Sediment Quality of Lakes, Rivers, and Estuaries in the Mystic River Basin, Eastern Massachusetts, 2001–03

By Robert F. Breault, John L. Durant, and Albert Robbat, Jr.

In cooperation with the
Massachusetts Department of Environmental Protection,
Massachusetts Department of Conservation and Recreation, and
Tufts University

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Conversion Factors, Vertical Datum, and Abbreviations

Multiply	By	To obtain
cubic foot (ft^3)	0.0283	cubic meters (m^3)
cubic yards (yd^3)	0.7646	cubic meters (m^3)
foot (ft)	0.3048	meter (m)
gallons (g)	3.785	liters (L)
gallons (g)	0.134	cubic feet (ft^3)
inch (in.)	2.54	centimeter (cm)
inch (in.)	25.4	millimeter (mm)
inch (in.)	25,400	micrometer (μm)
million gallons (Mgal)	3,785	cubic meters (m^3)

Temperature in degrees Celsius (°C) may be converted to degrees Fahrenheit (°F) as follows:

°F=(1.8×°C)+32

Temperature in degrees Fahrenheit (°F) may be converted to degrees Celsius (°C) as follows:

°C=(°F-32)/1.8

Vertical coordinate information is referenced to the North American Vertical Datum of 1988 (NAVD 88).

Horizontal coordinate information is referenced to the North American Datum of 1983 (NAD 83).

Altitude, as used in this report, refers to distance above the local vertical datum.

Concentrations of sediment-quality constituents are given in percent (%), parts per million (ppm), and parts per billion (ppb).

BHNIP	Boston Harbor Navigation Improvement Project
CCAG	Chelsea Creek Action Group
CSO	combined sewer overflow
DCR	Department of Conservation and Recreation
DDD	dichlorodiphenyldichloroethane
DDE	dichlorodiphenyldichlorethylene
DDT	dichlorodiphenyltrichloroethane
GCMS	gas chromatography mass spectrometry
GIS	geographic information system
GPS	global positioning system
HCl	hydrochloric acid
HSSR	Hydrogeochemical and Stream Sediment Reconnaissance
MDEP	Massachusetts Department of Environmental Protection
MassPort	Massachusetts Port Authority
MDCR	Massachusetts Department of Conservation and Recreation
MDC	Massachusetts District Commission
MDL	method detection limit
MIT	Massachusetts Institute of Technology
MLLW	mean lower low water
MRL	minimum reporting level
MWRA	Massachusetts Water Resources Authority
MyRWA	Mystic River Watershed Association
NAWQA	National Water-Quality Assessment
NURE	National Uranium Resource Evaluation
PAHs	polyaromatic hydrocarbons
PCBs	polychlorinated biphenyls
PEC	probable-effect concentration
PES	performance-evaluation samples
SOP	standard operating procedure
Σ	sum
TIN	triangular irregular network
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency

Sediment Quality of Lakes, Rivers, and Estuaries in the Mystic River Basin, Eastern Massachusetts, 2001–03

By Robert F. Breault[1], John L. Durant[2], and Albert Robbat, Jr.[2]

Abstract

The U.S. Geological Survey, in cooperation with the Massachusetts Department of Environmental Protection, Massachusetts Department of Conservation and Recreation, and Tufts University, completed a study of bottom-sediment quality in selected lakes, rivers, and estuaries in the Mystic River Basin, 2001–03. More than 100 bottom-sediment grab samples and 8 bottom-sediment cores were collected from the study area that included the Lower Mystic Lake, Mystic River, Alewife Brook, Malden River, Island End River, Chelsea and Mill Creeks, and Boston Inner Harbor. Sediment grab and sediment core samples were tested for the presence of pesticides, polyaromatic hydrocarbons (PAHs), polychlorinated biphenyls, and trace elements.

Both types of samples were generally enriched in toxic elements, in particular, arsenic, chromium, copper, lead, silver, zinc, and PAHs with respect to background concentrations and concentrations measured in sediment from other urban rivers. There were only a few detections of pesticides and no polychlorinated biphenyl detections above detection limits. Locally, concentrations of most trace elements and PAHs were lower in the sediments in the Mystic River Basin than in the lower Charles River, but higher than or equal to concentration in the Neponset River, with the notable exception of arsenic. Some chemicals also are in sufficiently high concentrations in Mystic River sediment to pose a threat to benthic organisms and potentially to cause health risks to humans if they come in contact with the sediment. Increasing concentrations with sediment depth in cores show that the deposition of trace elements and PAHs has substantially declined over the past 50 years or so. However, concentrations of PAHs are generally higher in the top few centimeters of sediment, indicating that sediment contaminant concentrations in the basin remain elevated above background.

Introduction

Restoration of lakes, rivers, and estuaries in the Boston metropolitan area has improved water and sediment quality and has generally made it safer for people to boat, swim, and fish in these waters. For example, during the past 10 years, Federal, State, and local institutions have collaborated to achieve the common goal of restoring the Charles River, a tributary to Boston Harbor (Breault and others, 2000; Zarriello and others, 2003; Weiskel, 2005). This initiative, known locally as Clean Charles River 2005, has realized substantial improvements in the water quality of the Charles River, and now serves as a model for other urban river-restoration projects across the nation. The initiative, which includes water-quality monitoring, collaborative studies, and the removal of illegal sewer connections, has been applied to lakes, rivers, and estuaries of the Mystic River Basin (fig. 1). This new initiative was motivated in part by the former administrator of the U.S. Environmental Protection Agency's (USEPA) New England Office, John DeVillars, who stated: "Our strategy is working * * * well on the Charles; it's time to put it to work on the Mystic. For too many years, the Mystic River has suffered from discharges of polluted storm water. A comprehensive strategy * * * will go a long way to returning this resource to better days" (U.S. Environmental Protection Agency, 2003). On November 30, 1998, the USEPA and the Massachusetts Department of Environmental Protection (MDEP) announced a program designed to improve the quality of the water in the Mystic River Basin, including Lower Mystic Lake, Mystic River, Alewife Brook, Malden River, Island End River, Chelsea and Mill Creeks, and Boston Inner Harbor. This program is known locally as the Clean Mystic River 2010.

[1]U.S. Geological Survey.

[2]Tufts University.

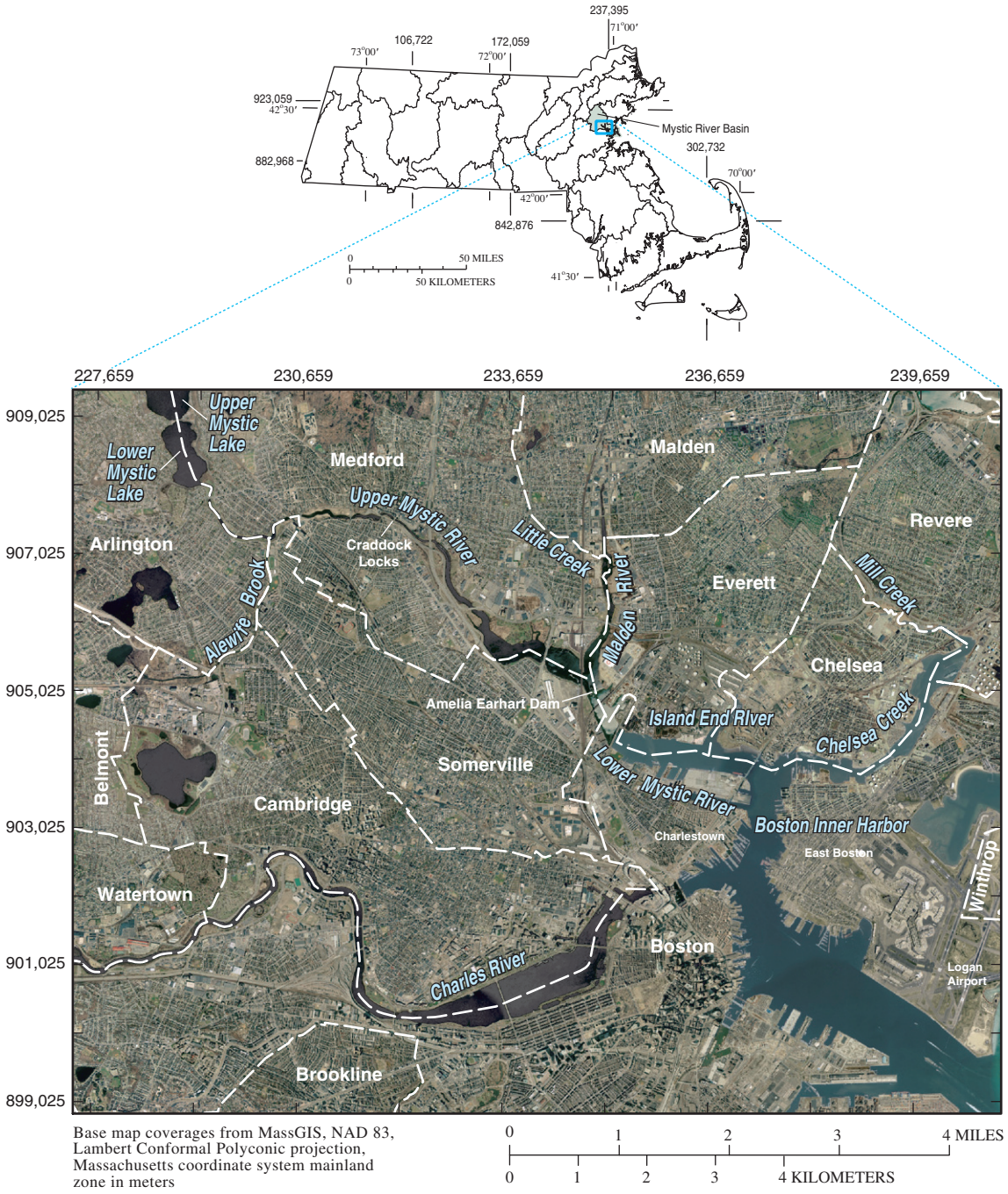

Figure 1. The location of the Mystic River Basin, Massachusetts.

Background

New Englanders and their water resources are closely connected. As early as colonial times, New England rivers were dammed for power production, fished for food, and used for waste disposal and the transportation of goods. The rivers of the Mystic River Basin, just north of Boston, which was the leading commercial port in colonial America, were well suited for these purposes. Tidally influenced until the early 1900s, the Mystic River was the site of mills, brickyards, tanneries, and shipyards (Mystic River Watershed Association, 2004). The "Blessing of the Bay," the first ocean-going ship built in Massachusetts, was launched from the shores of the Mystic River in 1631. The waters of the Mystic River Basin also have historical importance—the first naval battle of the American Revolution took place in Chelsea Creek on May 27, 1775. In this battle, the colonists destroyed the British schooner *Diana* (Chelsea Historical Society, 2004).

Although many of the old factories have been replaced by housing, and rivers in the upper parts of the basin have been dammed (first by the Craddock Locks in 1909 and then by the Amelia Earhart Dam in 1966), the rivers of the Mystic River Basin are still as important economically today (2005) as they were during colonial times. Modern industries and businesses line the waterways throughout the basin. Commercial vessels (about 500 annually), such as oil tankers, bulk carriers, and container ships, deliver fuel and cargo, including gypsum, salt, cement, and scrap metal, to ports on the Mystic River and Chelsea Creek (fig. 2). Although the Mystic River Basin supports recreational activities such as kayaking, rowing, and fishing, swimming has been limited because of contamination, which has been attributed to combined-sewer overflows (CSOs) and urban runoff (Mystic River Watershed Association, 2003).

Because of the long industrial history and the subsequent urbanization of the Mystic River Basin, the Mystic River has had a long history of contamination. In 1865, the decline of fish and shellfish populations in the Mystic River was blamed, in part, on contamination (Mystic River Watershed Association, 2004). Contamination in the upper parts of the basin began as early as the late 1600s. From the mid-1800s to the mid-1900s, leather tanneries and chemical-manufacturing plants released large quantities of arsenic, chromium, lead, and other chemicals into the Aberjona River, which drains to Lower Mystic Lake, the headwaters of the Mystic River (Wernstedt and Probst, 1997; Durant and others, 1990, Aurilio and others, 1995, Spliethoff and Hemond, 1996). Two Superfund hazardous-waste-disposal sites—wells G+H and Industri-Plex—are on the Aberjona River, the main tributary to the Mystic Lakes. In recent years, petroleum spills have contributed to the ongoing contamination of the Mystic River Basin. Since 1974 there have been over 40 recorded spills of petroleum into Chelsea Creek; moreover, it has been estimated that ground water in the area may have been contaminated with over one million gallons of oil (U.S. Environmental Protection Agency, 1999). An example of ongoing (2004) contamination in the basin can be found along the shores of the Island End River, a small tributary to the Mystic River. A major coal-gasification plant operated on the Island End River between the 1890s and the late 1950s, and residual waste from this plant continues to discharge into the river (U.S. Environmental Protection Agency, 2003b).

Urbanization has also contributed to the poor quality of the water of the Mystic River Basin. Toxic chemicals, animal waste, sediment, and trash washed from impervious areas such as roads or roof tops often end up in rivers, lakes, and estuaries. For example, 85 percent of the area of the city of Somerville is impervious (fig. 1) (Mystic River Watershed Association, 2004). Urban runoff typically contains high concentrations of bacteria, nutrients, oil and grease. Sewers are another source of contamination in the Mystic River Basin. The sewer systems in parts of the Mystic River Basin carry both sanitary discharge and stormwater, and during heavy rains these combined sewers overflow, sending raw or only marginally treated sewage into the Mystic River and its tributaries. Bacterial contamination is the reason for beach closings, shellfishing restrictions, and limitations on boating and swimming. At present, there are 17 active CSOs in the Mystic River Basin, eight of which discharge directly into Alewife Brook, a small tributary to the Mystic River (Kevin Brander, Massachusetts Department of Environmental Protection, written commun., 2004). In addition to CSOs, an aged sewer infrastructure with leaky sanitary sewers and illegal connections between sanitary sewers and storm drains also discharges sewage directly to lakes, rivers, and estuaries in the basin. The cumulative effect of this industrial history and the continuing discharge of household waste and urban runoff is that most waters in the basin fail to meet water-quality standards necessary for swimming and boating (U.S. Environmental Protection Agency, 2003a).

Figure 2. *A,* Tugboat operation; *B*, shipping; *C,* typical industry; and *D,* remedial action on a contaminated waterway in the lower Mystic River, Massachusetts.

Toxic chemicals, such as trace elements, and hydrophobic organic compounds (like oil) that enter natural waters often end up in the bottom sediment because their physical and chemical properties favor sorption onto sediments (Horowitz, 1991). In many rivers, high concentrations of contaminants in bottom sediment are a concern. As long as the sediments stay in the river, they remain a potential nonpoint source of contamination (de Groot, 1995). Contaminated sediments may also adversely affect benthic (bottom-dwelling) organisms (DePinto and others, 1994). In addition, chemicals in contaminated sediments may propagate through the food chain and thereby affect pelagic (swimming) organisms (Baudo and Muntau, 1990; Sly, 1994). Consumption of contaminated organisms can pose health risks to predatory fish, wildlife, and humans. Direct contact with or accidental ingestion of contaminated sediments may also pose health risks to humans (Massachusetts Department of Environmental Protection, 1996).

The distribution of toxic chemicals in sediment depends not only on the locations of contaminant sources but also on the natural processes that control sediment-particle transport. Human activities in the basin can also interfere with many of these natural processes; urbanization, dam construction, and channel alterations (dredging, channel straightening, or others) can change the sediment supply, hydraulic characteristics, or both (Montgomery and Buffington, 1998). For example, dams trap most of the sediment in impounded waters (Heinz Center, 2002), and dredging removes contaminated sediments. Both dam construction and dredging have likely altered natural sediment processes in the Mystic River Basin.

Many agencies and organizations are involved in the ongoing cleanup efforts in the Mystic River Basin, including the MDEP, the Massachusetts Department of Conservation and Recreation (DCR), the Massachusetts Water Resources Authority (MWRA), the Mystic River Watershed Association (MyRWA), the Chelsea Creek Action Group (CCAG), the Friends of Alewife Reservation, the USEPA, the Massachusetts Institute of Technology (MIT), Tufts University, and others. With the support of these Federal, State, and local institutions, the USGS was asked to undertake this cooperative study of sediment quality in the Mystic River Basin in 2001.

Purpose and Scope

This report describes the collection of 104 sediment grab samples (from the top 2–4 in. of sediment) and 8 sediment core samples and presents maps of bathymetry and sediment thickness in the Mystic River Basin. This report also describes the occurrence and geographic distribution of contaminants—inorganic elements, PAHs, pesticides, and PCBs—in bottom sediment. Trends in the depositional history of contaminants to lakes, rivers, and estuaries in the Mystic River Basin area are also described. Finally, the report discusses the potential adverse effects that these contaminants may have on aquatic organisms and humans.

Previous Studies

Several studies have been done in the Mystic River Basin to characterize sediment and water-quality problems. The USEPA, in cooperation with Nangle Consulting Associates, completed a study of sediment and water quality of the Malden River (Nangle Consulting Associates, 2000). Water samples were analyzed for total dissolved solids, total suspended solids, and nitrates; water-quality properties measured included alkalinity, conductivity, dissolved oxygen, pH, and temperature. Sediment samples were analyzed for trace elements, PAHs, and volatile organic compounds. Sediment samples collected in that study showed high concentrations of the trace elements and several individual PAHs, particularly at the confluence of Little Creek and the Malden River (Nangle Consulting Associates, 2000). The Massachusetts Institute of Technology (MIT), Tufts University, the U.S. Army Corps of Engineers (USACE), and the USEPA have studied sediment and water quality in Upper Mystic Lake and its major tributary, the Aberjona River, which flows through two Superfund sites. These studies focused primarily on arsenic contamination in the upper parts of the Mystic River Basin (Aurilio and others, 1993; Aurilio and others, 1995); however, the distribution of other toxic elements has also been described (Knox, 1991).

Studies of sediment quality have also been done in the tidal parts of the basin, including the lower Mystic River (downstream of the Amelia Earhart Dam), Island End River, Chelsea Creek, and the Inner Harbor. The USGS has assembled a database that contains sediment-quality data from more than 3,000 sediment samples in the tidal parts of the Mystic River Basin (Buchholtz ten Brink and others, 2002). Concentrations of trace elements such as copper, lead, mercury, and zinc were greater than their respective toxicity-criteria concentrations in nearly one-half of the samples, and ranged from 4 to more than 20 times their respective background concentrations. Organic compounds were also detected in high concentrations at many sampling locations (Manheim and others, 1999).

Sample Collection Methods and Analysis

Water depths were measured upstream of the Amelia Earhart Dam in the upper Mystic River (upstream of the Amelia Earhart Dam), the Malden River, Alewife Brook, and Lower Mystic Lake. Sediment-thickness data were also collected upstream of the dam. No sediment-thickness data were collected in the Lower Mystic Lake because the water was too deep for the methods used in this study. Sediment grab samples were collected randomly throughout the study area (table 1; fig. 3). Sediment cores were collected at eight locations (table 1; fig. 3). All sediment samples (grabs and cores) were analyzed for selected toxic elements and organic compounds.

Water Depths and Sediment Thickness

Water depths were measured on September 17–19, October 30, and December 2–4, 2001. On these days, the water altitudes measured on the upstream side of the Amelia Earhart Dam ranged from 105.2 to 105.8 ft (relative to Massachusetts District Commission (MDC) Datum). Water depths, however, were adjusted to a datum of 105.8 ft by adding the height of the water measured at each site to the difference between 105.8 ft and the altitude measured at the dam at the time of sampling.

Table 1. Bottom-sediment sampling sites in the Mystic River Basin, Massachusetts.

[**Latitude and longitude:** In degrees, minutes, and seconds. No., number; USGS, U.S. Geological Survey; do, ditto]

Station No.	USGS identifier	Town	Water body	Easting (meters)	Northing (meters)	Latitude ° ′ ″	Longitude ° ′ ″
			Sediment Grab Samples				
1	MMY-001	Medford	Lower Mystic Lake	229,128	908,943	42 25 49	71 08 47
2	AKY-001	Arlington	.....do.	228,922	908,859	42 25 46	71 08 56
3	AKY-002	.....do.	.....do.	228,884	908,704	42 25 41	71 08 58
4	MMY-002	Medford	.....do.	229,060	908,641	42 25 39	71 08 50
5	AKY-003	Arlington	.....do.	228,998	908,234	42 25 26	71 08 53
6	AKY-004	.....do.	.....do.	229,130	908,222	42 25 25	71 08 47
7	AKY-005	.....do.	.....do.	229,088	908,028	42 25 19	71 08 49
8	MMY-003	Medford	Upper Mystic River	229,435	907,892	42 25 15	71 08 34
9	MMY-004	.....do.	.....do.	229,582	907,524	42 25 03	71 08 27
10	MMY-005	.....do.	.....do.	230,011	907,262	42 24 54	71 08 09
11	CAY-069	Cambridge	Alewife Brook	230,028	905,758	42 24 05	71 08 08
12	CAY-070	.....do.	.....do.	230,076	905,833	42 24 08	71 08 06
13	SQY-001	Somerville	.....do.	230,128	906,106	42 24 17	71 08 04
14	SQY-002	.....do.	.....do.	230,289	906,540	42 24 31	71 07 57
15	SQY-003	.....do.	.....do.	230,270	906,998	42 24 46	71 07 57
16	SQY-004	.....do.	Upper Mystic River	230,405	907,457	42 25 00	71 07 51
17	MMY-006	Medford	.....do.	230,742	907,592	42 25 05	71 07 37
18	MMY-007	.....do.	.....do.	230,933	907,597	42 25 05	71 07 28
19	MMY-008	.....do.	.....do.	231,107	907,642	42 25 06	71 07 21
20	MMY-009	.....do.	.....do.	231,313	907,569	42 25 04	71 07 12
21	MMY-010	.....do.	.....do.	231,593	907,601	42 25 05	71 06 59
22	MMY-011	.....do.	.....do.	231,673	907,580	42 25 04	71 06 56
23	MMY-012	.....do.	.....do.	231,833	907,559	42 25 04	71 06 49
24	MMY-013	.....do.	.....do.	231,939	907,610	42 25 05	71 06 44
25	MMY-014	.....do.	.....do.	232,341	907,369	42 24 57	71 06 27
26	MMY-015	.....do.	.....do.	232,618	907,224	42 24 53	71 06 15
27	MMY-016	.....do.	.....do.	232,734	907,201	42 24 52	71 06 10
28	MMY-017	.....do.	.....do.	232,896	906,954	42 24 44	71 06 03
29	MMY-018	.....do.	.....do.	232,921	906,708	42 24 36	71 06 02
30	MMY-019	.....do.	.....do.	232,998	906,460	42 24 28	71 05 58
31	MMY-020	.....do.	.....do.	233,224	906,283	42 24 22	71 05 48
32	MMY-021	.....do.	.....do.	233,197	906,123	42 24 17	71 05 50
33	MMY-022	.....do.	.....do.	233,355	906,123	42 24 17	71 05 43
34	MMY-023	.....do.	.....do.	233,456	906,021	42 24 14	71 05 38
35	MMY-024	.....do.	.....do.	233,443	905,763	42 24 05	71 05 39
36	MMY-025	.....do.	.....do.	233,758	905,529	42 23 58	71 05 25
37	SQY-005	Somerville	.....do.	233,754	905,446	42 23 55	71 05 25
38	MMY-026	Medford	.....do.	233,880	905,539	42 23 58	71 05 20
39	MMY-027	.....do.	.....do.	233,924	905,663	42 24 02	71 05 18
40	MMY-028	.....do.	.....do.	234,462	905,620	42 24 00	71 04 54
41	EYY-001	Everett	.....do.	234,621	905,408	42 23 53	71 04 47
42	MAY-001	Malden	Malden River	235,149	907,820	42 25 12	71 04 24
43	MAY-002	.....do.	.....do.	235,164	907,536	42 25 02	71 04 23
44	MAY-003	.....do.	.....do.	235,164	907,417	42 24 58	71 04 23
45	MAY-004	.....do.	.....do.	235,148	907,012	42 24 45	71 04 24

Table 1. Bottom-sediment sampling sites in the Mystic River Basin, Massachusetts.—Continued

[**Latitude and longitude:** In degrees, minutes, and seconds. No., number; USGS, U.S. Geological Survey; do, ditto]

Station No.	USGS identifier	Town	Water body	Easting (meters)	Northing (meters)	Latitude ° ′ ″	Longitude ° ′ ″
			Sediment Grab Samples—Continued				
46	EYY-002	Everett	Malden River	235,243	906,782	42 24 38	71 04 20
47	EYY-003	.....do.	.....do.	235,170	906,662	42 24 34	71 04 23
48	EYY-004	.....do.	.....do.	235,300	906,216	42 24 20	71 04 18
49	EYY-005	.....do.	.....do.	235,135	905,819	42 24 07	71 04 25
50	EYY-006	.....do.	.....do.	235,013	905,642	42 24 01	71 04 30
51	EYY-007	.....do.	.....do.	235,023	905,444	42 23 55	71 04 30
52	EYY-008	.....do.	.....do.	234,891	905,396	42 23 53	71 04 36
53	EYY-009	.....do.	Upper Mystic River	234,942	905,217	42 23 47	71 04 33
54	EYY-010	.....do.	.....do.	235,112	905,136	42 23 45	71 04 26
55	SQY-006	Somerville	Lower Mystic River	234,968	904,960	42 23 39	71 04 32
56	EYY-011	Everett	.....do.	235,150	905,004	42 23 40	71 04 24
57	EYY-012	.....do.	.....do.	235,248	904,759	42 23 32	71 04 20
58	BGY-139	Boston	.....do.	235,159	904,602	42 23 27	71 04 24
59	BGY-140	.....do.	.....do.	235,444	904,796	42 23 33	71 04 12
60	BGY-141	.....do.	.....do.	235,318	904,448	42 23 22	71 04 17
61	BGY-142	.....do.	.....do.	235,467	904,172	42 23 13	71 04 11
62	EYY-013	Everett	.....do.	235,916	904,255	42 23 16	71 03 51
63	BGY-143	Boston	.....do.	236,015	903,860	42 23 03	71 03 47
64	EYY-014	Everett	.....do.	236,105	904,125	42 23 12	71 03 43
65	EYY-015	.....do.	.....do.	236,191	904,321	42 23 18	71 03 39
66	BGY-144	Boston	.....do.	236,240	903,899	42 23 04	71 03 37
67	EYY-016	Everett	.....do.	236,306	904,131	42 23 12	71 03 34
68	BGY-145	Boston	.....do.	236,503	903,936	42 23 05	71 03 25
69	EYY-017	Everett	.....do.	236,639	903,998	42 23 07	71 03 20
70	CIY-001	Chelsea	Island End River	237,103	904,801	42 23 33	71 02 59
71	EYY-018	Everett	.....do.	236,927	904,625	42 23 28	71 03 07
72	EYY-019	.....do.	.....do.	236,810	904,556	42 23 25	71 03 12
73	EYY-020	.....do.	.....do.	236,786	904,463	42 23 22	71 03 13
74	EYY-021	.....do.	.....do.	236,682	904,280	42 23 17	71 03 18
75	BGY-146	Boston	Lower Mystic River	236,882	903,938	42 23 05	71 03 09
76	BGY-147	.....do.	.....do.	237,157	903,853	42 23 03	71 02 57
77	CIY-002	Chelsea	.....do.	237,220	904,184	42 23 13	71 02 54
78	CIY-003	.....do.	.....do.	237,285	904,091	42 23 10	71 02 51
79	CIY-004	.....do.	.....do.	237,465	903,904	42 23 04	71 02 43
80	CIY-005	.....do.	Mill Creek	240,376	905,760	42 24 04	71 00 36
81	RDY-001	Revere	Chelsea Creek	240,408	905,606	42 23 59	71 00 34
82	RDY-002	.....do.	.....do.	240,365	905,501	42 23 55	71 00 36
83	CIY-006	Chelsea	.....do.	239,900	905,415	42 23 53	71 00 57
84	CIY-007	.....do.	.....do.	239,922	905,276	42 23 48	71 00 56
85	CIY-008	.....do.	.....do.	239,824	905,096	42 23 42	71 01 00
86	BGY-148	Boston	.....do.	239,858	904,915	42 23 37	71 00 59
87	CIY-009	Chelsea	.....do.	239,667	904,543	42 23 25	71 01 07
88	CIY-010	.....do.	.....do.	239,575	904,361	42 23 19	71 01 11
89	BGY-149	Boston	.....do.	239,504	904,195	42 23 13	71 01 14
90	BGY-150	.....do.	.....do.	239,296	904,022	42 23 08	71 01 23

Table 1. Bottom-sediment sampling sites in the Mystic River Basin, Massachusetts.—Continued

[**Latitude and longitude:** In degrees, minutes, and seconds. No., number; USGS, U.S. Geological Survey; do, ditto]

Station No.	USGS identifier	Town	Water body	Easting (meters)	Northing (meters)	Latitude ° ′ ″	Longitude ° ′ ″
			Sediment Grab Samples—Continued				
91	BGY-151	Boston	Chelsea Creek	239,021	903,858	42 23 02	71 01 35
92	CIY-011	Chelsea	.....do.	238,826	903,873	42 23 03	71 01 44
93	CIY-012	.....do.	.....do.	238,677	903,971	42 23 06	71 01 50
94	BGY-152	Boston	.....do.	238,588	903,851	42 23 02	71 01 54
95	CIY-013	Chelsea	.....do.	238,391	904,030	42 23 08	71 02 03
96	CIY-014	.....do.	.....do.	238,234	903,992	42 23 07	71 02 10
97	CIY-015	.....do.	.....do.	238,030	904,086	42 23 10	71 02 19
98	BGY-153	Boston	.....do.	237,961	903,959	42 23 06	71 02 22
99	CIY-016	Chelsea	.....do.	237,945	904,174	42 23 13	71 02 22
100	CIY-017	.....do.	.....do.	237,807	904,045	42 23 09	71 02 28
101	BGY-154	Boston	.....do.	237,830	903,956	42 23 06	71 02 28
102	BGY-155	.....do.	Boston Inner Harbor	237,617	903,592	42 22 54	71 02 37
103	BGY-156	.....do.	.....do.	237,311	903,542	42 22 53	71 02 50
104	BGY-157	.....do.	.....do.	237,543	903,456	42 22 50	71 02 40
			Sediment Core Samples				
105	AKY-006	Arlington	Lower Mystic Lake	236,848	904,464	42 23 26	71 03 10
106	MMY-029	Medford	Upper Mystic River	229,161	908,193	42 25 25	71 08 46
107	MMY-030	.....do.	Malden River	235,199	906,338	42 24 44	71 04 22
108	MMY-031	.....do.	Upper Mystic River	234,965	904,455	42 23 45	71 04 33
109	MAY-005	Malden	.....do.	235,059	904,455	42 23 45	71 04 28
110	SQY-007	Somerville	Lower Mystic River	234,086	906,333	42 24 01	71 05 11
111	BGY-158	Boston	.....do.	235,197	904,456	42 23 26	71 04 22
112	EYY-022	Everett	Island End River	235,099	904,456	42 23 39	71 04 27

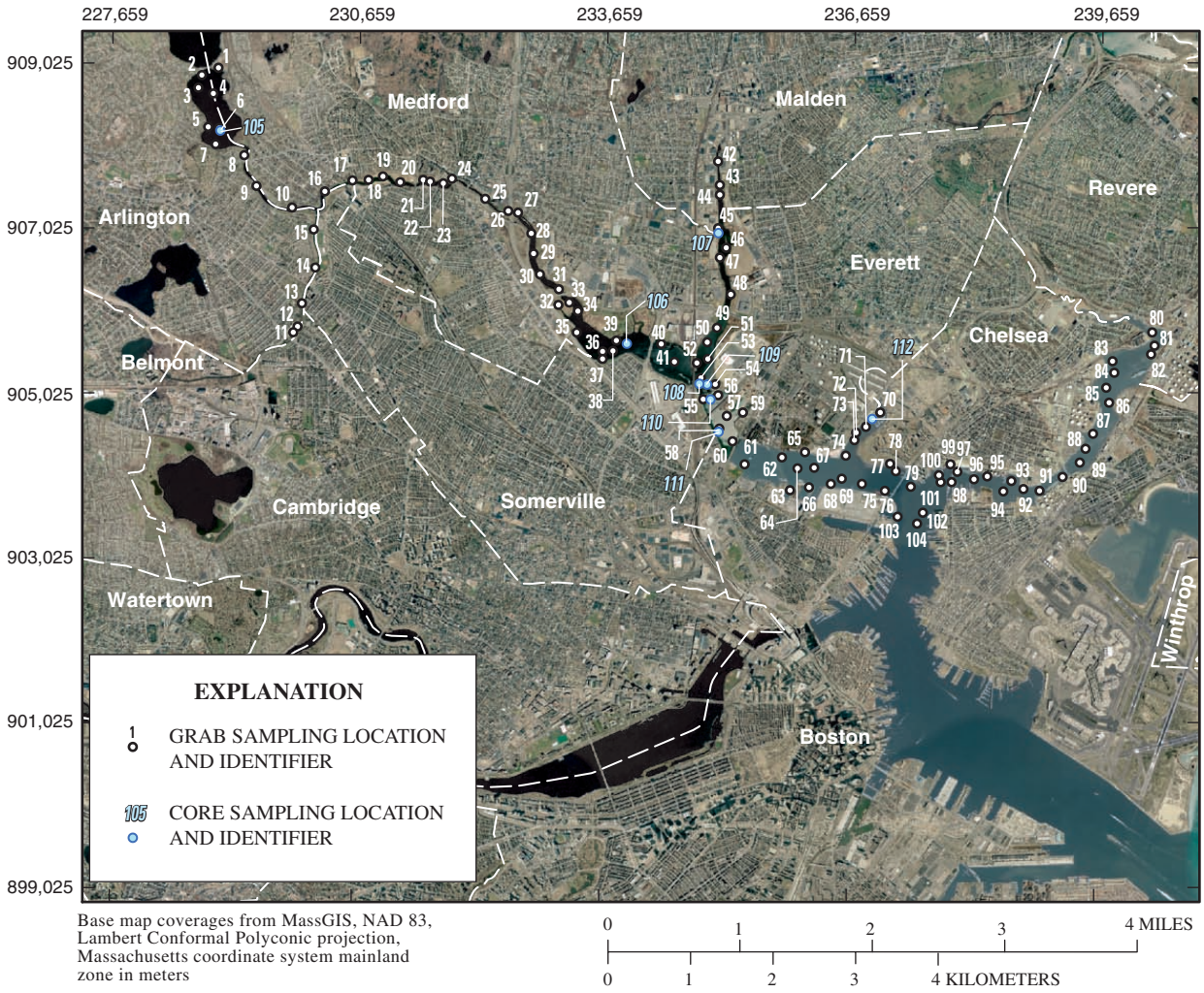

Figure 3. Sediment grab and core sampling locations, Mystic River Basin, Massachusetts.

An echo sounder was used to measure water depths. Water-depth data were recorded simultaneously with positional data taken with a handheld global-positioning-system (GPS) receiver. A steel rod, manually pushed into the bottom sediment, was used to collect soft-sediment-thickness data. Sediment-thickness measurements were made at more than 300 locations. A combination of the triangular irregular network (TIN) data model and topogrid functions of ESRI's ARC/INFO geographic information systems (GIS) software (Environmental Research Institute, Inc., Version 8.02) was used to map channel morphology and bottom-sediment thickness from water-depth and sediment-thickness data (fig. 4).

Sample-Collection Design

Grab samples were collected from 104 locations upstream of the Amelia Earhart Dam in October 2001 and downstream of the dam in June 2003 (table 1; fig. 3). A subroutine within ARC/INFO GIS software (Scott, 1990) was used to select the sampling locations randomly. A GPS unit was used to navigate to these locations in the study area. In addition, eight core samples were collected in December 2001 and July 2003 (table 1; fig. 3). These samples were collected in areas of deposition of fine-grained sediment.

Sample-Collection Techniques

A stainless-steel Eckman dredge was used to collect grab samples (fig. 5). A minimum of three samples was collected at each sampling location to characterize conditions at the site (Baudo and Mantau, 1990). Any water trapped in the dredge was decanted off after most of the fines had settled. The top 2–4 in. of the sample was removed from the dredge, placed in a precleaned stainless-steel bowl, and homogenized with a stainless-steel spatula in the field. Exceptions were the grab samples collected downstream of the Amelia Earhart Dam; these samples were placed in precleaned disposable Teflon bags and homogenized with a Teflon spoon. Each sample was divided into subsamples, which were placed in precleaned containers and stored on ice for overnight delivery to the appropriate laboratory.

Teflon bags were precleaned by rinsing with methanol, 5-percent hydrochloric acid (HCl), and deionized water, in that order. In the field, all sediment-sampling equipment was cleaned between samplings by scrubbing with a nylon brush and phosphate-free detergent, and rinsing with methanol, deionized water, and finally, native water from the sampling sites. After the methanol rinse, the Teflon spoon received an additional rinse with 5-percent HCl.

A freeze corer was used to collect sediment cores (fig. 6). The core barrel was filled with a dry ice and methanol slurry and allowed to fall freely through the water column into the sediment. The core was retrieved after about 20 minutes, wrapped in plastic, labeled, and transported on dry ice to Tufts University in Medford, MA. Individual subsamples were sliced from the core with a hot tungsten wire and placed in precleaned containers.

Chemical Analysis

Sediment samples were analyzed for a suite of inorganic elements and organic compounds commonly found in rivers that drain industrial and urban watersheds (table 2). XRAL Laboratory of Ontario, Canada, analyzed the sediment samples for inorganic elements by inductively coupled plasma atomic emission spectroscopy. Researchers at Tufts University analyzed sediment samples for a suite of organic compounds, including PAHs, organochlorine pesticides, and PCBs, by gas chromatography with mass spectrometry.

Data-Analysis Methods

A variety of statistical methods was used to summarize sediment-quality data. Particular attention was given to censored data, defined as measured concentrations that were less than the detection limit. For example, total concentrations (Σ) of PAHs, PCBs, and organochlorine pesticides were calculated by adding individual constituent concentrations. If individual concentrations were below detection limits, concentrations of those constituents were set to zero. If all of the individual constituents of a group such as PAHs were below detection limits, then the detection limits were added and the total PAH concentration was estimated to be less than the sum of the detection limits.

The USGS's Method Detection Limit (MDL) function of the S-Plus statistical software package was used to calculate summary statistics for constituents with censored data. A minimum of three observations is required to determine summary statistics by means of the MDL function, which uses a log-probability method (Helsel and Cohn, 1998). If the MDL program was not appropriate (for example, if there were fewer than three observations), simple population statistics were calculated with Microsoft Excel by setting censored data equal to one-half the reported detection limit. This procedure was used only for the cadmium statistics for Boston Inner Harbor.

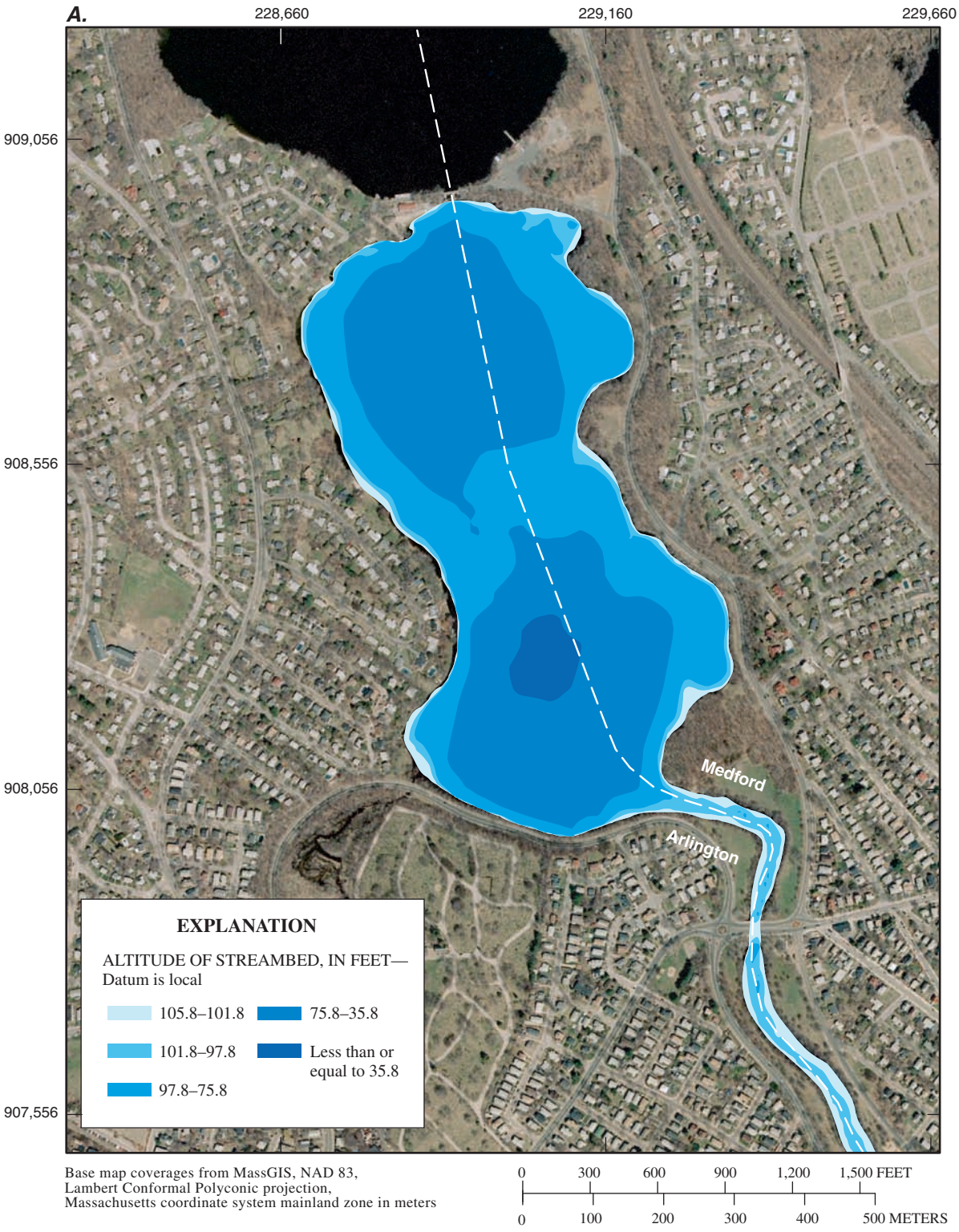

Figure 4. Altitude of streambed, sediment thickness, or both in the Mystic River Basin, Massachusetts: *A,* Lower Mystic Lake; *B,* Alewife Brook and its confluence with the upper Mystic River; and *C,* upper Mystic River and the Malden River above the Amelia Earhart Dam.

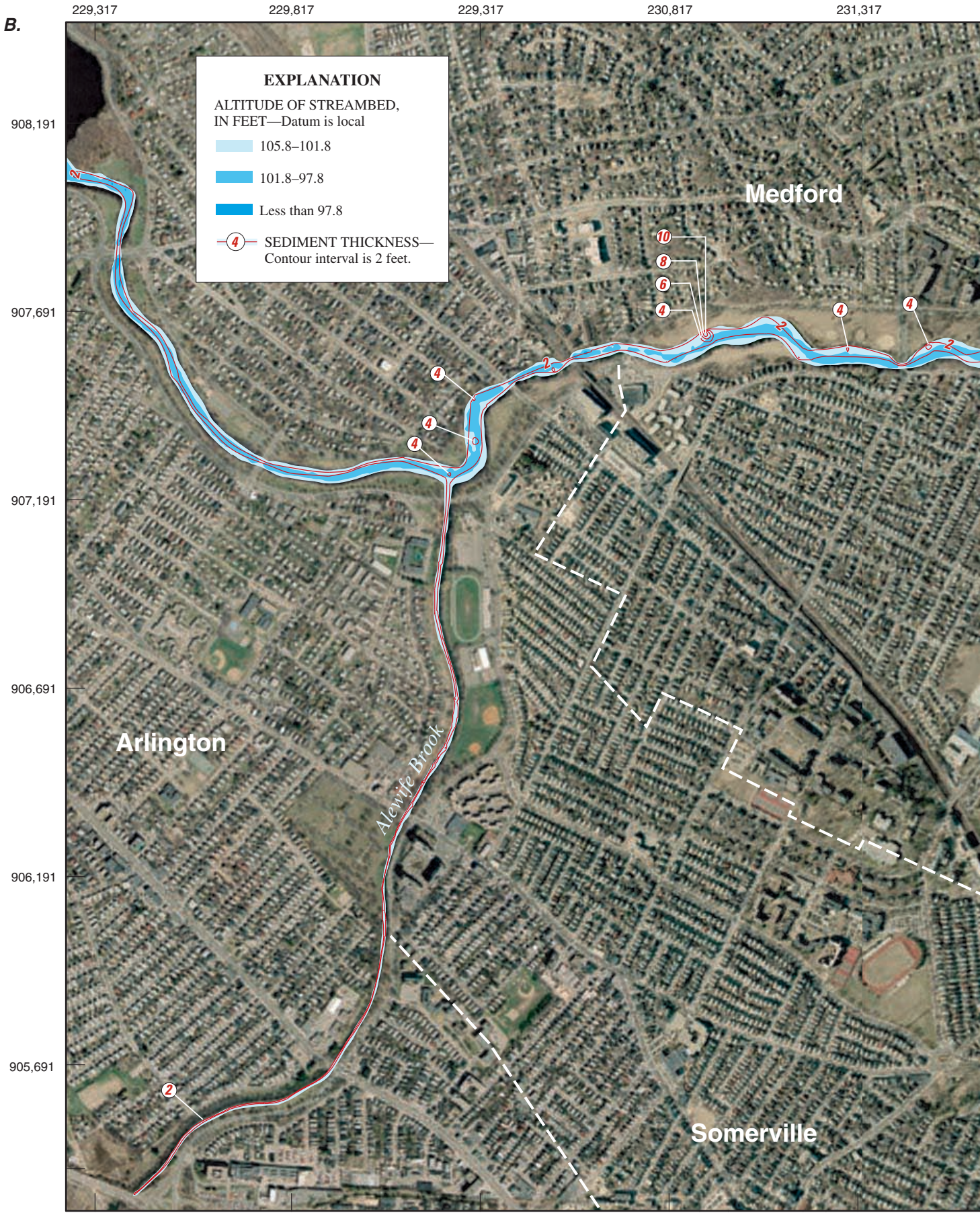
B.
229,317
229,817
229,317
230,817
231,317
908,191
907,691
907,191
906,691
906,191
905,691
EXPLANATION
ALTITUDE OF STREAMBED, IN FEET—Datum is local
105.8–101.8
101.8–97.8
Less than 97.8
SEDIMENT THICKNESS—Contour interval is 2 feet.
Medford
Arlington
Somerville
Alewife Brook

Figure 4—Continued. Altitude of streambed, sediment thickness, or both in the Mystic River Basin, Massachusetts: *A,* Lower Mystic Lake; *B*, Alewife Brook and its confluence with the upper Mystic River; and *C*, upper Mystic River and the Malden River above the Amelia Earhart Dam.

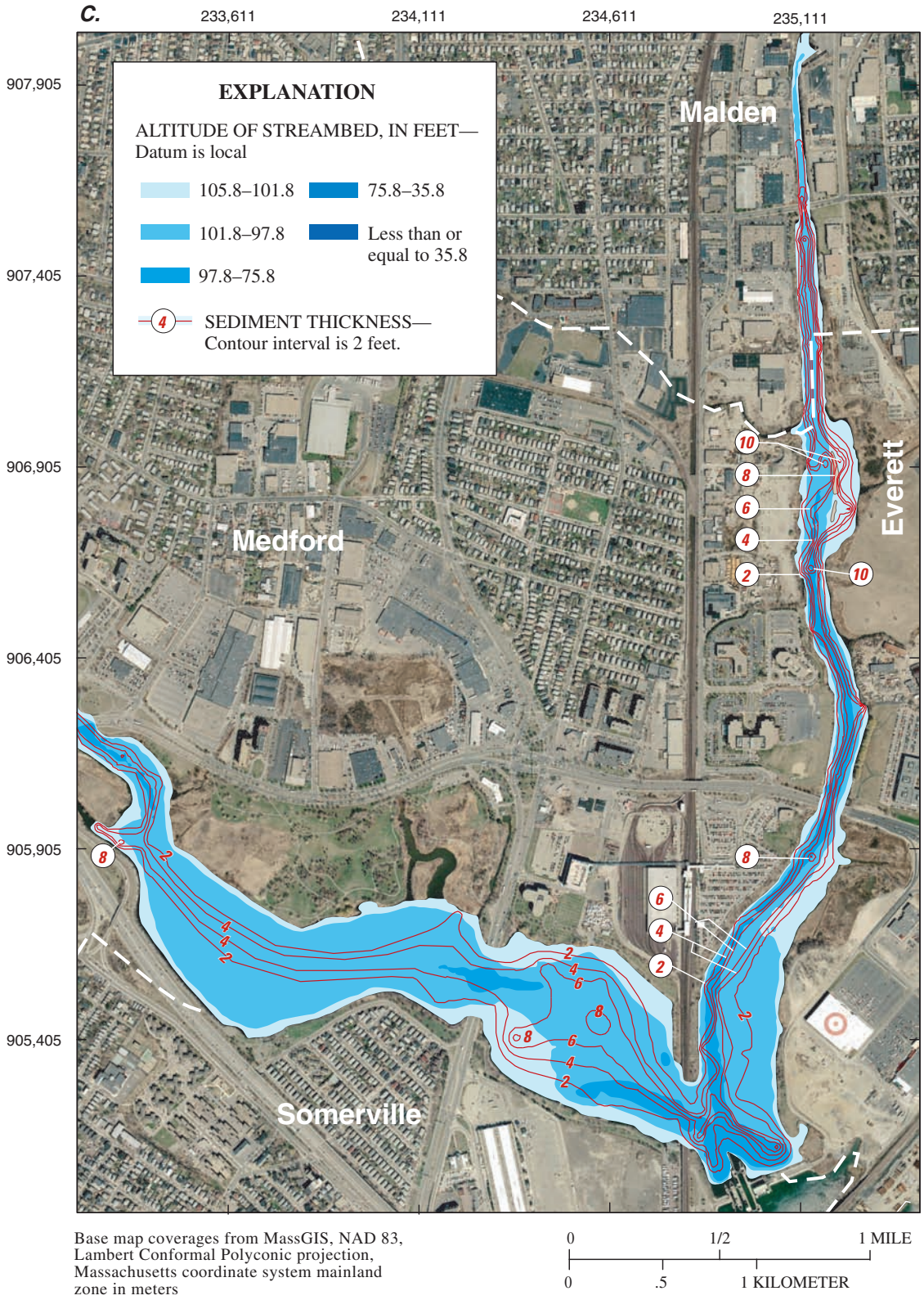

Figure 4—Continued. Altitude of streambed, sediment thickness, or both in the Mystic River Basin, Massachusetts: *A,* Lower Mystic Lake; *B*, Alewife Brook and its confluence with the upper Mystic River; and *C*, upper Mystic River and the Malden River above the Amelia Earhart Dam.

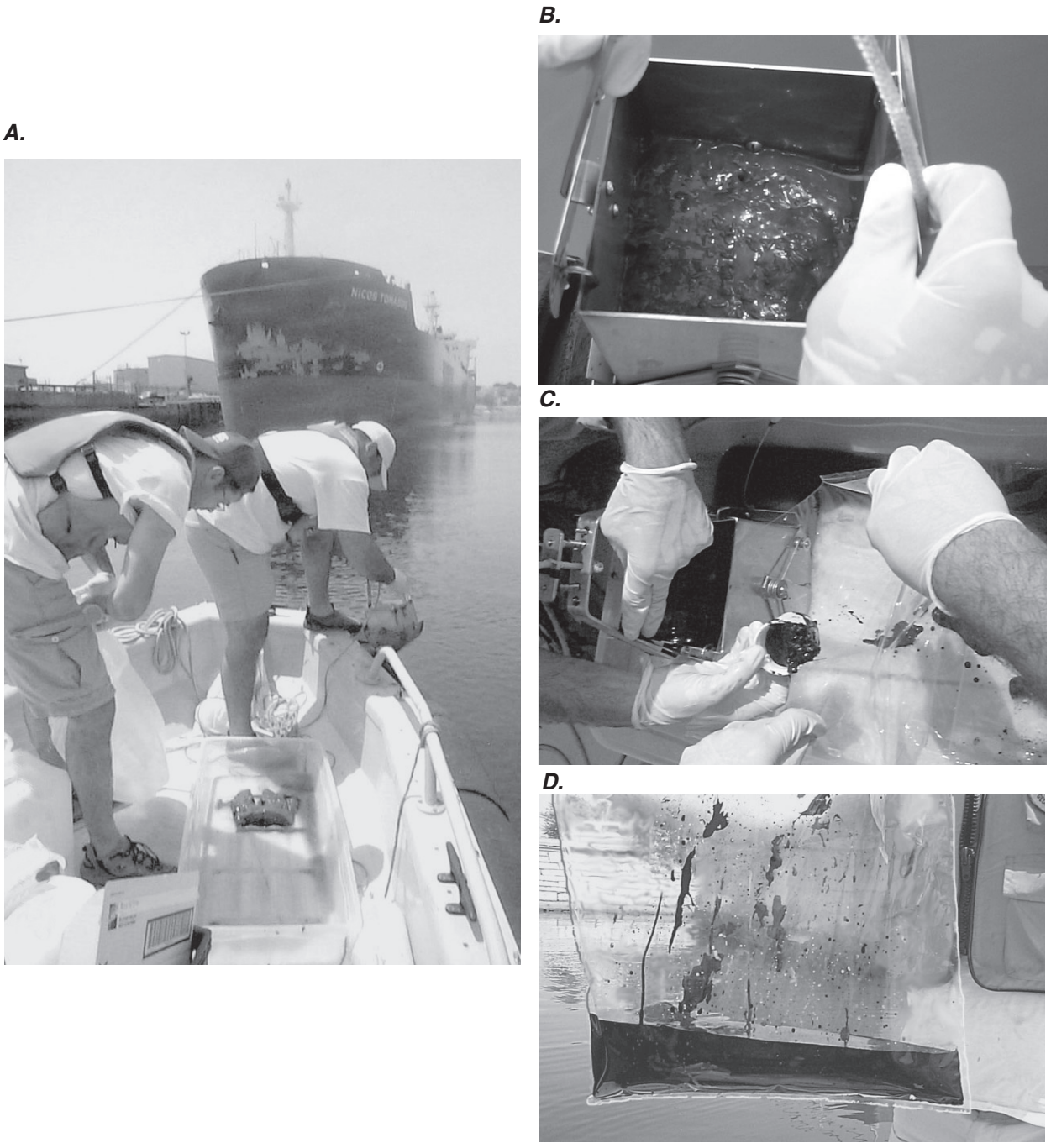

Figure 5. *A,* U.S. Geological Survey personnel collecting a sediment grab sample; *B,* sediment collected in the dredge; *C,* transfer of sediment sample from the dredge into a Teflon bag; and *D,* a waterlogged sediment sample collected from the lower Mystic River, Massachusetts.

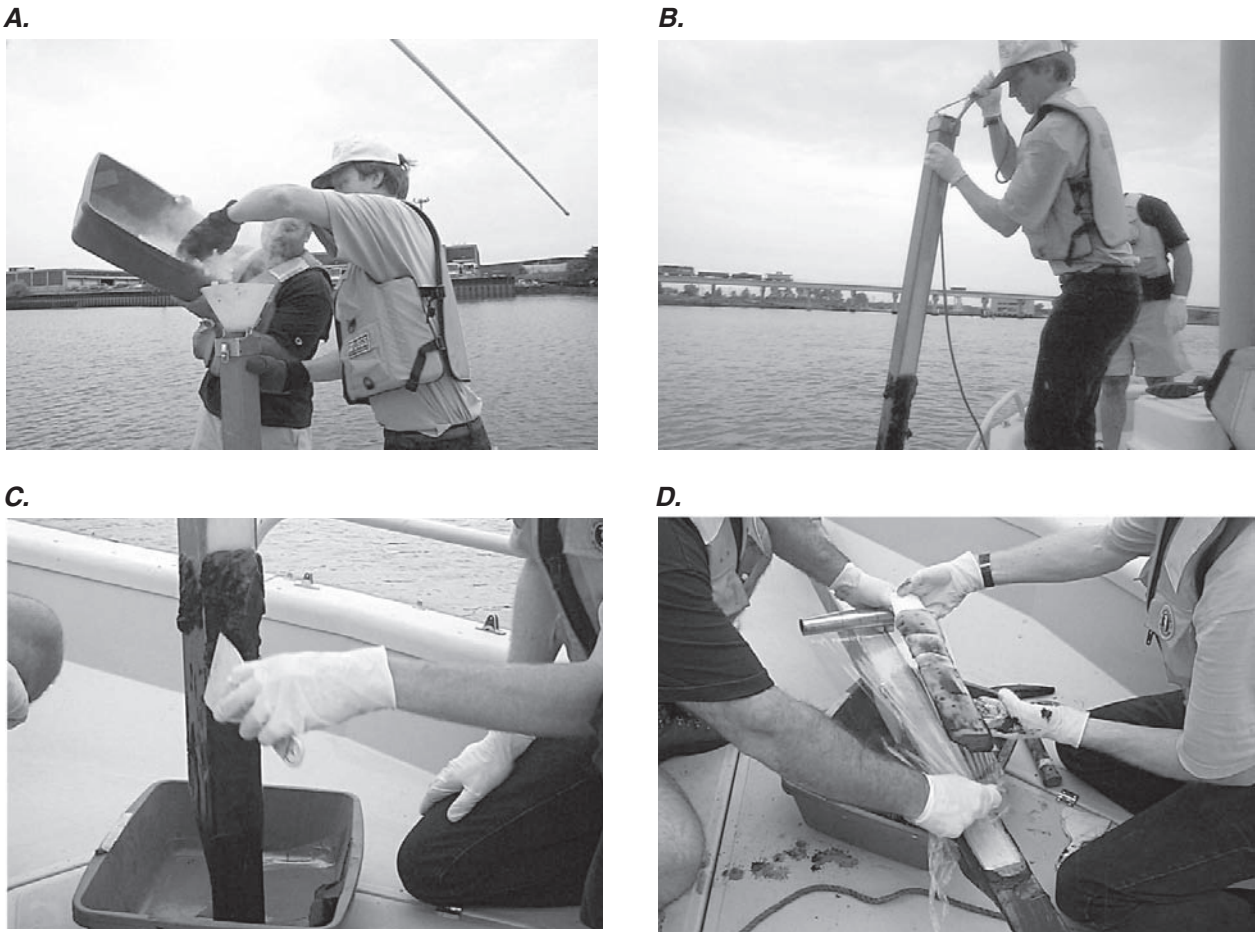

Figure 6. *A,* Dry ice being placed into freeze corer; *B,* retrieval of freeze corer; *C,* removal of excess sediment from corer; and *D,* sediment-core preservation by wrapping the core in plastic.

Bias and Variability

Sediment-quality data are subject to bias (or systematic error) and variability (or random error) during sample collection, processing, and analysis. The nature and magnitude of bias and variability can be determined by analysis of quality-control samples, including blanks, field duplicates, laboratory duplicates, matrix spikes, matrix-spike duplicates, and performance-evaluation samples (PES) (these data can be found in tables 3–5, at back of report). With a few exceptions, bias and variability in this study were generally within acceptable limits. Most notable is the potential contamination bias introduced by the equipment used for collection and processing of some grab samples (stainless-steel dredge, bowl, and spoon). The analysis of PES samples mixed in the stainless steel bowl indicates that grab samples may have been enriched in chromium from sampling or processing equipment (table 3). As a result of these findings, the standard operating procedure (SOP) for sediment sampling was changed. A Teflon spoon was used instead of a stainless-steel spoon to scoop material that had not come in contact with any part of the dredge and to composite the samples in disposable precleaned Teflon bags instead of in the stainless steel bowl. Therefore, chromium values measured in sediment samples processed with the stainless steel bowl and spoon were not included in this report.

Table 2. Constituents analyzed in sediment samples from the Mystic River Basin, Massachusetts, and their common sources and uses.

[BHC, 1,2,3,4,5,6-hexachlorocyclohexane; DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloroethane; PCBs, polychlorinated biphenyls; do., ditto]

Constituent	Common source or urban uses
Inorganic Elements	
Calcium	auto exhaust, brakes, deicers
Magnesium	.....do.
Phosphorus	auto exhaust, fuel, lubricants, industrial and municipal runoff, wastewater
Potassium	auto exhaust, deicers
Sodium	.....do.
Antimony	flame retardants, car batteries
Arsenic	production of pesticides and herbicides
Barium	motor vehicle brake linings
Beryllium	ceramics, steel
Bismuth	malleable irons, medicine
Cadmium	Ni-Cd batteries, televisions
Chromium	bricks, stainless steel
Cobalt	jet engines, gas turbine engines
Copper	boats, wires
Lanthanum	battery electrodes, lighter flints
Lead	batteries
Lithium	.....do.
Manganese	batteries, steel
Molybdenum	aircraft parts, electrical parts
Nickel	electronics, automobiles
Scandium	high-intensity lights
Silver	batteries, electronics, electrical parts
Strontium	greases, pyrotechnics
Tin	electronics, food packing, plumbing
Titanium	automobiles, construction, plastics
Tungsten	electrical parts, electronics
Vanadium	batteries, electronics
Yittrium	television sets
Zinc	paints, plastic, textiles, electronics
Zirconium	production of steel, photography
Polyaromatic Hydrocarbons	
Acenaphthene	automobile exhaust
Acenaphthylene	production of dyes, plastics, pesticides
Anthracene	.....do.
Benzo[*a*]anthracene	automobile exhaust
Benzo[*a*]pyrene	.....do.
Benzo[(*b*]fluoranthene	automobile exhaust
Benzo[*ghi*]perylene	.....do.
Benzo[*k*]fluoranthene	automobile exhaust, motor oil
Chrysene	combustion of coal and petroleum products
Dibenzo[*a,h*]anthracene	automobile exhaust
Fluoranthene	automobile exhaust
Fluorene	production of dyes, plastics, pesticides
Indeno[1,2,3-*cd*]pyrene	automobile exhaust
Naphthalene	coal tar, gasoline and diesel fuels
Phenanthrene	production of dyes, plastics, pesticides, explosives, and drugs
Pyrene	production of dyes, plastics, pesticides
Organochlorine Pesticides	
4,4′-DDD	pesticide for vegetables and tobacco
4,4′-DDE	breakdown product of DDT
4,4′-DDT	pesticide for livestock and crops
Aldrin	termite control
Alpha Chlordane	household insecticide
alpha-BHC	insecticide
beta-BHC	.....do.
delta-BHC	.....do.
Dieldrin	.....do.
Endosulfan I	insecticide for crops
Endosulfan II	.....do.
Endosulfan sulfate	.....do.
Endrin	.....do.
Endrin aldehyde	pesticide to control birds, rodents, insects
Endrin ketone	.....do.
gamma Chlordane	insecticide for fire-ant control, lawns
gamma-BHC	pesticide for crops
Heptachlor	insecticide for home, buildings, corn crops
Heptachlor epoxide	.....do.
Methoxychlor	insecticide for crops, livestock, household
Chlordane (technical)	insecticide for home lawns, gardens, crops
Toxaphene	pesticide for crops
Polychlorinated Biphenyls	
PCB congeners	hydraulic fluids, rubber plasticizer, and adhesives

Water Depths and Sediment Thickness

The channel morphology in figures 4*A–C* shows that when water levels at the Amelia Earhart Dam are at 105.8 ft relative to MDC's datum, water depths measured in Lower Mystic Lake upstream of the dam ranged from less than 1 ft to almost 80 ft. Water depths were greatest in the lake and averaged over 33 ft (fig. 4*A*). In contrast, the average water depth was lowest in Alewife Brook (only about 1 ft; fig. 4*B*). Water depths measured in the upper Mystic and Malden Rivers averaged about 5 and 6 ft, respectively (figs. 4*B–C*). Based on measurements of water depth, the estimated volumes of water in the Lower Mystic Lake, Alewife Brook, and upper Mystic and Malden Rivers are about 1,000, 2,300, and 150 Mgal, respectively.

Soft-sediment thicknesses are also shown in figures 4*B–C*. Sediment thicknesses ranged from less than 1 ft to about 13 ft near the dam. Sediment thicknesses measured in Alewife Book and the upper Mystic and Malden Rivers were about 2, 3, and 4 ft, respectively. Based on measurements of soft-sediment thickness, the estimated sediment volume in Alewife Brook and in the upper Mystic and Malden Rivers is about 0.5, 21, and 12 million ft^3, respectively. It was not possible to measure the thickness and the volume of soft sediment in the Lower Mystic Lake by the techniques used in this study. Sediment coring, however, indicates that the sediment is fairly thick (thicker than 4 ft on average) and that there is a substantial volume of sediment in the lake.

Results for Sediment Grab Samples

Chemical data for surficial sediment can be used by water-resource managers to ensure that the quality of lakes, rivers, and estuaries in the Mystic River Basin is high enough to make the waterways safe for boating, swimming, and fishing. These data (table 3) can also be used to define objectives for managing and monitoring sediment quality. For example, the objectives might be to maintain the present quality of the sediment or to restore contaminant concentrations to background levels (concentrations not affected by human activities), to the levels of other urban rivers, or to levels safe enough for specific designated uses (for example, swimming or boating). Comparisons of contaminant concentrations measured in samples in Mystic River Basin sediments among sediment-sampling locations, to background concentrations, to concentrations from other urban rivers, and to sediment-quality guidelines could help local water-resource managers determine what actions might be needed to restore sediment quality.

A detection indicates that the constituent concentration is greater than the minimum reporting level (MRL) for a given analytical technique. A nondetection can indicate two possibilities: (1) the constituent is not present in the sample, or (2) the concentration of the constituent in the sample is less than the MRL. Nondetection of a constituent, therefore, does not necessarily indicate its absence. In particular, the organochlorine pesticide and PCB data collected for this study should be interpreted carefully because detection limits reported in this study are higher than the detection limits reported for other studies in which gas chromatography with electon-capture detectors was used. In other studies, total Aroclors have been reported; however, in this study, gas chromatography mass spectrometry (GCMS) was used because it is more accurate.

Spatial Trends in Sediment Quality

Concentrations of the 33 elements measured in grab samples are shown in table 3 by sampling location. The elements most often present at concentrations greater than 1,000 ppm are considered major elements and include calcium, iron, manganese, phosphorus, aluminum, potassium, sodium, and titanium. Concentrations of these elements differed greatly in the sediment samples collected, likely because the samples were collected in freshwater, estuarine, and saltwater environments.

Conversely, trace elements are those elements whose concentrations are typically less than 1,000 ppm in uncontaminated sediment. Because of their toxicity, the USEPA has classified a few of these trace elements as priority pollutants (U.S. Environmental Protection Agency, 2002b) including antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, and zinc. In this study, chromium (where data are available), copper, lead, nickel, and zinc were detected in every sample. Concentrations greater than the detection limits of arsenic, silver, beryllium, cadmium, mercury, and antimony were measured in 97, 94, 77, 62, 14, and 1 percent of the samples tested, respectively. Concentrations of selenium and thallium were not measured in this study.

The highest median concentrations of priority pollutants—arsenic (70 ppm), cadmium (6 ppm), copper (290 ppm), nickel (37 ppm), and zinc (1,700 ppm)—were measured in sediment collected from Lower Mystic Lake (fig. 7). This was expected on the basis of the history of contamination in Upper Mystic Lake, which discharges directly into Lower Mystic Lake. The median concentrations of beryllium (1.2 ppm), lead (460 ppm), and silver (3.4 ppm) measured in the sample collected from Mill Creek were greater than the median concentrations of those elements measured in sediment collected from the other Mystic River Basin sites. Median concentrations of chromium (230 ppm, measured only downstream of the Amelia Earhart Dam) and tin (18 ppm) were highest in sediment collected from Chelsea Creek and the Malden River, respectively.

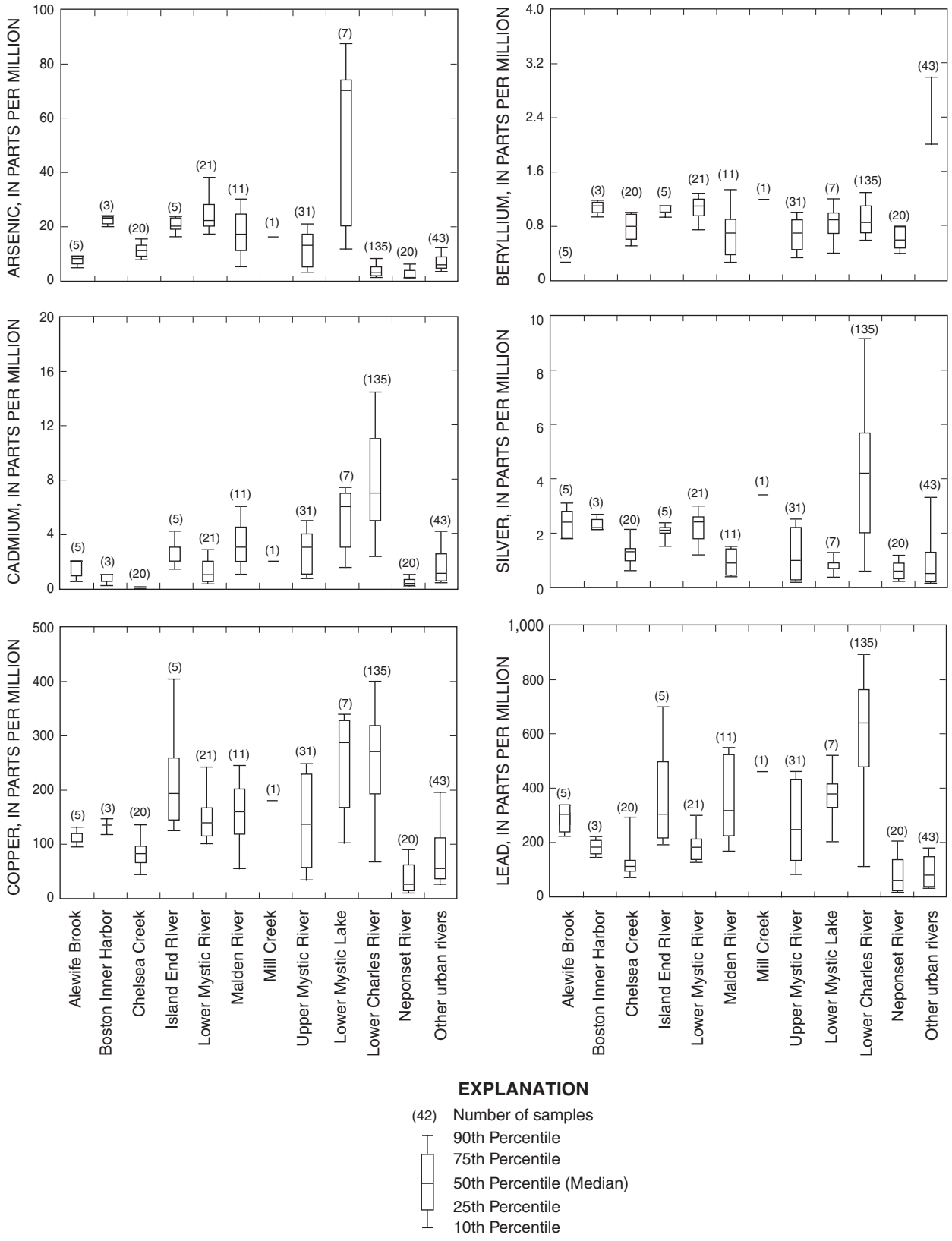

Figure 7. Population statistics for element and polyaromatic hydrocarbon concentrations measured in grab samples collected from the Mystic River Basin, Massachusetts, and other urban rivers (2001–03).

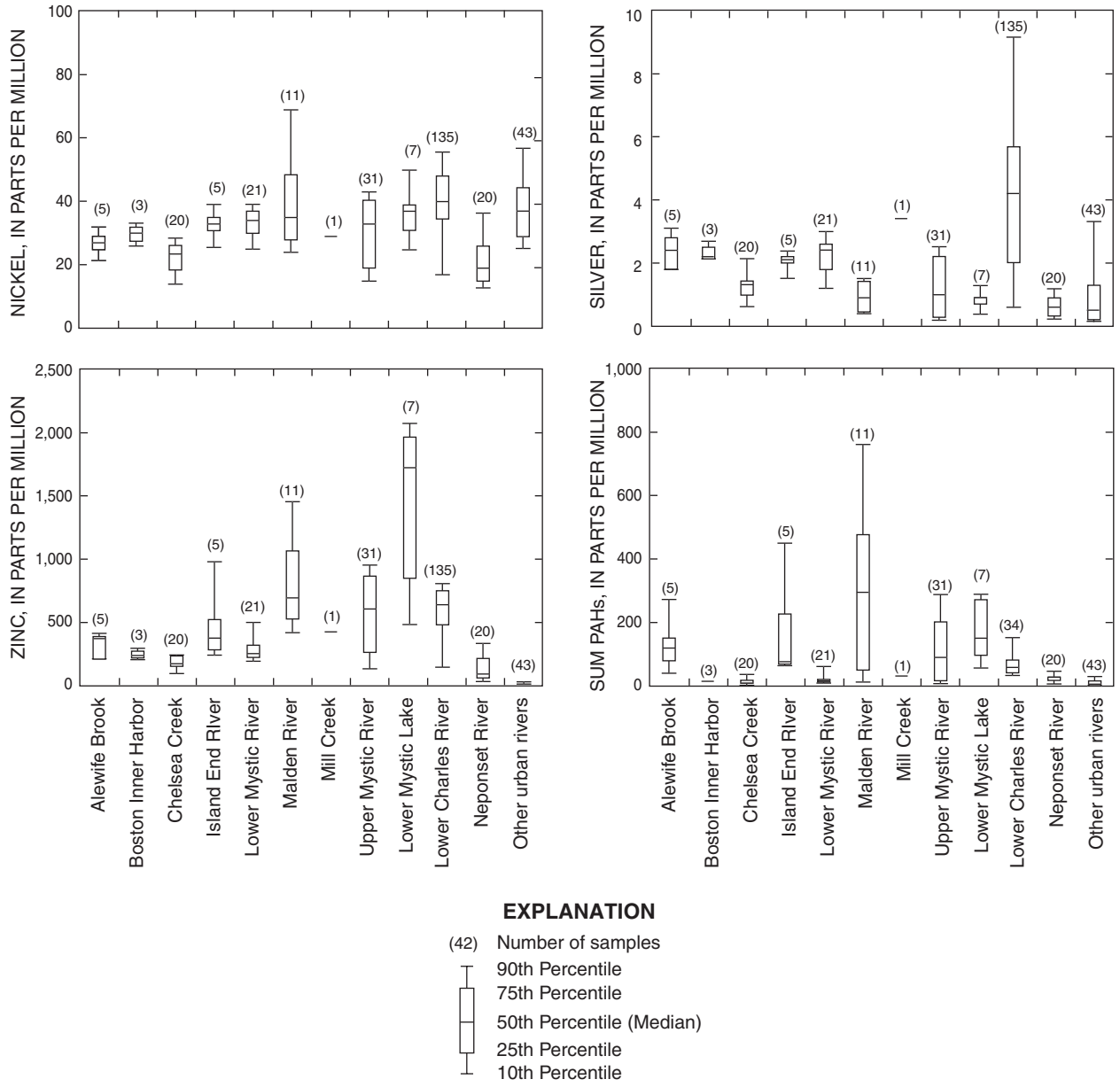

Figure 7—Continued. Population statistics for element and polyaromatic hydrocarbon concentrations measured in grab samples collected from the Mystic River Basin, Massachusetts, and other urban rivers (2001–03).

Concentrations of the organic compounds tested are shown by site in table 3. These organic compounds include three major groups: PAHs, organochlorine pesticides, and PCBs, which also appear on the USEPA's priority pollutant list (U.S. Environmental Protection Agency, 2002b). Group concentrations are expressed as the sum of concentrations of several related compounds; ΣPAH, for example, is the sum of all tested PAHs; and ΣDDT is the sum of the concentrations of dichlorodiphenyltrichlorethane (DDT), dichlorodiphenyldichloroethane (DDD), and dichlorodiphenyldichlorethylene (DDE). PCBs were not added because no concentrations of PCBs were measured above detection limits.

Of the 15 PAHs analyzed in the grab samples, fluoranthene was the most commonly detected (in more than 90 percent of the samples). The least commonly detected PAH of those detected was naphthalene (in less than 3 percent). The median ΣPAH concentration was highest (about 300 ppm) for samples collected from the Malden River (fig. 7). The grab sample with the highest ΣPAH concentration (780 ppm) was collected from the Malden River at sampling site 43 (table 3). DDT, an insecticide banned in the United States in 1972 or one of its metabolites (DDD and DDE) were detected in only one of the grab samples (sampling site 63). The DDT concentration at this station was about 0.2 ppm. No other organochlorine pesticides were detected (detection limits ranged from 0.151 to 0.874 ppm). No measurable amounts of PCBs were detected in any of the samples collected (detection limits ranged from 0.11 to 0.251 ppm).

Effects of Human Activities on Sediment Quality

Concentrations of elements measured in grab samples from the freshwater part of the study area (upstream of the Amelia Earhart Dam) were compared to median concentrations of the same elements measured in fine-grained sediment collected from freshwater streams in Connecticut, Maine, Massachusetts, New Hampshire, New York, and Rhode Island. These sediment samples were collected between 1977 and 1980 as part of the National Uranium Resource Evaluation (NURE) program—specifically the Hydrogeochemical and Stream Sediment Reconnaissance (HSSR) program (Smith, 1998; Grossman, 1998)—and reanalyzed by the National Geochemical Survey by using modern (2000) methods (U.S. Geological Survey, 2003). A brief history of this program, as well as tabulated data, is available online (U.S. Geological Survey, 2004). Concentrations of elements measured in sediment samples from the estuarine part of the study area (downstream of the Amelia Earhart Dam) were compared to concentrations thought to represent background for estuarine environments (Bowen, 1979).

The NURE HSSR program SOP instructed researchers to collect bottom-sediment samples from small uncontaminated streams (Ferguson and others, 1977), which were assumed to be unaffected by human activities. Element concentrations measured in these sediment samples are assumed to approximate nonurban background concentrations in New England streams. The samples collected by NURE HSSR and the samples collected in this study were processed by different methods (Ferguson and others, 1977). The NURE HSSR samples were passed through a 150-μm sieve, whereas samples collected in this study were not sieved. This difference could affect the comparison because the NURE HSSR samples consisted of a higher proportion of fine-grained sediments, which have a higher surface area per unit weight than coarse sediments, and because contaminants typically adhere to sediment in proportion to surface area (Horowitz, 1991). Thus, concentrations in NURE samples may be high relative to concentrations in unsieved samples from the same locations; such unsieved samples would be more directly comparable to the samples of this study. The samples collected by NURE HSSR and the samples collected in this study were also analyzed by different methods. The stronger acid digestion used by NURE HSSR than that used in this study probably also resulted in higher concentrations in the NURE HSSR trace-element data.

Despite the possibility that concentrations in the NURE samples would be biased higher than in the Mystic River Basin samples, selected trace-element concentrations in Mystic River Basin samples (excluding antimony, cadmium, and mercury, for which NURE provided no chemical background data) were generally greater than background concentrations in the NURE samples or concentrations thought to represent background for estuarine environments (Bowen, 1979). Concentrations of arsenic, chromium, copper, lead, or zinc were greater than background at 82 percent or more of the sites sampled. Similarly, concentrations of nickel, beryllium, or silver were greater than background concentrations in nearly one-half of the grab samples. The widespread distribution of high concentrations of arsenic, chromium, copper, lead, and zinc in sediments throughout the Mystic River Basin strongly suggests the importance of human activities.

Researchers may erroneously conclude that enrichment is caused by human activity, when the enrichment may actually be caused by natural processes. Many natural factors can cause bottom sediments to become enriched with trace elements above background levels, including differential weathering (related to solubilities of individual elements), physical fractionation (for example, the removal of fine particles by wind and water), chemical fractionation, and deposition of enriched atmospheric and biogenic dust (Reimann and De Caritat, 2000). In contrast, the history of dredging and channelization in the lower Mystic River, Chelsea Creek, and Boston Inner Harbor during the past 100 years may cause researchers to conclude erroneously that human activities have not affected sediment quality. Most recently (1998–2001), the Boston Harbor Navigation Improvement Project (BHNIP), a cooperative effort by the USACE and the Massachusetts Port Authority (MassPort), removed or redistributed about 3.5 million cubic yards of sediment (fig. 8). The objective of this project was to deepen parts of the lower Mystic River and Inner Harbor from 35 ft mean lower low water[1] (MLLW) to about 40 ft MLLW, and parts of Chelsea Creek from 35 ft MLLW to about 38 ft MLLW. Most sediment was placed in confined aquatic disposal cells built within the federal navigation channels and in designated disposal sites in Massachusetts Bay. Those areas dredged by the BHNIP are shown in figure 8. Thus, chemical analysis of grab samples collected from dredged areas during this study likely represents the chemistry of more recently deposited sediment (after 1998–2001) or, less likely, represents the chemistry of sediment deposited much earlier; the interpretation depends on sedimentation rates and resuspension patterns. In either case, grab samples can be used to measure existing (2001–03) sediment quality. Age dating of grab samples is beyond the scope of this project.

In contrast to trace elements, many of which occur naturally in bottom sediments, many organic compounds in sediment—for example, pesticides and PCBs—are not naturally occurring. Exceptions to this are the PAHs that are found in petroleum and in combustion emissions (for example, forest fires). Concentrations of naturally occurring PAHs are typically not very high in bottom sediments (about 1–10 ppm) (Massachusetts Department of Environmental Protection, 2002). Accordingly, the contamination of sediment by PAHs above 10 ppm and many other organic compounds can be attributed to human activities.

Comparison to Other Urban Rivers

Concentrations of the selected trace elements (with the exception of mercury) and organic compounds were compared with concentrations of these constituents in samples collected from other urban rivers (whose drainage-basin areas have greater than 50 percent urban land use) throughout the conterminous United States as part of the National Water-Quality Assessment (NAWQA) Program of the USGS (Rice, 1999). Like the NURE HSSR sediment samples, samples collected by the NAWQA Program for analysis of trace metals and organic compounds were sieved (through 63-µm and 2-mm sieves, respectively). The procedure used by the NAWQA Program also includes a a stronger acid digestion than that used in this study. The sieving procedure and use of a stronger acid digestion probably resulted in higher concentrations than would have been obtained if the NAWQA samples had been processed and analyzed by using the methods of this study.

Concentrations of some selected trace elements (arsenic, chromium, copper, lead, silver, or zinc) in Mystic River sediments were greater than the median concentrations for those elements in sediment collected by the USGS NAWQA Program at 75 percent or more of the sites sampled (fig. 7). Concentrations of cadmium and nickel were also greater than the NAWQA median concentrations at 45 and 23 percent, of the sites, respectively. Beryllium concentrations from the Mystic River Basin were less than the median NAWQA beryllium concentration in samples from all of the sites but two. The ΣPAH concentration in samples collected from the Mystic River Basin was generally greater than the NAWQA median PAH concentration (87 percent of the sites). Total DDT and PCB concentrations could not be compared with NAWQA concentrations because DDT and PCB detection limits for this study were higher than the NAWQA median DDT and PCB concentrations, respectively.

A better comparison might be between concentrations in the Mystic River Basin sediments and in the sediments of the other two rivers tributary to Boston Harbor. Summary statistics of selected trace element and organic compound concentrations in bottom sediment collected from the lower Charles and Neponset Rivers, both of which are dammed (Breault and others 2000, 2004a), allow comparison of the quality of Mystic River Basin sediments to the quality of sediments in nearby urban rivers (fig. 7). Generally, concentrations of the selected trace elements (mercury was not included in the comparison because data for this element from the other rivers were not available) and ΣPAHs were lower in the Mystic River Basin than in the lower Charles, but higher than in the Neponset River, with a few exceptions. Concentrations of arsenic were generally higher in the Mystic River Basin than in both the Charles and Neponset Rivers (fig. 7). Total DDT and PCB concentrations could not be compared with concentrations in samples from the Charles and Neponset Rivers because the detection limits for the Mystic River Basin samples were higher than for the samples collected in those studies.

[1]Mean lower low water is defined as the mean altitude of the lower of the two daily low-water altitudes over a period of time, typically 19 years (U.S. Geological Survey, 2005).

Figure 8. Areas dredged as part of the Boston Harbor Navigation Improvement Project, in which the lower Mystic River and Inner Harbor, Massachusetts, were deepened from 35 feet mean lower low water (MLLW) to about 40 feet MLLW (light blue) and parts of Chelsea Creek from 35 feet MLLW to about 38 ft MLLW (dark blue).

Results for Sediment Core Samples

Chemical data from sediment cores can be used to (1) assess trends in contaminant concentrations, (2) determine the effects of human activities on sediment quality, and (3) investigate the distribution of new contaminants. Data from core samples can also be used by water-resources managers to monitor, assess, and plan restoration efforts aimed at improving sediment quality. Trends in sediment quality can be observed from concentration profiles measured in sediment cores. The effects of human activities on sediment quality can be inferred by correlating human activities with contaminant peaks in the cores collected in undisturbed areas.

Trends in Sediment Quality

Sediment core results for trace elements (table 4) show variability in concentration with depth at some sites and concentrations that are elevated relative to background (figs. 9–16, at back of report). For example, in the Lower Mystic Lake core from site 105, arsenic concentration was highest (310 ppm) at 77.5 to 81 cm. These levels were substantially higher than background (about 20–40 ppm) as measured in deeper sediment strata. Although concentrations from the lake were lower in surface sediments (110 ppm) than at their peak, the concentrations were still much higher than background. This suggests either that there are contemporary inputs of arsenic to the lake or that arsenic in deeper sediment is remobilized to surface-sediment strata. Other results show that some trace-element concentrations are remaining constant, are only slightly lower in near-surface sediments, or show no trend at all with depth. For example, arsenic, beryllium, cadmium, lead, nickel, and silver concentrations measured in near-surface sediment samples collected from Island End River appear to remain constant with depth; other examples are shown in figures 9–16.

Concentrations of PAHs vary with depth at most sites (table 5). Some core samples show substantially lower concentrations of PAHs in surface layers compared to deeper layers. For example, in the Island End River core (sampling site 112, fig. 16), concentrations of PAHs decrease from 1,300 ppm (measured in the sediment at a depth of 40–44 cm) to 72 ppm in surficial sediment. It is likely that residual wastes from a coal-gasification plant that operated on the Island End River are the source of PAH contamination in the river (U.S. Environmental Protection Agency, 1999). In contrast, plots of ΣPAHs measured in core samples from sampling sites 107, 108, 109, 110, and 111 show a continuous increase in PAH concentrations with time. This trend is mirrored in cores from other urban areas across the United States (Van Metre and others, 2000). One possible source of contemporary PAHs is vehicular traffic, a byproduct of urban development, especially during the past 20–40 years. The Mystic River Basin has undergone considerable population growth during this time. There were only a few detections (fewer than six) of the pesticides; DDD (48–65 cm), DDT (73–77), and methoxychlor (61–81 cm) in cores collected from Lower Mystic Lake, one detection of methoxychlor in the core collected from the Malden River (75–78) and no detection of PCBs above the detection limit in core samples.

Sediment-concentration profiles can be greatly affected by several factors, most notably grain-size differences, bioturbation, diagenetic chemical processes, physical transport of contaminated sediment, and dredging. Generally, because fine sediment grains have much larger surface areas per unit weight than coarse sediment grains, fine grains of sediment have larger surface areas to which contaminants can adhere (Horowitz, 1991). Thus, observed increases or decreases in contaminant concentrations within a core might simply be a result of increases or decreases in grain sizes instead of changes in contaminant loading. Although grain-size information was unavailable for core-sample data from the Mystic River Basin, “conservative elements” like aluminum and titanium can be used as an empirical proxy (Horowitz, 1991). Fine-grained sediment would be expected to have a greater proportion of these elements per unit weight than coarse-grained sediment. Plots of contaminant concentrations divided by aluminum (aluminum-normalized) or titanium (titanium-normalized) concentrations can, therefore, be used to elucidate trends (figs. 9–16; Horowitz, 1991). Aluminum-normalized trace-element concentrations were calculated by dividing each trace-element concentration, in parts per million, by the concentration of aluminum (in percent) measured in the same sample. Similarly, titanium-normalized trace element concentrations were calculated by dividing the concentration of each contaminant by the concentration of titanium. Concentrations of titanium (in percent) were first multiplied by 10 (figs. 9–13, and 15) and by 100 (fig. 14) for purposes of scale (figs. 9–16). These plots show little change in depositional history, therefore, changes in contaminant concentrations can be interpreted as changes in contaminant loading.

Bioturbation refers to the mixing of the upper layers of bottom sediment by organisms that live in and on the bottom sediment—for example, worms, snails or crabs. As these creatures move through or ingest the sediment, they can homogenize sediment layers that may have been deposited over several tens of centimeters (Berner, 1980; Matisoff, 1995). Bioturbation can also increase the exchange of contaminants from the sediment into the water column (Bencala and other, 1984; Berg and others, 2001). For example, researchers working with lugworms have shown that the remobilization of cadmium from sediments with lugworms was three to five times greater than from sediment without lugworms (Rasmussen and others, 2004). Diagenetic chemical processes take place after a chemical is deposited in the sediment. Several processes might redistribute a given chemical after deposition, including equilibrium processes, homogeneous reactions, microbial reactions, precipitation, dissolution, and authigenic processes (Berner, 1980). The physical transport of contaminated sediment by waves, currents, or other physical processes

can also affect down-core chemistry. Physical transport of contaminants with suspended sediment might also result in the sorbtion or desorption of contaminants (Bonner and others, 1994). Finally, recent dredging of parts of the lower Mystic River, Boston Inner Harbor, and Chelsea Creek has affected the observed contaminant trends.

Human Activities and Sediment Quality

It may be possible to reconstruct the history of human influence in the Mystic River Basin on sediment quality by using core samples. This is particularly true for samples collected from Lower Mystic Lake, because the history of human activities in the drainage basin just upstream of the lake has been well documented (Splietfhoff and Hemond, 1996). Although dates were not assigned to sediment depths in the cores collected in this study, sediment samples from Upper Mystic Lake collected, chemically analyzed, and dated by others could be used to corroborate the interpretation of sediment-quality data in Lower Mystic Lake. Possible coincidences can be identified between peak concentrations of specific contaminants in the core sample collected at site 105 in Lower Mystic Lake and activities that produced those contaminants in the lake's drainage area.

The Aberjona River flows into Upper Mystic Lake, which drains into Lower Mystic Lake. The Aberjona River flows through one of the best-known Superfund sites in the Nation—the Industri-Plex in Woburn, MA. Between the 1860s and 1980s, six different chemical manufacturing companies operated on this site, and produced chemicals used by the leather and textile industries, arsenic- and lead-based pesticides, sulfuric acid, and explosives used during both World Wars. Byproducts of these manufacturing processes were often disposed of in areas near and directly adjacent to the Aberjona River. The arsenic-concentration maximum measured in the Lower Mystic Lake sediment core (sampling site 105, fig. 9) may correspond with the first of two major episodes of arsenic contamination in the basin in the early 1900s (Spliethoff and Hemond, 1996; Knox, 1991). The source of this arsenic is believed to be pyrites used in the manufacturing of sulfuric acid at the Industri-Plex site (Aurilio and others, 1995). Additionally, the arsenic peak measured at site 105 roughly corresponds with peaks of other contaminant concentrations. These peaks may indicate a period of substantial contaminant transport in the basin.

Concentrations of lead can also be related to human activities in the basin. For example, the use of lead as a gasoline additive reached a maximum in the mid-1970s, at which time it was phased out by the USEPA. A high concentration of lead (1,600 ppm) was measured at a depth of 32.5 cm to 36.5 cm in the sediment core collected from site 105 in Lower Mystic Lake. The highest concentrations of lead and other metals were at depths between 61 and 97 cm in sediment cores from the lake. This depth may correspond to the years between 1914 and 1947 when munitions used in both World Wars were manufactured in industrial plants just upstream of Lower Mystic Lake.

The maximum ΣPAH concentration (1,200 ppm) measured at sample site 105 in Lower Mystic Lake occurred at a depth of 73 to 77 cm, which may correspond approximately to the period 1930–35. The most likely source of these PAHs is tar from a coal-gasification plant that operated in Arlington between 1900 and 1930. Finally, a large spike in the concentration of silver (8.3 ppm) was measured at sample site 105 at a depth of 40.5 to 44.5 cm (fig. 9). The source of this silver is unknown.

Toxicity of Contaminated Bottom Sediment

Contaminant concentrations in sediment-grab samples were compared to sediment-quality guidelines and to exposure-based soil standards to assess the potential health risks posed by the Mystic River Basin sediments to bottom-dwelling organisms and to humans.

Benthic Organisms

One way to assess whether a river can support a healthy and diverse population of fish is to test the health of their food source, particularly benthic organisms. Benthic organisms (for example, worms, snails, or crabs) live and feed on the river bottom, where they come in direct contact with contaminated sediment. Contaminants can accumulate in the tissues of these organisms as they ingest sediment contaminated with elements and organic compounds or sorb these contaminants directly from sediment and water (Forstner and Whittman, 1983). Accumulation of these constituents in benthic organisms can cause physiological problems, reproductive problems, and death. Subsequent ingestion of contaminated benthic organisms by other organisms higher in the food chain (for example, fish) can cause similar health effects.

The potential toxicity of Mystic River sediment to benthic organisms can be estimated by comparing measured concentrations for individual contaminants and contaminant types to probable effect concentrations (PECs), which are published guidelines (Ingersoll and others, 2000). The guidelines are based on the results of laboratory tests in which organisms such as the amphipod *Hyalella azteca* and the insect larva *Chironomus* spp. were exposed to different concentrations of contaminants. The predicted potential for toxicity depends on the organism and on the test conditions in general; however, concentrations higher than the PECs are considered likely to be toxic to benthic organisms. Average PEC quotients can be calculated for individual sediment samples in which concentrations of more than one contaminant have been measured. The quotient for a given sample is a measure of the toxicity

caused by more than one contaminant in that sample. Finally, the average PEC quotient can be compared to PEC-quotient ranges associated with different toxicity potentials (Ingersoll and others, 2000).

Censored data was treated somewhat differently in the calculation of average PEC quotients than in the calculations of total concentrations. Censored data were set to one-half of the detection limit (instead of zero) unless all constituents in the group were below the detection limit, in which case the detection limits themselves were added. In addition, if a constituent's concentration was below the detection limit and the limit was greater than the PEC for that constituent, it was eliminated in the calculation of the PEC quotient (Ingersoll and others, 2000). In this study, concentrations of the PAHs acenaphthene, naphthalene, acenaphthylene, and dibenzo[*a,h*]anthracene were eliminated for this reason.

To calculate the average PEC quotient for a given sample of sediment, a measured concentration of a specific contaminant was adjusted for censored data in the manner described above. If the published PEC is for an individual contaminant, the concentration of that individual contaminant is divided by its PEC value; if the published PEC is for a contaminant type, however, the total concentration for that type is divided by the PEC. Then the quotients are added, and the total is divided by the number of contaminants and types. In this study, PECs for seven individual trace elements and for total PAHs were used. These were the only types of contaminants used to calculate the PEC quotients. The average PEC quotient for each sample was calculated according to the equation

$$Q_x = \frac{\Sigma \frac{C_{x,\,y}}{PEC_y}}{n_x} \quad ,$$

where

Q_x is the average PEC quotient for sample x;

$C_{x,y}$ is the concentration of contaminant y or contaminant type y in sample x;

PEC_y is the PEC for contaminant y (Ingersoll and others, 2000); and

n_x is equal to the number of contaminants and contaminant types used in sample x.

The PAH group included anthracene, benzo(*a*)anthracene, benzo(*a*)pyrene, chrysene, fluorene, fluoranthene, phenanthrene, and pyrene. The individual trace elements, each of which had its own PEC, included arsenic (As), cadmium (Cd), chromium (Cr), copper (Cu), lead (Pb), nickel (Ni), and zinc (Zn). As a result, n_x could be as high as 8.

The potential for toxicity was determined for the top 2–4 in. of bottom sediment, which can be considered the biologically active sediment layer (Baudo and Muntau, 1990). The average estimated potential-toxicity values at sampling sites in the Mystic River Basin for the test organisms (*Hyalella azteca* and *Chironomus* spp.) are shown in figure 17 (at back of report). The potential toxicity in figure 17 refers to the potential toxicity compared to a set of reference toxicity tests (Ingersoll and others, 2000). For example, an estimated potential toxicity of 20 percent means that 20 out of 100 toxicity tests are likely to show some level of toxicity for the concentration of contaminants measured in that sediment sample.

The average predicted potential toxicity ranged from about 13 to 97 percent among the sampling locations (fig. 17). Overall, the trace elements and the PAHs are responsible for as much as 50 percent of the predicted toxicity. In some areas, however, trace elements are more responsible for the predicted toxicity, and in other areas PAHs appear to be more responsible for the predicted toxicity. On average, trace elements are most responsible for the predicted toxicity of sediment grab samples collected from Boston Inner Harbor (69 percent), Chelsea Creek (67 percent), the lower Mystic River (68 percent), and Mill Creek (59 percent). In contrast, PAHs are most responsible for predicted toxicity of sediment samples collected from Alewife Brook (73 percent), Island End River (74 percent), Malden River (72 percent), and the upper Mystic River (61 percent). Trace elements and PAHs are each responsible for about one-half of the predicted toxicity for sediment samples collected from Lower Mystic Lake. The largest overall PEC quotient (13.7) was calculated for grab-sampling site 43 in the Malden River. In fact, PAHs accounted for most (96 percent) of the PEC quotient at this location. Similar results were obtained even when biased (high) chromium data (not shown) were used.

This evaluation of potential toxicity is intended to distinguish groups of chemicals that are likely to be associated with adverse biological effects at specific locations. This treatment of the data is intended to supplement, not substitute for, direct measures of sediment toxicity.

Humans

When people recreate in lakes, rivers, and estuaries, they often come in contact with sediment. Consequently, communities like those in the Mystic River Basin may benefit from information about the potential human-health risks associated with direct contact or incidental ingestion of contaminated sediment. These risks can be assessed by comparing contaminant concentrations with exposure-based guidelines for those contaminants (Massachusetts Department of Environmental Protection, 1996, method 2, soil category S-1). The guidelines can be applied only indirectly to aquatic sediment, however, because they are formulated for contaminated upland soil. In the absence of aquatic-sediment guidelines, comparison with direct-contact, exposure-based soil standards for many trace elements and organic compounds may suffice.

Comparing sediment concentrations to soil-based human-health standards likely overestimates the potential human-health risk. As people wade or swim near contaminated sediment, the sediment is washed quickly from their skin. On the other hand, people exposed to contaminated soils typically experience extended contact with the soil; therefore, the contaminant is more likely to enter the body. Nonetheless, the comparison can provide a sense of the risk associated with contacting the sediment. These comparisons, however, are not intended to replace direct measures of the health risk.

Several of the constituents were detected at concentrations near or above their respective human-health standards for soil. Of the trace elements, concentrations of antimony (at 1 sample site), arsenic (9 sample sites), beryllium (61 sample sites), lead (39 sample sites), and zinc (1 sample site) were closest to their respective standards for soil. Of particular interest is the beryllium concentration that was measured at Chelsea Creek (sample site 99) at more than 11 times the standard for soil. Lead and zinc concentrations at this site were also greater than the soil-standard concentrations of lead and zinc by six and two times, respectively. Of the organic compounds tested, the PAHs—benzo[*a*]anthracene (at 72 grab-sampling sites), benzo(*b*)fluoranthene and benzo[*k*]-fluoranthene (38 sample sites), benzo[*a*]pyrene (83 sample sites), chrysene (36 sample sites), dibenzo[*a,h*]anthracene (22 sample sites), indeno[1,2,3-*cd*]pyrene (54 sample sites), and naphtalene (1 sample site)—were closest to human-health standards for soil. On the basis of the analysis methods described previously for censored data, none of the organochlorine pesticides tested showed potential for adverse human-health risk based on soil standards. The human-health effects of PCBs could not be assessed because of the high detection limits in this study.

Summary

Surface-sediment and sediment-core samples from Lower Mystic Lake, Mystic River, Alewife Brook, Malden River, Island End River, Chelsea and Mill Creeks in the Mystic River Basin were tested for the presence of pesticides, polyaromatic hydrocarbons (PAHs), polychlorinated biphenyls, and selected elements, including antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, silver, and zinc. Both types of samples were generally enriched in toxic elements and organic compounds when compared to background concentrations. In addition, most constituent concentrations—in particular, arsenic, chromium, copper, lead, silver, or zinc, and PAHs—were equal to or greater than those found in the sediments of other urban rivers. With a few exceptions, concentrations of the selected trace elements and PAHs were lower in the Mystic River Basin sediments than in the sediments of the lower Charles, but higher than or equal to concentrations in the sediments of the Neponset River—each a tributary to Boston Harbor. Concentrations of arsenic were generally higher in the Mystic River Basin than in both the lower Charles and Neponset Rivers. Some chemicals are in sufficiently high concentrations in sediment samples collected from the Mystic River Basin to pose a threat to benthic organisms and, based on guidelines developed for upland soils, and may cause human-health risks if humans come in contact with the sediment.

Sediment core results show that trace-element concentrations within the upper parts of the cores (more recently deposited sediment) have remained constant or have slightly declined, on average. In contrast, concentrations of PAHs appear to be increasing in near-surface sediment compared to sediment deposited earlier. Taken as a whole, however, graphs of sediment-core data show that the concentrations of trace elements and PAHs in surficial sediment are substantially lower than in sediment at depth. These trends imply that, although the sediment quality in the Mystic River Basin remains impaired and shows little improvement over recent years, the sediment quality has improved markedly since the turn of the century.

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References Cited

Aurilio, A., Durant, J.L., and Hemond, H.F., 1995, Sources and distribution of arsenic contamination in the Aberjona Watershed, eastern Massachusetts: Water, Air, and Soil Pollution, v. 81, p. 265–282.

Aurilio, A., Mason, R., and Hemond, H.F., 1993, Speciation and fate of arsenic in three lakes of the Aberjona watershed, eastern Massachusetts: Environmental Science and Technology v. 28, p. 577–585.

Baudo, R., and Muntau, H., 1990, Lesser known in-place pollutants and diffuse source problems, *in* Baudo, R., Giesy, J., and Muntau, H., eds., Sediment chemistry and toxicity of in-place pollutants: Boston, MA, Lewis Publishers, Inc., 405 p.

Bencala, K.E., Kennedy, V.C., Zellweger, G.W., Jackman, A.P., and Avanzino, R.J., 1984, Interactions of solutes and streambed sediment, 1. An experimental analysis of cation and anion transport in a mountain stream: Water Resources Research, v. 20, p. 1797–1803.

Berg, P., Rysgaard, S., Funch, P., and Sejr, M.K., 2001, Effects of bioturbation on solutes and solids in marine sediments: Aquatic Microbial Ecology, v. 26, p. 81–94.

Berner, R.A., 1980, Early diagenesis—A theoretical approach: Princeton, NJ, Princeton University Press, 241 p.

Bonner, J.S., Ernest, A.N., Autenrieth, R.L., and Ducharme, S.L., 1994, Parameterizing models for contaminated sediment transport, *in* DePinto, J.V., Lick, W., and Paul, J.P., eds., Transport and transformation of contaminants near the sediment-water interface: Ann Arbor, MI, CRC Press, Inc., 351 p.

Bowen, H.J.M., 1979, Environmental chemistry of the elements: London, England, Academic Press, 316 p.

Breault, R.F., Cooke, M.G., and Merrill, Michael, 2004a, Data on sediment quality and concentrations of polychlorinated biphenyls from the lower Neponset River, Massachusetts, 2002–03: U.S. Geological Survey Open-File Report 2004-1280, 55 p.

Breault, R.F., Reisig, K.R., Barlow, L.K., and Weiskel P.K., 2000, Distribution and potential for adverse biological effects of inorganic elements and organic compounds in bottom sediment, Lower Charles River, Massachusetts: U.S. Geological Survey Water-Resources Investigations Report 00-4180, 70 p.

Buchholtz ten Brink, M.R., Manheim, F.T., Mecray, E.L., Hastings, M.E., and Currence, J.M., along with Farrington, J.W., Fredette, T.J., Jones, S.H., Larsen, P.F., Liebman, M.L., Smith Leo, W., Tripp, B.W., Wallace, G.T., Jr., and Ward, L.G., 2002, Contaminated sediments database for the Gulf of Maine, U.S. Geological Survey Open-File Report 02-403, accessed on March 23, 2004, at http://pubs.usgs.gov/of/2002/of02-403/

Chelsea Historical Society, 2004, The second engagement of the Revolutionary War, accessed on March 17, 2004, at http://www.olgp.net/chs/war/second.htm

de Groot, A.J., 1995, Metals and sediments—A global perspective, *in* Allen, H.E., eds., Metal contaminated aquatic sediments: Chelsea, MI, Ann Arbor Press, Inc., 292 p.

DePinto, J.V., Lick, W., and Paul, J.F., 1994, *in* DePinto, J.V., Lick, W., and Paul, J.F., eds., Transport and transformation of contaminants near the sediment-water interface: Boca Raton, FL, CRC Press, Inc., 351 p.

Durant, J.L., Zemach, J.J., and Hemond, H.F., 1990, The history of leather industry waste contamination in the Aberjona River watershed—A mass balance approach: Civil Engineering Practice, v. 5, p. 41–66.

Ferguson, R.B., Price, Van, and Baucom, E.I., 1977, Field manual for stream water and sediment reconnaissance: E.I. du Pont de Nemours & Co., Savannah River Laboratory, Aiken, S.C., SRL Internal Doc. DPST-76-363, U.S. Department of Energy, Grand Junction, Colorado, GJBX-80(77), 78 p.

Forstner, U., and Wittman, G.T.W., eds., 1983, Metal pollution in the benthic environment: New York, Springer Verlag, 486 p.

Grossman, J.N., 1998, National geochemical atlas—The geochemical landscape of the conterminous United States derived from stream sediment and other solid sample media analyzed by the national uranium evaluation (NURE): U.S. Geological Survey Open-File Report 98-622, ver. 3.01, 1 CD-ROM.

Heinz Center, 2002, Dam removal science and decision making: Washington, D.C., The H. John Heinz III Center for Science, Economics, and the Environment, 221 p.

Helsel, D.R., and Cohn, T.A., 1998, Estimation of descriptive statistics for multiply-censored water-quality data: Water-Resources Research, v. 24, n. 12, p. 1997–2004.

Horowitz, A.J., 1991, A primer on sediment-inorganic element chemistry (2d ed.): Boca Raton, FL, Lewis Publishers, 136 p.

Ingersoll, C.G., MacDonald, D.D., Wang, N., Crane, J.L., Field, L.J., Haverland, P.S., Kemble, N.E., Lindskoog, R.A., Severn, C., and Smorong, D.E., 2000, Prediction of sediment toxicity using consensus-based freshwater sediment quality guidelines: Chicago, IL, U.S. Environmental Protection Agency, EPA 905/R-00/007, June 2000, 25 p.

Knox, M.L., 1991, The distribution and depositional history of metals in surface sediments of the Aberjona River watershed: Boston, MA, M.S. Thesis, Massachusetts Institute of Technology, variously paged.

Manheim, F., Buchholtz ten Brink, M., Hastings, P., and Mecray, E., 1999, Contaminated-sediment database development assessment in Boston Harbor: U.S. Geological Survey Fact Sheet FS-078-99, accessed on March 22, 2004, at http://pubs.usgs.gov/fs/fs78-99/

Matisoff, G., 1995, Effects of bioturbation on solute and particle transport in sediments, *in* Allen, H.E., ed., Metal contaminated sediment: Chelsea, MI, Ann Arbor Press, 292 p.

Massachusetts Department of Environmental Protection, 1996, Massachusetts contingency plan: Boston, MA, Massachusetts Department of Environmental Protection, variously paged.

Massachusetts Department of Environmental Protection, 2002, Background levels of polycyclic aromatic hydrocarbons and metals in soil, accessed on February 11, 2004, at http://www.state.ma.us/dep/ors/files/backtu.pdf.

Montgomery, D.R., and Buffington, J.M., 1998, Channel processes, classification, and response, *in* Naiman, R.J., and Bilby, R.E., eds., River ecology and management: New York, Springer-Verlag, 705 p.

Mystic River Watershed Association, 2003, Mystic River Watershed Association water quality monitoring: Malden River May 28, 2002, accessed on March 17, 2004, at http://www.mysticriver.org/publications/malden2002.pdf.

Mystic River Watershed Association, 2004, Water pollution, accessed on March 18, 2004, at http://www.mysticriver.org/about_watershed/pollution.html

Nangle Consulting Associates, 2000, Interim data submittal, Malden River Corridor, U.S. EPA Brownfields Program, TeleCom City Everett-Malden-Medford, Massachusetts: Canton, MA, Nangle Consulting Associates, variously paged.

Rasmussen, D., Banta, G., and Andersen, O., 2004, Lugworm bioturbation affects cadmium water/sediment transfer and distribution, accessed on July 22, 2004, at http://www.aslo.org/meetings/santafe99/abstracts/SS30FR1145S.html

Reimann, C., and DeCaritat, P., 2000, Intrinsic flaws of elemental enrichment factors in environmental geochemistry, Environmental Science and Technology, v. 34, n. 24, p. 5084-5091.

Rice, K.C., 1999, Inorganic-element concentrations in streambed sediment across the conterminous United States: Environmental Science & Technology, v. 33, n. 15, p. 2499–2504.

Scott, J.C., 1990, Computerized stratified random site-selection approached across the conterminous United States: Environmental Science and Technology; v. 33, n. 15, p. 2499–2504.

Smith, S.M., 1998, History of the national uranium resource evaluation hydrogeochemical and stream sediment reconnaissance program: U.S. Geological Survey National Geochemical Database, Open-File Report 97-492, accessed on March 12, 2003, at http://pubs.usgs.gov/of/1997/ofr-97-0492/nurehist.htm

Spliethoff, H.M., Mason, R.P., and Hemond, H.F., 1995, Interannual variability in the speciation and mobility of arsenic in a dimictic lake: Environmental Science and Technology, v. 29, n. 8, p. 2157–2161.

Spliethoff, H.M., and Hemond, H.F., 1996, History of toxic metal discharge to surface waters of the Aberjona watershed: Environmental Science and Technology, v. 30, no.1, p. 121–128.

Sly, P.G., 1994, The impact of physical processes at the sediment/water interface in large lakes, *in* DePinto, J.V., Lick, W., and Paul, J.P., eds., Transport and transformation of contaminants near the sediment-water interface: Ann Arbor, MI, CRC Press, Inc., 351 p.

U.S. Environmental Protection Agency, 1999, Chelsea River oil hazards survey: Boston, MA, U.S. Environmental Protection Agency, variously paged.

U.S. Environmental Protection Agency, 2002a, National recommended water-quality criteria: U.S. Environmental Protection Agency EPA-822-R-02-047, 36 p.

U.S. Environmental Protection Agency, 2002b, EPA Numeric criteria, accessed on July 19, 2004, at http://oaspub.epa.govwqsdatabase/wqsi_epa_criteria.rep_parameter

U.S. Environmental Protection Agency, 2003a, EPA, DEP to focus on Mystic River Cleanup: U.S. Environmental Protection Agency, Boston, MA, 14 p., accessed on March 17, 2004, at http://www.epa.gov/NE/pr/1998/113098.html

U.S. Environmental Protection Agency, 2003b, Waste site cleanup and reuse in New England, accessed on September 12, 2005, at http://yosemite.epa.gov/r1/npl_pad.nsf/0/7692eb076450cc585256da900065d4be?opendocument#toc

U.S. Geological Survey, 2003, Arsenic in New England—Geology, geochemistry, database and statistics, accessed on February 2, 2004, at http://minerals.usgs.gov/east/environment/indexAsNEng.htm#overview

U.S. Geological Survey, 2004, The National geochemical survey—Database and documentation: U.S. Geological Survey Open-File Report 2004-1001, accessed on February 2, 2004, at http://tin.er.usgs.gov/geochem

U.S. Geological Survey, 2005, Glossary, in Welcome to the USGS research site for sfports, accessed October 4, 2005, at http://sfports.wr.usgs.gov/SFPORTS/glossary.html

Van Metre, P., Mahler, B.J., and Furlong, E.T., 2000, Urban sprawl leaves its PAH signature: Environmental Science and Technology, v. 34, no.19, p. 4064–4070.

Weiskel, P.K., Barlow, L.K., and Smieszek, T.W., 2005, Water resources and the urban environment, lower Charles River watershed, Massachusetts, 1630–2005: U.S. Geological Survey Circular 1280, 46 p.

Wernstedt, K., and Probst, K.N., 1997, Land use and remedy selection—Experience from the field—the Industri-Plex Site, Resources for the future, Washington, D.C., 49 p., accessed on July 21, 2004, at http://www.rff.org/Documents/RFF-DP-97-27.pdf.

Zarriello, P.J., Breault, R.F., and Weiskel, P.K., 2003, Potential effects of structural controls and street sweeping on storm-water loads to the lower Charles River, Massachusetts: U.S. Geological Survey Water-Resources Investigations Report 02-4220, 48 p.

Figures 9–17

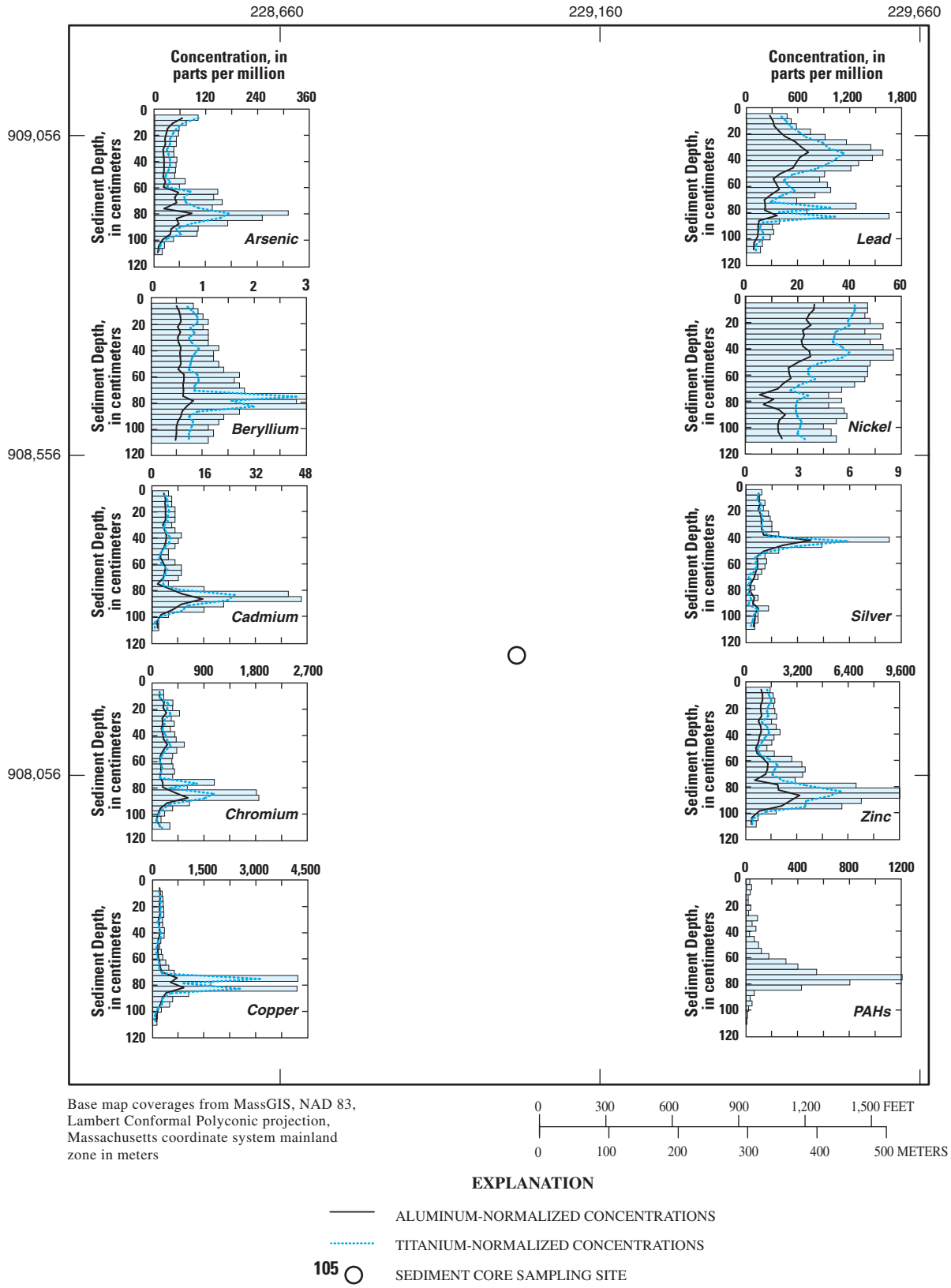

Figure 9. Selected trace element and organic compound concentrations measured in sediment core samples collected from site 105, Lower Mystic Lake, Mystic River Basin, Massachusetts. Data for trace elements were not analyzed for depth range 0–4 centimeters because the entire volume of sediment in this range was needed for organic analysis.

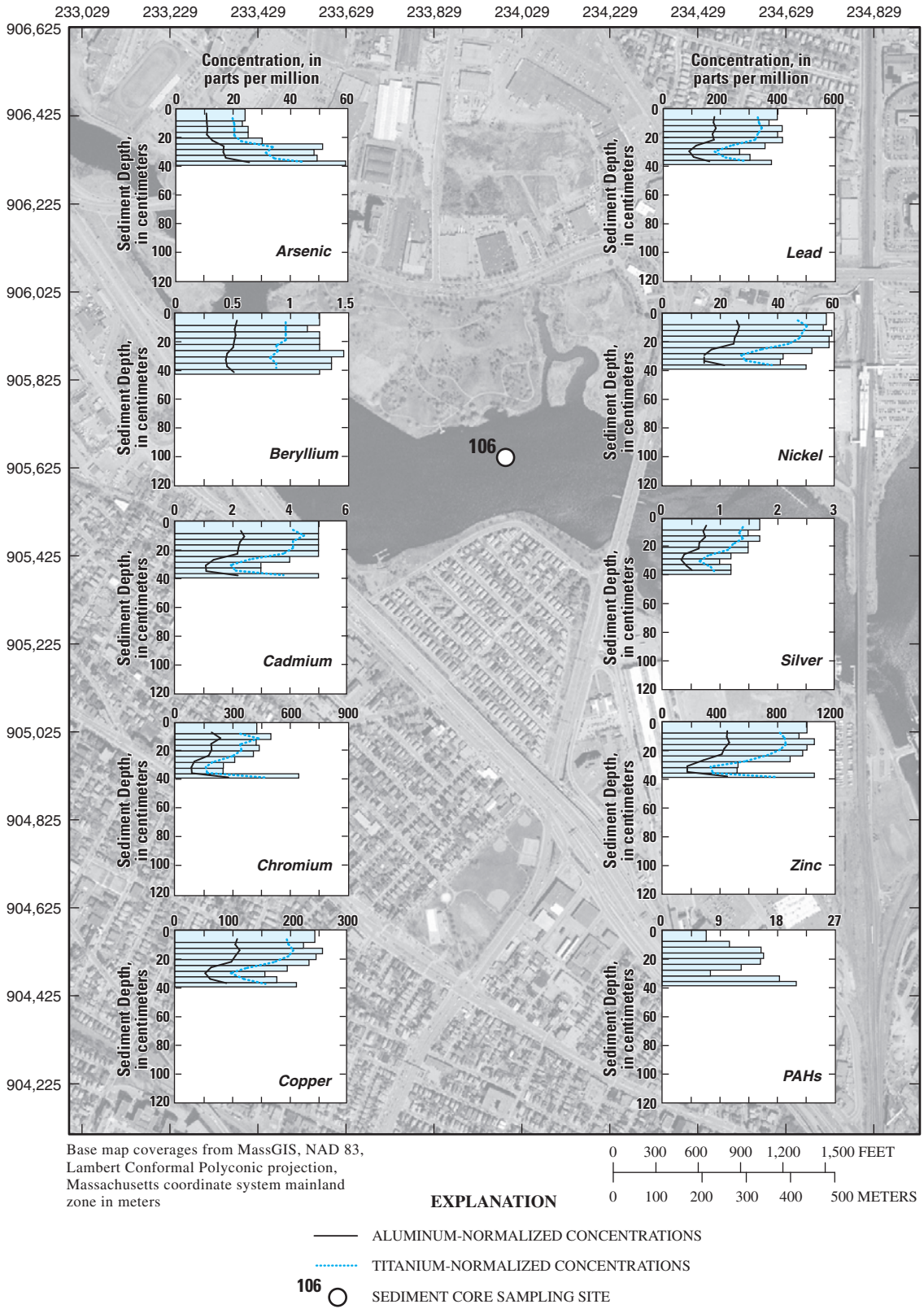

Figure 10. Selected trace element and organic compound concentrations measured in sediment core samples collected from site 106, upper Mystic River above Amelia Earhart Dam, Mystic River Basin, Massachusetts. Samples from depth ranges 0–4 and 4–8 centimeters were combined because high water content reduced the volume of sediment in the individual samples.

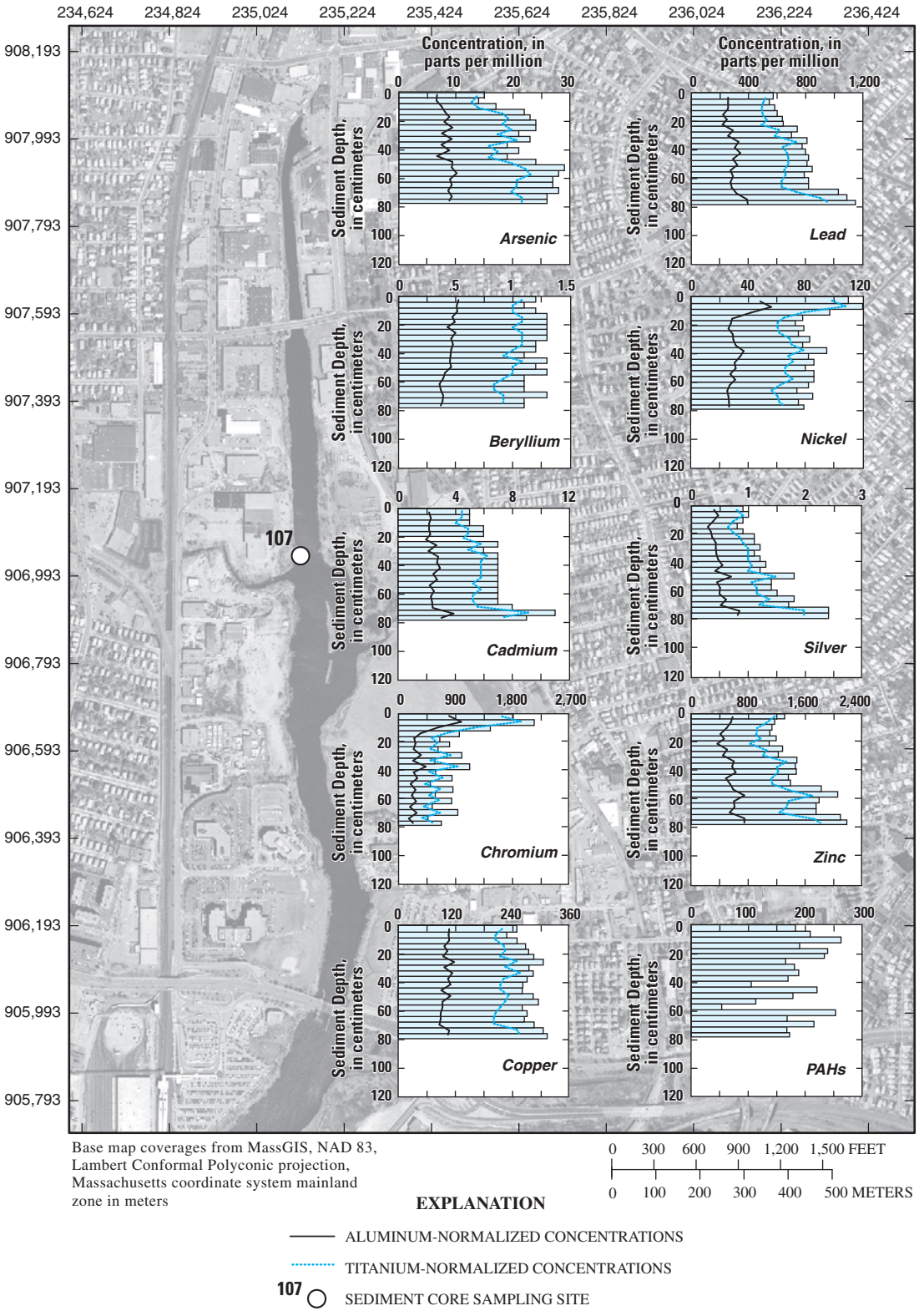

Figure 11. Selected trace element and organic compound concentrations measured in sediment core samples collected from site 107, Malden River, Mystic River Basin, Massachusetts.

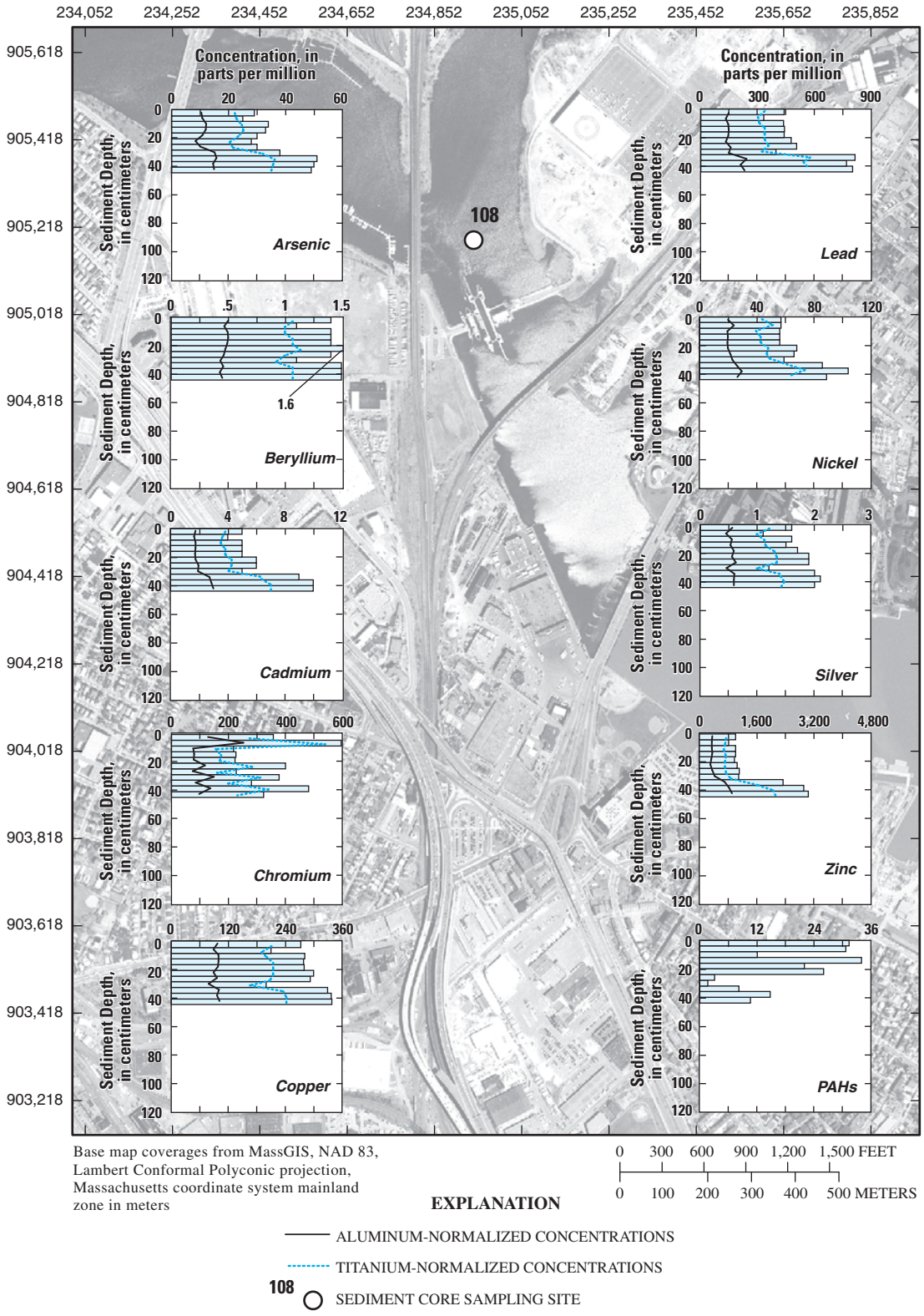

Figure 12. Selected trace element and organic compound concentrations measured in sediment core samples collected from site 108, upper Mystic River about 180 meters above the Amelia Earhart Dam, Mystic River Basin, Massachusetts.

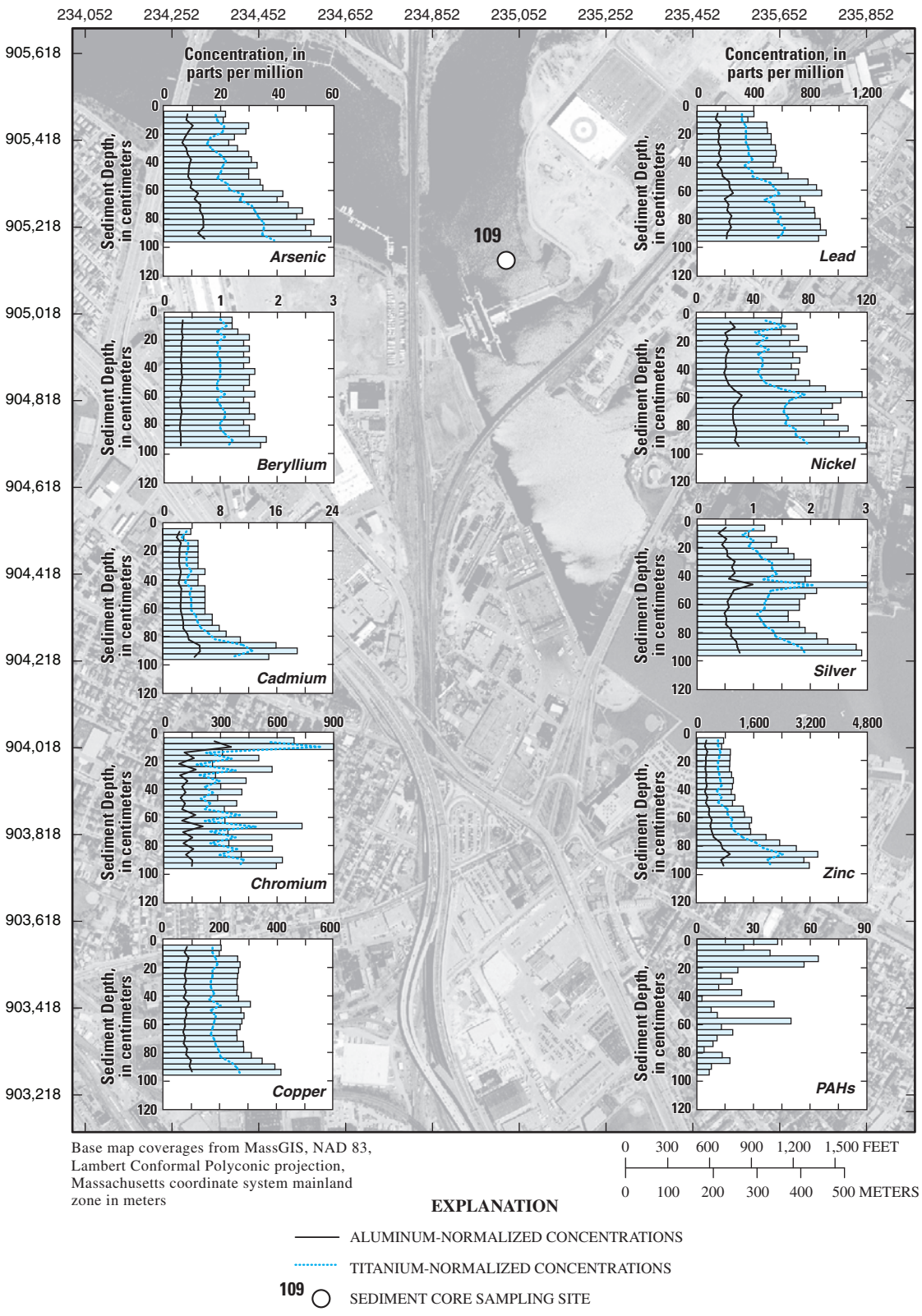

Figure 13. Selected trace element and organic compound concentrations measured in sediment core samples collected from site 109, upper Mystic River about 90 meters above Amelia Earhart Dam, Mystic River Basin, Massachusetts. Data for trace elements were not analyzed for depth range 0–4 centimeters because the entire volume of sediment in this range was needed for organic analysis.

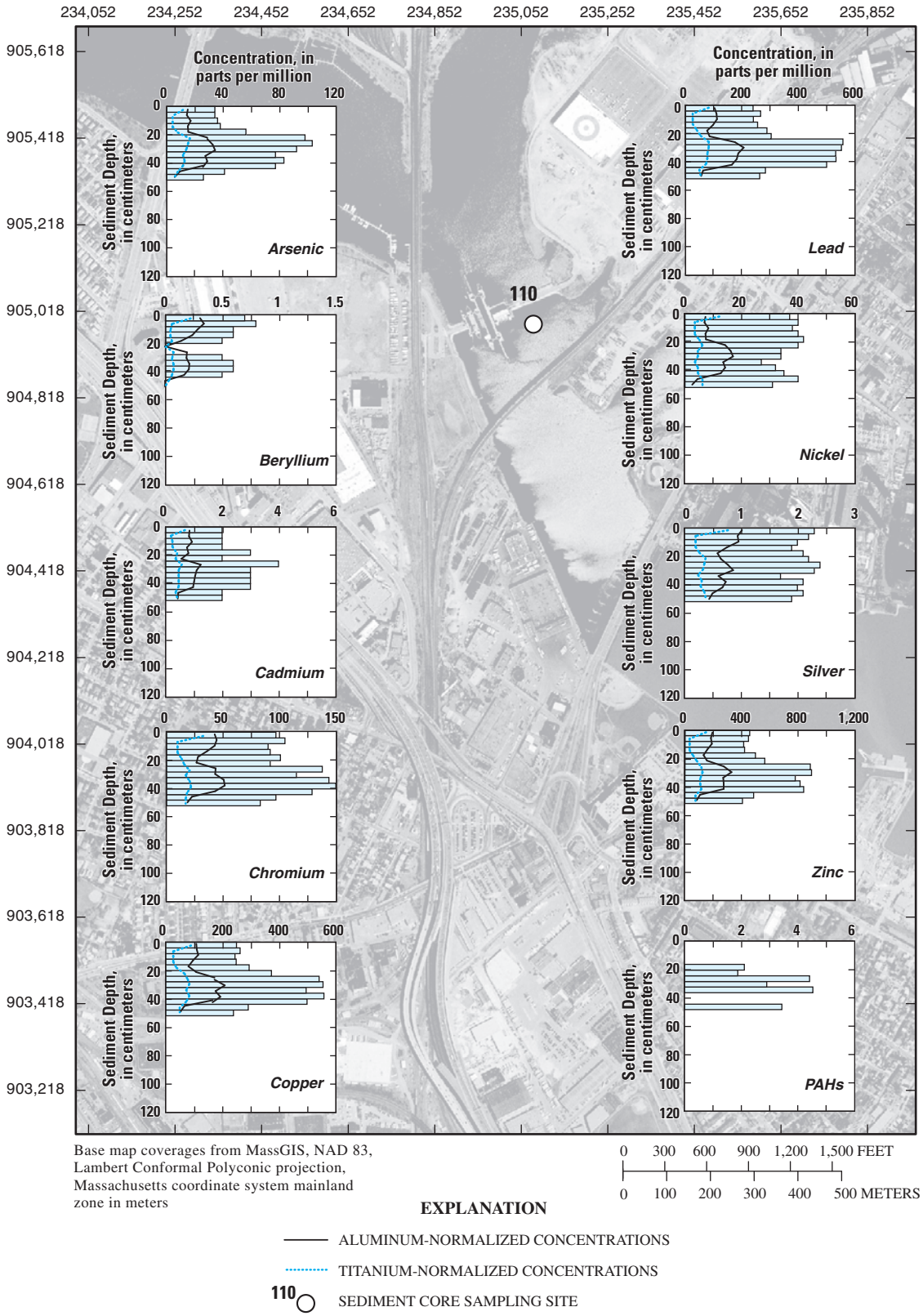

Figure 14. Selected trace element and organic compound concentrations measured in sediment core samples collected from site 110, lower Mystic River about 45 meters below the Amelia Earhart Dam, Mystic River Basin, Massachusetts.

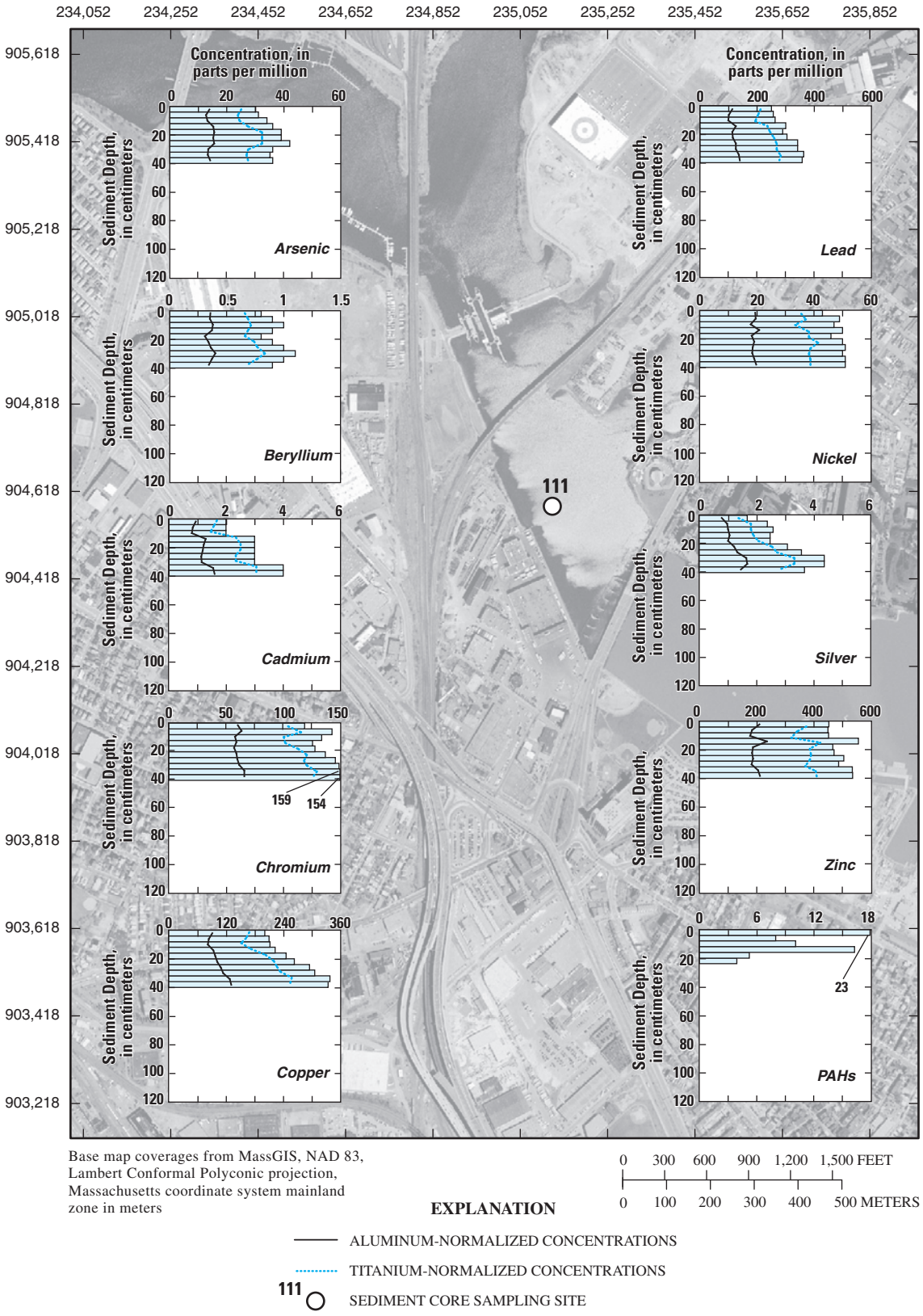

Figure 15. Selected trace element and organic compound concentrations measured in sediment core samples collected from site 111, lower Mystic River about 475 meters below the Amelia Earhart Dam, Mystic River Basin, Massachusetts.

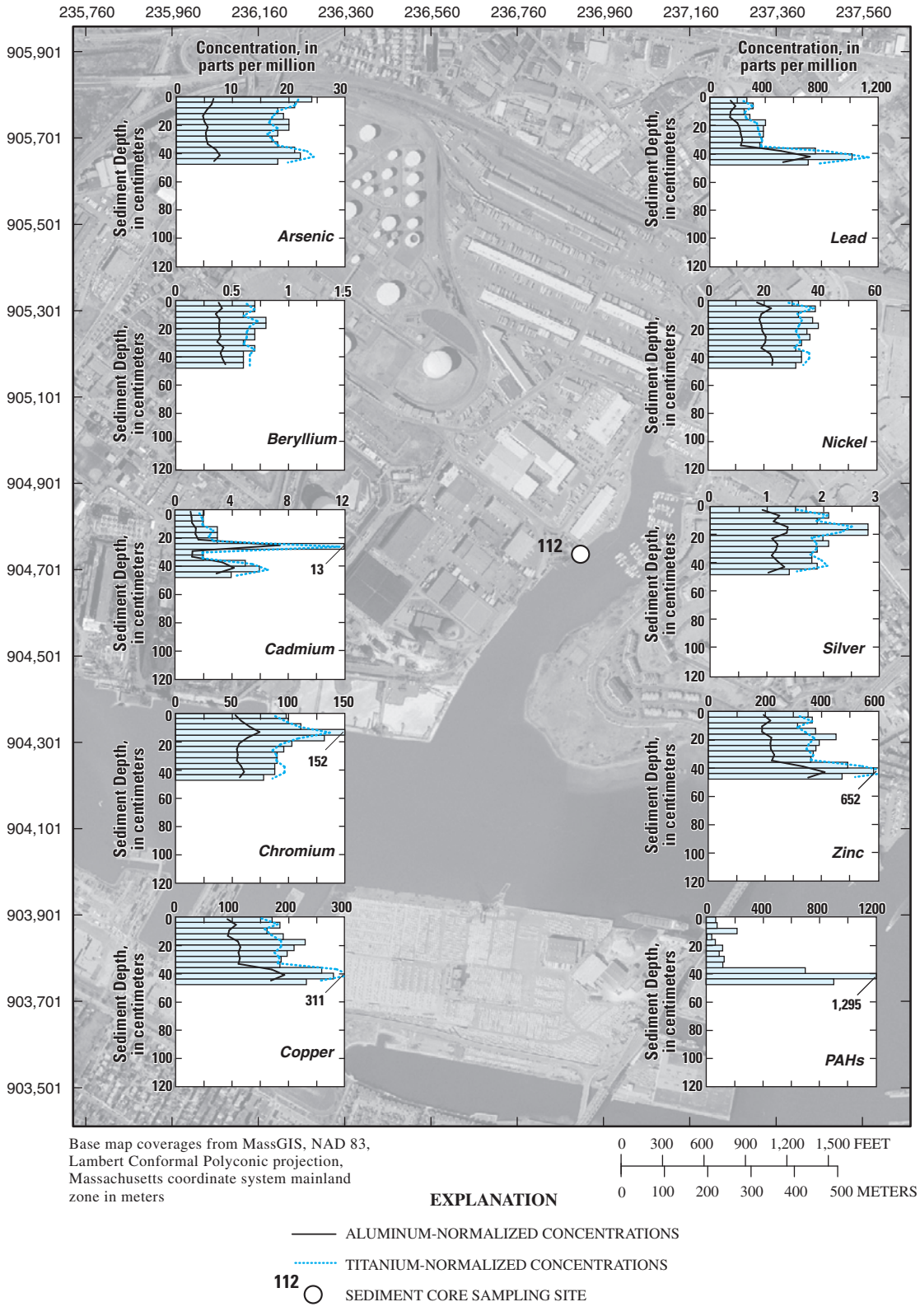

Figure 16. Selected trace element and organic compound concentrations measured in sediment core samples collected from site 112, Island End River, Mystic River Basin, Massachusetts.

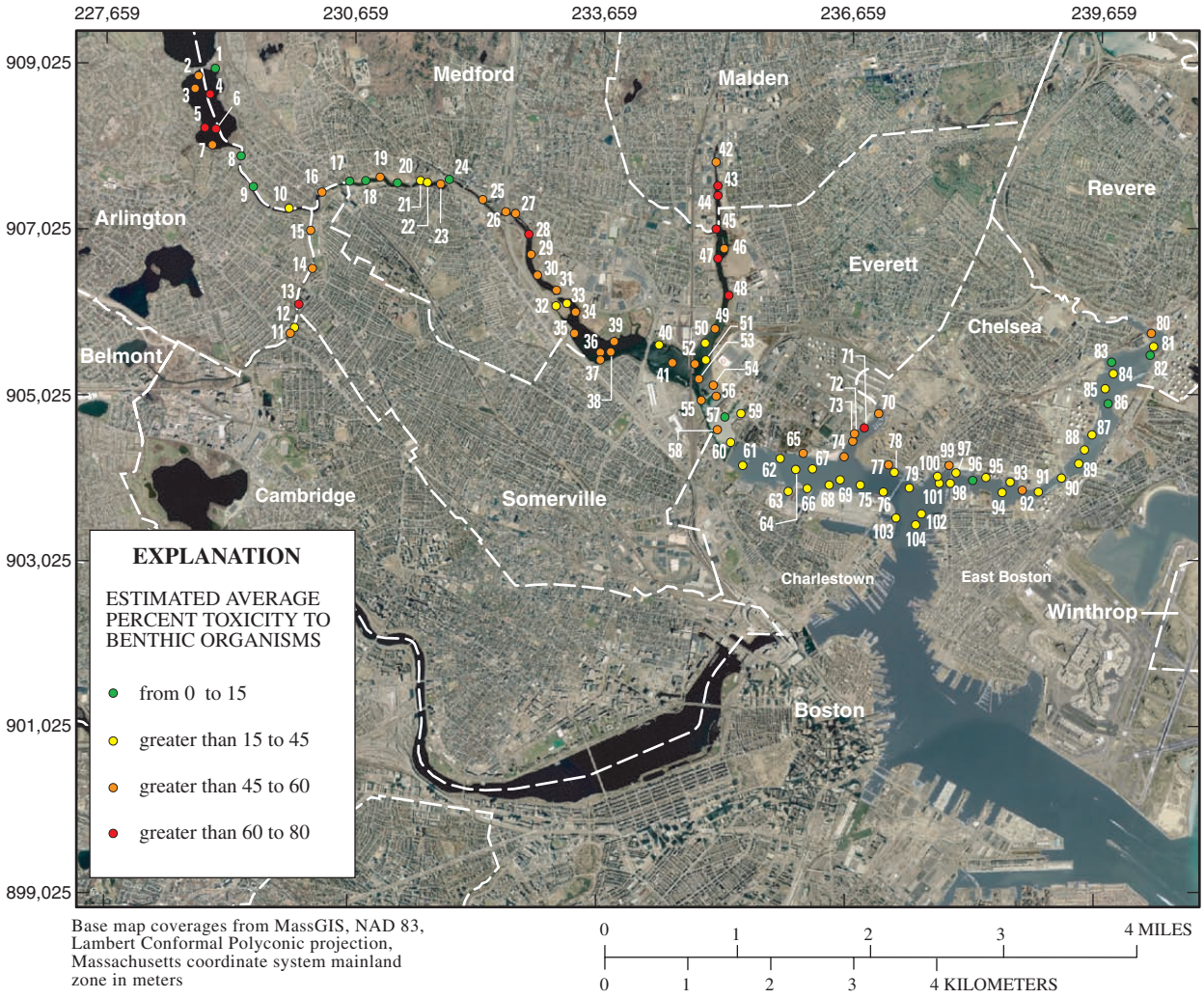

Figure 17. Estimated sediment toxicity to *Hyalella azteca* and *Chiromonus* spp. with respect to consensus-based freshwater sediment-quality guidelines. For example, potentitial toxicity of 20 percent means that 20 out of 100 toxicity tests are likely to show some level of toxicity for the concentration of contaminants measured in that sediment sample.

Tables 3–5

Table 3. Distribution of element and organic compound concentrations measured in sediment grab samples, Mystic River Basin, Massachusetts.

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. BHC, 1,2,3,4,5,6-hexachlorocyclohexane; D, duplicate; DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloroethane; do., ditto; LD, lab duplicate; No., number; PES, Performance Evaluation Standard; RPD, relative percent difference; USGS, U.S. Geological Survey; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; *, PES reported value was less than detection; --, not analyzed]

Station No.	Town	Water body	Calcium (%)	Magnesium (%)	Sodium (%)	Potassium (%)	Phosphorus (%)	Aluminum (%)	Antimony (ppm)	Arsenic (ppm)	Barium (ppm)
1	Medford	Lower Mystic Lake	0.30	0.48	0.04	0.15	0.05	0.8	<5	<3	38
2	Arlington	.....do.	.56	.60	.20	.22	.27	1.6	<5	92	220
3	.....do.	.....do.	.45	.57	.21	.20	.31	1.5	<5	85	230
4	Medford	.....do.	.50	.56	.20	.20	.25	1.6	<5	87	200
5	Arlington	.....do.	.58	.61	.07	.23	.16	1.5	<5	20	140
6	.....do.	.....do.	.58	1.0	2.0	.34	.24	1.5	<5	38	170
7	.....do.	.....do.	1.2	1.1	.16	.38	.26	2.6	<5	70	250
8	Medford	Upper Mystic River	.46	.52	.05	.19	.09	1.0	<5	<3	46
9	.....do.	.....do.	.30	.34	.03	.14	.05	.65	<5	7	45
10	.....do.	.....do.	.42	.45	.04	.18	.08	1.0	<5	12	82
11	Cambridge	Alewife Brook	.41	.37	.04	.16	.11	.88	<5	8	120
12	.....do.	.....do.	.30	.26	.03	.11	.07	.60	<5	4	120
13	Somerville	.....do.	.31	.28	.04	.12	.07	.63	<5	6	72
14	.....do.	.....do.	.37	.38	.04	.15	.10	.89	<5	9	110
15	.....do.	.....do.	.34	.34	.04	.16	.10	.89	<5	9	130
16	.....do.	Mystic River	.59	.50	.06	.24	.14	1.3	<5	17	150
17	Medford	.....do.	.33	.35	.04	.14	.06	.74	<5	3	42
18	.....do.	.....do.	.23	.23	.03	.11	.05	.57	<5	4	43
19	.....do.	.....do.	.28	.37	.03	.16	.07	.90	<5	7	57
20	.....do.	.....do.	.27	.34	.03	.16	.06	.82	<5	4	65
21	.....do.	.....do.	.22	.26	.03	.11	.05	.62	<5	3	44
22	.....do.	.....do.	.37	.51	.04	.22	.08	1.1	<5	12	62
23	.....do.	.....do.	.52	.55	.05	.26	.14	1.5	<5	14	140
24	.....do.	.....do.	.39	.77	.05	.49	.06	1.8	<5	<3	64
25	.....do.	.....do.	.38	.45	.07	.19	.08	1.0	<5	10	72
26	.....do.	.....do.	.46	.59	.12	.28	.16	1.5	<5	19	140
27	.....do.	.....do.	.23	.21	.03	.09	.05	.44	<5	4	58
28	.....do.	.....do.	.24	.31	.06	.18	.07	.75	<5	7	74
29	.....do.	.....do.	.46	.51	.10	.24	.14	1.3	<5	13	140
30	.....do.	.....do.	.48	.59	.14	.28	.16	1.5	<5	16	160
31	.....do.	.....do.	.53	.72	.14	.36	.18	1.8	<5	22	180
32	.....do.	.....do.	.18	.19	.03	.09	.05	.46	<5	5	56
33	.....do.	.....do.	.35	.52	.08	.27	.11	1.3	<5	7	100
34	.....do.	.....do.	.46	.68	.13	.35	.17	1.7	<5	19	170
35	.....do.	.....do.	.49	.70	.13	.34	.18	1.7	<5	17	170

Table 3. Distribution of element and organic compound concentrations measured in sediment grab samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. BHC, 1,2,3,4,5,6-hexachlorocyclohexane; D, duplicate; DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloroethane; do., ditto; LD, lab duplicate; No., number; PES, Performance Evaluation Standard; RPD, relative percent difference; USGS, U.S. Geological Survey; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; *, PES reported value was less than detection; --, not analyzed]

Station No.	Town	Water body	Calcium (%)	Magnesium (%)	Sodium (%)	Potassium (%)	Phosphorus (%)	Aluminum (%)	Antimony (ppm)	Arsenic (ppm)	Barium (ppm)
36	Medford	Upper Mystic River	0.46	0.66	0.13	0.33	0.15	1.7	<5	13	150
37	Somerville	.....do.	.45	.69	.15	.36	.16	1.8	<5	16	170
38	Medford	.....do.	.46	.74	.15	.38	.17	1.8	<5	15	160
39	.....do.	.....do.	.44	.69	.14	.35	.15	1.8	<5	14	150
40	.....do.	.....do.	.39	.57	.11	.31	.12	1.5	<5	16	94
41	Everett	.....do.	.33	.41	.10	.19	.10	1.0	<5	21	110
42	Malden	Malden River	.18	.21	.04	.09	.04	.43	<5	5	48
43	.....do.	.....do.	.32	.32	.08	.12	.08	.73	<5	4	110
44	.....do.	.....do.	.54	.36	.15	.11	.13	.72	11	59	110
45	.....do.	.....do.	.27	.45	.08	.23	.06	1.0	<5	8	54
46	Everett	.....do.	.45	.69	.13	.38	.19	2.2	<5	17	140
47	.....do.	.....do.	.44	.68	.20	.29	.18	1.7	<5	19	130
48	.....do.	.....do.	.48	.71	.24	.32	.21	1.9	<5	30	170
49	.....do.	.....do.	.44	.54	.12	.27	.23	1.8	<5	28	96
50	.....do.	.....do.	.32	.50	.10	.25	.12	1.3	<5	15	77
51	.....do.	.....do.	.42	.43	.09	.20	.10	1.1	<5	14	58
52	.....do.	.....do.	.35	.50	.16	.24	.13	1.2	<5	21	96
53	.....do.	Upper Mystic River	.41	.89	.71	.43	.16	1.8	<5	25	120
54	.....do.	.....do.	.40	.94	.67	.47	.16	2.0	<5	20	110
55	Somerville	Lower Mystic River	.75	1.3	2.8	.77	.15	2.9	<5	22	140
56	Everett	.....do.	1.1	.83	1.4	.46	.14	2.4	<5	54	100
57	.....do.	.....do.	.50	.37	.43	.22	.06	1.1	<5	9	38
58	Boston	.....do.	1.3	1.2	2.2	.83	.18	3.1	<5	29	140
59	.....do.	.....do.	.48	.59	.77	.32	.15	2.0	<5	38	66
60	.....do.	.....do.	.69	1.3	2.5	.94	.17	3.3	<5	28	140
61	.....do.	.....do.	3.3	.64	1.1	.40	.11	1.6	<5	20	92
62	Everett	.....do.	.62	1.0	1.5	.74	.12	2.6	<5	18	110
63	Boston	.....do.	.72	1.2	2.1	.75	.16	2.7	<5	24	120
64	Everett	.....do.	.55	1.1	1.7	.78	.12	2.9	<5	21	130
65	.....do.	.....do.	.78	1.1	1.7	.68	.12	2.5	<5	28	130
66	Boston	.....do.	.81	1.2	2.1	.80	.14	2.9	<5	24	130
67	Everett	.....do.	1.6	.89	1.4	.63	.11	2.2	<5	14	91
68	Boston	.....do.	.76	1.2	2.1	.80	.14	2.8	<5	21	120
69	Everett	.....do.	.70	1.1	1.6	.73	.14	2.6	<5	21	110
70	Chelsea	Island End River	.58	.94	1.8	.46	.13	2.0	<5	23	180

Table 3. Distribution of element and organic compound concentrations measured in sediment grab samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. BHC, 1,2,3,4,5,6-hexachlorocyclohexane; D, duplicate; DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloroethane; do., ditto; LD, lab duplicate; No., number; PES, Performance Evaluation Standard; RPD, relative percent difference; USGS, U.S. Geological Survey; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; *, PES reported value was less than detection; --, not analyzed]

Station No.	Town	Water body	Calcium (%)	Magnesium (%)	Sodium (%)	Potassium (%)	Phosphorus (%)	Aluminum (%)	Antimony (ppm)	Arsenic (ppm)	Barium (ppm)
71	Everett	Island End River	0.55	1.0	1.7	0.62	0.10	2.4	<5	24	150
72	.....do.	.....do.	.61	1.0	1.8	.64	.12	2.4	<5	20	130
73	.....do.	.....do.	.36	.53	1.0	.30	.07	1.2	<5	14	87
74	.....do.	.....do.	.66	.88	1.4	.53	.11	2.0	<5	19	98
75	Boston	Lower Mystic River	.77	1.3	1.6	.87	.17	3.1	<5	25	120
76	.....do.	.....do.	.86	1.2	1.5	.78	.14	2.9	<5	18	120
77	Chelsea	.....do.	.59	.84	1.2	.51	.11	2.1	<5	61	100
78	.....do.	.....do.	.73	1.1	1.6	.67	.15	2.5	<5	29	200
79	.....do.	.....do.	.51	1.0	.92	.67	.09	2.6	<5	21	100
80	.....do.	Mill Creek	1.7	.89	1.3	.52	.14	2.5	<5	16	160
81	Revere	Chelsea Creek	.56	.87	1.4	.52	.11	2.2	<5	15	140
82	.....do.	.....do.	2.7	.40	.47	.20	.06	1.0	<5	4	45
83	Chelsea	.....do.	.85	.47	.45	.27	.06	1.3	<5	4	53
84	.....do.	.....do.	.51	.89	1.1	.62	.09	2.4	<5	10	100
85	.....do.	.....do.	.53	.81	1.2	.55	.11	2.2	<5	12	110
86	Boston	.....do.	.42	.50	.57	.29	.06	1.3	<5	9	57
87	Chelsea	.....do.	.62	.86	1.4	.56	.11	2.2	<5	11	100
88	.....do.	.....do.	1.4	1.0	1.4	.58	.14	2.3	<5	17	94
89	Boston	.....do.	.66	.60	.74	.35	.08	1.5	<5	8	66
90	.....do.	.....do.	.58	.64	.75	.36	.08	1.6	<5	9	71
91	.....do.	.....do.	.56	.80	1.1	.49	.10	2.1	<5	11	85
92	Chelsea	.....do.	.56	.91	.78	.44	.11	2.1	<5	11	92
93	.....do.	.....do.	.57	.87	.90	.55	.12	2.3	<5	17	110
94	Boston	.....do.	.91	.45	.48	.25	.06	1.2	<5	8	51
95	Chelsea	.....do.	.73	.80	.88	.47	.10	2.0	<5	15	72
96	.....do.	.....do.	.94	.60	.68	.31	.07	1.5	<5	13	57
97	.....do.	.....do.	.58	.86	1.0	.55	.11	2.4	<5	11	97
98	Boston	.....do.	5.7	.53	.72	.28	.08	1.3	<5	10	62
99	Chelsea	.....do.	1.2	.79	.81	.35	.15	2.6	<5	27	290
100	.....do.	.....do.	.60	.73	.88	.49	.09	2.0	<5	12	86
101	Boston	.....do.	.60	.77	1.0	.49	.10	1.9	<5	13	77
102	.....do.	Boston Inner Harbor	.66	1.1	1.5	.71	.15	2.7	<5	19	100
103	.....do.	.....do.	.71	1.1	1.4	.75	.14	2.8	<5	23	130
104	.....do.	.....do.	.48	.82	1.0	.53	.08	2.1	<5	24	99

Table 3. Distribution of element and organic compound concentrations measured in sediment grab samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. BHC, 1,2,3,4,5,6-hexachlorocyclohexane; D, duplicate; DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloroethane; do., ditto; LD, lab duplicate; No., number; PES, Performance Evaluation Standard; RPD, relative percent difference; USGS, U.S. Geological Survey; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; *, PES reported value was less than detection; --, not analyzed]

Station No.	Town	Water body	Calcium (%)	Magnesium (%)	Sodium (%)	Potassium (%)	Phosphorus (%)	Aluminum (%)	Antimony (ppm)	Arsenic (ppm)	Barium (ppm)
7-D	Arlington	Lower Mystic Lake	0.60	0.55	0.09	0.20	0.13	1.3	<5	33	130
16-D	Somerville	Mystic River	.57	.50	.06	.24	.14	1.3	<5	15	150
23-D	Medford	.....do.	.48	.48	.05	.23	.12	1.3	<5	13	120
29-D	.....do.	.....do.	.47	.49	.08	.26	.13	1.3	<5	15	140
52-D	Everett	Malden River	.33	.47	.13	.25	.12	1.3	<5	23	98
55-D	Somerville	Upper Mystic River	.74	1.3	2.6	.79	.15	3.0	<5	23	150
70-D	Chelsea	Island End River	.57	.91	1.7	.46	.13	1.9	<5	22	180
85-D	.....do.	Chelsea Creek	.60	.91	1.2	.59	.12	2.5	<5	9	110
100-D	.....do.	.....do.	.48	.72	.91	.43	.10	1.7	<5	10	74
102-D	Boston	Boston Inner Harbor	.74	1.3	1.7	.85	.16	3.0	<5	21	120
6-LD	Arlington	Lower Mystic Lake	.60	1.0	2.0	.34	.24	1.5	<5	42	170
18-LD	Medford	Upper Mystic River	.24	.24	.03	.11	.05	.59	<5	4	43
25-LD	.....do.	.....do.	.37	.44	.07	.18	.08	.94	<5	9	70
36-LD	.....do.	.....do.	.47	.66	.12	.34	.15	1.7	<5	13	160
42-LD	Malden	Malden River	.18	.20	.04	.10	.04	.46	<5	4	49
56-LD	Everett	Lower Mystic River	1.1	.85	1.5	.50	.15	2.7	<5	56	120
66-LD	Boston	.....do.	.78	1.2	2.1	.78	.14	2.7	<5	25	120
77-LD	Chelsea	.....do.	.57	.81	1.2	.50	.11	2.0	<5	59	99
95-LD	.....do.	Chelsea Creek	.79	.83	.93	.53	.10	2.2	<5	18	83
104-LD	Boston	Boston Inner Harbor	.49	.81	.92	.56	.07	2.2	<5	20	100
Blank	--	--	<.01	<.01	<.01	<.01	<.01	<.01	<5	<3	<1
Blank	--	--	<.01	<.01	<.01	<.01	<.01	<.01	<5	<3	<1
PES, in RPD	--	--	28	3	4	2	49	16	--	--	1
PES, in RPD	--	--	1	3	12	6	6	6	*	4	3
PES, in RPD	--	--	2	7	0	6	0	2	*	3	6
PES, in RPD	--	--	7	2	39	22	20	19	12	17	9
PES, in RPD	--	--	7	0	26	22	20	19	12	16	9
PES, in RPD	--	--	5	2	26	20	20	17	27	16	7
PES, in RPD	--	--	5	2	39	20	20	16	12	16	6
PES, in RPD	--	--	2	5	26	16	20	13	1	14	3
PES, in RPD	--	--	5	4	26	16	20	14	12	14	6

Table 3. Distribution of element and organic compound concentrations measured in sediment grab samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. BHC, 1,2,3,4,5,6-hexachlorocyclohexane; D, duplicate; DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloroethane; do., ditto; LD, lab duplicate; No., number; PES, Performance Evaluation Standard; RPD, relative percent difference; USGS, U.S. Geological Survey; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; *, PES reported value was less than detection; --, not analyzed]

Station number	Town	Water body	Beryllium (ppm)	Bismuth (ppm)	Cadmium (ppm)	Chromium (ppm)	Cobalt (ppm)	Copper (ppm)	Iron (%)	Lanthanum (ppm)
1	Medford	Lower Mystic Lake	<0.5	<5	<1	--	9	19	1.9	9.1
2	Arlington	.....do.	1.0	<5	7	--	26	330	5.0	20
3	.....do.	.....do.	.9	<5	6	--	25	290	4.7	17
4	Medford	.....do.	1.0	<5	7	--	25	330	4.7	18
5	Arlington	.....do.	.7	<5	3	--	13	150	3.0	19
6	.....do.	.....do.	.8	<5	3	--	19	180	6.3	14
7	.....do.	.....do.	1.5	<5	8	--	37	350	6.1	32
8	Medford	Upper Mystic River	<.5	<5	<1	--	10	19	2.2	11
9	.....do.	.....do.	<.5	<5	1	--	13	49	1.5	11
10	.....do.	.....do.	<.5	<5	2	--	14	91	2.2	14
11	Cambridge	Alewife Brook	<.5	<5	2	--	10	140	1.8	13
12	.....do.	.....do.	<.5	<5	1	--	6	120	1.4	9.7
13	Somerville	.....do.	<.5	<5	<1	--	7	87	2.4	9.8
14	.....do.	.....do.	<.5	<5	2	--	9	120	2.3	13
15	.....do.	.....do.	<.5	<5	2	--	9	100	1.7	13
16	.....do.	Upper Mystic River	.7	<5	3	--	12	180	2.7	18
17	Medford	.....do.	<.5	<5	<1	--	7	33	1.8	9.9
18	.....do.	.....do.	<.5	<5	<1	--	6	41	1.2	8.9
19	.....do.	.....do.	<.5	<5	1	--	8	69	1.8	12
20	.....do.	.....do.	<.5	<5	<1	--	8	51	1.7	11
21	.....do.	.....do.	<.5	<5	<1	--	6	30	1.5	9.3
22	.....do.	.....do.	<.5	<5	<1	--	9	70	2.2	13
23	.....do.	.....do.	.7	<5	3	--	15	170	2.7	18
24	.....do.	.....do.	.8	<5	<1	--	11	23	3.2	21
25	.....do.	.....do.	.7	<5	1	--	9	79	2.1	12
26	.....do.	.....do.	.8	<5	3	--	12	210	3.0	18
27	.....do.	.....do.	<.5	<5	<1	--	4	49	1.3	8.3
28	.....do.	.....do.	<.5	<5	<1	--	7	80	1.7	11
29	.....do.	.....do.	.7	<5	3	--	13	190	2.8	16
30	.....do.	.....do.	.8	<5	4	--	14	220	3.1	18
31	.....do.	.....do.	1.0	<5	4	--	14	250	3.9	20
32	.....do.	.....do.	<.5	<5	1	--	5	63	1.4	9.3
33	.....do.	.....do.	.6	<5	2	--	10	110	2.6	16
34	.....do.	.....do.	2.7	<5	6	--	16	230	3.6	21
35	.....do.	.....do.	.9	<5	5	--	15	260	3.6	19

Table 3. Distribution of element and organic compound concentrations measured in sediment grab samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. BHC, 1,2,3,4,5,6-hexachlorocyclohexane; D, duplicate; DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloroethane; do., ditto; LD, lab duplicate; No., number; PES, Performance Evaluation Standard; RPD, relative percent difference; USGS, U.S. Geological Survey; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; *, PES reported value was less than detection; --, not analyzed]

Station number	Town	Water body	Beryllium (ppm)	Bismuth (ppm)	Cadmium (ppm)	Chromium (ppm)	Cobalt (ppm)	Copper (ppm)	Iron (%)	Lanthanum (ppm)
36	Medford	Upper Mystic River	0.9	<5	4	--	16	230	3.4	19
37	Somerville	.....do.	1.0	<5	5	--	14	270	3.8	20
38	Medford	.....do.	1.0	<5	5	--	16	260	3.8	19
39	.....do.	.....do.	.9	<5	4	--	15	230	3.6	19
40	.....do.	.....do.	.7	<5	3	--	14	150	3.7	15
41	Everett	.....do.	.6	<5	4	--	12	140	3.2	11
42	Malden	Malden River	<.5	<5	1	--	5	50	1.4	8.6
43	.....do.	.....do.	<.5	<5	2	--	8	120	2.0	11
44	.....do.	.....do.	<.5	<5	2	--	10	160	2.4	10
45	.....do.	.....do.	<.5	<5	1	--	8	55	2.2	12
46	Everett	.....do.	1.4	<5	7	--	20	240	4.0	21
47	.....do.	.....do.	.9	<5	5	--	17	230	3.5	18
48	.....do.	.....do.	1.1	<5	6	--	20	320	5.3	17
49	.....do.	.....do.	.9	<5	3	--	14	180	3.8	15
50	.....do.	.....do.	.7	<5	3	--	13	140	3.1	14
51	.....do.	.....do.	.5	<5	2	--	12	110	2.7	12
52	.....do.	.....do.	.7	<5	4	--	15	170	3.9	13
53	.....do.	Upper Mystic River	1.0	<5	4	--	15	230	4.3	17
54	.....do.	.....do.	1.1	<5	4	--	15	240	4.9	17
55	Somerville	Lower Mystic River	1.2	<5	3	190	14	270	4.4	23
56	Everett	.....do.	.9	7	2	130	44	680	13	18
57	.....do.	.....do.	<.5	<5	<1	230	6	75	2.1	14
58	Boston	.....do.	1.3	<5	3	350	14	240	4.8	23
59	.....do.	.....do.	.7	<5	<1	170	9	170	3.2	15
60	.....do.	.....do.	1.3	<5	1	190	13	160	4.4	25
61	.....do.	.....do.	.8	<5	1	360	8	140	3.1	15
62	Everett	.....do.	1.1	<5	<1	230	11	110	3.5	22
63	Boston	.....do.	1.1	<5	1	180	12	160	4.1	23
64	Everett	.....do.	1.2	<5	2	220	13	170	3.7	24
65	.....do.	.....do.	1.2	<5	2	180	12	140	4.6	21
66	Boston	.....do.	1.2	<5	2	220	12	170	4.1	23
67	Everett	.....do.	.9	<5	<1	360	10	110	3.1	20
68	Boston	.....do.	1.1	<5	1	220	12	130	3.8	23
69	Everett	.....do.	1.1	<5	<1	210	12	110	3.7	24
70	Chelsea	Island End River	.9	<5	5	190	11	500	4.2	18

Table 3. Distribution of element and organic compound concentrations measured in sediment grab samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. BHC, 1,2,3,4,5,6-hexachlorocyclohexane; D, duplicate; DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloroethane; do., ditto; LD, lab duplicate; No., number; PES, Performance Evaluation Standard; RPD, relative percent difference; USGS, U.S. Geological Survey; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; *, PES reported value was less than detection; --, not analyzed]

Station number	Town	Water body	Beryllium (ppm)	Bismuth (ppm)	Cadmium (ppm)	Chromium (ppm)	Cobalt (ppm)	Copper (ppm)	Iron (%)	Lanthanum (ppm)
71	Everett	Island End River	1.1	<5	3	180	11	260	3.6	22
72	.....do.	.....do.	1.1	<5	2	210	11	190	3.8	21
73	.....do.	.....do.	1.1	<5	1	110	8	110	2.1	12
74	.....do.	.....do.	1.0	<5	2	170	10	140	3.1	19
75	Boston	Lower Mystic River	1.2	<5	<1	190	14	140	4.4	29
76	.....do.	.....do.	1.2	<5	<1	180	13	130	4.0	26
77	Chelsea	.....do.	1.2	<5	1	160	10	150	3.3	20
78	.....do.	.....do.	1.1	<5	<1	170	12	120	3.7	23
79	.....do.	.....do.	1.0	<5	<1	160	12	82	3.4	24
80	.....do.	Mill Creek	1.2	<5	2	170	10	180	3.5	21
81	Revere	Chelsea Creek	.9	<5	1	160	9	140	3.2	20
82	.....do.	.....do.	<.5	<5	<1	99	4	33	1.5	13
83	Chelsea	.....do.	.5	<5	<1	170	5	29	1.7	16
84	.....do.	.....do.	1.0	<5	<1	350	10	88	3.2	21
85	.....do.	.....do.	.9	<5	<1	340	10	77	2.9	19
86	Boston	.....do.	.6	<5	<1	220	6	56	1.9	15
87	Chelsea	.....do.	.9	<5	<1	390	9	93	3.0	20
88	.....do.	.....do.	1.0	<5	<1	210	10	100	3.2	20
89	Boston	.....do.	.6	<5	<1	290	7	78	2.3	15
90	.....do.	.....do.	.7	<5	<1	250	8	82	2.4	16
91	.....do.	.....do.	.8	<5	<1	240	9	84	3.0	19
92	Chelsea	.....do.	.8	<5	<1	180	12	67	3.3	18
93	.....do.	.....do.	1.0	<5	1	230	10	120	3.3	22
94	Boston	.....do.	.6	<5	<1	130	5	43	1.7	16
95	Chelsea	.....do.	.8	<5	<1	240	10	76	3.1	19
96	.....do.	.....do.	.6	<5	<1	110	7	56	2.3	14
97	.....do.	.....do.	1.0	<5	<1	280	10	82	3.2	22
98	Boston	.....do.	.6	<5	<1	180	6	130	2.5	12
99	Chelsea	.....do.	8.0	<5	<1	280	45	1700	7.2	18
100	.....do.	.....do.	1.0	<5	<1	350	9	100	2.8	18
101	Boston	.....do.	.8	<5	<1	160	9	80	2.8	19
102	.....do.	Boston Inner Harbor	1.1	<5	<1	190	12	120	3.8	25
103	.....do.	.....do.	1.2	<5	1	210	12	150	3.9	25
104	.....do.	.....do.	.9	<5	1	210	10	120	3.0	20

Table 3. Distribution of element and organic compound concentrations measured in sediment grab samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. BHC, 1,2,3,4,5,6-hexachlorocyclohexane; D, duplicate; DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloroethane; do., ditto; LD, lab duplicate; No., number; PES, Performance Evaluation Standard; RPD, relative percent difference; USGS, U.S. Geological Survey; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; *, PES reported value was less than detection; --, not analyzed]

Station number	Town	Water body	Beryllium (ppm)	Bismuth (ppm)	Cadmium (ppm)	Chromium (ppm)	Cobalt (ppm)	Copper (ppm)	Iron (%)	Lanthanum (ppm)
7-D	Arlington	Lower Mystic Lake	1.0	<5	4	--	19	180	3.3	18
16-D	Somerville	Upper Mystic River	.7	<5	4	--	12	180	2.6	19
23-D	Medford	.....do.	.7	<5	3	--	11	150	2.5	17
29-D	.....do.	.....do.	.7	<5	4	--	13	180	2.9	18
52-D	Everett	Malden River	.8	<5	4	--	16	170	3.8	15
55-D	Somerville	Upper Mystic River	1.2	<5	3	220	14	270	4.5	22
70-D	Chelsea	Island End River	.9	<5	5	150	10	490	4.0	17
85-D	.....do.	Chelsea Creek	1.0	<5	<1	290	10	87	3.3	22
100-D	.....do.	.....do.	.8	<5	<1	220	9	110	2.7	18
102-D	Boston	Boston Inner Harbor	1.3	<5	<1	220	14	130	4.3	28
6-LD	Arlington	Lower Mystic Lake	.8	<5	3	--	19	190	6.4	15
18-LD	Medford	Mystic River	<.5	<5	<1	--	6	43	1.3	9.3
25-LD	.....do.	.....do.	.6	<5	1	--	9	81	2.1	12
36-LD	.....do.	.....do.	1.0	<5	4	--	15	240	3.5	20
42-LD	Malden	Malden River	<.5	<5	1	--	5	51	1.3	8.9
56-LD	Everett	Lower Mystic River	1.0	8	3	140	47	690	14	19
66-LD	Boston	.....do.	1.1	<5	2	220	12	170	4.0	23
77-LD	Chelsea	.....do.	1.1	<5	<1	160	10	150	3.2	19
95-LD	.....do.	Chelsea Creek	.9	<5	<1	250	10	81	3.2	20
104-LD	Boston	Boston Inner Harbor	1.0	<5	1	200	9	120	3.0	20
Blank	--	--	<.5	<5	<1	--	<1	<.5	<.01	<.5
Blank	--	--	<.5	<5	<1	--	<1	<.5	<.01	<.5
PES, in RPD	--	--	56	--	*	3	15	12	2	--
PES, in RPD	--	--	*	*	*	4	1	1	5	8
PES, in RPD	--	--	*	*	*	7	1	4	7	1
PES, in RPD	--	--	--	--	33	10	9	19	10	--
PES, in RPD	--	--	--	--	33	10	9	18	10	--
PES, in RPD	--	--	--	--	33	10	9	17	8	--
PES, in RPD	--	--	--	--	33	10	9	17	7	--
PES, in RPD	--	--	--	--	30	5	9	14	5	--
PES, in RPD	--	--	--	--	30	5	9	14	5	--

Table 3. Distribution of element and organic compound concentrations measured in sediment grab samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. BHC, 1,2,3,4,5,6-hexachlorocyclohexane; D, duplicate; DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloroethane; do., ditto; LD, lab duplicate; No., number; PES, Performance Evaluation Standard; RPD, relative percent difference; USGS, U.S. Geological Survey; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; *, PES reported value was less than detection; --, not analyzed]

Station number	Town	Water body	Lead (ppm)	Lithium (ppm)	Manganese (ppm)	Molybdenum (ppm)	Mercury (ppm)	Nickel (ppm)	Scandium (ppm)	Silver (ppm)
1	Medford	Lower Mystic Lake	27	15	230	<1	--	17	2.1	<0.2
2	Arlington	.....do.	420	23	1,100	4	--	40	3.1	.8
3	.....do.	.....do.	380	21	1,100	3	--	37	2.8	.9
4	Medford	.....do.	410	21	990	4	--	38	2.9	.9
5	Arlington	.....do.	340	25	510	3	--	32	3.0	.7
6	.....do.	.....do.	320	25	510	3	--	30	2.6	.9
7	.....do.	.....do.	670	45	1,000	6	--	65	5.4	1.6
8	Medford	Upper Mystic River	24	16	320	<1	--	15	2.7	<.2
9	.....do.	.....do.	96	14	210	1	--	19	1.7	.2
10	.....do.	.....do.	200	22	400	1	--	26	2.3	.5
11	Cambridge	Alewife Brook	310	15	230	2	--	29	1.9	2.4
12	.....do.	.....do.	240	10	170	1	--	19	1.4	2.8
13	Somerville	.....do.	210	10	230	3	--	25	1.4	3.3
14	.....do.	.....do.	340	15	220	2	--	27	1.9	1.8
15	.....do.	.....do.	340	15	200	2	--	34	2.0	1.8
16	.....do.	Upper Mystic River	410	23	380	2	--	36	3.0	2.0
17	Medford	.....do.	78	15	230	1	--	15	2.0	<.2
18	.....do.	.....do.	120	13	140	2	--	15	1.3	.3
19	.....do.	.....do.	140	19	210	<1	--	16	2.0	.4
20	.....do.	.....do.	130	18	200	1	--	19	1.9	.4
21	.....do.	.....do.	84	10	170	1	--	13	1.4	<.2
22	.....do.	.....do.	140	22	250	1	--	19	2.5	.5
23	.....do.	.....do.	410	28	330	2	--	34	3.0	1.6
24	.....do.	.....do.	28	38	340	<1	--	24	4.4	<.2
25	.....do.	.....do.	230	21	290	1	--	20	2.2	.5
26	.....do.	.....do.	560	29	380	2	--	35	3.2	2.5
27	.....do.	.....do.	210	8	150	2	--	14	.9	<.2
28	.....do.	.....do.	250	18	200	1	--	19	1.6	.6
29	.....do.	.....do.	420	26	330	3	--	36	2.7	2.0
30	.....do.	.....do.	460	29	380	3	--	38	3.1	2.2
31	.....do.	.....do.	460	37	490	3	--	40	3.8	2.3
32	.....do.	.....do.	220	8	130	2	--	14	1.0	.2
33	.....do.	.....do.	190	28	330	2	--	25	2.7	.9
34	.....do.	.....do.	430	38	450	5	--	42	5.4	2.1
35	.....do.	.....do.	480	35	450	4	--	45	3.5	2.4

Table 3. Distribution of element and organic compound concentrations measured in sediment grab samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. BHC, 1,2,3,4,5,6-hexachlorocyclohexane; D, duplicate; DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloroethane; do., ditto; LD, lab duplicate; No., number; PES, Performance Evaluation Standard; RPD, relative percent difference; USGS, U.S. Geological Survey; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; *, PES reported value was less than detection; --, not analyzed]

Station number	Town	Water body	Lead (ppm)	Lithium (ppm)	Manganese (ppm)	Molybdenum (ppm)	Mercury (ppm)	Nickel (ppm)	Scandium (ppm)	Silver (ppm)
36	Medford	Upper Mystic River	460	33	380	3	--	42	3.5	2.7
37	Somerville	.....do.	440	36	440	3	--	45	3.6	2.3
38	Medford	.....do.	470	37	430	3	--	43	3.7	2.7
39	.....do.	.....do.	430	35	410	3	--	41	3.6	2.5
40	.....do.	.....do.	230	33	330	3	--	33	2.9	1.2
41	Everett	.....do.	290	23	270	2	--	34	2.0	1.0
42	Malden	Malden River	210	8	150	1	--	16	1.2	.4
43	.....do.	.....do.	420	11	230	2	--	28	1.3	.4
44	.....do.	.....do.	520	11	240	3	--	30	1.3	.4
45	.....do.	.....do.	130	21	230	3	--	24	2.1	.5
46	Everett	.....do.	540	42	410	5	--	69	3.8	1.4
47	.....do.	.....do.	550	31	350	5	--	54	3.0	1.4
48	.....do.	.....do.	750	32	440	7	--	70	3.2	2.0
49	.....do.	.....do.	320	32	300	3	--	39	2.8	1.5
50	.....do.	.....do.	250	26	270	2	--	35	2.4	.9
51	.....do.	.....do.	170	23	240	2	--	28	2.0	.7
52	.....do.	.....do.	310	25	290	2	--	43	2.4	1.0
53	.....do.	Upper Mystic River	410	38	420	4	--	42	3.5	1.9
54	.....do.	.....do.	400	40	450	3	--	43	3.8	1.5
55	Somerville	Lower Mystic River	360	47	370	7	<1	39	5.8	2.6
56	Everett	.....do.	350	36	290	13	1	38	4.0	3.5
57	.....do.	.....do.	53	15	190	3	<1	14	2.3	.5
58	Boston	.....do.	300	47	390	6	2	43	6.2	2.6
59	.....do.	.....do.	220	39	230	3	<1	24	3.2	1.2
60	.....do.	.....do.	200	48	450	4	<1	39	7.0	2.5
61	.....do.	.....do.	180	26	260	6	<1	35	3.3	1.6
62	Everett	.....do.	130	38	380	3	<1	30	5.6	1.8
63	Boston	.....do.	210	43	410	4	<1	36	5.8	2.7
64	Everett	.....do.	200	43	420	4	<1	37	6.4	3.4
65	.....do.	.....do.	220	38	450	5	<1	35	5.4	2.7
66	Boston	.....do.	210	45	420	4	<1	37	6.2	3.0
67	Everett	.....do.	130	34	350	4	<1	30	4.8	1.9
68	Boston	.....do.	160	43	410	3	1	33	6.2	2.5
69	Everett	.....do.	140	40	420	3	<1	31	5.9	2.0
70	Chelsea	Island End River	830	31	290	9	<1	42	3.9	2.5

Table 3. Distribution of element and organic compound concentrations measured in sediment grab samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. BHC, 1,2,3,4,5,6-hexachlorocyclohexane; D, duplicate; DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloroethane; do., ditto; LD, lab duplicate; No., number; PES, Performance Evaluation Standard; RPD, relative percent difference; USGS, U.S. Geological Survey; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; *, PES reported value was less than detection; --, not analyzed]

Station number	Town	Water body	Lead (ppm)	Lithium (ppm)	Manganese (ppm)	Molybdenum (ppm)	Mercury (ppm)	Nickel (ppm)	Scandium (ppm)	Silver (ppm)
71	Everett	Island End River	500	39	340	6	1	35	5.3	2.1
72	.....do.	.....do.	310	38	360	4	<1	33	5.2	2.0
73	.....do.	.....do.	180	20	190	4	<1	22	2.7	1.2
74	.....do.	.....do.	220	33	320	4	<1	31	4.5	2.2
75	Boston	Lower Mystic River	160	49	500	3	<1	36	6.9	2.6
76	.....do.	.....do.	160	46	470	3	<1	33	6.4	2.4
77	Chelsea	.....do.	230	33	320	5	<1	34	4.9	1.8
78	.....do.	.....do.	160	40	420	3	<1	32	5.6	2.2
79	.....do.	.....do.	130	38	430	3	<1	28	5.9	1.1
80	.....do.	Mill Creek	460	39	320	5	<1	29	5.3	3.4
81	Revere	Chelsea Creek	330	35	310	4	<1	24	4.9	2.3
82	.....do.	.....do.	62	15	180	3	<1	11	2.3	.5
83	Chelsea	.....do.	47	19	250	3	<1	14	2.9	.5
84	.....do.	.....do.	110	36	380	4	<1	28	5.4	1.4
85	.....do.	.....do.	120	29	340	4	<1	33	5.0	1.3
86	Boston	.....do.	110	20	220	3	<1	16	3.1	.9
87	Chelsea	.....do.	130	31	330	3	<1	23	5.0	1.7
88	.....do.	.....do.	130	35	370	3	<1	25	5.1	1.4
89	Boston	.....do.	120	22	260	3	<1	19	3.3	1.4
90	.....do.	.....do.	140	23	280	3	<1	20	3.6	1.3
91	.....do.	.....do.	130	29	350	3	<1	23	4.5	1.2
92	Chelsea	.....do.	90	28	370	2	<1	24	4.3	1.0
93	.....do.	.....do.	180	35	370	3	<1	26	5.3	2.1
94	Boston	.....do.	72	17	220	3	2	13	2.8	.6
95	Chelsea	.....do.	100	29	360	4	<1	24	4.5	1.3
96	.....do.	.....do.	83	22	270	3	<1	17	3.3	.7
97	.....do.	.....do.	110	32	400	3	<1	25	5.3	1.4
98	Boston	.....do.	290	19	240	4	1	27	2.5	1.1
99	Chelsea	.....do.	1,600	32	540	27	<1	290	4.4	2.3
100	.....do.	.....do.	130	28	330	4	<1	28	4.4	1.5
101	Boston	.....do.	110	29	320	2	<1	23	4.2	1.4
102	.....do.	Boston Inner Harbor	140	42	450	2	<1	30	5.9	2.1
103	.....do.	.....do.	230	43	430	3	1	34	6.2	2.8
104	.....do.	.....do.	190	33	330	3	<1	25	4.8	2.2

Table 3. Distribution of element and organic compound concentrations measured in sediment grab samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. BHC, 1,2,3,4,5,6-hexachlorocyclohexane; D, duplicate; DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloroethane; do., ditto; LD, lab duplicate; No., number; PES, Performance Evaluation Standard; RPD, relative percent difference; USGS, U.S. Geological Survey; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; *, PES reported value was less than detection; --, not analyzed]

Station number	Town	Water body	Lead (ppm)	Lithium (ppm)	Manganese (ppm)	Molybdenum (ppm)	Mercury (ppm)	Nickel (ppm)	Scandium (ppm)	Silver (ppm)
7-D	Arlington	Lower Mystic Lake	340	23	530	4	--	35	3.0	0.8
16-D	Somerville	Upper Mystic River	420	24	380	3	--	36	2.9	2.1
23-D	Medford	.....do.	350	24	310	1	--	32	2.8	1.3
29-D	.....do.	.....do.	410	25	350	4	--	39	2.8	1.7
52-D	Everett	Malden River	310	24	300	3	--	44	2.5	1.4
55-D	Somerville	Upper Mystic River	360	48	380	8	<1	40	5.9	2.7
70-D	Chelsea	Island End River	810	31	280	9	<1	41	3.9	2.4
85-D	.....do.	Chelsea Creek	120	33	390	3	<1	26	5.6	1.4
100-D	.....do.	.....do.	130	27	310	3	<1	25	3.9	1.5
102-D	Boston	Boston Inner Harbor	150	50	500	3	<1	34	6.7	2.6
6-LD	Arlington	Lower Mystic Lake	330	26	530	3	--	31	2.7	.9
18-LD	Medford	Upper Mystic River	120	13	140	1	--	15	1.3	.2
25-LD	.....do.	.....do.	230	20	280	1	--	20	2.0	.5
36-LD	.....do.	.....do.	480	35	400	3	--	43	3.6	3.1
42-LD	Malden	Malden River	210	7	150	2	--	15	1.0	.3
56-LD	Everett	Lower Mystic River	350	37	290	14	<1	39	4.4	4.0
66-LD	Boston	.....do.	210	43	410	4	<1	37	5.9	3.0
77-LD	Chelsea	.....do.	230	32	310	4	<1	33	4.5	1.8
95-LD	.....do.	Chelsea Creek	110	31	370	3	<1	25	5.0	1.3
104-LD	Boston	Boston Inner Harbor	180	35	320	3	<1	25	5.0	2.1
Blank	--	--	<2	<1	<2	<1	--	<1	<.5	<.2
Blank	--	--	<2	<1	<2	<1	--	<1	<.5	<.2
PES, in RPD	--	--	30	--	15	46	--	37	--	--
PES, in RPD	--	--	0	7	2	*	--	0	7	7
PES, in RPD	--	--	3	7	5	*	--	2	10	9
PES, in RPD	--	--	18	--	17	16	--	39	--	95
PES, in RPD	--	--	17	--	16	16	--	39	--	95
PES, in RPD	--	--	16	--	15	16	--	39	--	95
PES, in RPD	--	--	15	--	15	16	--	39	--	95
PES, in RPD	--	--	12	--	12	22	--	39	--	95
PES, in RPD	--	--	16	--	12	16	--	39	--	95

Table 3. Distribution of element and organic compound concentrations measured in sediment grab samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. BHC, 1,2,3,4,5,6-hexachlorocyclohexane; D, duplicate; DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloroethane; do., ditto; LD, lab duplicate; No., number; PES, Performance Evaluation Standard; RPD, relative percent difference; USGS, U.S. Geological Survey; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; *, PES reported value was less than detection; --, not analyzed]

Station number	Town	Water body	Strontium (ppm)	Tin (ppm)	Titanium (%)	Tungsten (ppm)	Vanadium (ppm)	Yttrium (ppm)	Zinc (ppm)	Zirconium (ppm)
1	Medford	Lower Mystic Lake	14	<10	0.07	10	34	5.1	110	3.4
2	Arlington	.....do.	38	<10	.07	<10	85	14	2,000	3.0
3	.....do.	.....do.	35	<10	.05	<10	78	13	1,700	2.8
4	Medford	.....do.	35	<10	.06	<10	82	13	2,000	3.0
5	Arlington	.....do.	32	11	.07	<10	64	11	740	3.3
6	.....do.	.....do.	92	<10	.06	<10	66	11	970	4.6
7	.....do.	.....do.	66	25	.11	<10	140	22	2,200	7.7
8	Medford	Upper Mystic River	19	<10	.09	<10	38	6.9	130	3.0
9	.....do.	.....do.	14	<10	.06	<10	25	6.1	430	2.3
10	.....do.	.....do.	20	<10	.07	<10	37	8.1	690	3.1
11	Cambridge	Alewife Brook	21	<10	.05	<10	34	7.2	430	3.3
12	.....do.	.....do.	15	12	.04	<10	26	5.2	220	2.6
13	Somerville	.....do.	16	<10	.04	<10	44	5.3	210	3.5
14	.....do.	.....do.	19	13	.05	<10	46	7.0	390	3.0
15	.....do.	.....do.	20	<10	.04	<10	36	7.0	380	2.6
16	.....do.	Upper Mystic River	32	13	.06	<10	53	11	760	4.2
17	Medford	.....do.	15	<10	.06	<10	36	6.5	130	3.2
18	.....do.	.....do.	13	<10	.04	<10	21	4.7	180	1.8
19	.....do.	.....do.	17	<10	.06	<10	32	7.1	330	2.8
20	.....do.	.....do.	18	<10	.05	<10	27	6.0	240	3.0
21	.....do.	.....do.	12	<10	.04	<10	27	5.0	140	2.5
22	.....do.	.....do.	20	<10	.08	<10	36	7.9	320	3.8
23	.....do.	.....do.	30	14	.06	<10	51	11	780	4.2
24	.....do.	.....do.	24	<10	.10	<10	49	11	95	8.3
25	.....do.	.....do.	21	<10	.06	<10	35	7.5	330	4.3
26	.....do.	.....do.	32	15	.06	<10	58	11	790	4.4
27	.....do.	.....do.	13	<10	.03	<10	19	3.9	230	2.4
28	.....do.	.....do.	17	<10	.04	<10	29	5.5	280	2.5
29	.....do.	.....do.	32	23	.06	<10	53	9.9	790	4.5
30	.....do.	.....do.	32	15	.06	<10	58	11	880	5.1
31	.....do.	.....do.	37	18	.07	<10	67	12	930	6.1
32	.....do.	.....do.	12	14	.03	<10	24	4.4	260	2.8
33	.....do.	.....do.	26	<10	.06	<10	42	9.6	420	5.2
34	.....do.	.....do.	36	18	.07	<10	65	14	900	7.8
35	.....do.	.....do.	36	18	.06	<10	67	12	1,100	7.1

Table 3. Distribution of element and organic compound concentrations measured in sediment grab samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. BHC, 1,2,3,4,5,6-hexachlorocyclohexane; D, duplicate; DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloroethane; do., ditto; LD, lab duplicate; No., number; PES, Performance Evaluation Standard; RPD, relative percent difference; USGS, U.S. Geological Survey; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; *, PES reported value was less than detection; --, not analyzed]

Station number	Town	Water body	Strontium (ppm)	Tin (ppm)	Titanium (%)	Tungsten (ppm)	Vanadium (ppm)	Yttrium (ppm)	Zinc (ppm)	Zirconium (ppm)
36	Medford	Upper Mystic River	34	18	0.07	<10	64	12	960	6.9
37	Somerville	.....do.	35	20	.06	<10	69	13	970	7.9
38	Medford	.....do.	37	19	.06	<10	67	13	1,000	7.1
39	.....do.	.....do.	35	18	.07	<10	63	12	950	6.9
40	.....do.	.....do.	31	14	.07	<10	68	10	570	6.8
41	Everett	.....do.	28	18	.05	<10	59	8.5	610	6.3
42	Malden	Malden River	12	<10	.03	<10	24	4.4	190	3.0
43	.....do.	.....do.	23	13	.04	<10	35	6.0	430	2.8
44	.....do.	.....do.	40	15	.03	<10	43	6.9	630	3.4
45	.....do.	.....do.	20	<10	.06	<10	43	7.2	580	4.6
46	Everett	.....do.	42	210	.06	<10	75	15	1,700	7.2
47	.....do.	.....do.	44	46	.06	<10	71	12	1,300	5.7
48	.....do.	.....do.	55	92	.06	<10	100	12	1,500	7.7
49	.....do.	.....do.	41	27	.05	<10	74	11	760	6.9
50	.....do.	.....do.	28	18	.05	<10	58	9.3	700	6.1
51	.....do.	.....do.	29	12	.05	<10	49	7.8	500	5.2
52	.....do.	.....do.	39	37	.05	<10	75	9.4	820	6.3
53	.....do.	Upper Mystic River	54	20	.06	<10	77	12	860	7.7
54	.....do.	.....do.	55	28	.07	<10	91	12	820	8.4
55	Somerville	Lower Mystic River	93	14	.13	<10	100	13	690	18
56	Everett	.....do.	96	13	.10	<10	110	12	660	17
57	.....do.	.....do.	42	<10	.07	<10	33	8.3	89	7.8
58	Boston	.....do.	150	14	.13	<10	110	14	510	16
59	.....do.	.....do.	62	<10	.09	<10	83	9.8	250	9.6
60	.....do.	.....do.	69	<10	.14	<10	97	14	330	16
61	.....do.	.....do.	150	<10	.09	<10	97	9.5	250	10
62	Everett	.....do.	52	<10	.12	<10	76	12	230	13
63	Boston	.....do.	65	<10	.13	<10	100	13	310	14
64	Everett	.....do.	57	11	.14	<10	100	14	330	15
65	.....do.	.....do.	69	<10	.12	<10	94	12	360	15
66	Boston	.....do.	73	<10	.13	<10	100	13	330	14
67	Everett	.....do.	84	<10	.11	<10	68	11	200	12
68	Boston	.....do.	67	<10	.13	<10	87	13	270	14
69	Everett	.....do.	55	<10	.13	<10	76	13	220	13
70	Chelsea	Island End River	76	20	.10	<10	110	11	1300	15

Table 3. Distribution of element and organic compound concentrations measured in sediment grab samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. BHC, 1,2,3,4,5,6-hexachlorocyclohexane; D, duplicate; DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloroethane; do., ditto; LD, lab duplicate; No., number; PES, Performance Evaluation Standard; RPD, relative percent difference; USGS, U.S. Geological Survey; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; *, PES reported value was less than detection; --, not analyzed]

Station number	Town	Water body	Strontium (ppm)	Tin (ppm)	Titanium (%)	Tungsten (ppm)	Vanadium (ppm)	Yttrium (ppm)	Zinc (ppm)	Zirconium (ppm)
71	Everett	Island End River	66	12	0.12	<10	95	13	530	16
72	.....do.	.....do.	70	<10	.12	<10	88	13	380	14
73	.....do.	.....do.	53	<10	.06	<10	55	8.1	220	8.5
74	.....do.	.....do.	58	<10	.10	<10	83	11	290	12
75	Boston	Lower Mystic River	63	<10	.15	<10	88	15	260	15
76	.....do.	.....do.	67	<10	.14	<10	81	14	240	14
77	Chelsea	.....do.	59	13	.11	<10	77	12	340	14
78	.....do.	.....do.	61	<10	.13	<10	78	13	230	13
79	.....do.	.....do.	47	<10	.13	<10	63	13	180	12
80	.....do.	Mill Creek	120	16	.12	<10	84	13	430	14
81	Revere	Chelsea Creek	59	<10	.12	<10	65	13	280	13
82	.....do.	.....do.	140	<10	.07	<10	30	8.3	84	6.9
83	Chelsea	.....do.	57	<10	.09	<10	31	9.6	75	9.1
84	.....do.	.....do.	45	<10	.13	<10	62	12	200	12
85	.....do.	.....do.	48	<10	.11	<10	61	12	180	12
86	Boston	.....do.	34	<10	.08	<10	37	9.0	140	8.8
87	Chelsea	.....do.	60	<10	.11	<10	62	12	250	12
88	.....do.	.....do.	81	<10	.11	<10	65	12	200	12
89	Boston	.....do.	53	19	.09	<10	47	9.1	180	9.1
90	.....do.	.....do.	47	<10	.09	<10	49	9.9	190	9.5
91	.....do.	.....do.	49	<10	.10	<10	58	11	170	11
92	Chelsea	.....do.	45	<10	.10	<10	58	12	180	10
93	.....do.	.....do.	52	<10	.12	<10	73	13	250	13
94	Boston	.....do.	58	<10	.08	<10	32	9.1	100	8.8
95	Chelsea	.....do.	60	<10	.11	<10	58	11	170	10
96	.....do.	.....do.	56	<10	.10	<10	45	9.2	140	8.7
97	.....do.	.....do.	51	<10	.12	<10	62	13	180	13
98	Boston	.....do.	420	<10	.07	<10	52	7.8	240	8.5
99	Chelsea	.....do.	210	300	.12	<10	80	12	4,700	42
100	.....do.	.....do.	50	<10	.10	<10	57	11	240	12
101	Boston	.....do.	49	<10	.10	<10	55	10	170	9.9
102	.....do.	Boston Inner Harbor	58	<10	.13	<10	75	13	210	13
103	.....do.	.....do.	61	12	.13	<10	85	14	310	15
104	.....do.	.....do.	44	<10	.11	<10	60	11	240	11

Table 3. Distribution of element and organic compound concentrations measured in sediment grab samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. BHC, 1,2,3,4,5,6-hexachlorocyclohexane; D, duplicate; DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloroethane; do., ditto; LD, lab duplicate; No., number; PES, Performance Evaluation Standard; RPD, relative percent difference; USGS, U.S. Geological Survey; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; *, PES reported value was less than detection; --, not analyzed]

Station number	Town	Water body	Strontium (ppm)	Tin (ppm)	Titanium (%)	Tungsten (ppm)	Vanadium (ppm)	Yttrium (ppm)	Zinc (ppm)	Zirconium (ppm)
7-D	Arlington	Lower Mystic Lake	34	12	0.06	<10	73	12	1,100	3.8
16-D	Somerville	Upper Mystic River	31	12	.06	<10	50	11	770	4.4
23-D	Medford	.....do.	27	12	.06	<10	46	9.9	680	3.9
29-D	.....do.	.....do.	31	22	.06	<10	56	11	760	5.2
52-D	Everett	Malden River	37	33	.06	<10	76	10	770	6.7
55-D	Somerville	Upper Mystic River	90	13	.13	<10	99	14	690	19
70-D	Chelsea	Island End River	73	18	.10	<10	110	11	1,300	14
85-D	.....do.	Chelsea Creek	54	<10	.12	<10	66	14	190	13
100-D	.....do.	.....do.	43	<10	.10	<10	56	10	220	10
102-D	Boston	Boston Inner Harbor	66	<10	.15	<10	85	15	240	15
6-LD	Arlington	Lower Mystic Lake	93	<10	.06	<10	67	11	980	4.6
18-LD	Medford	Upper Mystic River	13	<10	.04	<10	22	4.9	170	1.8
25-LD	.....do.	.....do.	20	<10	.06	<10	33	7.3	330	3.7
36-LD	.....do.	.....do.	35	18	.07	<10	67	13	980	7.2
42-LD	Malden	Malden River	12	<10	.03	<10	24	4.2	180	2.7
56-LD	Everett	Lower Mystic River	100	15	.11	<10	120	12	700	19
66-LD	Boston	.....do.	71	<10	.13	<10	100	13	320	14
77-LD	Chelsea	.....do.	56	12	.10	<10	76	12	320	13
95-LD	.....do.	Chelsea Creek	66	<10	.12	<10	61	12	170	12
104-LD	Boston	Boston Inner Harbor	46	<10	.12	<10	62	12	230	12
Blank	--	--	<.5	<10	<.01	<10	<2	<.5	<.5	<.5
Blank	--	--	<.5	<10	<.01	<10	<2	<.5	<.5	<.5
PES, in RPD	--	--	--	--	--	--	61	--	3	--
PES, in RPD	--	--	3	*	0	*	7	5	3	3
PES, in RPD	--	--	7	*	0	*	5	2	0	1
PES, in RPD	--	--	20	--	0	--	24	--	22	--
PES, in RPD	--	--	20	--	0	--	24	--	21	--
PES, in RPD	--	--	18	--	0	--	23	--	19	--
PES, in RPD	--	--	18	--	0	--	19	--	20	--
PES, in RPD	--	--	15	--	0	--	17	--	18	--
PES, in RPD	--	--	15	--	0	--	21	--	17	--

Table 3. Distribution of element and organic compound concentrations measured in sediment grab samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. BHC, 1,2,3,4,5,6-hexachlorocyclohexane; D, duplicate; DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloro-ethane; do., ditto; LD, lab duplicate; No., number; PES, Performance Evaluation Standard; RPD, relative percent difference; USGS, U.S. Geological Survey; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; *, PES reported value was less than detection; --, not analyzed]

Station No.	Town	Water body	PCBs, Cl1Cl10 (ppm)	Aldrin (ppm)	alpha-BHC (ppm)	beta-BHC (ppm)	delta-BHC (ppm)	gamma-BHC (ppm)	DDE (ppm)
1	Medford	Lower Mystic Lake	<0.15-0.87	<0.061	<0.059	<0.072	<0.043	<0.069	<0.012
2	Arlington	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
3	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
4	Medford	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
5	Arlington	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
6	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
7	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
8	Medford	Upper Mystic River	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
9	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
10	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
11	Cambridge	Alewife Brook	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
12	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
13	Somerville	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
14	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
15	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
16	.....do.	Upper Mystic River	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
17	Medford	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
18	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
19	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
20	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
21	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
22	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
23	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
24	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
25	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
26	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
27	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
28	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
29	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
30	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
31	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
32	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
33	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
34	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
35	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
36	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
37	Somerville	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
38	Medford	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
39	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
40	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
41	Everett	Upper Mystic River	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
42	Malden	Malden River	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012

Table 3. Distribution of element and organic compound concentrations measured in sediment grab samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. BHC, 1,2,3,4,5,6-hexachlorocyclohexane; D, duplicate; DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloro-ethane; do., ditto; LD, lab duplicate; No., number; PES, Performance Evaluation Standard; RPD, relative percent difference; USGS, U.S. Geological Survey; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; *, PES reported value was less than detection; --, not analyzed]

Station No.	Town	Water body	PCBs, Cl1Cl10 (ppm)	Aldrin (ppm)	alpha-BHC (ppm)	beta-BHC (ppm)	delta-BHC (ppm)	gamma-BHC (ppm)	DDE (ppm)
43	.....do.	.....do.	<0.15-0.87	<0.061	<0.059	<0.072	<0.043	<0.069	<0.012
44	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
45	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
46	Everett	Malden River	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
47	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
48	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
49	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
50	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
51	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
52	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
53	.....do.	Upper Mystic River	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
54	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
55	Somerville	Lower Mystic River	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
56	Everett	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
57	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
58	Boston	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
59	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
60	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
61	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
62	Everett	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
63	Boston	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
64	Everett	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
65	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
66	Boston	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
67	Everett	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
68	Boston	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
69	Everett	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
70	Chelsea	Island End River	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
71	Everett	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
72	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
73	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
74	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
75	Boston	Lower Mystic River	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
76	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
77	Chelsea	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
78	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
79	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
80	.....do.	Mill Creek	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
81	Revere	Chelsea Creek	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
82	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
83	Chelsea	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
84	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
85	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012

Table 3. Distribution of element and organic compound concentrations measured in sediment grab samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. BHC, 1,2,3,4,5,6-hexachlorocyclohexane; D, duplicate; DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloro-ethane; do., ditto; LD, lab duplicate; No., number; PES, Performance Evaluation Standard; RPD, relative percent difference; USGS, U.S. Geological Survey; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; *, PES reported value was less than detection; --, not analyzed]

Station No.	Town	Water body	PCBs, Cl1Cl10 (ppm)	Aldrin (ppm)	alpha-BHC (ppm)	beta-BHC (ppm)	delta-BHC (ppm)	gamma-BHC (ppm)	DDE (ppm)
86	Boston	.....do.	<0.15-0.87	<0.061	<0.059	<0.072	<0.043	<0.069	<0.012
87	Chelsea	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
88	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
89	Boston	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
90	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
91	Boston	Chelsea Creek	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
92	Chelsea	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
93	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
94	Boston	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
95	Chelsea	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
96	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
97	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
98	Boston	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
99	Chelsea	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
100	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
101	Boston	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
102	.....do.	Boston Inner Harbor	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
103	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
104	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
7-D	Arlington	Lower Mystic Lake	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
16-D	Somerville	Upper Mystic River	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
23-D	Medford	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
29-D	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
55-D	Somerville	Lower Mystic River	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
66-D	Boston	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
70-D	Chelsea	Island End River	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
100-D	.....do.	Chelsea Creek	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
4-LD	Medford	Lower Mystic Lake	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
10-LD	.....do.	Upper Mystic River	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
10-LD	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
19-LD	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
19-LD	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
27-LD	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
27-LD	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
28-LD	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
34-LD	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
54-LD	Everett	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
54-LD	.....do.	.....do.	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012
85-LD	Chelsea	Chelsea Creek	<0.15-0.87	<.061	<.059	<.072	<.043	<.069	<.012

Table 3. Distribution of element and organic compound concentrations measured in sediment grab samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. BHC, 1,2,3,4,5,6-hexachlorocyclohexane; D, duplicate; DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloro-ethane; do., ditto; LD, lab duplicate; No., number; PES, Performance Evaluation Standard; RPD, relative percent difference; USGS, U.S. Geological Survey; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; *, PES reported value was less than detection; --, not analyzed]

Station No.	Town	Water body	DDD (ppm)	DDT (ppm)	Dieldrin (ppm)	Endosulfan 1 (ppm)	Endosulfan 2 (ppm)	Endrin (ppm)	Endrin aldehyde (ppm)
1	Medford	Lower Mystic Lake	<0.045	<0.251	<0.011	<0.015	<0.012	<0.062	<0.012
2	Arlington	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
3	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
4	Medford	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
5	Arlington	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
6	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
7	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
8	Medford	Upper Mystic River	<.045	<.251	<.011	<.015	<.012	<.062	<.012
9	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
10	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
11	Cambridge	Alwife Brook	<.045	<.251	<.011	<.015	<.012	<.062	<.012
12	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
13	Somerville	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
14	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
15	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
16	.....do.	Upper Mystic River	<.045	<.251	<.011	<.015	<.012	<.062	<.012
17	Medford	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
18	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
19	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
20	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
21	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
22	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
23	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
24	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
25	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
26	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
27	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
28	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
29	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
30	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
31	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
32	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
33	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
34	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
35	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
36	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
37	Somerville	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
38	Medford	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
39	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
40	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
41	Everett	Upper Mystic River	<.045	<.251	<.011	<.015	<.012	<.062	<.012
42	Malden	Malden River	<.045	<.251	<.011	<.015	<.012	<.062	<.012
43	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
44	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
45	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012

Table 3. Distribution of element and organic compound concentrations measured in sediment grab samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. BHC, 1,2,3,4,5,6-hexachlorocyclohexane; D, duplicate; DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloro-ethane; do., ditto; LD, lab duplicate; No., number; PES, Performance Evaluation Standard; RPD, relative percent difference; USGS, U.S. Geological Survey; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; *, PES reported value was less than detection; --, not analyzed]

Station No.	Town	Water body	DDD (ppm)	DDT (ppm)	Dieldrin (ppm)	Endo-sulfan 1 (ppm)	Endo-sulfan 2 (ppm)	Endrin (ppm)	Endrin aldehyde (ppm)
46	Everett	Malden River	<0.045	<0.251	<0.011	<0.015	<0.012	<0.062	<0.012
47	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
48	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
49	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
50	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
51	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
52	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
53	.....do.	Upper Mystic River	<.045	<.251	<.011	<.015	<.012	<.062	<.012
54	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
55	Somerville	Lower Mystic River	<.045	<.251	<.011	<.015	<.012	<.062	<.012
56	Everett	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
57	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
58	Boston	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
59	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
60	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
61	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
62	Everett	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
63	Boston	.....do.	0.24	<.251	<.011	<.015	<.012	<.062	<.012
64	Everett	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
65	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
66	Boston	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
67	Everett	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
68	Boston	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
69	Everett	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
70	Chelsea	Island End River	<.045	<.251	<.011	<.015	<.012	<.062	<.012
71	Everett	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
72	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
73	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
74	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
75	Boston	Lower Mystic River	<.045	<.251	<.011	<.015	<.012	<.062	<.012
76	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
77	Chelsea	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
78	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
79	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
80	.....do.	Mill Creek	<.045	<.251	<.011	<.015	<.012	<.062	<.012
81	Revere	Chelsea Creek	<.045	<.251	<.011	<.015	<.012	<.062	<.012
82	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
83	Chelsea	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
84	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
85	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
86	Boston	Chelsea Creek	<.045	<.251	<.011	<.015	<.012	<.062	<.012
87	Chelsea	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
88	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
89	Boston	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
90	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012

Table 3. Distribution of element and organic compound concentrations measured in sediment grab samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. BHC, 1,2,3,4,5,6-hexachlorocyclohexane; D, duplicate; DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloro-ethane; do., ditto; LD, lab duplicate; No., number; PES, Performance Evaluation Standard; RPD, relative percent difference; USGS, U.S. Geological Survey; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; *, PES reported value was less than detection; --, not analyzed]

Station No.	Town	Water body	DDD (ppm)	DDT (ppm)	Dieldrin (ppm)	Endo-sulfan 1 (ppm)	Endo-sulfan 2 (ppm)	Endrin (ppm)	Endrin aldehyde (ppm)
91	Boston	Chelsea Creek	<0.045	<0.251	<0.011	<0.015	<0.012	<0.062	<0.012
92	Chelsea	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
93	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
94	Boston	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
95	Chelsea	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
96	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
97	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
98	Boston	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
99	Chelsea	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
100	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
101	Boston	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
102	.....do.	Boston Inner Harbor	<.045	<.251	<.011	<.015	<.012	<.062	<.012
103	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
104	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
7	Arlington	Lower Mystic Lake	<.045	<.251	<.011	<.015	<.012	<.062	<.012
16	Somerville	Upper Mystic River	<.045	<.251	<.011	<.015	<.012	<.062	<.012
23	Medford	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
29	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
55	Somerville	Lower Mystic River	<.045	<.251	<.011	<.015	<.012	<.062	<.012
66	Boston	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
70	Chelsea	Island End River	<.045	<.251	<.011	<.015	<.012	<.062	<.012
100	.....do.	Chelsea Creek	<.045	<.251	<.011	<.015	<.012	<.062	<.012
4	Medford	Lower Mystic Lake	<.045	<.251	<.011	<.015	<.012	<.062	<.012
10	.....do.	Upper Mystic River	<.045	<.251	<.011	<.015	<.012	<.062	<.012
10	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
19	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
19	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
27	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
27	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
28	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
34	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
54	Everett	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
54	.....do.	.....do.	<.045	<.251	<.011	<.015	<.012	<.062	<.012
85	Chelsea	Chelsea Creek	<.045	<.251	<.011	<.015	<.012	<.062	<.012

Table 3. Distribution of element and organic compound concentrations measured in sediment grab samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. BHC, 1,2,3,4,5,6-hexachlorocyclohexane; D, duplicate; DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloro-ethane; do., ditto; LD, lab duplicate; No., number; PES, Performance Evaluation Standard; RPD, relative percent difference; USGS, U.S. Geological Survey; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; *, PES reported value was less than detection; --, not analyzed]

Station No.	Town	Water body	Endrin ketone (ppm)	Hepta-chlor (ppm)	Heptachlor epoxide (ppm)	Methoxy-chlor (ppm)	Acenaph-thene (ppm)	Acenaph-thylene (ppm)	Anthracene (ppm)
1	Medford	Lower Mystic Lake	<0.015	<0.021	<0.072	<0.013	<0.37	<0.22	<0.29
2	Arlington	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
3	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
4	Medford	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
5	Arlington	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
6	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
7	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
8	Medford	Upper Mystic River	<.015	<.021	<.072	<.013	<.37	<.22	<.29
9	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
10	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
11	Cambridge	Alewife Brook	<.015	<.021	<.072	<.013	<.37	<.22	<.29
12	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
13	Somerville	.....do.	<.015	<.021	<.072	<.013	2.2	<.22	<.29
14	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
15	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
16	.....do.	Upper Mystic River	<.015	<.021	<.072	<.013	<.37	<.22	<.29
17	Medford	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
18	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
19	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
20	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
21	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
22	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
23	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
24	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
25	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
26	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
27	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
28	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
29	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
30	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
31	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
32	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
33	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
34	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
35	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
36	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
37	Somerville	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
38	Medford	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
39	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
40	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
41	Everett	Upper Mystic River	<.015	<.021	<.072	<.013	<.37	<.22	2.5
42	Malden	Malden River	<.015	<.021	<.072	<.013	<.37	<.22	<.29
43	.....do.	.....do.	<.015	<.021	<.072	<.013	14	<.22	45
44	.....do.	.....do.	<.015	<.021	<.072	<.013	4.6	4.2	21
45	.....do.	.....do.	<.015	<.021	<.072	<.013	13	<.22	26

Table 3. Distribution of element and organic compound concentrations measured in sediment grab samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. BHC, 1,2,3,4,5,6-hexachlorocyclohexane; D, duplicate; DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloro-ethane; do., ditto; LD, lab duplicate; No., number; PES, Performance Evaluation Standard; RPD, relative percent difference; USGS, U.S. Geological Survey; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; *, PES reported value was less than detection; --, not analyzed]

Station No.	Town	Water body	Endrin ketone (ppm)	Hepta-chlor (ppm)	Heptachlor epoxide (ppm)	Methoxy-chlor (ppm)	Acenaph-thene (ppm)	Acenaph-thylene (ppm)	Anthracene (ppm)
46	Everett	Malden River	<0.015	<0.021	<0.072	<0.013	<0.37	<0.22	<0.29
47	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	7.3
48	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
49	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
50	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
51	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
52	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
53	.....do.	Upper Mystic River	<.015	<.021	<.072	<.013	<.37	<.22	<.29
54	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	7.4
55	Somerville	Lower Mystic River	<.015	<.021	<.072	<.013	<.37	<.22	1.1
56	Everett	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	.52
57	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	.29
58	Boston	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	1.2
59	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
60	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	.65
61	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	.45
62	Everett	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	.50
63	Boston	.....do.	<.015	<.021	<.072	<.013	<.37	.30	.65
64	Everett	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	.69
65	.....do.	.....do.	<.015	<.021	<.072	<.013	1.0	3.7	3.9
66	Boston	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	.65
67	Everett	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	.63
68	Boston	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	.63
69	Everett	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
70	Chelsea	Island End River	<.015	<.021	<.072	<.013	3.6	4.6	9.8
71	Everett	.....do.	<.015	<.021	<.072	<.013	17	19	34
72	.....do.	.....do.	<.015	<.021	<.072	<.013	.82	2.4	3.5
73	.....do.	.....do.	<.015	<.021	<.072	<.013	.70	2.0	3.0
74	.....do.	.....do.	<.015	<.021	<.072	<.013	.58	2.8	3.9
75	Boston	Lower Mystic River	<.015	<.021	<.072	<.013	<.37	<.22	.35
76	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	.33
77	Chelsea	.....do.	<.015	<.021	<.072	<.013	.33	2.1	2.6
78	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	.29
79	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	.41
80	.....do.	Mill Creek	<.015	<.021	<.072	<.013	<.37	<.22	<.29
81	Revere	Chelsea Creek	<.015	<.021	<.072	<.013	<.37	<.22	<.29
82	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
83	Chelsea	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
84	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	.27
85	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
86	Boston	Chelsea Creek	<.015	<.021	<.072	<.013	<.37	<.22	<.29
87	Chelsea	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	.48
88	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	.45
89	Boston	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	.61
90	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	.57

Table 3. Distribution of element and organic compound concentrations measured in sediment grab samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. BHC, 1,2,3,4,5,6-hexachlorocyclohexane; D, duplicate; DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloro-ethane; do., ditto; LD, lab duplicate; No., number; PES, Performance Evaluation Standard; RPD, relative percent difference; USGS, U.S. Geological Survey; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; *, PES reported value was less than detection; --, not analyzed]

Station No.	Town	Water body	Endrin ketone (ppm)	Hepta-chlor (ppm)	Heptachlor epoxide (ppm)	Methoxy-chlor (ppm)	Acenaph-thene (ppm)	Acenaph-thylene (ppm)	Anthracene (ppm)
91	Boston	Chelsea Creek	<0.015	<0.021	<0.072	<0.013	<0.37	<0.22	1.1
92	Chelsea	.....do.	<.015	<.021	<.072	<.013	1.8	1.6	3.7
93	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	1.1
94	Boston	.....do.	<.015	<.021	<.072	<.013	.59	<.22	1.8
95	Chelsea	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
96	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
97	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
98	Boston	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	.70
99	Chelsea	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	1.0
100	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	.45
101	Boston	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	.29
102	.....do.	Boston Inner Harbor	<.015	<.021	<.072	<.013	<.37	<.22	.38
103	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	.34
104	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	.26	.73
7	Arlington	Lower Mystic Lake	<.015	<.021	<.072	<.013	<.37	<.22	<.29
16	Somerville	Upper Mystic River	<.015	<.021	<.072	<.013	<.37	<.22	<.29
23	Medford	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
29	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
55	Somerville	Lower Mystic River	<.015	<.021	<.072	<.013	<.37	<.22	1.1
66	Boston	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	.28
70	Chelsea	Island End River	<.015	<.021	<.072	<.013	12	7.1	24
100	.....do.	Chelsea Creek	<.015	<.021	<.072	<.013	<.37	<.22	.35
4	Medford	Lower Mystic Lake	<.015	<.021	<.072	<.013	<.37	<.22	<.29
10	.....do.	Upper Mystic River	<.015	<.021	<.072	<.013	<.37	<.22	<.29
10	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
19	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
19	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
27	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
27	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
28	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
34	.....do.	.....do.	<.015	<.021	<.072	<.013	<.37	<.22	<.29
54	Everett	.....do.	<.015	<.021	<.072	<.013	1.7	<.22	7.7
54	.....do.	.....do.	<.015	<.021	<.072	<.013	2.5	<.22	7.3
85	Chelsea	Chelsea Creek	<.015	<.021	<.072	<.013	<.37	<.22	<.29

Table 3. Distribution of element and organic compound concentrations measured in sediment grab samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. BHC, 1,2,3,4,5,6-hexachlorocyclohexane; D, duplicate; DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloro-ethane; do., ditto; LD, lab duplicate; No., number; PES, Performance Evaluation Standard; RPD, relative percent difference; USGS, U.S. Geological Survey; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; *, PES reported value was less than detection; --, not analyzed]

Station No.	Town	Water body	Benzo[*a*]-anthracene (ppm)	Benzo[*b,k*]-fluoranthracene (ppm)	Benzo[*a*]-pyrene (ppm)	Benzo[*g,h,i*]-perylene (ppm)	Chrysene (ppm)	Dibenz[*a,h*]-anthracene (ppm)	Fluoranthene (ppm)
1	Medford	Lower Mystic Lake	<0.44	<0.29	<0.51	<0.32	<0.28	<0.58	<0.12
2	Arlington	.....do.	<.44	<.29	<.51	<.32	<.28	<.58	<.12
3	.....do.	.....do.	<.44	<.29	<.51	<.32	<.28	<.58	<.12
4	Medford	.....do.	<.44	64	51	<.32	66	<.58	57
5	Arlington	.....do.	27	38	33	<.32	41	<.58	63
6	.....do.	.....do.	26	49	35	15	49	<.58	66
7	.....do.	.....do.	16	27	20	<.32	23	<.58	36
8	Medford	Upper Mystic River	<.44	<.29	<.51	<.32	<.28	<.58	<.12
9	.....do.	.....do.	<.44	<.29	<.51	<.32	<.28	<.58	1.8
10	.....do.	.....do.	2.9	7.4	<.51	<.32	<.28	<.58	6.8
11	Cambridge	Alewife Brook	8.0	14	16	9.9	17	<.58	21
12	.....do.	.....do.	<.44	1.5	<.51	<.32	1.4	<.58	3.5
13	Somerville	.....do.	29	26	32	17	42	8.6	70
14	.....do.	.....do.	7.9	10	12	<.32	12	<.58	17
15	.....do.	.....do.	11	14	16	15	18	8.7	23
16	.....do.	Upper Mystic River	20	31	31	37	36	21	44
17	Medford	.....do.	<.44	<.29	<.51	<.32	<.28	<.58	<.12
18	.....do.	.....do.	<.44	<.29	<.51	<.32	<.28	<.58	<.12
19	.....do.	.....do.	4.5	6.9	3.9	<.32	5.5	<.58	11
20	.....do.	.....do.	<.44	<.29	<.51	<.32	<.28	<.58	<.12
21	.....do.	.....do.	<.44	<.29	<.51	<.32	<.28	<.58	8.6
22	.....do.	.....do.	2.6	6.1	5.0	<.32	6.1	<.58	9
23	.....do.	.....do.	17	26	26	24	31	<.58	41
24	.....do.	.....do.	<.44	<.29	<.51	<.32	<.28	<.58	<.12
25	.....do.	.....do.	3.8	5.8	6.1	3.9	6.1	<.58	9.5
26	.....do.	.....do.	15	25	24	23	26	<.58	30
27	.....do.	.....do.	5.4	6.1	6.6	<.32	10	<.58	13
28	.....do.	.....do.	<.44	<.29	<.51	<.32	<.28	<.58	160
29	.....do.	.....do.	18	26	27	27	29	<.58	32
30	.....do.	.....do.	16	25	26	22	27	<.58	30
31	.....do.	.....do.	13	22	24	22	24	15	26
32	.....do.	.....do.	1.3	3.1	1.9	<.32	4.1	<.58	5.7
33	.....do.	.....do.	<.44	<.29	<.51	<.32	<.28	<.58	5.3
34	.....do.	.....do.	12	22	25	21	24	<.58	25
35	.....do.	.....do.	14	25	27	19	31	<.58	34
36	.....do.	.....do.	9.9	18	19	12	22	<.58	24
37	Somerville	.....do.	16	34	39	23	42	<.58	32
38	Medford	.....do.	9.7	19	21	14	22	<.58	21
39	.....do.	.....do.	9.1	16	16	9.3	19	<.58	18
40	.....do.	.....do.	<.44	4.9	<.51	<.32	<.28	<.58	7.2
41	Everett	Upper Mystic River	8.8	11	13	6.5	15	<.58	16
42	Malden	Malden River	4.9	5.8	3.9	<.32	6.6	<.58	14
43	.....do.	.....do.	60	55	79	39	83	23	120
44	.....do.	.....do.	55	61	74	62	77	23	110
45	.....do.	.....do.	24	20	30	14	36	<.58	48

Table 3. Distribution of element and organic compound concentrations measured in sediment grab samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. BHC, 1,2,3,4,5,6-hexachlorocyclohexane; D, duplicate; DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloro-ethane; do., ditto; LD, lab duplicate; No., number; PES, Performance Evaluation Standard; RPD, relative percent difference; USGS, U.S. Geological Survey; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; *, PES reported value was less than detection; --, not analyzed]

Station No.	Town	Water body	Benzo[*a*]-anthracene (ppm)	Benzo[*b,k*]-fluoranthra-cene (ppm)	Benzo[*a*]-pyrene (ppm)	Benzo[*g,h,i*]-perylene (ppm)	Chrysene (ppm)	Dibenz[*a,h*]-anthracene (ppm)	Fluoran-thene (ppm)
46	Everett	Malden River	23	36	42	43	38	11	30
47	.....do.	.....do.	36	53	65	61	60	16	56
48	.....do.	.....do.	22	39	45	36	44	15	51
49	.....do.	.....do.	7.5	10	11	5.2	14	<.58	15
50	.....do.	.....do.	<.44	<.29	<.51	<.32	<.28	<.58	<.12
51	.....do.	.....do.	1.3	3.2	2.3	<.32	3.9	<.58	3.3
52	.....do.	.....do.	18	12	24	7.0	19	<.58	8.3
53	.....do.	Upper Mystic River	7.8	16	15	7.7	19	<.58	19
54	.....do.	.....do.	10	23	23	16	25	<.58	25
55	Somerville	Lower Mystic River	2.4	5.7	4.0	3.3	5.4	1.3	10
56	Everett	.....do.	.85	2.6	1.9	1.3	2.3	1.2	2.9
57	.....do.	.....do.	.59	.92	.81	<.32	1.0	<.58	2.1
58	Boston	.....do.	1.8	3.9	2.9	2.1	3.3	.79	5.7
59	.....do.	.....do.	<.44	8.3	.72	.42	.8	<.58	.85
60	.....do.	.....do.	.79	2.1	1.6	1.0	1.7	1.5	2.2
61	.....do.	.....do.	.98	2.0	1.8	.61	1.8	<.58	2.6
62	Everett	.....do.	.71	1.4	1.2	.59	1.3	<.58	1.5
63	Boston	.....do.	1.0	2.1	1.7	1.3	1.6	.46	2.2
64	Everett	.....do.	.97	2.2	2.0	1.1	1.9	<.58	2.3
65	.....do.	.....do.	5.4	6.0	6.1	3.2	7.4	2.4	14
66	Boston	.....do.	.88	2.0	1.7	1.2	1.6	<.58	1.8
67	Everett	.....do.	.96	1.8	1.4	.94	1.4	<.58	2
68	Boston	.....do.	1.1	2.3	2.0	1.3	1.8	<.58	2.3
69	Everett	.....do.	.65	1.4	1.1	<.32	1.1	<.58	1.6
70	Chelsea	Island End River	14	24	19	14	21	5.5	46
71	Everett	.....do.	40	48	42	23	45	12	120
72	.....do.	.....do.	4.4	8.0	7.0	4.0	6.1	1.8	12
73	.....do.	.....do.	4.0	6.6	5.9	5.4	6.0	1.6	9.4
74	.....do.	.....do.	5.1	8.5	7.8	4.5	7.3	2.2	11
75	Boston	Lower Mystic River	.51	1.3	1.1	.49	1.0	<.58	1.5
76	.....do.	.....do.	.76	1.7	1.6	.91	1.2	<.58	1.5
77	Chelsea	.....do.	4.5	7.3	6.8	4.2	6.7	2.1	9.3
78	.....do.	.....do.	.62	1.4	1.2	.71	1.2	<.58	1.4
79	.....do.	.....do.	.97	1.4	1.4	.71	1.4	<.58	2.0
80	.....do.	Mill Creek	1.4	4.5	3.8	1.9	4.0	.84	5.7
81	Revere	Chelsea Creek	<.44	.11	.87	<.32	1.1	<.58	1.5
82	.....do.	.....do.	<.44	<.29	<.51	<.32	<.28	<.58	.17
83	Chelsea	.....do.	<.44	<.29	<.51	<.32	<.28	<.58	<.12
84	.....do.	.....do.	.43	1.2	.92	.43	.96	<.58	1.4
85	.....do.	.....do.	<.44	.98	.89	.42	1.0	<.58	1.2
86	Boston	.....do.	.39	.85	.82	<.32	.89	<.58	.86
87	Chelsea	.....do.	.61	1.2	1.0	.59	1.1	<.58	1.6
88	.....do.	.....do.	.68	1.4	1.1	.63	1.3	<.58	4.3
89	Boston	.....do.	1.0	1.8	1.7	.83	1.7	<.58	2.6
90	.....do.	.....do.	.83	1.6	1.7	.71	1.4	<.58	1.6

Table 3. Distribution of element and organic compound concentrations measured in sediment grab samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. BHC, 1,2,3,4,5,6-hexachlorocyclohexane; D, duplicate; DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloro-ethane; do., ditto; LD, lab duplicate; No., number; PES, Performance Evaluation Standard; RPD, relative percent difference; USGS, U.S. Geological Survey; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; *, PES reported value was less than detection; --, not analyzed]

Station No.	Town	Water body	Benzo[*a*]-anthracene (ppm)	Benzo[*b,k*]-fluoranthracene (ppm)	Benzo[*a*]-pyrene (ppm)	Benzo[*g,h,i*]-perylene (ppm)	Chrysene (ppm)	Dibenz[*a,h*]-anthracene (ppm)	Fluoranthene (ppm)
91	Boston	Chelsea Creek	2.0	3.0	3.3	1.7	3.1	<0.58	4.6
92	Chelsea	.....do.	4.5	5.3	6.1	3.3	6.2	1.2	12
93	.....do.	.....do.	<.44	<.29	<.51	<.32	<.28	<.58	3.6
94	Boston	.....do.	2.3	2.6	2.6	1.3	3.0	.33	6.5
95	Chelsea	.....do.	.44	.89	.67	<.32	.87	<.58	1.1
96	.....do.	.....do.	<.44	.88	.52	<.32	.44	<.58	.76
97	.....do.	.....do.	.74	.96	.90	<.32	1.3	<.58	2
98	Boston	.....do.	1.4	1.8	1.4	.56	2.3	<.58	3.3
99	Chelsea	.....do.	1.6	3.1	2.4	1.4	3.0	<.58	4.3
100	.....do.	.....do.	.81	1.4	1.1	.51	1.7	.25	2.7
101	Boston	.....do.	.88	1.3	1.1	<.32	1.3	<.58	1.5
102	.....do.	Boston Inner Harbor	.78	1.6	1.2	.92	1.4	<.58	1.8
103	.....do.	.....do.	.84	1.6	1.4	.76	1.5	.34	1.8
104	.....do.	.....do.	1.1	2.1	2.1	1.2	1.5	.45	1.6
7	Arlington	Lower Mystic Lake	18	30	32	29	32	<.58	42
16	Somerville	Upper Mystic River	19	28	30	30	33	7.6	38
23	Medford	.....do.	19	29	29	25	32	<.58	39
29	.....do.	.....do.	15	23	24	21	26	<.58	28
55	Somerville	Lower Mystic River	2.4	5.9	4.3	3.2	5.6	.15	10
66	Boston	.....do.	.63	1.2	1.0	.69	1	<.58	1.4
70	Chelsea	Island End River	20	30	25	17	29	7.2	71
100	.....do.	Chelsea Creek	.55	1.1	1.0	.42	.97	<.58	1.1
4	Medford	Lower Mystic Lake	<.44	50	29	<.32	43	<.58	49
10	.....do.	Upper Mystic River	<.44	<.29	<.51	<.32	<.28	<.58	<.12
10	.....do.	.....do.	<.44	4.9	<.51	<.32	<.28	<.58	7.9
19	.....do.	.....do.	<.44	<.29	<.51	<.32	<.28	<.58	4.5
19	.....do.	.....do.	<.44	5.3	<.51	<.32	4.9	<.58	8.2
27	.....do.	.....do.	6.3	6.1	6.9	<.32	9.3	<.58	11
27	.....do.	.....do.	5.2	5.7	5.6	<.32	9.4	<.58	12
28	.....do.	.....do.	<.44	7.7	<.51	<.32	<.28	<.58	22
34	.....do.	.....do.	12	22	26	19	23	<.58	24
54	Everett	.....do.	12	21	21	10	22	<.58	22
54	.....do.	.....do.	11	21	22	9.1	22	<.58	23
85	Chelsea	Chelsea Creek	<.44	1.0	.73	<.32	.50	<.58	1.2

Table 3. Distribution of element and organic compound concentrations measured in sediment grab samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. BHC, 1,2,3,4,5,6-hexachlorocyclohexane; D, duplicate; DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloro-ethane; do., ditto; LD, lab duplicate; No., number; PES, Performance Evaluation Standard; RPD, relative percent difference; USGS, U.S. Geological Survey; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; *, PES reported value was less than detection; --, not analyzed]

Station No.	Town	Water body	Fluorene (ppm)	Indeno[1,2,3-*cd*]-pyrene (ppm)	Naphtha-lene (ppm)	Phenan-threne (ppm)	Pyrene (ppm)	Tribromo-phenol (% recovery)
1	Medford	Lower Mystic Lake	<0.11	<0.40	<0.61	<0.17	<0.05	91
2	Arlington	.....do.	<.11	<.40	<.61	<.17	<.05	64
3	.....do.	.....do.	<.11	<.40	<.61	<.17	<.05	82
4	Medford	.....do.	<.11	<.40	<.61	<.17	48	70
5	Arlington	.....do.	<.11	<.40	<.61	<.17	52	82
6	.....do.	.....do.	<.11	31	<.61	17	51	56
7	.....do.	.....do.	<.11	<.40	<.61	<.17	30	75
8	Medford	Upper Mystic River	<.11	<.40	<.61	<.17	<.05	83
9	.....do.	.....do.	<.11	<.40	<.61	<.17	1.9	72
10	.....do.	.....do.	<.11	<.40	<.61	<.17	7.4	75
11	Cambridge	Alewife Brook	<.11	11	<.61	5.3	18	81
12	.....do.	.....do.	<.11	<.40	<.61	<.17	3.5	61
13	Somerville	.....do.	<.11	19	<.61	53	53	66
14	.....do.	.....do.	<.11	<.40	<.61	4.6	15	52
15	.....do.	.....do.	<.11	15	<.61	10	20	86
16	.....do.	Upper Mystic River	<.11	37	<.61	14	39	90
17	Medford	.....do.	<.11	<.40	<.61	<.17	<.05	77
18	.....do.	.....do.	<.11	<.40	<.61	<.17	<.05	51
19	.....do.	.....do.	<.11	<.40	<.61	<.17	9.8	67
20	.....do.	.....do.	<.11	<.40	<.61	<.17	<.05	54
21	.....do.	.....do.	<.11	<.40	<.61	<.17	7.1	67
22	.....do.	.....do.	<.11	<.40	<.61	<.17	9	78
23	.....do.	.....do.	<.11	20	<.61	15	36	65
24	.....do.	.....do.	<.11	<.40	<.61	<.17	<.05	79
25	.....do.	.....do.	<.11	<.40	<.61	2.9	8.5	81
26	.....do.	.....do.	<.11	19	<.61	8.7	28	63
27	.....do.	.....do.	<.11	<.40	<.61	7.9	13	86
28	.....do.	.....do.	<.11	<.40	<.61	270	120	66
29	.....do.	.....do.	<.11	24	<.61	6.8	28	95
30	.....do.	.....do.	<.11	24	<.61	<.17	27	85
31	.....do.	.....do.	<.11	27	<.61	<.17	27	57
32	.....do.	.....do.	<.11	<.40	<.61	<.17	4.5	92
33	.....do.	.....do.	<.11	<.40	<.61	<.17	6.6	76
34	.....do.	.....do.	<.11	19	<.61	<.17	24	54
35	.....do.	.....do.	<.11	18	<.61	7.9	30	51
36	.....do.	.....do.	<.11	11	<.61	4.7	23	60
37	Somerville	.....do.	<.11	26	<.61	<.17	33	97
38	Medford	.....do.	<.11	14	<.61	3.4	21	80
39	.....do.	.....do.	<.11	11	<.61	<.17	19	77
40	.....do.	.....do.	<.11	<.40	<.61	<.17	6.6	97
41	Everett	Upper Mystic River	<.11	6.5	<.61	8.2	16	95
42	Malden	Malden River	<.11	<.40	<.61	<.17	13	71
43	.....do.	.....do.	10	46	<.61	98	100	76
44	.....do.	.....do.	<.11	60	<.61	61	98	49
45	.....do.	.....do.	8.2	16	<.61	52	51	50

Table 3. Distribution of element and organic compound concentrations measured in sediment grab samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. BHC, 1,2,3,4,5,6-hexachlorocyclohexane; D, duplicate; DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloro-ethane; do., ditto; LD, lab duplicate; No., number; PES, Performance Evaluation Standard; RPD, relative percent difference; USGS, U.S. Geological Survey; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; *, PES reported value was less than detection; --, not analyzed]

Station No.	Town	Water body	Fluorene (ppm)	Indeno[1,2,3-*cd*]-pyrene (ppm)	Naphtha-lene (ppm)	Phenan-threne (ppm)	Pyrene (ppm)	Tribromo-phenol (% recovery)
46	Everett	Malden River	<0.11	38	<0.61	<0.17	33	94
47	.....do.	.....do.	<.11	55	<.61	11	58	98
48	.....do.	.....do.	<.11	39	<.61	14	49	60
49	.....do.	.....do.	<.11	<.40	<.61	7.4	14	71
50	.....do.	.....do.	<.11	<.400	<.61	<.17	<.05	88
51	.....do.	.....do.	<.11	<.4	<.61	<.17	3.9	95
52	.....do.	.....do.	<.11	8	<.61	<.17	9.8	93
53	.....do.	Upper Mystic River	<.11	4.9	<.61	<.17	<.05	99
54	.....do.	.....do.	<.11	13	100	23	24	101
55	Somerville	Lower Mystic River	<.11	2.9	<.61	4.7	7.7	109
56	Everett	.....do.	<.11	1.1	<.61	1.1	3.1	104
57	.....do.	.....do.	<.11	<.40	<.61	.43	1.5	79
58	Boston	.....do.	.19	1.9	<.61	2.7	5.7	107
59	.....do.	.....do.	<.11	<.40	<.61	<.17	1.1	92
60	.....do.	.....do.	<.11	.84	<.61	.58	2.4	99
61	.....do.	.....do.	<.11	.84	<.61	1.3	3.0	25
62	Everett	.....do.	<.11	.57	<.61	.61	1.8	60
63	Boston	.....do.	<.11	1.2	<.61	<.17	2.5	75
64	Everett	.....do.	<.11	1.1	<.61	.95	3.2	43
65	.....do.	.....do.	3.7	3.3	4.8	6	13	109
66	Boston	.....do.	.12	1	<.61	.72	2.5	81
67	Everett	.....do.	<.11	.72	<.61	.74	2.5	68
68	Boston	.....do.	<.11	1.1	<.61	.75	2.7	90
69	Everett	.....do.	<.11	<.40	<.61	.45	2.0	57
70	Chelsea	Island End River	4.9	13	<.61	15	34	114
71	Everett	.....do.	28	2.8	2.6	84	86	97
72	.....do.	.....do.	1.1	4.1	<.61	3.2	10	107
73	.....do.	.....do.	1	3.3	<.61	2.7	9.5	71
74	.....do.	.....do.	1.3	4.7	<.61	3.6	12	109
75	Boston	Lower Mystic River	<.11	<.40	<.61	.66	1.8	67
76	.....do.	.....do.	<.11	.84	<.61	.51	2.0	45
77	Chelsea	.....do.	1	3.9	<.61	2.2	8.7	115
78	.....do.	.....do.	<.11	.61	<.61	.54	1.9	86
79	.....do.	.....do.	<.11	.54	<.61	.43	2.6	46
80	.....do.	Mill Creek	<.11	2.0	<.61	<.17	5.5	55
81	Revere	Chelsea Creek	<.11	<.40	<.61	.20	1.7	74
82	.....do.	.....do.	<.11	<.40	<.61	<.17	.22	47
83	Chelsea	.....do.	<.11	<.40	<.61	<.17	<.05	78
84	.....do.	.....do.	<.11	<.40	<.61	.81	1.9	105
85	.....do.	.....do.	<.11	<.40	<.61	.26	1.3	105
86	Boston	Chelsea Creek	<.11	<.40	<.61	<.17	1.1	92
87	Chelsea	.....do.	<.11	.53	<.61	.36	1.7	98
88	.....do.	.....do.	<.11	.54	<.61	.32	5.4	82
89	Boston	.....do.	<.11	.75	<.61	1.7	4.1	109
90	.....do.	.....do.	<.11	.71	<.61	.51	3.4	114

Table 3. Distribution of element and organic compound concentrations measured in sediment grab samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. BHC, 1,2,3,4,5,6-hexachlorocyclohexane; D, duplicate; DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloro-ethane; do., ditto; LD, lab duplicate; No., number; PES, Performance Evaluation Standard; RPD, relative percent difference; USGS, U.S. Geological Survey; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; *, PES reported value was less than detection; --, not analyzed]

Station No.	Town	Water body	Fluorene (ppm)	Indeno[1,2,3-*cd*]-pyrene (ppm)	Naphtha-lene (ppm)	Phenan-threne (ppm)	Pyrene (ppm)	Tribromo-phenol (% recovery)
91	Boston	Chelsea Creek	0.10	1.6	<0.61	1.0	4.8	66
92	Chelsea	.....do.	2.0	3.1	<.61	7.3	12	92
93	.....do.	.....do.	<.11	<.40	<.61	1.2	4.9	88
94	Boston	.....do.	.86	1.2	<.61	7.3	6.0	75
95	Chelsea	.....do.	<.11	<.40	<.61	.20	1.5	100
96	.....do.	.....do.	<.11	<.40	<.61	<.17	.95	51
97	.....do.	.....do.	<.11	<.40	<.61	.36	2.5	90
98	Boston	.....do.	<.11	.56	<.61	1.4	5.3	64
99	Chelsea	.....do.	<.11	1.5	<.61	1.7	4.3	89
100	.....do.	.....do.	<.11	<.40	<.61	.55	2.9	72
101	Boston	.....do.	<.11	<.40	<.61	.79	1.6	54
102	.....do.	Boston Inner Harbor	<.11	.97	<.61	.89	2.0	65
103	.....do.	.....do.	<.11	.78	<.61	.94	2.2	112
104	.....do.	.....do.	<.11	.93	<.61	.62	3.8	71
7	Arlington	Lower Mystic Lake	<.11	22	<.61	12	34	88
16	Somerville	Upper Mystic River	<.11	28	<.61	13	36	85
23	Medford	.....do.	<.11	25	<.61	14	35	52
29	.....do.	.....do.	<.11	20	<.61	7.5	25	105
55	Somerville	Lower Mystic River	.46	2.9	<.61	4.8	7.9	112
66	Boston	.....do.	<.11	.67	<.61	.50	1.6	71
70	Chelsea	Island End River	19	17	5.1	54	56	105
100	.....do.	Chelsea Creek	<.11	<.40	<.61	.36	1.8	61
4	Medford	Lower Mystic Lake	<.11	<.40	<.61	<.17	51	52
10	.....do.	Upper Mystic River	<.11	<.40	<.61	<.17	<.05	63
10	.....do.	.....do.	<.11	<.40	<.61	<.17	7.2	77
19	.....do.	.....do.	<.11	<.40	<.61	<.17	7.0	53
19	.....do.	.....do.	<.11	<.40	<.61	<.17	9.0	65
27	.....do.	.....do.	<.11	<.40	<.61	3.8	12	73
27	.....do.	.....do.	<.11	<.40	<.61	4.8	12	94
28	.....do.	.....do.	<.11	<.40	<.61	<.17	21	92
34	.....do.	.....do.	<.11	18	<.61	<.17	23	44
54	Everett	.....do.	<.11	8.3	95	17	22	88
54	.....do.	.....do.	<.11	13	81	15	21	93
85	Chelsea	Chelsea Creek	<.11	<.40	<.61	<.17	1.3	63

Table 4. Distribution of element concentrations measured in sediment core samples, Mystic River Basin, Massachusetts.

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. D, duplicate; do., ditto; No., number; cm, centimeters; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; --, not analyzed]

Station No.	Town	Water body	Depth (cm)	Calcium (%)	Magnesium (%)	Sodium (%)	Potassium (%)	Phosphorus (%)	Aluminum (%)
105	Arlington	Lower Mystic Lake	00–04	--	--	--	--	--	--
	.....do.	.....do.	04–8.5	0.81	1.1	1.4	0.37	0.28	1.8
	.....do.	.....do.	8.5–12.5	.73	1.0	1.4	.35	.27	1.8
	.....do.	.....do.	12.5–16.5	.71	1.0	1.8	.37	.25	1.9
	.....do.	.....do.	16.5–20.5	.74	1.1	1.8	.40	.24	2.1
	.....do.	.....do.	20.5–24.5	.69	1.0	1.5	.44	.22	2.1
	.....do.	.....do.	24.5–28.5	.68	1.0	1.5	.39	.21	2.1
	.....do.	.....do.	28.5–32.5	.70	1.1	1.4	.47	.19	2.4
	.....do.	.....do.	32.5–36.5	.71	1.1	1.4	.42	.20	2.3
	.....do.	.....do.	36.5–40.5	.72	1.1	1.6	.46	.25	2.5
	.....do.	.....do.	40.5–44.5	.73	1.1	1.8	.45	.23	2.3
	.....do.	.....do.	44.5–48.5	.71	1.0	1.6	.44	.23	2.3
	.....do.	.....do.	48.5–53	.71	.94	1.4	.43	.24	2.5
	.....do.	.....do.	53–57	.78	1.1	1.2	.52	.26	2.9
	.....do.	.....do.	57–61	.83	1.0	1.4	.44	.30	2.9
	.....do.	.....do.	61–65	.79	1.0	1.6	.42	.25	2.7
	.....do.	.....do.	65–69	.87	1.0	1.4	.41	.28	3.0
	.....do.	.....do.	69–73	.87	1.0	1.1	.34	.31	3.1
	.....do.	.....do.	73–77.5	1.2	.92	1.4	.28	.75	6.5
	.....do.	.....do.	77.5–81	.88	1.0	1.3	.31	.41	3.6
	.....do.	.....do.	81–85	1.2	1.0	1.4	.32	1.0	4.9
	.....do.	.....do.	85–89	.81	1.2	1.1	.60	.28	3.1
	.....do.	.....do.	89–93	.74	1.1	1.0	.50	.21	2.7
	.....do.	.....do.	93–97	.79	1.1	1.6	.56	.23	2.8
	.....do.	.....do.	97–101	.73	1.1	1.9	.54	.16	2.5
	.....do.	.....do.	101–106	.63	1.1	1.6	.64	.13	2.7
	.....do.	.....do.	106–111	.58	1.0	1.5	.58	.12	2.6
106	.....do.	Upper Mystic River	00–08	.59	.76	.19	.44	.16	2.2
	.....do.	.....do.	08–12	.55	.71	.18	.44	.15	2.1
	.....do.	.....do.	12–16	.60	.77	.16	.44	.16	2.2
	.....do.	.....do.	16–20	.61	.76	.17	.46	.15	2.3
	.....do.	.....do.	20–24	.58	.79	.17	.47	.15	2.3
	.....do.	.....do.	24–28	.55	1.0	.19	.69	.17	3.0
	.....do.	.....do.	28–32	.51	1.0	.19	.69	.16	2.9
	.....do.	.....do.	32–36	.94	1.0	.20	.68	.18	2.8
	.....do.	.....do.	36–39	.53	.79	.16	.53	.17	2.3
107	Medford	Malden River	00–04	.67	.70	.34	.47	.18	2.3
	.....do.	.....do.	04–08	.66	.66	.30	.45	.16	2.1
	.....do.	.....do.	08–12	.68	.77	.32	.49	.17	2.3
	.....do.	.....do.	12–16	.66	.89	.37	.59	.20	2.7
	.....do.	.....do.	16–19.5	.67	1.0	.40	.53	.22	2.6
	.....do.	.....do.	19.5–23	.65	1.0	.43	.68	.19	3.0
	.....do.	.....do.	23–27	.64	1.0	.44	.52	.21	2.6
	.....do.	.....do.	27–31	.62	.90	.45	.61	.20	2.8
	.....do.	.....do.	31–35	.61	.90	.52	.49	.21	2.5
	.....do.	.....do.	35–39	.63	.85	.51	.55	.20	2.6

Table 4. Distribution of element concentrations measured in sediment core samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. D, duplicate; do., ditto; No., number; cm, centimeters; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; --, not analyzed]

Station No.	Town	Water body	Depth (cm)	Calcium (%)	Magnesium (%)	Sodium (%)	Potassium (%)	Phosphorus (%)	Aluminum (%)
107—Continued									
	Medford	Malden River	39–43	0.60	0.87	0.51	0.46	0.20	2.4
	.....do.	.....do.	43–47	.61	.92	.52	.62	.19	2.8
	.....do.	.....do.	47–51	.58	.94	.61	.54	.20	2.6
	.....do.	.....do.	51–55	.62	1.0	.63	.68	.22	3.1
	.....do.	.....do.	55–59	.58	.91	.59	.55	.24	2.8
	.....do.	.....do.	59–63	.61	1.0	.65	.67	.21	3.0
	.....do.	.....do.	63–67	.59	1.0	.63	.60	.23	2.9
	.....do.	.....do.	67–71	.67	1.1	.76	.74	.24	3.3
	.....do.	.....do.	71–75	.62	1.0	.74	.58	.26	2.8
	.....do.	.....do.	75–78	.65	1.0	.74	.62	.28	2.9
108	.....do.	Upper Mystic River	00–04	.58	1.1	.48	.60	.16	2.8
	.....do.	.....do.	04–08	.70	.84	.47	.53	.17	2.3
	.....do.	.....do.	08–12	.58	1.1	.85	.65	.16	2.8
	.....do.	.....do.	12–16	.58	1.1	.74	.64	.15	2.8
	.....do.	.....do.	16–20	.55	1.1	.68	.64	.15	2.8
	.....do.	.....do.	20–24	.64	1.2	.77	.84	.17	3.3
	.....do.	.....do.	24–28	.58	1.1	.73	.70	.14	3.0
	.....do.	.....do.	28–32	.56	.89	.48	.57	.13	2.5
	.....do.	.....do.	32–36	.56	1.2	.73	.74	.18	3.2
	.....do.	.....do.	36–40	.60	1.2	.73	.80	.20	3.5
	.....do.	.....do.	40–44	.59	1.2	.76	.75	.19	3.3
109	Malden	.....do.	00–04	--	--	--	--	--	--
	.....do.	.....do.	04–08	1.9	.88	.25	.61	.13	2.5
	.....do.	.....do.	08–12	.51	.83	.33	.67	.11	2.6
	.....do.	.....do.	12–16	.77	1.0	.46	.64	.16	2.9
	.....do.	.....do.	16–20	.65	1.1	.59	.78	.15	3.2
	.....do.	.....do.	20–24	.65	1.2	.83	.77	.15	3.2
	.....do.	.....do.	24–28	.63	1.2	.75	.87	.14	3.4
	.....do.	.....do.	28–32	.60	1.2	.71	.77	.16	3.2
	.....do.	.....do.	32–36	.59	1.2	.76	.84	.17	3.5
	.....do.	.....do.	36–40	.59	1.2	.74	.75	.18	3.1
	.....do.	.....do.	40–44	.60	1.2	.79	.89	.18	3.6
	.....do.	.....do.	44–48	.60	1.2	.83	.79	.19	3.3
	.....do.	.....do.	48–52	.61	1.2	.93	.88	.19	3.4
	.....do.	.....do.	52–56	.60	1.2	1.0	.78	.20	3.4
	.....do.	.....do.	56–60	.63	1.2	1.0	.90	.22	3.6
	.....do.	.....do.	60–64	.58	1.2	.94	.77	.21	3.4
	.....do.	.....do.	64–68	.70	1.1	.86	.88	.21	3.6
	.....do.	.....do.	68–72	.68	1.1	1.0	.78	.20	3.3
	.....do.	.....do.	72–76	.64	1.2	1.2	.92	.23	3.8
	.....do.	.....do.	76–80	.62	1.2	1.1	.77	.22	3.3
	.....do.	.....do.	80–84	.63	1.2	1.1	.90	.24	3.7
	.....do.	.....do.	84–88	.62	1.2	1.1	.80	.25	3.5
	.....do.	.....do.	88–92	.64	1.2	1.2	1.0	.27	4.2
	.....do.	.....do.	92–96	.67	1.3	1.2	1.0	.28	4.0

Table 4. Distribution of element concentrations measured in sediment core samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. D, duplicate; do., ditto; No., number; cm, centimeters; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; --, not analyzed]

Station No.	Town	Water body	Depth (cm)	Calcium (%)	Magnesium (%)	Sodium (%)	Potassium (%)	Phosphorus (%)	Aluminum (%)
110	Somerville	Lower Mystic River	00–04	2.6	1.0	2.3	0.62	0.91	2.3
	.....do.	.....do.	04–08	.72	1.0	1.9	.61	.19	2.3
	.....do.	.....do.	08–12	.43	.84	1.3	.49	.14	2.1
	.....do.	.....do.	12–16	.40	.79	1.3	.44	.15	2.5
	.....do.	.....do.	16–20	.56	.82	2.3	.51	.17	3.6
	.....do.	.....do.	20–24	.47	.78	2.9	.45	.19	3.4
	.....do.	.....do.	24–28	.89	1.5	6.7	.62	.57	3.1
	.....do.	.....do.	28–32	.67	1.5	6.1	.57	.38	2.6
	.....do.	.....do.	32–36	1.1	1.7	7.9	.62	.82	2.8
	.....do.	.....do.	36–40	1.1	1.5	6.2	.56	.75	2.9
	.....do.	.....do.	40–44	.75	1.4	6.8	.61	.47	3.0
	.....do.	.....do.	44–48	.56	.89	4.3	.52	.32	4.2
	.....do.	.....do.	48–52	.53	.90	5.0	.51	.35	4.3
111	Boston	.....do.	00–04	.64	1.3	3.8	.72	.16	2.2
	.....do.	.....do.	04–08	.66	1.3	3.2	.77	.19	2.5
	.....do.	.....do.	08–12	.59	1.2	2.5	.78	.17	2.6
	.....do.	.....do.	12–16	.49	1.1	2.3	.67	.14	2.4
	.....do.	.....do.	16–20	.47	1.0	1.9	.65	.21	2.5
	.....do.	.....do.	20–24	.50	1.0	1.8	.67	.19	2.6
	.....do.	.....do.	24–28	.51	1.1	1.9	.76	.15	2.7
	.....do.	.....do.	28–32	.50	1.1	1.8	.78	.14	2.7
	.....do.	.....do.	32–36	.49	1.1	1.7	.75	.15	2.6
	.....do.	.....do.	36–40	.48	1.1	1.7	.73	.15	2.5
112	Everett	Island End River	00–04	.60	1.0	2.4	.60	.10	1.8
	.....do.	.....do.	04–08	.61	.87	1.7	.52	.10	1.7
	.....do.	.....do.	08–12	.48	.82	1.5	.50	.09	1.7
	.....do.	.....do.	12–16	.60	1.0	1.6	.60	.13	2.0
	.....do.	.....do.	16–20	.57	1.0	1.6	.62	.12	2.0
	.....do.	.....do.	20–24	.48	.88	1.5	.54	.10	1.8
	.....do.	.....do.	24–28	.48	.83	1.4	.52	.09	1.7
	.....do.	.....do.	28–32	.46	.77	1.3	.47	.09	1.6
	.....do.	.....do.	32–36	.50	.81	1.5	.48	.09	1.6
	.....do.	.....do.	36–40	.44	.71	1.2	.42	.09	1.5
	.....do.	.....do.	40–44	.46	.69	1.2	.40	.10	1.4
	.....do.	.....do.	44–48	.41	.67	1.1	.39	.09	1.4
105-D	Arlington	Lower Mystic Lake	12.5–16.5	.72	1.0	1.8	.38	.24	1.9
106-D	.....do.	Upper Mystic River	08–12	.54	.72	.18	.43	.15	2.0
	.....do.	.....do.	53–57	.79	1.1	1.2	.51	.26	3.0
	.....do.	.....do.	101–106	.63	1.1	1.6	.62	.12	2.6
107-D	Medford	Malden River	08–12	.71	.79	.34	.54	.18	2.5
	.....do.	.....do.	47–51	.62	1.0	.62	.56	.20	2.7
108-D	.....do.	Upper Mystic River	04–08	.75	.82	.44	.49	.20	2.2
109-D	Malden	.....do.	08–12	.52	.86	.34	.71	.12	2.7
	.....do.	.....do.	52–56	.61	1.2	1.0	.81	.20	3.5
111-D	Boston	Lower Mystic Lake	00–04	.66	1.3	3.7	.77	.16	2.4
	.....do.	.....do.	08–12	.45	.85	1.3	.51	.14	2.2
112-D	Everett	Island End River	00–04	.59	1.0	2.4	.60	.10	1.9
Blank	--	--	--	<.01	<.01	<.01	<.01	<.01	<.01

Table 4. Distribution of element concentrations measured in sediment core samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. D, duplicate; do., ditto; No., number; cm, centimeters; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; --, not analyzed

Station No.	Town	Water body	Depth (cm)	Antimony (ppm)	Arsenic (ppm)	Barium (ppm)	Beryllium (ppm)	Bismuth (ppm)	Cadmium (ppm)
105	Arlington	Lower Mystic Lake	00–04	--	--	--	--	<5	--
	.....do.	.....do.	04–8.5	<5	110	270	0.8	<5	5
	.....do.	.....do.	8.5–12.5	<5	73	190	.9	<5	6
	.....do.	.....do.	12.5–16.5	<5	56	150	1.0	<5	6
	.....do.	.....do.	16.5–20.5	<5	55	130	1.1	<5	7
	.....do.	.....do.	20.5–24.5	<5	50	120	1.0	<5	7
	.....do.	.....do.	24.5–28.5	<5	50	100	1.1	<5	7
	.....do.	.....do.	28.5–32.5	<5	44	110	1.1	<5	6
	.....do.	.....do.	32.5–36.5	<5	44	110	1.1	<5	7
	.....do.	.....do.	36.5–40.5	<5	51	130	1.3	<5	9
	.....do.	.....do.	40.5–44.5	<5	49	130	1.2	<5	8
	.....do.	.....do.	44.5–48.5	<5	48	130	1.2	<5	7
	.....do.	.....do.	48.5–53	<5	46	130	1.3	<5	5
	.....do.	.....do.	53–57	<5	70	150	1.4	<5	5
	.....do.	.....do.	57–61	<5	57	180	1.7	<5	7
	.....do.	.....do.	61–65	<5	150	150	1.6	<5	9
	.....do.	.....do.	65–69	<5	140	130	1.7	<5	9
	.....do.	.....do.	69–73	<5	160	110	1.8	<5	8
	.....do.	.....do.	73–77.5	10	130	90	3.7	<5	5
	.....do.	.....do.	77.5–81	6	310	90	2.8	<5	16
	.....do.	.....do.	81–85	18	250	180	3.2	<5	42
	.....do.	.....do.	85–89	19	170	110	1.7	<5	46
	.....do.	.....do.	89–93	<5	100	86	1.4	<5	22
	.....do.	.....do.	93–97	<5	98	85	1.3	<5	16
	.....do.	.....do.	97–101	<5	43	68	1.1	<5	5
	.....do.	.....do.	101–106	<5	22	71	1.2	<5	2
	.....do.	.....do.	106–111	<5	17	64	1.1	<5	2
106	.....do.	Upper Mystic River	00–08	5	24	150	1.2	<5	5
	.....do.	.....do.	08–12	6	23	150	1.1	<5	5
	.....do.	.....do.	12–16	<5	25	160	1.2	<5	5
	.....do.	.....do.	16–20	5	25	160	1.2	<5	5
	.....do.	.....do.	20–24	<5	30	150	1.2	<5	5
	.....do.	.....do.	24–28	<5	51	180	1.4	<5	4
	.....do.	.....do.	28–32	<5	48	140	1.3	<5	3
	.....do.	.....do.	32–36	<5	49	140	1.3	<5	3
	.....do.	.....do.	36–39	7	59	160	1.2	<5	5
107	Medford	Malden River	00–04	19	15	180	1.2	<5	5
	.....do.	.....do.	04–08	22	14	170	1.1	<5	5
	.....do.	.....do.	08–12	14	17	180	1.2	<5	5
	.....do.	.....do.	12–16	9	22	170	1.3	<5	6
	.....do.	.....do.	16–19.5	6	23	160	1.3	<5	6
	.....do.	.....do.	19.5–23	7	24	170	1.3	<5	6
	.....do.	.....do.	23–27	5	24	160	1.3	<5	7
	.....do.	.....do.	27–31	9	21	180	1.3	<5	6
	.....do.	.....do.	31–35	6	23	170	1.2	<5	7
	.....do.	.....do.	35–39	11	19	180	1.2	<5	7

Table 4. Distribution of element concentrations measured in sediment core samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. D, duplicate; do., ditto; No., number; cm, centimeters; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; --, not analyzed

Station No.	Town	Water body	Depth (cm)	Antimony (ppm)	Arsenic (ppm)	Barium (ppm)	Beryllium (ppm)	Bismuth (ppm)	Cadmium (ppm)
107—Continued									
	Medford	Malden River	39–43	5	21	170	1.1	<5	7
	.....do.	.....do.	43–47	8	19	180	1.3	<5	7
	.....do.	.....do.	47–51	<5	24	160	1.2	<5	7
	.....do.	.....do.	51–55	8	29	170	1.3	<5	7
	.....do.	.....do.	55–59	<5	28	130	1.1	<5	7
	.....do.	.....do.	59–63	8	27	150	1.1	<5	7
	.....do.	.....do.	63–67	5	27	130	1.1	<5	7
	.....do.	.....do.	67–71	9	28	170	1.3	<5	8
	.....do.	.....do.	71–75	<5	26	170	1.1	<5	11
	.....do.	.....do.	75–78	6	26	190	1.1	<5	9
108	.....do.	Upper Mystic River	00–04	<5	29	120	1.4	<5	5
	.....do.	.....do.	04–08	6	25	120	1.1	<5	4
	.....do.	.....do.	08–12	<5	34	120	1.4	<5	5
	.....do.	.....do.	12–16	<5	33	120	1.4	<5	5
	.....do.	.....do.	16–20	<5	30	110	1.4	<5	5
	.....do.	.....do.	20–24	<5	28	140	1.6	<5	6
	.....do.	.....do.	24–28	<5	30	110	1.4	<5	6
	.....do.	.....do.	28–32	<5	38	98	1.1	<5	5
	.....do.	.....do.	32–36	<5	51	130	1.5	<5	9
	.....do.	.....do.	36–40	<5	50	150	1.5	<5	10
	.....do.	.....do.	40–44	<5	49	150	1.5	<5	10
109	Malden	.....do.	00–04	--	--	--	--	--	--
	.....do.	.....do.	04–08	15	22	130	1.2	<5	4
	.....do.	.....do.	08–12	13	21	130	1.2	<5	3
	.....do.	.....do.	12–16	6	30	150	1.3	<5	5
	.....do.	.....do.	16–20	8	29	170	1.5	<5	5
	.....do.	.....do.	20–24	<5	25	160	1.4	<5	5
	.....do.	.....do.	24–28	7	23	170	1.5	<5	5
	.....do.	.....do.	28–32	<5	26	150	1.4	<5	5
	.....do.	.....do.	32–36	5	30	170	1.5	<5	6
	.....do.	.....do.	36–40	<5	31	150	1.4	<5	5
	.....do.	.....do.	40–44	<5	33	170	1.6	<5	5
	.....do.	.....do.	44–48	<5	30	160	1.5	<5	6
	.....do.	.....do.	48–52	<5	30	160	1.5	<5	6
	.....do.	.....do.	52–56	<5	34	140	1.4	<5	6
	.....do.	.....do.	56–60	5	35	170	1.6	<5	6
	.....do.	.....do.	60–64	<5	42	150	1.4	<5	6
	.....do.	.....do.	64–68	7	40	180	1.5	<5	7
	.....do.	.....do.	68–72	<5	44	160	1.5	<5	7
	.....do.	.....do.	72–76	6	49	200	1.6	5	8
	.....do.	.....do.	76–80	<5	47	170	1.4	<5	9
	.....do.	.....do.	80–84	6	53	210	1.5	<5	11
	.....do.	.....do.	84–88	<5	50	200	1.5	<5	16
	.....do.	.....do.	88–92	5	52	240	1.8	<5	19
	.....do.	.....do.	92–96	5	59	230	1.7	<5	15

Table 4. Distribution of element concentrations measured in sediment core samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. D, duplicate; do., ditto; No., number; cm, centimeters; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; --, not analyzed

Station No.	Town	Water body	Depth (cm)	Antimony (ppm)	Arsenic (ppm)	Barium (ppm)	Beryllium (ppm)	Bismuth (ppm)	Cadmium (ppm)
110	Somerville	Lower Mystic River	00–04	<5	34	97	0.7	<5	2
	.....do.	.....do.	04–08	<5	34	96	.8	<5	2
	.....do.	.....do.	08–12	<5	36	88	.6	<5	2
	.....do.	.....do.	12–16	<5	38	72	.6	<5	2
	.....do.	.....do.	16–20	<5	56	72	.5	<5	3
	.....do.	.....do.	20–24	<5	98	67	<.5	<5	2
	.....do.	.....do.	24–28	<5	100	64	.6	<5	4
	.....do.	.....do.	28–32	<5	92	66	.5	5	3
	.....do.	.....do.	32–36	<5	77	69	.6	<5	3
	.....do.	.....do.	36–40	<5	83	79	.6	6	3
	.....do.	.....do.	40–44	<5	77	76	.5	<5	3
	.....do.	.....do.	44–48	<5	41	71	<.5	<5	2
	.....do.	.....do.	48–52	<5	26	64	<.5	<5	2
111	Boston	.....do.	00–04	<5	30	98	.8	<5	2
	.....do.	.....do.	04–08	<5	31	110	.9	<5	2
	.....do.	.....do.	08–12	<5	34	110	1.0	<5	2
	.....do.	.....do.	12–16	<5	36	100	.9	<5	3
	.....do.	.....do.	16–20	<5	39	100	.8	<5	3
	.....do.	.....do.	20–24	<5	39	110	.9	<5	3
	.....do.	.....do.	24–28	<5	42	130	1.0	<5	3
	.....do.	.....do.	28–32	<5	36	130	1.1	<5	3
	.....do.	.....do.	32–36	<5	35	120	1.0	<5	4
	.....do.	.....do.	36–40	<5	36	120	.9	<5	4
112	Everett	Island End River	00–04	<5	24	110	.7	<5	2
	.....do.	.....do.	04–08	<5	21	120	.7	<5	2
	.....do.	.....do.	08–12	<5	18	100	.6	<5	2
	.....do.	.....do.	12–16	<5	19	120	.8	<5	3
	.....do.	.....do.	16–20	<5	20	150	.8	<5	3
	.....do.	.....do.	20–24	<5	20	130	.7	<5	3
	.....do.	.....do.	24–28	<5	18	120	.7	<5	13
	.....do.	.....do.	28–32	<5	17	120	.6	<5	2
	.....do.	.....do.	32–36	<5	18	120	.7	<5	2
	.....do.	.....do.	36–40	<5	21	180	.6	<5	5
	.....do.	.....do.	40–44	<5	22	210	.6	<5	6
	.....do.	.....do.	44–48	<5	18	160	.6	<5	4
105-D	Arlington	Lower Mystic Lake	12.5–16.5	<5	57	150	1.0	<5	6
106-D	.....do.	Upper Mystic Lake	08–12	6	23	140	1.1	<5	5
	.....do.	.....do.	53–57	<5	68	150	1.5	<5	5
	.....do.	.....do.	101–106	<5	20	68	1.1	<5	2
107-D	Medford	Malden River	08–12	16	18	180	1.1	<5	5
	.....do.	.....do.	47–51	<5	25	160	1.1	<5	7
108-D	.....do.	Upper Mystic Lake	04–08	6	23	110	1.1	<5	4
109-D	Malden	.....do.	08–12	8	20	140	1.2	<5	4
	.....do.	.....do.	52–56	<5	34	150	1.5	<5	6
111-D	Boston	Lower Mystic Lake	00–04	<5	31	110	.9	<5	2
	.....do.	.....do.	08–12	<5	33	89	.7	<5	2
112-D	Everett	Island End River	00–04	<5	25	110	.7	<5	2
Blank	--	--	--	<5	<3	<1	<.5	<5	<1

Table 4. Distribution of element concentrations measured in sediment core samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. D, duplicate; do., ditto; No., number; cm, centimeters; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; --, not analyzed]

Station No.	Town	Water body	Depth (cm)	Chromium (ppm)	Cobalt (ppm)	Copper (ppm)	Iron (%)	Lanthanum (ppm)	Lead (ppm)	Lithium (ppm)
105	Arlington	Lower Mystic Lake	00–04	--	--	--	--	--	--	--
	.....do.	.....do.	04–8.5	200	24	250	8.2	20	450	26
	.....do.	.....do.	8.5–12.5	200	23	280	6.8	19	520	25
	.....do.	.....do.	12.5–16.5	360	23	310	5.9	20	580	25
	.....do.	.....do.	16.5–20.5	360	22	310	5.5	21	740	28
	.....do.	.....do.	20.5–24.5	480	21	320	5.4	23	910	32
	.....do.	.....do.	24.5–28.5	330	22	330	5.0	22	1,200	30
	.....do.	.....do.	28.5–32.5	380	23	290	5.4	24	1,400	36
	.....do.	.....do.	32.5–36.5	310	24	300	5.0	23	1,600	34
	.....do.	.....do.	36.5–40.5	400	31	350	5.4	24	1,500	37
	.....do.	.....do.	40.5–44.5	420	24	340	5.3	23	1,300	37
	.....do.	.....do.	44.5–48.5	560	21	240	5.1	21	1,200	33
	.....do.	.....do.	48.5–53	430	20	210	4.8	21	910	34
	.....do.	.....do.	53–57	360	25	260	5.3	26	850	40
	.....do.	.....do.	57–61	340	27	300	5.0	24	940	37
	.....do.	.....do.	61–65	360	39	390	5.0	25	980	33
	.....do.	.....do.	65–69	390	62	480	5.2	27	790	38
	.....do.	.....do.	69–73	360	48	630	5.2	30	580	38
	.....do.	.....do.	73–77.5	1,100	18	4,200	5.3	51	1,300	27
	.....do.	.....do.	77.5–81	610	78	1,700	6.3	50	700	37
	.....do.	.....do.	81–85	1,800	32	4,200	8.6	51	1,700	31
	.....do.	.....do.	85–89	1,900	44	1,100	4.8	35	380	45
	.....do.	.....do.	89–93	650	24	590	4.4	26	300	37
	.....do.	.....do.	93–97	350	24	500	4.3	25	320	36
	.....do.	.....do.	97–101	220	15	260	3.9	22	270	34
	.....do.	.....do.	101–106	160	15	150	4.4	25	190	41
	.....do.	.....do.	106–111	310	15	130	4.6	24	160	39
106	.....do.	Upper Mystic River	00–08	430	15	240	3.9	22	400	37
	.....do.	.....do.	08–12	500	15	220	3.8	22	370	35
	.....do.	.....do.	12–16	430	16	260	3.9	24	410	37
	.....do.	.....do.	16–20	440	16	250	3.9	23	400	37
	.....do.	.....do.	20–24	410	15	230	3.9	23	420	39
	.....do.	.....do.	24–28	310	15	200	4.4	25	350	50
	.....do.	.....do.	28–32	250	14	160	4.2	24	270	49
	.....do.	.....do.	32–36	250	14	180	4.3	23	300	48
	.....do.	.....do.	36–39	650	12	210	4.5	21	380	40
107	Medford	Malden River	00–04	1,800	17	250	4.9	24	580	27
	.....do.	.....do.	04–08	2,100	17	230	4.9	22	550	25
	.....do.	.....do.	08–12	1,500	16	250	4.9	24	580	31
	.....do.	.....do.	12–16	960	16	270	5.2	25	600	39
	.....do.	.....do.	16–19.5	650	16	270	5.3	26	640	41
	.....do.	.....do.	19.5–23	810	17	290	5.6	26	640	45
	.....do.	.....do.	23–27	620	17	310	5.2	25	740	41
	.....do.	.....do.	27–31	1,000	17	280	5.1	25	700	39
	.....do.	.....do.	31–35	570	18	280	4.7	23	810	37
	.....do.	.....do.	35–39	1,100	18	270	4.7	25	780	35

Table 4. Distribution of element concentrations measured in sediment core samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. D, duplicate; do., ditto; No., number; cm, centimeters; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; --, not analyzed]

Station No.	Town	Water body	Depth (cm)	Chromium (ppm)	Cobalt (ppm)	Copper (ppm)	Iron (%)	Lanthanum (ppm)	Lead (ppm)	Lithium (ppm)
107—Continued										
	Medford	Malden River	39–43	580	18	260	4.1	24	800	36
	.....do.	.....do.	43–47	840	17	260	4.6	25	820	39
	.....do.	.....do.	47–51	500	17	280	4.8	24	810	41
	.....do.	.....do.	51–55	860	18	300	4.9	25	850	47
	.....do.	.....do.	55–59	580	19	260	4.4	23	790	47
	.....do.	.....do.	59–63	840	19	270	4.8	25	820	47
	.....do.	.....do.	63–67	530	17	270	4.6	25	820	49
	.....do.	.....do.	67–71	940	18	290	5.3	27	1,000	51
	.....do.	.....do.	71–75	460	17	310	4.6	24	1,100	46
	.....do.	.....do.	75–78	670	17	310	4.6	25	1,200	44
108	.....do.	Upper Mystic River	00–04	360	16	270	5.5	24	440	49
	.....do.	.....do.	04–08	600	14	210	4.7	20	330	38
	.....do.	.....do.	08–12	220	16	280	5.6	23	440	51
	.....do.	.....do.	12–16	230	16	280	5.6	24	440	49
	.....do.	.....do.	16–20	220	17	280	5.6	23	440	50
	.....do.	.....do.	20–24	400	18	300	6.0	25	480	56
	.....do.	.....do.	24–28	230	19	290	5.6	24	500	54
	.....do.	.....do.	28–32	380	16	200	4.2	20	400	45
	.....do.	.....do.	32–36	280	25	330	5.9	24	810	56
	.....do.	.....do.	36–40	480	27	340	6.2	24	770	58
	.....do.	.....do.	40–44	320	24	340	5.4	25	800	55
109	Malden	.....do.	00–04	--	--	--	--	--	--	--
	.....do.	.....do.	04–08	680	15	220	4.8	21	390	38
	.....do.	.....do.	08–12	920	14	200	4.8	20	360	35
	.....do.	.....do.	12–16	310	17	260	5.4	24	490	45
	.....do.	.....do.	16–20	500	18	270	6.0	26	500	48
	.....do.	.....do.	20–24	260	18	270	5.9	26	520	54
	.....do.	.....do.	24–28	570	18	260	5.9	25	520	51
	.....do.	.....do.	28–32	270	18	260	5.6	25	550	52
	.....do.	.....do.	32–36	440	19	260	5.8	26	560	54
	.....do.	.....do.	36–40	300	19	260	5.7	25	550	53
	.....do.	.....do.	40–44	410	19	270	6.0	27	540	56
	.....do.	.....do.	44–48	290	19	310	5.6	26	600	55
	.....do.	.....do.	48–52	390	20	280	5.7	26	640	56
	.....do.	.....do.	52–56	320	23	290	5.8	25	780	57
	.....do.	.....do.	56–60	600	31	280	5.9	26	840	57
	.....do.	.....do.	60–64	320	29	270	5.6	25	880	55
	.....do.	.....do.	64–68	730	23	260	5.7	25	730	51
	.....do.	.....do.	68–72	340	26	260	5.7	24	760	50
	.....do.	.....do.	72–76	570	27	280	6.2	25	830	54
	.....do.	.....do.	76–80	340	25	290	5.9	24	830	50
	.....do.	.....do.	80–84	580	27	310	6.0	25	870	54
	.....do.	.....do.	84–88	410	22	350	5.2	25	870	53
	.....do.	.....do.	88–92	630	22	400	5.6	28	910	55
	.....do.	.....do.	92–96	600	24	420	5.8	27	860	56

Table 4. Distribution of element concentrations measured in sediment core samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. D, duplicate; do., ditto; No., number; cm, centimeters; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; --, not analyzed]

Station No.	Town	Water body	Depth (cm)	Chromium (ppm)	Cobalt (ppm)	Copper (ppm)	Iron (%)	Lanthanum (ppm)	Lead (ppm)	Lithium (ppm)
110	Somerville	Lower Mystic River	00–04	97	12	250	4.4	18	240	34
	.....do.	.....do.	04–08	110	13	260	4.6	21	270	37
	.....do.	.....do.	08–12	90	13	250	4.3	18	240	33
	.....do.	.....do.	12–16	92	13	250	4.4	18	260	33
	.....do.	.....do.	16–20	100	13	300	4.9	16	290	34
	.....do.	.....do.	20–24	92	17	370	6.3	12	300	24
	.....do.	.....do.	24–28	140	15	540	9.5	12	560	16
	.....do.	.....do.	28–32	120	22	560	11	12	550	14
	.....do.	.....do.	32–36	140	11	500	9.9	13	530	13
	.....do.	.....do.	36–40	150	18	560	11	12	530	13
	.....do.	.....do.	40–44	130	18	500	10	12	500	15
	.....do.	.....do.	44–48	97	11	290	4.8	14	280	21
	.....do.	.....do.	48–52	83	8	240	3.9	13	260	19
111	Boston	.....do.	00–04	120	11	200	4.0	21	250	37
	.....do.	.....do.	04–08	140	12	210	4.5	23	260	41
	.....do.	.....do.	08–12	130	12	210	4.5	24	260	42
	.....do.	.....do.	12–16	130	12	220	4.3	23	300	39
	.....do.	.....do.	16–20	130	11	250	4.0	21	290	40
	.....do.	.....do.	20–24	140	11	260	4.3	22	310	42
	.....do.	.....do.	24–28	150	12	300	4.7	24	340	44
	.....do.	.....do.	28–32	150	12	310	4.9	24	340	44
	.....do.	.....do.	32–36	160	12	340	4.6	23	360	43
	.....do.	.....do.	36–40	150	12	340	4.4	23	360	41
112	Everett	Island End River	00–04	98	9	170	3.3	19	260	30
	.....do.	.....do.	04–08	100	9	190	3.3	19	310	28
	.....do.	.....do.	08–12	110	9	160	3.1	19	240	27
	.....do.	.....do.	12–16	150	10	190	3.6	22	290	33
	.....do.	.....do.	16–20	130	10	230	3.7	21	400	33
	.....do.	.....do.	20–24	100	9	210	3.3	20	380	30
	.....do.	.....do.	24–28	96	9	200	3.2	19	380	29
	.....do.	.....do.	28–32	90	8	190	3.0	19	370	28
	.....do.	.....do.	32–36	90	8	190	3.2	19	360	28
	.....do.	.....do.	36–40	88	8	260	2.9	17	750	25
	.....do.	.....do.	40–44	88	8	280	3.0	16	1,000	25
	.....do.	.....do.	44–48	78	8	230	2.9	16	700	24
105-D	Arlington	Lower Mystic Lake	12.5–16.5	350	23	310	6.0	20	580	25
106-D	.....do.	Upper Mystic River	08–12	480	15	220	3.9	20	370	34
	.....do.	.....do.	53–57	360	25	270	5.3	26	870	41
	.....do.	.....do.	101–106	150	15	140	4.3	24	180	41
107-D	Medford	Malden River	08–12	1,600	16	250	5.1	24	530	32
	.....do.	.....do.	47–51	530	16	290	4.8	24	720	43
108-D	.....do.	Upper Mystic River	04–08	560	13	200	4.4	19	310	37
109-D	Malden	.....do.	08–12	900	14	210	4.9	20	370	38
	.....do.	.....do.	52–56	320	24	290	5.9	25	790	58
111-D	Boston	Lower Mystic River	00–04	120	11	200	4.1	24	250	39
	.....do.	.....do.	08–12	100	13	240	4.5	20	240	33
112-D	Everett	Island End River	00–04	100	9	170	3.3	19	270	31
Blank	--	--	--	--	<1	<.5	<.01	<.5	<2	<1

Table 4. Distribution of element concentrations measured in sediment core samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. D, duplicate; do., ditto; No., number; cm, centimeters; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; --, not analyzed]

Station No.	Town	Water body	Depth (cm)	Manganese (ppm)	Molybdenum (ppm)	Mercury (ppm)	Nickel (ppm)	Scandium (ppm)	Silver (ppm)	Strontium (ppm)
105	Arlington	Lower Mystic Lake	00–04	--	--	--	--	--	--	--
	.....do.	.....do.	04–8.5	1,100	4	--	47	2.8	0.9	130
	.....do.	.....do.	8.5–12.5	820	5	--	47	3.0	.8	110
	.....do.	.....do.	12.5–16.5	730	6	--	46	3.2	1.1	110
	.....do.	.....do.	16.5–20.5	630	4	--	48	3.6	1.0	110
	.....do.	.....do.	20.5–24.5	540	6	--	53	3.8	1.3	96
	.....do.	.....do.	24.5–28.5	410	4	--	46	3.8	1.4	91
	.....do.	.....do.	28.5–32.5	400	5	--	52	4.2	1.5	92
	.....do.	.....do.	32.5–36.5	360	5	--	48	4.0	1.5	92
	.....do.	.....do.	36.5–40.5	370	5	--	53	4.3	1.9	110
	.....do.	.....do.	40.5–44.5	370	15	--	57	4.4	8.3	98
	.....do.	.....do.	44.5–48.5	370	32	--	57	4.3	4.4	100
	.....do.	.....do.	48.5–53	350	12	--	48	4.5	1.9	100
	.....do.	.....do.	53–57	380	8	--	47	5.7	1.1	110
	.....do.	.....do.	57–61	310	13	--	47	5.4	1.2	130
	.....do.	.....do.	61–65	420	17	--	46	5.1	1.1	120
	.....do.	.....do.	65–69	400	9	--	42	5.5	.9	120
	.....do.	.....do.	69–73	350	5	--	37	5.2	.7	120
	.....do.	.....do.	73–77.5	210	7	--	32	4.2	.3	280
	.....do.	.....do.	77.5–81	380	5	--	37	4.9	.5	150
	.....do.	.....do.	81–85	340	7	--	32	4.5	.3	330
	.....do.	.....do.	85–89	490	12	--	38	6.2	.7	130
	.....do.	.....do.	89–93	450	13	--	39	6.2	.4	89
	.....do.	.....do.	93–97	390	17	--	35	5.5	1.3	110
	.....do.	.....do.	97–101	300	25	--	30	4.9	.7	87
	.....do.	.....do.	101–106	380	27	--	33	5.9	.7	65
	.....do.	.....do.	106–111	370	27	--	35	5.3	.5	63
106	.....do.	Upper Mystic River	00–08	500	6	--	57	5.0	1.7	52
	.....do.	.....do.	08–12	460	6	--	56	4.8	1.5	48
	.....do.	.....do.	12–16	480	5	--	59	5.2	1.7	51
	.....do.	.....do.	16–20	470	5	--	58	5.1	1.5	53
	.....do.	.....do.	20–24	470	6	--	58	5.2	1.5	56
	.....do.	.....do.	24–28	520	5	--	52	6.6	1.2	69
	.....do.	.....do.	28–32	480	5	--	42	6.4	1.0	62
	.....do.	.....do.	32–36	450	6	--	41	6.0	1.2	90
	.....do.	.....do.	36–39	430	9	--	50	5.2	1.2	73
107	Medford	Malden River	00–04	510	17	--	110	4.5	.9	65
	.....do.	.....do.	04–08	500	19	--	120	4.3	1.0	64
	.....do.	.....do.	08–12	490	16	--	97	4.7	.9	69
	.....do.	.....do.	12–16	520	10	--	78	5.5	.8	77
	.....do.	.....do.	16–19.5	530	9	--	73	5.3	.9	81
	.....do.	.....do.	19.5–23	550	11	--	79	5.9	1.1	79
	.....do.	.....do.	23–27	530	9	--	75	5.3	1.1	80
	.....do.	.....do.	27–31	530	10	--	83	5.7	1.2	79
	.....do.	.....do.	31–35	450	9	--	78	4.9	1.1	78
	.....do.	.....do.	35–39	460	11	--	95	5.2	1.2	76

Table 4. Distribution of element concentrations measured in sediment core samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. D, duplicate; do., ditto; No., number; cm, centimeters; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; --, not analyzed]

Station No.	Town	Water body	Depth (cm)	Manganese (ppm)	Molybdenum (ppm)	Mercury (ppm)	Nickel (ppm)	Scandium (ppm)	Silver (ppm)	Strontium (ppm)
107—Continued										
	Medford	Malden River	39–43	400	8	--	82	4.8	1.3	72
	.....do.	.....do.	43–47	430	10	--	86	5.7	1.2	77
	.....do.	.....do.	47–51	420	10	--	80	5.3	1.8	80
	.....do.	.....do.	51–55	460	12	--	86	6.0	1.4	88
	.....do.	.....do.	55–59	400	10	--	86	5.0	1.4	81
	.....do.	.....do.	59–63	420	13	--	82	5.7	1.5	82
	.....do.	.....do.	63–67	410	10	--	74	5.5	1.8	80
	.....do.	.....do.	67–71	480	13	--	85	6.2	1.7	93
	.....do.	.....do.	71–75	430	10	--	75	5.0	2.4	90
	.....do.	.....do.	75–78	440	10	--	79	5.0	2.4	96
108	.....do.	Upper Mystic River	00–04	490	6	--	57	5.9	1.6	73
	.....do.	.....do.	04–08	480	7	--	57	4.8	1.1	78
	.....do.	.....do.	08–12	570	7	--	56	5.8	1.6	81
	.....do.	.....do.	12–16	560	6	--	56	5.7	1.5	79
	.....do.	.....do.	16–20	560	10	--	56	5.7	1.7	77
	.....do.	.....do.	20–24	560	13	--	68	6.8	1.9	90
	.....do.	.....do.	24–28	560	9	--	66	6.1	1.9	82
	.....do.	.....do.	28–32	580	6	--	59	5.2	1.2	70
	.....do.	.....do.	32–36	610	6	--	86	6.2	2.0	98
	.....do.	.....do.	36–40	540	6	--	100	6.4	2.1	110
	.....do.	.....do.	40–44	480	5	--	89	6.4	2.0	110
109	Malden	.....do.	00–04	--	--	--	--	--	--	--
	.....do.	.....do.	04–08	470	7	--	61	5.1	1.2	68
	.....do.	.....do.	08–12	460	8	--	71	5.0	.9	60
	.....do.	.....do.	12–16	520	5	--	60	5.9	1.4	74
	.....do.	.....do.	16–20	550	8	--	72	6.4	1.3	82
	.....do.	.....do.	20–24	560	10	--	66	6.5	1.6	82
	.....do.	.....do.	24–28	560	9	--	78	6.9	1.7	83
	.....do.	.....do.	28–32	610	4	--	68	6.5	2.0	81
	.....do.	.....do.	32–36	620	6	--	73	6.8	2.0	84
	.....do.	.....do.	36–40	580	4	--	67	6.3	2.0	83
	.....do.	.....do.	40–44	590	7	--	72	7.1	1.9	87
	.....do.	.....do.	44–48	530	7	--	70	6.7	3.1	87
	.....do.	.....do.	48–52	550	10	--	80	6.8	2.1	93
	.....do.	.....do.	52–56	600	9	--	91	6.5	1.9	89
	.....do.	.....do.	56–60	700	9	--	120	7.0	1.8	97
	.....do.	.....do.	60–64	720	6	--	100	6.4	1.8	92
	.....do.	.....do.	64–68	630	8	--	96	6.9	1.6	98
	.....do.	.....do.	68–72	560	5	--	88	6.4	1.6	95
	.....do.	.....do.	72–76	570	6	--	100	7.2	1.8	110
	.....do.	.....do.	76–80	520	4	--	90	6.3	1.9	97
	.....do.	.....do.	80–84	560	5	--	110	7.0	2.1	100
	.....do.	.....do.	84–88	530	4	--	100	6.6	2.3	100
	.....do.	.....do.	88–92	540	5	--	120	7.8	2.8	110
	.....do.	.....do.	92–96	580	4	--	120	7.5	2.9	120

Table 4. Distribution of element concentrations measured in sediment core samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. D, duplicate; do., ditto; No., number; cm, centimeters; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; --, not analyzed]

Station No.	Town	Water body	Depth (cm)	Manganese (ppm)	Molybdenum (ppm)	Mercury (ppm)	Nickel (ppm)	Scandium (ppm)	Silver (ppm)	Strontium (ppm)
110	Somerville	Lower Mystic River	00–04	420	4	--	37	4.8	2.3	180
	.....do.	.....do.	04–08	370	4	--	40	5.0	2.2	78
	.....do.	.....do.	08–12	340	5	--	38	4.4	2.0	57
	.....do.	.....do.	12–16	330	8	--	40	4.0	1.9	70
	.....do.	.....do.	16–20	270	6	--	42	3.7	2.1	100
	.....do.	.....do.	20–24	190	7	--	40	2.9	2.2	110
	.....do.	.....do.	24–28	150	18	--	34	3.9	2.4	270
	.....do.	.....do.	28–32	150	12	--	34	3.3	2.3	180
	.....do.	.....do.	32–36	150	14	--	27	3.8	1.7	380
	.....do.	.....do.	36–40	170	15	--	32	3.8	2.1	350
	.....do.	.....do.	40–44	140	12	--	35	3.3	2.0	220
	.....do.	.....do.	44–48	150	4	--	40	2.8	2.1	160
	.....do.	.....do.	48–52	100	3	--	31	2.3	1.9	170
111	Boston	.....do.	00–04	370	3	--	43	5.1	1.7	75
	.....do.	.....do.	04–08	420	3	--	49	5.9	2.4	73
	.....do.	.....do.	08–12	430	3	--	47	6.1	2.6	66
	.....do.	.....do.	12–16	370	4	--	50	5.5	2.5	66
	.....do.	.....do.	16–20	350	4	--	46	5.2	2.5	84
	.....do.	.....do.	20–24	360	4	--	50	5.4	3.1	83
	.....do.	.....do.	24–28	400	5	--	51	6.0	3.6	73
	.....do.	.....do.	28–32	400	5	--	50	6.0	4.4	70
	.....do.	.....do.	32–36	390	6	--	51	5.9	4.4	65
	.....do.	.....do.	36–40	370	6	--	51	5.7	3.7	68
112	Everett	Island End River	00–04	340	2	--	32	4.5	1.7	65
	.....do.	.....do.	04–08	330	2	--	38	4.3	2.1	63
	.....do.	.....do.	08–12	330	2	--	32	4.2	1.9	53
	.....do.	.....do.	12–16	400	2	--	37	5.2	2.8	59
	.....do.	.....do.	16–20	380	3	--	39	5.1	2.8	61
	.....do.	.....do.	20–24	330	3	--	35	4.5	2.0	56
	.....do.	.....do.	24–28	320	3	--	36	4.3	2.1	53
	.....do.	.....do.	28–32	300	2	--	33	4.1	1.9	52
	.....do.	.....do.	32–36	300	3	--	31	4.1	1.8	56
	.....do.	.....do.	36–40	280	3	--	33	3.7	1.8	57
	.....do.	.....do.	40–44	270	4	--	33	3.5	1.9	62
	.....do.	.....do.	44–48	260	3	--	31	3.4	1.4	54
105-D	Arlington	Lower Mystic Lake	12.5–16.5	730	5	--	45	3.2	1.1	110
106-D	.....do.	Upper Mystic Lake	08–12	460	6	--	56	4.5	1.6	47
	.....do.	.....do.	53–57	390	8	--	47	5.7	1.2	110
	.....do.	.....do.	101–106	380	27	--	32	5.6	.6	64
107-D	Medford	Malden River	08–12	500	18	--	100	4.8	.9	73
	.....do.	.....do.	47–51	430	11	--	78	5.2	1.7	82
108-D	.....do.	Lower Mystic Lake	04–08	470	7	--	53	4.6	1.1	74
109-D	Malden	.....do.	08–12	480	8	--	71	5.2	1.1	61
	.....do.	.....do.	52–56	620	8	--	91	6.7	1.9	91
111-D	Boston	Upper Mystic Lake	00–04	380	3	--	45	5.6	2.1	77
	.....do.	.....do.	08–12	350	5	--	42	4.7	2.1	60
112-D	Everett	Island End River	00–04	340	2	--	33	4.6	1.7	64
Blank	--	--	--	<2	<1	--	<1	<.5	<.2	<0.5

Table 4. Distribution of element concentrations measured in sediment core samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. D, duplicate; do., ditto; No., number; cm, centimeters; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; --, not analyzed]

Station No.	Town	Water body	Depth (cm)	Tin (ppm)	Titanium (%)	Tungsten (ppm)	Vanadium (ppm)	Yttrium (ppm)	Zinc (ppm)	Zirconium (ppm)
105	Arlington	Lower Mystic Lake	00–04	--	--	--	--	--	--	--
	.....do.	.....do.	04–8.5	13	0.11	<10	85	12	1,500	8.5
	.....do.	.....do.	8.5–12.5	<10	.11	<10	81	12	1,700	7.4
	.....do.	.....do.	12.5–16.5	<10	.11	<10	83	13	1,800	8.4
	.....do.	.....do.	16.5–20.5	<10	.12	<10	89	13	1,700	8.9
	.....do.	.....do.	20.5–24.5	11	.13	<10	90	13	1,800	9.8
	.....do.	.....do.	24.5–28.5	11	.13	<10	88	13	1,900	8.9
	.....do.	.....do.	28.5–32.5	11	.15	<10	99	14	1,600	11
	.....do.	.....do.	32.5–36.5	12	.14	<10	98	14	1,900	10
	.....do.	.....do.	36.5–40.5	13	.14	<10	130	15	2,100	14
	.....do.	.....do.	40.5–44.5	21	.14	<10	150	14	1,700	9.6
	.....do.	.....do.	44.5–48.5	20	.15	<10	150	13	1,600	9.9
	.....do.	.....do.	48.5–53	12	.17	<10	120	14	1,300	9.1
	.....do.	.....do.	53–57	20	.19	<10	110	16	1,800	10
	.....do.	.....do.	57–61	22	.19	<10	120	16	2,900	9.7
	.....do.	.....do.	61–65	29	.17	<10	86	16	3,500	10
	.....do.	.....do.	65–69	15	.20	<10	77	19	3,700	9.5
	.....do.	.....do.	69–73	<10	.21	<10	73	20	3,500	8.0
	.....do.	.....do.	73–77.5	12	.13	<10	56	43	3,100	5.9
	.....do.	.....do.	77.5–81	20	.18	<10	69	34	6,900	6.6
	.....do.	.....do.	81–85	15	.16	<10	61	40	9,600	7.2
	.....do.	.....do.	85–89	<10	.19	<10	66	22	>10,000	9.2
	.....do.	.....do.	89–93	<10	.19	<10	62	17	7,200	8.5
	.....do.	.....do.	93–97	14	.16	<10	64	17	6,000	9.3
	.....do.	.....do.	97–101	19	.14	<10	56	14	1,900	9.2
	.....do.	.....do.	101–106	13	.16	11	62	15	760	10
	.....do.	.....do.	106–111	<10	.15	30	55	14	650	8.8
106	.....do.	Upper Mystic River	00–08	17	.12	33	74	14	1,000	14
	.....do.	.....do.	08–12	15	.11	<10	68	14	960	13
	.....do.	.....do.	12–16	17	.12	<10	75	15	1,100	15
	.....do.	.....do.	16–20	17	.12	<10	74	15	1,000	14
	.....do.	.....do.	20–24	19	.13	<10	82	15	980	14
	.....do.	.....do.	24–28	21	.15	<10	120	15	890	15
	.....do.	.....do.	28–32	14	.15	<10	97	14	530	15
	.....do.	.....do.	32–36	14	.14	<10	99	14	520	14
	.....do.	.....do.	36–39	22	.13	<10	91	13	1,100	15
107	Medford	Malden River	00–04	51	.11	<10	77	15	1,300	16
	.....do.	.....do.	04–08	55	.11	<10	76	14	1,200	16
	.....do.	.....do.	08–12	56	.12	<10	84	15	1,100	15
	.....do.	.....do.	12–16	76	.12	<10	93	16	1,100	15
	.....do.	.....do.	16–19.5	78	.12	<10	99	17	1,200	15
	.....do.	.....do.	19.5–23	81	.13	<10	98	16	1,100	16
	.....do.	.....do.	23–27	86	.12	<10	100	16	1,300	14
	.....do.	.....do.	27–31	87	.12	<10	96	16	1,200	15
	.....do.	.....do.	31–35	88	.11	<10	95	15	1,500	13
	.....do.	.....do.	35–39	88	.12	<10	94	15	1,500	16

Table 4. Distribution of element concentrations measured in sediment core samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. D, duplicate; do., ditto; No., number; cm, centimeters; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; --, not analyzed]

Station No.	Town	Water body	Depth (cm)	Tin (ppm)	Titanium (%)	Tungsten (ppm)	Vanadium (ppm)	Yttrium (ppm)	Zinc (ppm)	Zirconium (ppm)
107—Continued										
	Medford	Malden River	39–43	85	0.12	<10	95	15	1,500	13
	.....do.	.....do.	43–47	83	.12	<10	99	15	1,400	14
	.....do.	.....do.	47–51	95	.12	<10	110	15	1,400	13
	.....do.	.....do.	51–55	140	.13	<10	110	16	1,800	13
	.....do.	.....do.	55–59	280	.12	<10	110	15	2,100	12
	.....do.	.....do.	59–63	110	.13	<10	110	15	1,800	14
	.....do.	.....do.	63–67	120	.13	<10	110	15	1,800	13
	.....do.	.....do.	67–71	98	.14	<10	120	16	1,800	14
	.....do.	.....do.	71–75	87	.12	<10	120	15	2,100	11
	.....do.	.....do.	75–78	78	.12	<10	120	15	2,200	11
108	.....do.	Upper Mystic River	00–04	19	.13	<10	100	15	1,000	17
	.....do.	.....do.	04–08	15	.11	<10	81	13	830	15
	.....do.	.....do.	08–12	20	.14	<10	100	15	1,000	15
	.....do.	.....do.	12–16	19	.13	<10	110	15	1,000	16
	.....do.	.....do.	16–20	20	.13	<10	110	15	990	15
	.....do.	.....do.	20–24	24	.14	<10	130	16	1,100	18
	.....do.	.....do.	24–28	25	.14	<10	130	15	1,100	17
	.....do.	.....do.	28–32	18	.12	<10	110	13	1,100	14
	.....do.	.....do.	32–36	34	.14	<10	160	16	2,400	16
	.....do.	.....do.	36–40	38	.14	<10	160	15	2,900	17
	.....do.	.....do.	40–44	40	.14	<10	150	16	3,100	16
109	Malden	.....do.	00–04	--	--	--	--	--	--	--
	.....do.	.....do.	04–08	27	.12	23	81	13	760	16
	.....do.	.....do.	08–12	26	.11	13	76	12	700	18
	.....do.	.....do.	12–16	32	.14	<10	99	15	950	17
	.....do.	.....do.	16–20	31	.14	<10	100	16	940	19
	.....do.	.....do.	20–24	37	.15	<10	110	16	930	18
	.....do.	.....do.	24–28	36	.15	<10	110	16	920	19
	.....do.	.....do.	28–32	38	.15	<10	110	15	980	18
	.....do.	.....do.	32–36	40	.15	<10	110	16	1,000	19
	.....do.	.....do.	36–40	39	.14	<10	110	15	1,000	17
	.....do.	.....do.	40–44	40	.16	<10	120	16	970	20
	.....do.	.....do.	44–48	42	.15	<10	130	16	1,100	18
	.....do.	.....do.	48–52	42	.16	<10	150	15	1,000	18
	.....do.	.....do.	52–56	45	.15	<10	140	15	1,300	17
	.....do.	.....do.	56–60	41	.15	<10	150	16	1,400	19
	.....do.	.....do.	60–64	43	.15	<10	150	15	1,500	17
	.....do.	.....do.	64–68	41	.15	<10	140	16	1,500	19
	.....do.	.....do.	68–72	40	.14	<10	140	16	1,500	17
	.....do.	.....do.	72–76	47	.15	<10	150	16	2,000	19
	.....do.	.....do.	76–80	44	.14	<10	140	16	2,300	17
	.....do.	.....do.	80–84	52	.15	<10	150	16	2,800	19
	.....do.	.....do.	84–88	52	.14	<10	150	16	3,400	16
	.....do.	.....do.	88–92	54	.15	<10	180	18	3,000	18
	.....do.	.....do.	92–96	52	.15	<10	190	18	3,200	17

Table 4. Distribution of element concentrations measured in sediment core samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. D, duplicate; do., ditto; No., number; cm, centimeters; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; --, not analyzed]

Station No.	Town	Water body	Depth (cm)	Tin (ppm)	Titanium (%)	Tungsten (ppm)	Vanadium (ppm)	Yttrium (ppm)	Zinc (ppm)	Zirconium (ppm)
110	Somerville	Lower Mystic River	00–04	<10	0.03	<10	99	11	460	13
	.....do.	.....do.	04–08	14	.11	<10	110	12	450	16
	.....do.	.....do.	08–12	11	.10	<10	110	11	420	15
	.....do.	.....do.	12–16	10	.10	<10	130	11	420	20
	.....do.	.....do.	16–20	<10	.08	<10	190	8.7	500	29
	.....do.	.....do.	20–24	11	.06	<10	200	7.0	570	29
	.....do.	.....do.	24–28	27	.07	<10	230	10	890	25
	.....do.	.....do.	28–32	25	.07	<10	210	9.7	900	22
	.....do.	.....do.	32–36	29	.07	<10	220	11	780	22
	.....do.	.....do.	36–40	29	.07	<10	230	11	810	23
	.....do.	.....do.	40–44	26	.07	<10	230	9.3	840	25
	.....do.	.....do.	44–48	<10	.06	<10	250	6.3	490	33
	.....do.	.....do.	48–52	<10	.05	<10	220	5.0	410	36
111	Boston	.....do.	00–04	17	.12	<10	100	12	450	14
	.....do.	.....do.	04–08	15	.13	<10	110	14	450	15
	.....do.	.....do.	08–12	14	.14	<10	120	14	450	16
	.....do.	.....do.	12–16	17	.13	<10	130	14	560	16
	.....do.	.....do.	16–20	14	.12	<10	150	13	470	16
	.....do.	.....do.	20–24	16	.12	<10	170	13	470	16
	.....do.	.....do.	24–28	19	.13	<10	150	14	510	18
	.....do.	.....do.	28–32	15	.13	<10	150	14	490	17
	.....do.	.....do.	32–36	20	.13	<10	150	14	540	17
	.....do.	.....do.	36–40	20	.13	<10	160	14	540	17
112	Everett	Island End River	00–04	11	.11	<10	84	11	360	11
	.....do.	.....do.	04–08	12	.10	<10	86	11	370	11
	.....do.	.....do.	08–12	10	.10	<10	79	11	320	11
	.....do.	.....do.	12–16	11	.11	<10	100	13	380	13
	.....do.	.....do.	16–20	14	.12	<10	110	13	450	13
	.....do.	.....do.	20–24	14	.11	<10	94	12	390	11
	.....do.	.....do.	24–28	12	.11	<10	95	11	380	11
	.....do.	.....do.	28–32	13	.10	<10	95	11	370	11
	.....do.	.....do.	32–36	13	.10	<10	79	11	360	11
	.....do.	.....do.	36–40	<10	.09	<10	87	10	500	9.2
	.....do.	.....do.	40–44	11	.09	<10	91	10	590	9.6
	.....do.	.....do.	44–48	14	.09	<10	83	10	480	9.5
105-D	Arlington	Lower Mystic Lake	12.5–16.5	<10	.12	<10	81	12	1,700	7.8
106-D	.....do.	Upper Mystic River	08–12	15	.11	<10	65	13	930	13
	.....do.	.....do.	53–57	14	.19	<10	110	16	1,800	10
	.....do.	.....do.	101–106	11	.16	<10	59	14	730	9.5
107-D	Medford	Malden River	08–12	48	.12	<10	84	15	1,200	17
	.....do.	.....do.	47–51	77	.12	<10	110	15	1,500	13
108-D	.....do.	Upper Mystic River	04–08	14	.11	<10	77	13	780	14
109-D	Malden	.....do.	08–12	27	.12	15	80	12	700	18
	.....do.	.....do.	52–56	46	.16	<10	140	16	1,300	18
111-D	Boston	Lower Mystic River	00–04	14	.13	<10	100	13	450	15
	.....do.	.....do.	08–12	12	.11	<10	110	12	400	16
112-D	Everett	Island End River	00–04	<10	.11	<10	83	12	360	11
Blank	--	--	--	<10	<.01	<10	<2	<.5	<.5	<.5

Table 5. Distribution of organic compound concentrations measured in sediment core samples, Mystic River Basin, Massachusetts.

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. BHC, 1,2,3,4,5,6-hexachlorocyclohexane; DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloroethane; do., ditto; LD, lab duplicate; MDL, method detection limit; No., number; PCBs, polychlorinated biphenyls; cm, centimeters; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; --, not analyzed]

Station No.	Town	Water body	Depth (cm)	PCBs, Cl1Cl10 (ppm)	Aldrin (ppm)	alpha-BHC (ppm)	beta-BHC (ppm)	delta-BHC (ppm)	gamma-BHC (ppm)
105	Arlington	Lower Mystic Lake	00–04	<0.15–0.87	<0.059	<0.072	<0.069	<0.043	<0.021
	.....do.	.....do.	04–08	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	04–12	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	12–16	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	16–20	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	20–24	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	24–28	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	28–32	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	32–36	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	36–40	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	40–44	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	44–48	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	48–53	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	53–57	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	57–61	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	61–65	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	65–69	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	69–73	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	73–77	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	77–81	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	81–85	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	85–89	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	89–93	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	93–97	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	97–101	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	101–106	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	106–111	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
106	.....do.	Upper Mystic River	00–08	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	08–12	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	12–16	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	16–20	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	20–24	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	24–28	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	28–32	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	32–36	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	36–39	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
107	Medford	Malden River	00–04	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	04–08	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	08–12	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	12–16	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	16–19.5	<0.15–0.87	<.059	<.072	<.069	<.043	<.021

Table 5. Distribution of organic compound concentrations measured in sediment core samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. BHC, 1,2,3,4,5,6-hexachlorocyclohexane; DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloroethane; do., ditto; LD, lab duplicate; MDL, method detection limit; No., number; PCBs, polychlorinated biphenyls; cm, centimeters; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; --, not analyzed]

Station No.	Town	Water body	Depth (cm)	PCBs, Cl1Cl10 (ppm)	Aldrin (ppm)	alpha-BHC (ppm)	beta-BHC (ppm)	delta-BHC (ppm)	gamma-BHC (ppm)
107—Continued									
	Medford	Malden River	19.5–23	<0.15–0.87	<0.059	<0.072	<0.069	<0.043	<0.021
	.....do.	.....do.	23–27	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	27–31	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	31–35	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	35–39	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	39–43	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	43–47	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	47–51	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	51–55	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	55–59	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	59–63	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	63–67	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	67–71	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	71–75	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	75–78	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
108	.....do.	Upper Mystic River	00–04	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	04–08	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	08–12	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	12–16	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	16–20	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	20–24	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	24–28	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	28–32	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	32–36	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	36–40	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	40–44	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
109	Malden	.....do.	00–04	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	04–08	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	08–12	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	12–16	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	16–20	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	20–24	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	24–28	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	28–32	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	32–36	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	36–40	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	40–44	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	44–48	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	48–52	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	52–56	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	56–60	<0.15–0.87	<.059	<.072	<.069	<.043	<.021

Table 5. Distribution of organic compound concentrations measured in sediment core samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. BHC, 1,2,3,4,5,6-hexachlorocyclohexane; DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloroethane; do., ditto; LD, lab duplicate; MDL, method detection limit; No., number; PCBs, polychlorinated biphenyls; cm, centimeters; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; --, not analyzed]

Station No.	Town	Water body	Depth (cm)	PCBs, Cl1Cl10 (ppm)	Aldrin (ppm)	alpha-BHC (ppm)	beta-BHC (ppm)	delta-BHC (ppm)	gamma-BHC (ppm)
109—Continued									
	Malden	Upper Mystic River	60–64	<0.15–0.87	<0.059	<0.072	<0.069	<0.043	<0.021
	.....do.	.....do.	64–68	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	68–72	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	72–76	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	76–80	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	80–84	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	84–88	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	88–92	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	92–96	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
110	Somerville	Lower Mystic River	00–04	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	04–08	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	08–12	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	12–16	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	16–20	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	20–24	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	24–28	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	28–32	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	32–36	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	36–40	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	40–44	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	44–48	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
111	Boston	.....do.	00–04	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	04–08	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	08–12	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	12–16	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	16–20	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	20–24	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
112	Everett	Island End River	00–04	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	04–08	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	08–12	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	12–16	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	16–20	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	20–24	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	24–28	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	28–32	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	32–36	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	36–40	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	40–44	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	44–48	<0.15–0.87	<.059	<.072	<.069	<.043	<.021

Table 5. Distribution of organic compound concentrations measured in sediment core samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. BHC, 1,2,3,4,5,6-hexachlorocyclohexane; DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloroethane; do., ditto; LD, lab duplicate; MDL, method detection limit; No., number; PCBs, polychlorinated biphenyls; cm, centimeters; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; --, not analyzed]

Station No.	Town	Water body	Depth (cm)	PCBs, Cl1Cl10 (ppm)	Aldrin (ppm)	alpha-BHC (ppm)	beta-BHC (ppm)	delta-BHC (ppm)	gamma-BHC (ppm)
105-LD	Arlington	Lower Mystic Lake	24–28	<0.15–0.87	<0.059	<0.072	<0.069	<0.043	<0.021
	.....do.	.....do.	24–28	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	89–93	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	89–93	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
106-LD	.....do.	Upper Mystic River	16–20	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	16–20	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
107-LD	Medford	Malden River	19.5–23	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	19.5–23	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	67–71	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	67–71	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
108-LD	.....do.	Upper Mystic River	36–40	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	36–40	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
109-LD	Malden	.....do.	00–04	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	08–12	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	08–12	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	56–60	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	56–60	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	84–88	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	84–88	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
111-LD	Boston	Lower Mystic River	00–04	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	04–08	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	08–12	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	12–16	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	16–20	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	20–24	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
112-LD	Everett	Island End River	00–04	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	04–08	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	08–12	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	12–16	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	16–20	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	20–24	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	24–28	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	28–32	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	32–36	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	36–40	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	40–44	<0.15–0.87	<.059	<.072	<.069	<.043	<.021
	.....do.	.....do.	44–48	<0.15–0.87	<.059	<.072	<.069	<.043	<.021

Table 5. Distribution of organic compound concentrations measured in sediment core samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. BHC, 1,2,3,4,5,6-hexachlorocyclohexane; DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloroethane; do., ditto; LD, lab duplicate; MDL, method detection limit; No., number; PCBs, polychlorinated biphenyls; cm, centimeters; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; --, not analyzed]

Station No.	Town	Water body	Depth (cm)	DDE (ppm)	DDD (ppm)	DDT (ppm)	Dieldrin (ppm)	Endosulfan 1 (ppm)	Endosulfan 2 (ppm)	Endrin (ppm)
105	Arlington	Lower Mystic Lake	00–04	<0.061	<0.72	<0.015	<0.012	<0.011	<0.012	<0.045
	.....do.	.....do.	04–08	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	04–12	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	12–16	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	16–20	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	20–24	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	24–28	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	28–32	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	32–36	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	36–40	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	40–44	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	44–48	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	48–53	<.061	1.5	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	53–57	<.061	.80	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	57–61	<.061	1.4	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	61–65	<.061	1.2	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	65–69	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	69–73	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	73–77	<.061	<.72	.90	<.012	<.011	<.012	<.045
	.....do.	.....do.	77–81	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	81–85	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	85–89	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	89–93	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	93–97	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	97–101	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	101–106	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	106–111	<.061	<.72	<.015	<.012	<.011	<.012	<.045
106	.....do.	Upper Mystic River	00–08	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	08–12	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	12–16	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	16–20	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	20–24	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	24–28	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	28–32	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	32–36	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	36–39	<.061	<.72	<.015	<.012	<.011	<.012	<.045
107	Medford	Malden River	00–04	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	04–08	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	08–12	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	12–16	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	16–19.5	<.061	<.72	<.015	<.012	<.011	<.012	<.045

Table 5. Distribution of organic compound concentrations measured in sediment core samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. BHC, 1,2,3,4,5,6-hexachlorocyclohexane; DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloroethane; do., ditto; LD, lab duplicate; MDL, method detection limit; No., number; PCBs, polychlorinated biphenyls; cm, centimeters; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; --, not analyzed]

Station No.	Town	Water body	Depth (cm)	DDE (ppm)	DDD (ppm)	DDT (ppm)	Dieldrin (ppm)	Endosulfan 1 (ppm)	Endosulfan 2 (ppm)	Endrin (ppm)
107—Continued										
	Medford	Malden River	19.5–23	<0.061	<0.72	<0.015	<0.012	<0.011	<0.012	<0.045
	.....do.	.....do.	23–27	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	27–31	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	31–35	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	35–39	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	39–43	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	43–47	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	47–51	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	51–55	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	55–59	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	59–63	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	63–67	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	67–71	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	71–75	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	75–78	<.061	<.72	<.015	<.012	<.011	<.012	<.045
108	.....do.	Upper Mystic River	00–04	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	04–08	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	08–12	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	12–16	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	16–20	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	20–24	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	24–28	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	28–32	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	32–36	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	36–40	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	40–44	<.061	<.72	<.015	<.012	<.011	<.012	<.045
109	Malden	.....do.	00–04	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	04–08	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	08–12	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	12–16	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	16–20	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	20–24	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	24–28	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	28–32	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	32–36	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	36–40	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	40–44	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	44–48	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	48–52	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	52–56	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	56–60	<.061	<.72	<.015	<.012	<.011	<.012	<.045

Table 5. Distribution of organic compound concentrations measured in sediment core samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. BHC, 1,2,3,4,5,6-hexachlorocyclohexane; DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloroethane; do., ditto; LD, lab duplicate; MDL, method detection limit; No., number; PCBs, polychlorinated biphenyls; cm, centimeters; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; --, not analyzed]

Station No.	Town	Water body	Depth (cm)	DDE (ppm)	DDD (ppm)	DDT (ppm)	Dieldrin (ppm)	Endosulfan 1 (ppm)	Endosulfan 2 (ppm)	Endrin (ppm)
109—Continued										
	Malden	Upper Mystic River	60–64	<0.061	<0.72	<0.015	<0.012	<0.011	<0.012	<0.045
	.....do.	.....do.	64–68	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	68–72	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	72–76	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	76–80	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	80–84	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	84–88	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	88–92	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	92–96	<.061	<.72	<.015	<.012	<.011	<.012	<.045
110	Somerville	Lower Mystic River	00–04	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	04–08	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	08–12	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	12–16	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	16–20	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	20–24	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	24–28	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	28–32	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	32–36	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	36–40	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	40–44	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	44–48	<.061	<.72	<.015	<.012	<.011	<.012	<.045
111	Boston	.....do.	00–04	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	04–08	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	08–12	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	12–16	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	16–20	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	20–24	<.061	<.72	<.015	<.012	<.011	<.012	<.045
112	Everett	Island End River	00–04	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	04–08	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	08–12	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	12–16	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	16–20	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	Everett	Island End River	20–24	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	24–28	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	28–32	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	32–36	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	36–40	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	40–44	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	44–48	<.061	<.72	<.015	<.012	<.011	<.012	<.045

Table 5. Distribution of organic compound concentrations measured in sediment core samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. BHC, 1,2,3,4,5,6-hexachlorocyclohexane; DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloroethane; do., ditto; LD, lab duplicate; MDL, method detection limit; No., number; PCBs, polychlorinated biphenyls; cm, centimeters; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; --, not analyzed]

Station No.	Town	Water body	Depth (cm)	DDE (ppm)	DDD (ppm)	DDT (ppm)	Dieldrin (ppm)	Endosulfan 1 (ppm)	Endosulfan 2 (ppm)	Endrin (ppm)
105-LD	Arlington	Lower Mystic Lake	24–28	<0.061	<0.72	<0.015	<0.012	<0.011	<0.012	<0.045
	.....do.	.....do.	24–28	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	89–93	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	89–93	<.061	<.72	<.015	<.012	<.011	<.012	<.045
106-LD	.....do.	Upper Mystic River	16–20	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	16–20	<.061	<.72	<.015	<.012	<.011	<.012	<.045
107-LD	Medford	Malden River	19.5–23	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	19.5–23	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	67–71	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	67–71	<.061	<.72	<.015	<.012	<.011	<.012	<.045
108-LD	.....do.	Upper Mystic River	36–40	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	36–40	<.061	<.72	<.015	<.012	<.011	<.012	<.045
109-LD	Malden	.....do.	00–04	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	08–12	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	08–12	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	56–60	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	56–60	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	84–88	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	84–88	<.061	<.72	<.015	<.012	<.011	<.012	<.045
111-LD	Boston	Lower Mystic River	00–04	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	04–08	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	08–12	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	12–16	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	16–20	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	20–24	<.061	<.72	<.015	<.012	<.011	<.012	<.045
112-LD	Everett	Island End River	00–04	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	04–08	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	08–12	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	12–16	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	16–20	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	20–24	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	24–28	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	28–32	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	32–36	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	36–40	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	40–44	<.061	<.72	<.015	<.012	<.011	<.012	<.045
	.....do.	.....do.	44–48	<.061	<.72	<.015	<.012	<.011	<.012	<.045

Table 5. Distribution of organic compound concentrations measured in sediment core samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. BHC, 1,2,3,4,5,6-hexachlorocyclohexane; DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloroethane; do., ditto; LD, lab duplicate; MDL, method detection limit; No., number; PCBs, polychlorinated biphenyls; cm, centimeters; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; --, not analyzed]

Station No.	Town	Water body	Depth (cm)	Endrin aldehyde (ppm)	Endrin ketone (ppm)	Hepta-chlor (ppm)	Hepta-chlor epoxide (ppm)	Methoxy-chlor (ppm)	Acenaph-thene (ppm)	Acenaph-thylene (ppm)
105	Arlington	Lower Mystic Lake	00–04	<0.251	<0.024	<0.062	<0.012	<0.015	<0.37	<0.22
	.....do.	.....do.	04–08	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	04–12	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	12–16	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	16–20	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	20–24	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	24–28	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	28–32	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	32–36	<.251	<.024	<.062	<.012	<.015	<.37	.40
	.....do.	.....do.	36–40	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	40–44	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	44–48	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	48–53	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	53–57	<.251	<.024	<.062	<.012	<.015	<.37	.50
	.....do.	.....do.	57–61	<.251	<.024	<.062	<.012	<.015	.40	7.0
	.....do.	.....do.	61–65	<.251	<.024	<.062	<.012	2.1	9.8	9.3
	.....do.	.....do.	65–69	<.251	<.024	<.062	<.012	2.3	5.4	16
	.....do.	.....do.	69–73	<.251	<.024	<.062	<.012	.40	11	15
	.....do.	.....do.	73–77	<.251	<.024	<.062	<.012	3.1	21	44
	.....do.	.....do.	77–81	<.251	<.024	<.062	<.012	.30	4.7	17
	.....do.	.....do.	81–85	<.251	<.024	<.062	<.012	<.015	<.37	.4
	.....do.	.....do.	85–89	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	89–93	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	93–97	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	97–101	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	101–106	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	106–111	<.251	<.024	<.062	<.012	<.015	<.37	<.22
106	.....do.	Upper Mystic River	00–08	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	08–12	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	12–16	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	16–20	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	20–24	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	24–28	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	28–32	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	32–36	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	36–39	<.251	<.024	<.062	<.012	<.015	<.37	<.22
107	Medford	Malden River	00–04	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	04–08	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	08–12	<.251	<.024	<.062	<.012	<.015	<.37	.3
	.....do.	.....do.	12–16	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	16–19.5	<.251	<.024	<.062	<.012	<.015	<.37	<.22

Table 5. Distribution of organic compound concentrations measured in sediment core samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. BHC, 1,2,3,4,5,6-hexachlorocyclohexane; DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloroethane; do., ditto; LD, lab duplicate; MDL, method detection limit; No., number; PCBs, polychlorinated biphenyls; cm, centimeters; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; --, not analyzed]

Station No.	Town	Water body	Depth (cm)	Endrin aldehyde (ppm)	Endrin ketone (ppm)	Heptachlor (ppm)	Heptachlor epoxide (ppm)	Methoxychlor (ppm)	Acenaphthene (ppm)	Acenaphthylene (ppm)
107—Continued										
	Medford	Malden River	19.5–23	<0.251	<0.024	<0.062	<0.012	<0.015	<0.37	1.3
	.....do.	.....do.	23–27	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	27–31	<.251	<.024	<.062	<.012	<.015	1.9	.50
	.....do.	.....do.	31–35	<.251	<.024	<.062	<.012	<.015	3.1	<.22
	.....do.	.....do.	35–39	<.251	<.024	<.062	<.012	<.015	1.2	<.22
	.....do.	.....do.	39–43	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	43–47	<.251	<.024	<.062	<.012	<.015	<.37	.3
	.....do.	.....do.	47–51	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	51–55	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	55–59	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	59–63	<.251	<.024	<.062	<.012	<.015	2.3	1.5
	.....do.	.....do.	63–67	<.251	<.024	<.062	<.012	<.015	<.37	.30
	.....do.	.....do.	67–71	<.251	<.024	<.062	<.012	<.015	.40	3.2
	.....do.	.....do.	71–75	<.251	<.024	<.062	<.012	<.015	<.37	.20
	.....do.	.....do.	75–78	<.251	<.024	<.062	<.012	.30	1.1	6.2
108	.....do.	Upper Mystic River	00–04	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	04–08	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	08–12	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	12–16	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	16–20	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	20–24	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	24–28	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	28–32	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	32–36	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	36–40	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	40–44	<.251	<.024	<.062	<.012	<.015	<.37	<.22
109	Malden	.....do.	00–04	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	04–08	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	08–12	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	12–16	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	16–20	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	20–24	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	24–28	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	28–32	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	32–36	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	36–40	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	40–44	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	44–48	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	48–52	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	52–56	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	56–60	<.251	<.024	<.062	<.012	<.015	<.37	<.22

Table 5. Distribution of organic compound concentrations measured in sediment core samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. BHC, 1,2,3,4,5,6-hexachlorocyclohexane; DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloroethane; do., ditto; LD, lab duplicate; MDL, method detection limit; No., number; PCBs, polychlorinated biphenyls; cm, centimeters; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; --, not analyzed]

Station No.	Town	Water body	Depth (cm)	Endrin aldehyde (ppm)	Endrin ketone (ppm)	Hepta-chlor (ppm)	Hepta-chlor epoxide (ppm)	Methoxy-chlor (ppm)	Acenaph-thene (ppm)	Acenaph-thylene (ppm)
109—Continued										
	Malden	Upper Mystic River	60–64	<0.251	<0.024	<0.062	<0.012	<0.015	<0.37	<0.22
	.....do.	.....do.	64–68	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	68–72	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	72–76	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	76–80	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	80–84	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	84–88	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	88–92	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	92–96	<.251	<.024	<.062	<.012	<.015	<.37	<.22
110	Somerville	Lower Mystic River	00–04	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	04–08	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	08–12	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	12–16	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	16–20	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	20–24	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	24–28	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	28–32	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	32–36	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	36–40	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	40–44	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	44–48	<.251	<.024	<.062	<.012	<.015	<.37	<.22
111	Boston	.....do.	00–04	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	04–08	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	08–12	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	12–16	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	16–20	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	20–24	<.251	<.024	<.062	<.012	<.015	<.37	<.22
112	Everett	Island End River	00–04	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	04–08	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	08–12	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	12–16	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	16–20	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	20–24	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	24–28	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	28–32	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	32–36	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	36–40	<.251	<.024	<.062	<.012	<.015	21	7.8
	.....do.	.....do.	40–44	<.251	<.024	<.062	<.012	<.015	58	10
	.....do.	.....do.	44–48	<.251	<.024	<.062	<.012	<.015	22	6.5

Table 5. Distribution of organic compound concentrations measured in sediment core samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. BHC, 1,2,3,4,5,6-hexachlorocyclohexane; DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloroethane; do., ditto; LD, lab duplicate; MDL, method detection limit; No., number; PCBs, polychlorinated biphenyls; cm, centimeters; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; --, not analyzed]

Station No.	Town	Water body	Depth (cm)	Endrin aldehyde (ppm)	Endrin ketone (ppm)	Hepta-chlor (ppm)	Hepta-chlor epoxide (ppm)	Methoxy-chlor (ppm)	Acenaph-thene (ppm)	Acenaph-thylene (ppm)
105-LD	Arlington	Lower Mystic Lake	24–28	<0.251	<0.024	<0.062	<0.012	<0.015	<0.37	<0.22
	.....do.	.....do.	24–28	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	89–93	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	89–93	<.251	<.024	<.062	<.012	<.015	<.37	<.22
106-LD	.....do.	Upper Mystic Lake	16–20	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	16–20	<.251	<.024	<.062	<.012	<.015	<.37	<.22
107-LD	Medford	Malden River	19.5–23	<.251	<.024	<.062	<.012	.015	<.37	.30
	.....do.	.....do.	19.5–23	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	67–71	<.251	<.024	<.062	<.012	<.015	1.0	2.3
	.....do.	.....do.	67–71	<.251	<.024	<.062	<.012	<.015	1.0	2.0
108-LD	.....do.	Upper Mystic Lake	36–40	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	36–40	<.251	<.024	<.062	<.012	<.015	<.37	<.22
109-LD	Malden	.....do.	00–04	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	08–12	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	08–12	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	56–60	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	56–60	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	84–88	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	84–88	<.251	<.024	<.062	<.012	<.015	<.37	<.22
111-LD	Boston	Lower Mystic Lake	00–04	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	04–08	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	08–12	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	12–16	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	16–20	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	20–24	<.251	<.024	<.062	<.012	<.015	<.37	<.22
112-LD	Everett	Island End River	00–04	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	04–08	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	08–12	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	12–16	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	16–20	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	20–24	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	24–28	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	28–32	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	32–36	<.251	<.024	<.062	<.012	<.015	<.37	<.22
	.....do.	.....do.	36–40	<.251	<.024	<.062	<.012	<.015	19	6.6
	.....do.	.....do.	40–44	<.251	<.024	<.062	<.012	<.015	38	7.4
	.....do.	.....do.	44–48	<.251	<.024	<.062	<.012	<.015	21	6.6

Table 5. Distribution of organic compound concentrations measured in sediment core samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. BHC, 1,2,3,4,5,6-hexachlorocyclohexane; DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloroethane; do., ditto; LD, lab duplicate; MDL, method detection limit; No., number; PCBs, polychlorinated biphenyls; cm, centimeters; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; --, not analyzed]

Station No.	Town	Water body	Depth (cm)	Anthracene (ppm)	Benzo[*a*]anthracene (ppm)	Benzo[*b,k*]fluoranthracene (ppm)	Benzo[*a*]pyrene (ppm)	Benzo[*g,h,i*]perylene (ppm)	Chrysene (ppm)	Dibenzo[*a,h*]anthracene (ppm)
105	Arlington	Lower Mystic Lake	00–04	<0.29	<0.44	0.4	<0.51	<0.32	<0.28	<0.58
	.....do.	.....do.	04–08	<.29	.90	7.9	1.4	<.32	2.5	<.58
	.....do.	.....do.	04–12	<.29	.80	4.9	<.51	<.32	1.8	<.58
	.....do.	.....do.	12–16	<.29	<.44	2.8	<.51	<.32	<.28	<.58
	.....do.	.....do.	16–20	<.29	<.44	2.3	<.51	<.32	<.28	<.58
	.....do.	.....do.	20–24	<.29	1.2	7.0	<.51	<.32	2.8	<.58
	.....do.	.....do.	24–28	<.29	<.44	2.9	<.51	<.32	>MDL	<.58
	.....do.	.....do.	28–32	1.4	2.9	12	15	1.7	4.6	<.58
	.....do.	.....do.	32–36	.30	1.6	7.9	3.8	<.32	2.9	<.58
	.....do.	.....do.	36–40	.20	2.6	11	15	.70	4.4	.10
	.....do.	.....do.	40–44	<.29	.60	5.4	<.51	<.32	2.1	<.58
	.....do.	.....do.	44–48	.30	2.5	8.3	7.9	<.32	3.7	<.58
	.....do.	.....do.	48–53	1.0	3.9	14	11	<.32	6.2	<.58
	.....do.	.....do.	53–57	3.1	4.3	16	20	3.3	6.8	.90
	.....do.	.....do.	57–61	7.5	7.2	17	2.6	9.7	12	2.7
	.....do.	.....do.	61–65	14	11	29	.30	16	19	6.0
	.....do.	.....do.	65–69	1.1	16	43	1.0	22	25	13
	.....do.	.....do.	69–73	28	20	51	12	27	33	13
	.....do.	.....do.	73–77	55	53	100	27	64	68	33
	.....do.	.....do.	77–81	24	54	46	130	32	43	86
	.....do.	.....do.	81–85	17	22	49	11	24	31	14.0
	.....do.	.....do.	85–89	2.6	1.1	<.29	<.51	<.32	1.0	<.58
	.....do.	.....do.	89–93	<.29	<.44	.30	<.51	<.32	<.28	<.58
	.....do.	.....do.	93–97	.50	2.4	5.3	<.51	<.32	3.7	<.58
	.....do.	.....do.	97–101	<.29	1.1	3.1	<.51	<.32	1.4	<.58
	.....do.	.....do.	101–106	<.29	<.44	<.29	<.51	<.32	<.28	<.58
	.....do.	.....do.	106–111	<.29	<.44	<.29	<.51	<.32	<.28	<.58
106	.....do.	Upper Mystic River	00–08	<.29	<.44	1.2	<.51	<.32	<.28	<.58
	.....do.	.....do.	08–12	<.29	<.44	2.0	<.51	<.32	<.28	<.58
	.....do.	.....do.	12–16	<.29	>MDL	3.7	<.51	<.32	1.3	<.58
	.....do.	.....do.	16–20	<.29	.50	3.4	<.51	<.32	1.4	<.58
	.....do.	.....do.	20–24	<.29	.40	3.7	<.51	<.32	1.3	<.58
	.....do.	.....do.	24–28	<.29	>MDL	2.0	<.51	<.32	.60	<.58
	.....do.	.....do.	28–32	<.29	<.44	.70	<.51	<.32	>MDL	<.58
	.....do.	.....do.	32–36	<.29	<.44	3.7	<.51	<.32	.80	<.58
	.....do.	.....do.	36–39	<.29	.70	5.5	<.51	<.32	2.0	<.58
107	Medford	Malden River	00–04	4.3	7.6	22	33	11	13	<.58
	.....do.	.....do.	04–08	6.9	10	23	36	6.9	15	<.58
	.....do.	.....do.	08–12	8.1	11	29	49	14	16	4.6
	.....do.	.....do.	12–16	4.9	9.5	25	34	12	12	.80
	.....do.	.....do.	16–19.5	7.1	10	8.8	50	13	16	2.4

Table 5. Distribution of organic compound concentrations measured in sediment core samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. BHC, 1,2,3,4,5,6-hexachlorocyclohexane; DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloroethane; do., ditto; LD, lab duplicate; MDL, method detection limit; No., number; PCBs, polychlorinated biphenyls; cm, centimeters; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; --, not analyzed]

Station No.	Town	Water body	Depth (cm)	Anthracene (ppm)	Benzo[*a*]anthracene (ppm)	Benzo[*b,k*]fluoranthracene (ppm)	Benzo[*a*]pyrene (ppm)	Benzo[*g,h,i*]perylene (ppm)	Chrysene (ppm)	Dibenzo[*a,h*]anthracene (ppm)
107—Continued										
	Medford	Malden River	19.5–23	5.4	8.8	25	47	15	14	1.8
	.....do.	.....do.	23–27	4.3	7.6	18	27	3.4	11	<.58
	.....do.	.....do.	27–31	8.3	8.3	6.9	33	8.7	12	1.5
	.....do.	.....do.	31–35	7.9	9.0	19	28	2.8	12	<.58
	.....do.	.....do.	35–39	2.0	8.6	17	23	1.9	12	<.58
	.....do.	.....do.	39–43	2.7	6.0	12	10	<.32	8.2	<.58
	.....do.	.....do.	43–47	7.1	9.3	23	40	10	13	.90
	.....do.	.....do.	47–51	6.9	8.2	21	30	5.5	12	<.58
	.....do.	.....do.	51–55	3.3	6.0	16	18	.70	8.2	<.58
	.....do.	.....do.	55–59	2.7	4.3	2.7	<.51	<.32	5.4	<.58
	.....do.	.....do.	59–63	13	12	9.7	43	9.2	13	1.8
	.....do.	.....do.	63–67	7.6	8.0	10	32	6.1	9.6	.60
	.....do.	.....do.	67–71	8.7	8.0	22	34	11.0	11	1.5
	.....do.	.....do.	71–75	8.1	7.8	19	22	.60	10	<.58
	.....do.	.....do.	75–78	5.3	6.2	20	35	9.8	9.4	3.3
108	.....do.	Upper Mystic River	00–04	<.29	1.9	5.9	8.3	<.32	2.0	<.58
	.....do.	.....do.	04–08	<.29	2.7	5.9	6.1	<.32	2.8	<.58
	.....do.	.....do.	08–12	<.29	<.44	4.6	1.4	<.32	<.28	<.58
	.....do.	.....do.	12–16	<.29	2.5	7.4	10	<.32	2.6	<.58
	.....do.	.....do.	16–20	<.29	.40	4.7	6.0	<.32	.40	<.58
	.....do.	.....do.	20–24	<.29	.50	4.6	9.5	<.32	.50	<.58
	.....do.	.....do.	24–28	<.29	<.44	.40	<.51	<.32	<.28	<.58
	.....do.	.....do.	28–32	<.29	<.44	.50	<.51	<.32	<.28	<.58
	.....do.	.....do.	32–36	<.29	.30	2.0	<.51	<.32	.30	<.58
	.....do.	.....do.	36–40	<.29	<.44	4.1	3.7	<.32	<.28	<.58
	.....do.	.....do.	40–44	<.29	<.44	1.5	1.3	<.32	<.28	<.58
109	Malden	.....do.	00–04	<.29	3.7	8.4	13	<.32	3.8	<.58
	.....do.	.....do.	04–08	<.29	.40	5.6	6.5	<.32	.40	<.58
	.....do.	.....do.	08–12	<.29	5.2	6.6	7.5	<.32	5.3	<.58
	.....do.	.....do.	12–16	<.29	6.2	8.8	18	7.2	6.4	<.58
	.....do.	.....do.	16–20	<.29	5.8	8.8	12	<.32	6.0	<.58
	.....do.	.....do.	20–24	<.29	1.3	3.2	.60	<.32	1.3	<.58
	.....do.	.....do.	24–28	<.29	<.44	2.6	2.5	<.32	<.28	<.58
	.....do.	.....do.	28–32	<.29	1.3	4.2	2.3	<.32	1.4	<.58
	.....do.	.....do.	32–36	<.29	<.44	4.1	1.3	<.32	<.28	<.58
	.....do.	.....do.	36–40	<.29	1.9	4.4	5.7	<.32	1.9	<.58
	.....do.	.....do.	40–44	<.29	<.44	<.29	<.51	<.32	<.28	<.58
	.....do.	.....do.	44–48	<.29	4.5	7.6	9.7	<.32	4.7	<.58
	.....do.	.....do.	48–52	<.29	<.44	1.2	<.51	<.32	<.28	<.58
	.....do.	.....do.	52–56	<.29	.20	2.4	3.1	<.32	.20	<.58
	.....do.	.....do.	56–60	<.29	5.0	7.4	11	<.32	5.2	<.58

Table 5. Distribution of organic compound concentrations measured in sediment core samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. BHC, 1,2,3,4,5,6-hexachlorocyclohexane; DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloroethane; do., ditto; LD, lab duplicate; MDL, method detection limit; No., number; PCBs, polychlorinated biphenyls; cm, centimeters; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; --, not analyzed]

Station No.	Town	Water body	Depth (cm)	Anthracene (ppm)	Benzo[*a*]anthracene (ppm)	Benzo[*b,k*]fluoranthracene (ppm)	Benzo[*a*]pyrene (ppm)	Benzo[*g,h,i*]perylene (ppm)	Chrysene (ppm)	Dibenzo[*a,h*]anthracene (ppm)
109—Continued										
	Malden	Upper Mystic River	60–64	<0.29	<0.44	2.4	2.3	<0.32	<0.28	<0.58
	.....do.	.....do.	64–68	<.29	.80	4.7	2.2	<.32	.80	<.58
	.....do.	.....do.	68–72	<.29	.30	.4	<.51	<.32	.30	<.58
	.....do.	.....do.	72–76	<.29	<.44	2.5	1.5	<.32	<.28	<.58
	.....do.	.....do.	76–80	<.29	<.44	.60	<.51	<.32	<.28	<.58
	.....do.	.....do.	80–84	<.29	<.44	4.1	1.5	<.32	<.28	<.58
	.....do.	.....do.	84–88	<.29	1.0	4.1	1.2	<.32	1.0	<.58
	.....do.	.....do.	88–92	<.29	<.44	<.29	<.51	<.32	<.28	<.58
	.....do.	.....do.	92–96	<.29	<.44	.50	<.51	<.32	<.28	<.58
110	Somerville	Lower Mystic River	00–04	<.29	<.44	<.29	<.51	<.32	<.28	<.58
	.....do.	.....do.	04–08	<.29	<.44	<.29	<.51	<.32	<.28	<.58
	.....do.	.....do.	08–12	<.29	<.44	<.29	<.51	<.32	<.28	<.58
	.....do.	.....do.	12–16	<.29	<.44	<.29	<.51	<.32	<.28	<.58
	.....do.	.....do.	16–20	<.29	<.44	<.29	<.51	<.32	<.28	<.58
	.....do.	.....do.	20–24	<.29	<.44	<.29	<.51	<.32	<.28	<.58
	.....do.	.....do.	24–28	<.29	<.44	<.29	<.51	<.32	<.28	<.58
	.....do.	.....do.	28–32	<.29	<.44	<.29	<.51	<.32	<.28	<.58
	.....do.	.....do.	32–36	<.29	<.44	<.29	<.51	<.32	<.28	<.58
	.....do.	.....do.	36–40	<.29	<.44	<.29	<.51	<.32	<.28	<.58
	.....do.	.....do.	40–44	<.29	<.44	<.29	<.51	<.32	<.28	<.58
	.....do.	.....do.	44–48	<.29	<.44	<.29	<.51	<.32	<.28	<.58
111	Boston	.....do.	00–04	<.29	1.7	5.0	1.9	1.9	1.6	<.58
	.....do.	.....do.	04–08	<.29	<.44	1.9	1.1	<.32	.80	<.58
	.....do.	.....do.	08–12	<.29	.60	2.7	1.4	.60	.60	<.58
	.....do.	.....do.	12–16	<.29	1.2	3.8	1.8	1.2	1.1	<.58
	.....do.	.....do.	16–20	<.29	<.44	1.6	<.51	<.32	.60	<.58
	.....do.	.....do.	20–24	<.29	<.44	.30	<.51	<.32	<.28	<.58
112	Everett	Island End River	00–04	5.2	4.2	12	5.9	3.2	4.9	<.58
	.....do.	.....do.	04–08	4.0	5.5	9.8	5.3	2.8	3.3	<.58
	.....do.	.....do.	08–12	15	20	26	18	10	12.	4.4
	.....do.	.....do.	12–16	1.4	3.6	6.8	3.5	1.5	2.9	<.58
	.....do.	.....do.	16–20	2.8	6.2	11	6.1	3.5	4.1	<.58
	.....do.	.....do.	20–24	4.6	10	15	9.8	4.8	7.2	2.1
	.....do.	.....do.	24–28	4.8	9.2	15	9.0	5.5	4.9	2.2
	.....do.	.....do.	28–32	5.2	12	17	11	5.3	7.4	2.2
	.....do.	.....do.	32–36	5.5	12	14	9.6	3.9	7.7	1.6
	.....do.	.....do.	36–40	53	59	57	37	15	37	7.9
	.....do.	.....do.	40–44	98	89	79	50	19	57	10
	.....do.	.....do.	44–48	57	75	68	44	15	49	8.1

Table 5. Distribution of organic compound concentrations measured in sediment core samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. BHC, 1,2,3,4,5,6-hexachlorocyclohexane; DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloroethane; do., ditto; LD, lab duplicate; MDL, method detection limit; No., number; PCBs, polychlorinated biphenyls; cm, centimeters; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; --, not analyzed]

Station No.	Town	Water body	Depth (cm)	Anthracene (ppm)	Benzo[*a*]anthracene (ppm)	Benzo[*b,k*]fluoranthracene (ppm)	Benzo[*a*]pyrene (ppm)	Benzo[*g,h,i*]perylene (ppm)	Chrysene (ppm)	Dibenzo[*a,h*]anthracene (ppm)
105-LD	Arlington	Lower Mystic Lake	24–28	<0.29	0.60	4.5	<0.51	<0.32	1.2	<0.58
	.....do.	.....do.	24–28	<.29	<.44	2.8	<.51	<.32	1.3	<.58
	.....do.	.....do.	89–93	<.29	<.44	.4	<.51	<.32	<.28	<.58
	.....do.	.....do.	89–93	<.29	<.44	.3	<.51	<.32	<.28	<.58
106-LD	.....do.	Upper Mystic River	16–20	<.29	.40	3.2	<.51	<.32	1.3	<.58
	.....do.	.....do.	16–20	<.29	.50	3.7	<.51	<.32	1.6	<.58
107-LD	Medford	Malden River	19.5–23	4.8	8.6	25	41	13	13	1.6
	.....do.	.....do.	19.5–23	4.3	8.0	25	35	9.5	13	1.3
	.....do.	.....do.	67–71	6.7	6.5	18	30	9.1	9.6	1.6
	.....do.	.....do.	67–71	6.5	6.7	19	30	6.1	9.4	1.6
108-LD	.....do.	Upper Mystic River	36–40	<.29	<.44	1.7	.90	<.32	<.28	<.58
	.....do.	.....do.	36–40	<.29	<.44	1.5	<.51	<.32	<.28	<.58
109-LD	Malden	.....do.	00–04	<.29	2.1	3.5	3.1	<.32	2.1	<.58
	.....do.	.....do.	08–12	<.29	2.9	6.0	7.0	<.32	1.9	<.58
	.....do.	.....do.	08–12	<.29	3.2	6.3	8.5	<.32	3.3	<.58
	.....do.	.....do.	56–60	<.29	6.7	8.3	17	<.32	6.9	<.58
	.....do.	.....do.	56–60	<.29	6.2	8.0	15	<.32	6.4	<.58
	.....do.	.....do.	84–88	<.29	<.44	1.4	1.0	<.32	<.28	<.58
	.....do.	.....do.	84–88	<.29	2.0	5.4	8.1	<.32	2.1	<.58
111-LD	Boston	Lower Mystic River	00–04	<.29	.60	1.9	.70	<.32	1.1	<.58
	.....do.	.....do.	04–08	<.29	<.44	2.2	.80	<.32	.90	<.58
	.....do.	.....do.	08–12	<.29	.60	2.2	.60	<.32	.60	<.58
	.....do.	.....do.	12–16	.40	<.44	3.2	1.7	.50	1.6	<.58
	.....do.	.....do.	16–20	<.29	<.44	<.29	<.51	<.32	<.28	<.58
	.....do.	.....do.	20–24	<.29	<.44	1.6	<.51	<.32	.50	<.58
112-LD	Everett	Island End River	00–04	5.2	3.7	7.3	5.0	2.3	4.2	<.58
	.....do.	.....do.	04–08	4.4	6.8	12	7.8	3.5	5.0	<.58
	.....do.	.....do.	08–12	13	21	23	17	6.3	12	3.2
	.....do.	.....do.	12–16	2.0	2.9	5.6	3.0	1.0	1.6	<.58
	.....do.	.....do.	16–20	2.2	6.1	9.6	5.9	3.6	4.2	<.58
	.....do.	.....do.	20–24	5.4	12	18	12	6.3	8.2	2.1
	.....do.	.....do.	24–28	3.9	9.2	15	9.4	5.0	4.8	1.4
	.....do.	.....do.	28–32	5.4	13	18	11	5.4	8.0	1.7
	.....do.	.....do.	32–36	7.1	12	17	11	5.2	8.2	1.6
	.....do.	.....do.	36–40	49	68	62	40	15	44	6.0
	.....do.	.....do.	40–44	86	91	73	42	16	59	8.4
	.....do.	.....do.	44–48	57	83	86	50	22	57	16.0

Table 5. Distribution of organic compound concentrations measured in sediment core samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. BHC, 1,2,3,4,5,6-hexachlorocyclohexane; DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloroethane; do., ditto; LD, lab duplicate; MDL, method detection limit; No., number; PCBs, polychlorinated biphenyls; cm, centimeters; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; --, not analyzed]

Station No.	Town	Water body	Depth (cm)	Fluoranthene (ppm)	Fluorene (ppm)	Indeno-[1,2,3-*cd*]-pyrene (ppm)	Naphthalene (ppm)	Phenanthrene (ppm)	Pyrene (ppm)	Tribromophenol (% recovery)
105	Arlington	Lower Mystic Lake	00–04	20	<0.11	<0.4	<0.61	<0.17	9.7	85
	.....do.	.....do.	04–08	14	<.11	<.4	<.61	1.6	10	87
	.....do.	.....do.	04–12	14	<.11	<.4	<.61	<.17	6.8	80
	.....do.	.....do.	12–16	10	<.11	<.4	<.61	<.17	5.4	71
	.....do.	.....do.	16–20	9.8	<.11	<.4	<.61	<.17	5.2	72
	.....do.	.....do.	20–24	13	<.11	<.4	<.61	<.17	14	70
	.....do.	.....do.	24–28	9.7	<.11	<.4	<.61	<.17	5.3	106
	.....do.	.....do.	28–32	32	<.11	<.4	<.61	3.9	16	77
	.....do.	.....do.	32–36	19	<.11	<.4	<.61	1.9	10	104
	.....do.	.....do.	36–40	27	<.11	1.4	<.61	2.3	14	73
	.....do.	.....do.	40–44	13	<.11	<.4	<.61	<.17	7.4	70
	.....do.	.....do.	44–48	26	<.11	<.4	<.61	3.1	13	70
	.....do.	.....do.	48–53	37	<.11	<.4	<.61	5.0	20	75
	.....do.	.....do.	53–57	38	<.11	3.1	<.61	4.7	20	114
	.....do.	.....do.	57–61	44	2.9	8.4	<.61	14	43	81
	.....do.	.....do.	61–65	69	15	15	1.0	29	67	86
	.....do.	.....do.	65–69	100	15	24	2.3	36	83	73
	.....do.	.....do.	69–73	120	19	25	<.61	62	110	75
	.....do.	.....do.	73–77	270	66	62	<.61	110	240	86
	.....do.	.....do.	77–81	140	7.8	25	<.61	53	140	75
	.....do.	.....do.	81–85	100	7.1	21	<.61	39	95	114
	.....do.	.....do.	85–89	25	<.11	<.4	<.61	13	22	97
	.....do.	.....do.	89–93	19	<.11	<.4	<.61	3.8	9.3	120
	.....do.	.....do.	93–97	16	<.11	<.4	<.61	4.8	15	52
	.....do.	.....do.	97–101	8.3	<.11	<.4	<.61	.40	7.4	109
	.....do.	.....do.	101–106	8.8	<.11	<.4	<.61	<.17	4.5	108
	.....do.	.....do.	106–111	4.7	<.11	<.4	<.61	<.17	2.7	97
106	.....do.	Upper Mystic River	00–08	1.8	<.11	<.4	<.61	<.17	4.1	83
	.....do.	.....do.	08–12	4.1	<.11	<.4	<.61	<.17	4.6	73
	.....do.	.....do.	12–16	5.3	<.11	<.4	<.61	<.17	5.4	54
	.....do.	.....do.	16–20	5.6	<.11	<.4	<.61	<.17	5.6	73
	.....do.	.....do.	20–24	4.8	<.11	<.4	<.61	<.17	5.5	79
	.....do.	.....do.	24–28	4.0	<.11	<.4	<.61	<.17	6.0	120
	.....do.	.....do.	28–32	2.1	<.11	<.4	<.61	<.17	4.9	108
	.....do.	.....do.	32–36	5.0	<.11	<.4	<.61	<.17	9.1	36
	.....do.	.....do.	36–39	4.6	<.11	<.4	<.61	<.17	8.4	102
107	Medford	Malden River	00–04	42	<.11	5.5	<.61	9.3	38	61
	.....do.	.....do.	04–08	52	<.11	2.1	<.61	11	45	65
	.....do.	.....do.	08–12	56	<.11	11	<.61	14	50	80
	.....do.	.....do.	12–16	40	<.11	5.9	<.61	9.5	37	37
	.....do.	.....do.	16–19.5	54	.40	11	<.61	16	49	117

Table 5. Distribution of organic compound concentrations measured in sediment core samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. BHC, 1,2,3,4,5,6-hexachlorocyclohexane; DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloroethane; do., ditto; LD, lab duplicate; MDL, method detection limit; No., number; PCBs, polychlorinated biphenyls; cm, centimeters; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; --, not analyzed]

Station No.	Town	Water body	Depth (cm)	Fluoranthene (ppm)	Fluorene (ppm)	Indeno-[1,2,3-*cd*]-pyrene (ppm)	Naphthalene (ppm)	Phenanthrene (ppm)	Pyrene (ppm)	Tribromophenol (% recovery)
107—Continued										
	Medford	Malden River	19.5–23	48	0.70	12	<0.61	12	43	45
	.....do.	.....do.	23–27	40	<.11	5.0	<.61	11	37	96
	.....do.	.....do.	27–31	42	.70	5.5	<.61	12	40	55
	.....do.	.....do.	31–35	44	3.5	1.5	<.61	14	44	118
	.....do.	.....do.	35–39	46	1.5	.6	<.61	13	43	111
	.....do.	.....do.	39–43	30	<.11	<.4	<.61	6.2	29	47
	.....do.	.....do.	43–47	50	.40	6.0	<.61	17	44	93
	.....do.	.....do.	47–51	43	<.11	.6	<.61	13	38	100
	.....do.	.....do.	51–55	29	<.11	1.0	<.61	2.9	29	55
	.....do.	.....do.	55–59	20	<.11	<.4	<.61	4.8	13	104
	.....do.	.....do.	59–63	56	6.8	.5	<.61	27	50	111
	.....do.	.....do.	63–67	39	.70	3.6	<.61	14	37	64
	.....do.	.....do.	67–71	48	4.5	5.0	<.61	16	42	75
	.....do.	.....do.	71–75	42	.80	1.0	<.61	16	40	80
	.....do.	.....do.	75–78	29	1.5	6.6	<.61	9.7	29	105
108	.....do.	Upper Mystic River	00–04	5.3	<.11	<.4	<.61	<.17	7.9	66
	.....do.	.....do.	04–08	6.5	<.11	<.4	<.61	<.17	6.6	51
	.....do.	.....do.	08–12	1.5	<.11	<.4	<.61	<.17	4.6	81
	.....do.	.....do.	12–16	4.7	<.11	<.4	<.61	<.17	6.5	75
	.....do.	.....do.	16–20	4.7	<.11	<.4	<.61	<.17	5.8	58
	.....do.	.....do.	20–24	4.3	<.11	<.4	<.61	<.17	6.6	60
	.....do.	.....do.	24–28	<.12	<.11	<.4	<.61	<.17	2.7	70
	.....do.	.....do.	28–32	<.12	<.11	<.4	<.61	<.17	1.2	53
	.....do.	.....do.	32–36	<.12	<.11	<.4	<.61	<.17	5.5	74
	.....do.	.....do.	36–40	1.9	<.11	<.4	<.61	<.17	5.3	71
	.....do.	.....do.	40–44	2.3	<.11	<.4	<.61	<.17	5.5	79
109	Malden	.....do.	00–04	6.4	<.11	.9	<.61	<.17	6.3	46
	.....do.	.....do.	04–08	5.9	<.11	<.4	<.61	<.17	5.9	31
	.....do.	.....do.	08–12	6.8	<.11	<.4	<.61	<.17	7.4	35
	.....do.	.....do.	12–16	10	<.11	4.4	<.61	<.17	10	93
	.....do.	.....do.	16–20	12	<.11	1.1	<.61	<.17	11	108
	.....do.	.....do.	20–24	7.1	<.11	<.4	<.61	<.17	8.1	149
	.....do.	.....do.	24–28	3.6	<.11	<.4	<.61	<.17	3.9	44
	.....do.	.....do.	28–32	4.1	<.11	<.4	<.61	<.17	5.2	104
	.....do.	.....do.	32–36	1.1	<.11	<.4	<.61	<.17	5.0	91
	.....do.	.....do.	36–40	4.7	<.11	<.4	<.61	<.17	5.0	80
	.....do.	.....do.	40–44	1.3	<.11	<.4	<.61	<.17	1.3	84
	.....do.	.....do.	44–48	5.8	<.11	<.4	<.61	<.17	8.3	76
	.....do.	.....do.	48–52	1.5	<.11	<.4	<.61	<.17	4.8	95
	.....do.	.....do.	52–56	1.0	<.11	<.4	<.61	<.17	3.8	80
	.....do.	.....do.	56–60	9.2	<.11	<.4	<.61	<.17	12	99

Table 5. Distribution of organic compound concentrations measured in sediment core samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. BHC, 1,2,3,4,5,6-hexachlorocyclohexane; DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloroethane; do., ditto; LD, lab duplicate; MDL, method detection limit; No., number; PCBs, polychlorinated biphenyls; cm, centimeters; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; --, not analyzed]

Station No.	Town	Water body	Depth (cm)	Fluoranthene (ppm)	Fluorene (ppm)	Indeno-[1,2,3-*cd*]-pyrene (ppm)	Naphthalene (ppm)	Phenanthrene (ppm)	Pyrene (ppm)	Tribromophenol (% recovery)
109—Continued										
	Malden	Upper Mystic River	60–64	2.6	<0.11	<0.4	<0.61	<0.17	5.5	98
	.....do.	.....do.	64–68	3.9	<.11	<.4	<.61	<.17	6.4	74
	.....do.	.....do.	68–72	3.4	<.11	<.4	<.61	<.17	6.1	83
	.....do.	.....do.	72–76	<.12	<.11	<.4	<.61	<.17	4.5	86
	.....do.	.....do.	76–80	<.12	<.11	<.4	<.61	<.17	3.2	81
	.....do.	.....do.	80–84	1.1	<.11	<.4	<.61	<.17	6.7	91
	.....do.	.....do.	84–88	2.6	<.11	<.4	<.61	<.17	7.6	95
	.....do.	.....do.	88–92	1.6	<.11	<.4	<.61	<.17	6.0	68
	.....do.	.....do.	92–96	<.12	<.11	<.4	<.61	<.17	6.0	94
110	Somerville	Lower Mystic River	00–04	<.12	<.11	<.4	<.61	<.17	<.05	--
	.....do.	.....do.	04–08	<.12	<.11	<.4	<.61	<.17	<.05	--
	.....do.	.....do.	08–12	<.12	<.11	<.4	<.61	<.17	<.05	--
	.....do.	.....do.	12–16	<.12	<.11	<.4	<.61	<.17	<.05	--
	.....do.	.....do.	16–20	<.12	<.11	<.4	<.61	<.17	2.1	--
	.....do.	.....do.	20–24	<.12	<.11	<.4	<.61	<.17	1.9	--
	.....do.	.....do.	24–28	.40	<.11	<.4	<.61	<.17	4.0	--
	.....do.	.....do.	28–32	1.4	<.11	<.4	<.61	<.17	1.5	--
	.....do.	.....do.	32–36	1.7	<.11	<.4	<.61	<.17	2.9	--
	.....do.	.....do.	36–40	<.12	<.11	<.4	<.61	<.17	<.05	--
	.....do.	.....do.	40–44	<.12	<.11	<.4	<.61	<.17	<.05	--
	.....do.	.....do.	44–48	1.2	<.11	<.4	<.61	<.17	2.2	--
111	Boston	.....do.	00–04	5.5	<.11	1.5	<.61	<.17	4.5	--
	.....do.	.....do.	04–08	1.6	<.11	.6	<.61	<.17	2.1	--
	.....do.	.....do.	08–12	1.2	<.11	.8	<.61	<.17	2.4	--
	.....do.	.....do.	12–16	2.4	<.11	.9	<.61	.70	3.4	--
	.....do.	.....do.	16–20	.90	<.11	<.4	<.61	<.17	2.2	--
	.....do.	.....do.	20–24	1.3	<.11	<.4	<.61	<.17	2.5	--
112	Everett	Island End River	00–04	15	<.11	3.3	<.61	4.9	13	--
	.....do.	.....do.	04–08	14	<.11	2.7	<.61	4.6	20	--
	.....do.	.....do.	08–12	57	<.11	12	<.61	3.1	48	--
	.....do.	.....do.	12–16	5.1	<.11	1.4	<.61	1.0	10	--
	.....do.	.....do.	16–20	12	<.11	4.1	<.61	2.7	17	--
	.....do.	.....do.	20–24	31	<.11	5.8	<.61	3.2	25	--
	.....do.	.....do.	24–28	19	<.11	5.5	<.61	2.1	19	--
	.....do.	.....do.	28–32	35	<.11	6.0	<.61	2.9	28	--
	.....do.	.....do.	32–36	35	<.11	4.5	<.61	5.0	25	--
	.....do.	.....do.	36–40	220	22	18	<.61	20	140	--
	.....do.	.....do.	40–44	370	78	24	<.61	140	220	--
	.....do.	.....do.	44–48	260	35	19	<.61	92	160	--

Table 5. Distribution of organic compound concentrations measured in sediment core samples, Mystic River Basin, Massachusetts.—Continued

[**Station number:** USGS sample identifiers and geographical coordinates are given in table 1; sampling locations shown on figure 3. BHC, 1,2,3,4,5,6-hexachlorocyclohexane; DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethylene; DDT, dichlorodiphenyltrichloroethane; do., ditto; LD, lab duplicate; MDL, method detection limit; No., number; PCBs, polychlorinated biphenyls; cm, centimeters; ppm, parts per million; %, percent; <, actual value shown is less than the minimum reporting limit; --, not analyzed]

Station No.	Town	Water body	Depth (cm)	Fluoranthene (ppm)	Fluorene (ppm)	Indeno-[1,2,3-*cd*]-pyrene (ppm)	Naphthalene (ppm)	Phenanthrene (ppm)	Pyrene (ppm)	Tribromophenol (% recovery)
105-LD	Arlington	Lower Mystic Lake	24–28	12	<0.11	<0.4	<0.61	<0.17	6.1	106
	.....do.	.....do.	24–28	13	<.11	<.4	<.61	<.17	6.6	108
	.....do.	.....do.	89–93	18	<.11	<.4	<.61	3.3	9.4	91
	.....do.	.....do.	89–93	20	<.11	<.4	<.61	4.5	9.8	120
106-LD	.....do.	Upper Mystic River	16–20	6.0	<.11	<.4	<.61	<.17	5.2	72
	.....do.	.....do.	16–20	5.0	<.11	<.4	<.61	<.17	5.0	76
107-LD	Medford	Malden River	19.5–23	44	<.11	10	<.61	12	40	44
	.....do.	.....do.	19.5–23	47	<.11	6.5	<.61	12	42	55
	.....do.	.....do.	67–71	38	4.4	5.9	<.61	14	34	89
	.....do.	.....do.	67–71	43	2.6	4.5	<.61	14	37	96
108-LD	.....do.	Upper Mystic River	36–40	2.8	<.11	<.4	<.61	<.17	5.1	56
	.....do.	.....do.	36–40	.90	<.11	<.4	<.61	<.17	5.0	63
109-LD	Malden	.....do.	00–04	7.9	<.11	<.4	<.61	<.17	8.1	53
	.....do.	.....do.	08–12	5.9	<.11	<.4	<.61	<.17	5.9	85
	.....do.	.....do.	08–12	5.1	<.11	1.2	<.61	<.17	5.9	70
	.....do.	.....do.	56–60	8.3	<.11	<.4	<.61	<.17	12	83
	.....do.	.....do.	56–60	6.8	<.11	<.4	<.61	<.17	11	76
	.....do.	.....do.	84–88	1.6	<.11	<.4	<.61	<.17	7.4	48
	.....do.	.....do.	84–88	3.2	<.11	<.4	<.61	<.17	7.6	61
111-LD	Boston	Lower Mystic River	00–04	3.3	<.11	<.4	<.61	<.17	3.4	--
	.....do.	.....do.	04–08	1.3	<.11	.4	<.61	<.17	2.7	--
	.....do.	.....do.	08–12	1.6	<.11	<.4	<.61	<.17	2.6	--
	.....do.	.....do.	12–16	2.2	<.11	<.4	<.61	<.17	3.5	--
	.....do.	.....do.	16–20	1.8	<.11	<.4	<.61	<.17	2.7	--
	.....do.	.....do.	20–24	1.0	<.11	<.4	<.61	<.17	2.2	--
112-LD	Everett	Island End River	00–04	14	<.11	2.8	<.61	5.9	12	--
	.....do.	.....do.	04–08	14	<.11	4.4	<.61	3.6	20	--
	.....do.	.....do.	08–12	58	<.11	8.5	<.61	2.1	50	--
	.....do.	.....do.	12–16	6.4	<.11	1.2	<.61	1.2	10	--
	.....do.	.....do.	16–20	11	<.11	3.1	<.61	1.3	16	--
	.....do.	.....do.	20–24	31	<.11	6.8	<.61	3.1	25	--
	.....do.	.....do.	24–28	18	<.11	5.1	<.61	1.6	18	--
	.....do.	.....do.	28–32	35	<.11	6.4	<.61	2.7	27	--
	.....do.	.....do.	32–36	34	<.11	6.0	<.61	4.4	24	--
	.....do.	.....do.	36–40	240	17	19	<.61	18	140	--
	.....do.	.....do.	40–44	340	60	19	<.61	120	220	--
	.....do.	.....do.	44–48	260	30	28	<.61	89	160	--