

Prepared in cooperation with the
District Department of the Environment

Summary of Ground-Water-Quality Data in the Anacostia River Watershed, Washington, D.C., September— December 2005

Open-File Report 2006–1392

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By Cheryl A. Klohe and Linda M. Debrewer

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**U.S. Department of the Interior
U.S. Geological Survey**

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Conversion Factors and Datums

Multiply	By	To obtain
Length		
inch (in.)	2.54	centimeter (cm)
inch (in.)	25.4	millimeter (mm)
foot (ft)	0.3048	meter (m)
mile (mi)	1.609	kilometer (km)
Area		
square mile (mi ²)	259.0	hectare (ha)
square mile (mi ²)	2.590	square kilometer (km ²)
Volume		
gallon (gal)	3.785	liter (L)
gallon (gal)	0.003785	cubic meter (m ³)
gallon (gal)	3.785	cubic decimeter (dm ³)
cubic foot (ft ³)	28.32	cubic decimeter (dm ³)
cubic foot (ft ³)	0.02832	cubic meter (m ³)
Flow rate		
cubic foot per day (ft ³ /d)	0.02832	cubic meter per day (m ³ /d)
gallon per minute (gal/min)	0.06309	liter per second (L/s)
gallon per day (gal/d)	0.003785	cubic meter per day (m ³ /d)
Mass		
ounce, avoirdupois (oz)	28.35	gram (g)
pound, avoirdupois (lb)	0.4536	kilogram (kg)

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

$$^{\circ}\text{F}=(1.8\times^{\circ}\text{C})+32$$

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

$$^{\circ}\text{C}=(^{\circ}\text{F}-32)/1.8$$

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 vertical datum.

Specific conductance is given in microsiemens per centimeter at 25 degrees Celsius (µS/cm at 25°C).

Concentrations of chemical constituents in water are given either in milligrams per liter (mg/L) or micrograms per liter (µg/L).

Summary of Ground-Water-Quality Data in the Anacostia River Watershed, Washington, D.C., September–December 2005

By Cheryl A. Klohe and Linda M. Debrewer

Abstract

The U.S. Geological Survey, in cooperation with the District Department of the Environment (formerly the District of Columbia, Department of Health, Environmental Health Administration), conducted a ground-water-quality investigation in the Anacostia River watershed within Washington, D.C. Samples were collected and analyzed from 17 ground-water monitoring wells located within the study area from September through December 2005. Samples were analyzed for a variety of constituents including major ions, nutrients, volatile organic compounds, semivolatile organic compounds, pesticides and degradates, oil and grease, phenols, total polychlorinated biphenyls, and other selected constituents. The concentrations of major ions in the study area indicate that the ground water is predominantly calcium-bicarbonate type water, with some wells containing a higher percentage of milliequivalents per liter of iron (cation), and chloride or sulfate (anions). Concentrations of nitrogen were generally less than 1 milligram per liter, and concentrations of phosphorus were generally less than 0.5 milligrams per liter. Twelve of 79 pesticides and degradates were detected at 6 out of 17 wells. Volatile organic compounds (predominantly gasoline oxygenates and solvents) were detected in 9 of the 17 wells. Two semivolatile organic compounds, (bis(2-ethylhexyl) phthalate and total phenols), out of the 51 analyzed, were detected in the study area.

Introduction

Ground-water quality in the Atlantic Coastal Plain Physiographic Province is influenced by the presence of soluble ions from natural sources (such as dissolution of minerals in the aquifer sediments) and human sources (such as road salting), and by geochemical factors that affect the mobility and fate of these ions within the aquifer. Additional human influences on water quality in the Washington, D.C. area include industrial, commercial, and residential land uses (Schneider and others, 1993a).

Herbicides, insecticides, and fungicides (collectively referred to as pesticides) are used on lawns, gardens, golf courses, and cemeteries, as well as in turf maintenance, near building foundations, and in the soils surrounding building foundations to control termites and other destructive insects. Pesticide use in urban areas has changed over the last several decades due to the development of new herbicides and insecticides and the replacement of organochlorine insecticides with alternative compounds (Barbash and Resek, 1996). Pesticide compounds commonly used in urban settings across the Nation were analyzed in the shallow ground-water samples from the study area.

Residential and commercial-urban land use contribute more volatile organic compounds (VOCs) to ground water across the Nation than other land uses (Zogorski and others, 2006). The presence of VOCs and semivolatile organic compounds (SVOCs) in ground water depends on several factors, including aquifer properties, stresses on the aquifer such as pumping, the relative location of the sampling site, and the transport and fate of contaminants. Urban settings may have more sources and releases as well as enhanced areas of ground-water recharge compared to non-urban settings (Zogorski and others, 2006). Possible sources of VOCs in urban settings include chemical manufacturing, industrial processes (solvents, degreasers, dry cleaning), and gasoline or other petroleum-based fuels.

From September through December 2005, the U.S. Geological Survey (USGS) collected ground-water-quality samples from 17 wells in the Anacostia River watershed, within Washington, D.C. (fig. 1, table 1). Field parameters, such as pH and specific conductance, were measured at the sites at the time of sampling. Samples were collected and analyzed for constituents including major ions, nutrients, trace elements, VOCs, SVOCs, pesticides and their degradates, oil and grease, phenols, total polychlorinated biphenyls (PCBs), and cyanide. Sampling was conducted to expand the database of baseline concentrations of potential contaminants in ground water within the Washington, D.C. part of the Anacostia River watershed. The constituents were selected on the basis of previous analyses of ground-water samples in the watershed as well as constituents currently regulated by the District Department of the Environment (DDOE).

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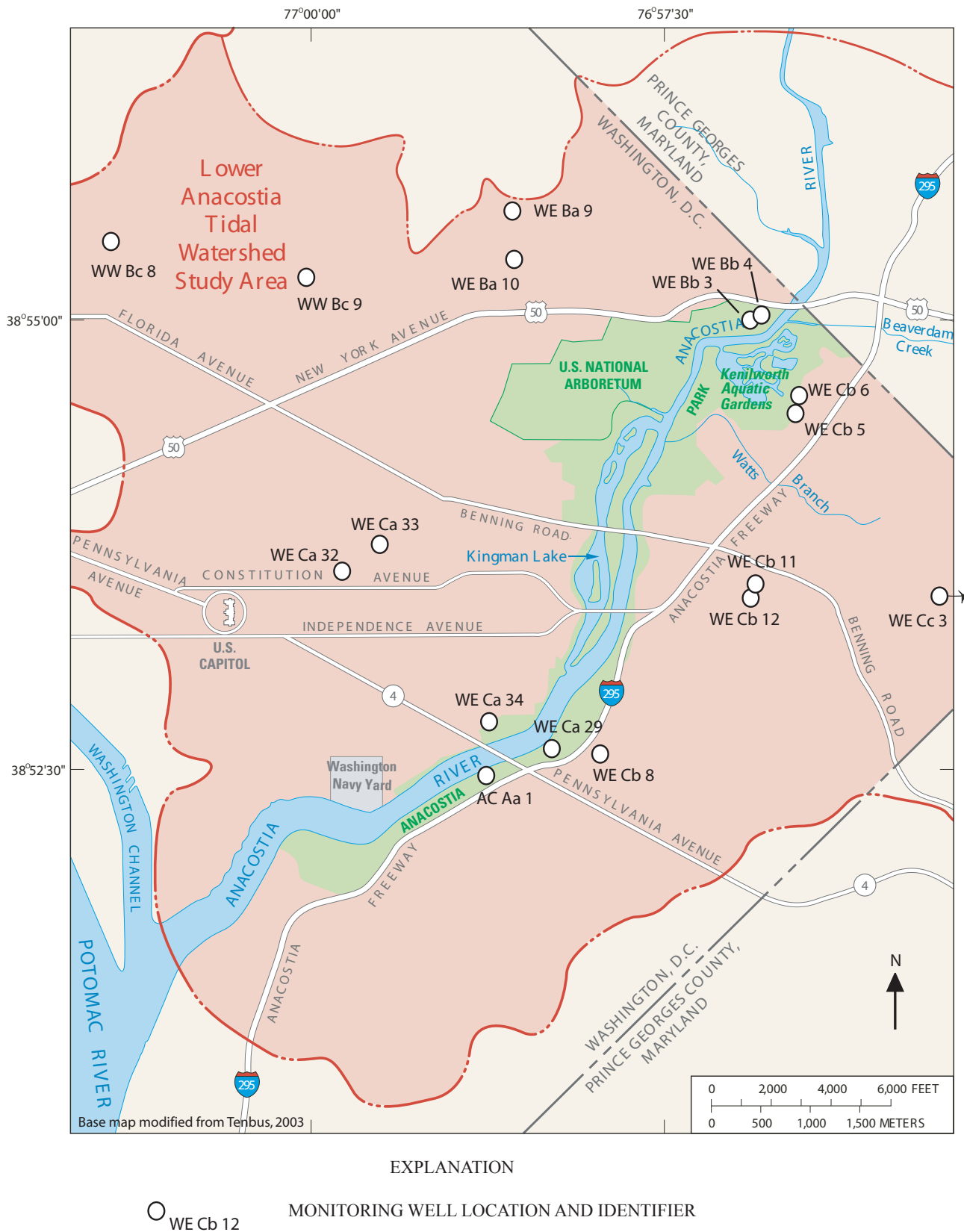


Figure 1. Study area and monitoring well locations, Washington, D.C. (modified from Tenbus, 2003).

Table 1. Location and construction information for ground-water monitoring wells sampled from September through December 2005, Washington, D.C.

[USGS, U.S. Geological Survey; NAVD 88, North American Vertical Datum of 1988; DDOE, District Department of the Environment; unk, unknown; (° ' "), degrees, minutes, seconds]

USGS well number	USGS site identifier	Latitude (° ' ")	Longitude (° ' ")	Altitude of land surface, in feet NAVD 88	Date of construction	Aquifer	Depth of well, in feet below land surface	Casing interval, in feet below land surface	Diameter of casing (upper-lower), in inches	Screen interval, in feet below land surface	Diameter of screen interval, in inches	DDOE well number
AC Aa 1	385225076590101	38°52'25"	76°59'01"	5.7	2/5/1998	Alluvium	30	0–25	2	25–30	1.25	DCMW001-03
WE Ba 9	385606076584101	38°56'06.5"	76°58'41.4"	81.3	8/15/2005	Potomac Group	18	0.35–8	1	8–18	1	DCMW012-05
WE Ba 10	385534076582101	38°55'34.4"	76°58'21.4"	74.4	8/18/2005	Alluvium	17	0.35–7	1	7–17	1	DCMW007-05
WE Bb 3	385504076563801	38°55'03.6"	76°56'37.7"	12.3	7/24/2002	Alluvium	25	-3.6–15	2	15–25	2	DCMW001-02
WE Bb 4	385504076563802	38°55'03.6"	76°56'37.7"	12.4	7/26/2002	Alluvium	32	-3–32	2	22–32	2	DCMW004-02
WE Ca 29	385238076581501	38°52'38.4"	76°58'15.3"	13.4	7/29/2002	Alluvium	48.5	0.15–38.5	2	38.5–48.5	2	DCMW005-02
WE Ca 32	385332076594701	38°53'31.8"	76°59'47.1"	80.0	10/1/1992	Terrace deposits	29	0–19	4	19–29	4	DCMW001-04
WE Ca 33	385349076592801	38°53'49.8"	76°59'28.3"	67.8	8/5/2005	Terrace deposits	38	0.47–28	2	28–38	2	DCMW006-05
WE Ca 34	385245076583501	38°52'45.6"	76°58'35.1"	19.6	8/10/2005	Alluvium	33	0.55–13, 33–43	2	13–33	2	DCMW005-05
WE Cb 5	385443076562801	38°54'43.5"	76°56'28.4"	18.5	7/24/2002	Terrace deposits	22.6	0.2–12.6	2	12.6–22.6	2	DCMW002-02
WE Cb 6	385443076562802	38°54'43.5"	76°56'28.4"	18.8	7/25/2002	Terrace deposits	46.3	0.2–36.3	2	36.3–46.3	0.75	DCMW003-02
WE Cb 8	385252076572801	38°52'52.3"	76°57'28"	61.0	4/1/1992	Potomac Group	265	0–255	4	255–265	4	DCMW002-04
WE Cb 11	385332076564101	38°53'32.1"	76°56'41.2"	60.0	7/28/2005	Alluvium	21	0.32–21	1	16–21	1	DCMW003-05
WE Cb 12	385332076564102	38°53'32.1"	76°56'41.2"	60.6	8/3/2005	Potomac Group	39	0.32–29	2	29–39	2	DCMW004-05
WE Cc 3	385327076544801	38°53'27"	76°54'48.5"	88.7	8/16/2005	Potomac Group	23	0.31–13	1	13–23	1	DCMW008-05
WW Bc 8	385519077012601	38°55'19.3"	77°01'26.9"	123.4	8/18/2005	Potomac Group	32	0.33–22	1	22–32	1	DCMW009-05
WW Bc 9	385527077000701	38°55'27.8"	77°00'07.7"	133.6	8/17/2005	Potomac Group	36	0.27–26	1	26–36	1	DCMW011-05

¹ Previously sampled in July–August 2002 (Miller and Klohe, 2003).² Previously sampled in the early 1990s (Schneider and others, 1993a).

Previous Investigations

Previous studies conducted in the Anacostia River watershed within Washington, D.C. analyzed ground-water samples. Miller and Klohe (2003) analyzed ground-water-quality data from five wells and borehole-sediment-quality data from six locations (collected from July through August 2002) within the watershed. The five wells sampled in 2002 were re-sampled during the September through December 2005 study described in this report (WE Bb 3, WE Bb 4, WE Cb 5, WE Cb 6, and WE Ca 29). Ground-water samples were analyzed for VOCs, SVOCs, or polyaromatic hydrocarbons, organochlorine pesticides, aroclors and total PCBs, metals, nutrients, biochemical and chemical oxygen demands, total phenols, total cyanide, oil and grease, and total suspended and dissolved solids.

Schneider and others (1993a) presented analytical results for five wells located in Washington, D.C. Four of the five wells are located within the Anacostia River watershed, and two of the four were re-sampled by the USGS during the September through December 2005 study described in this report (WE Ca 32 and WE Cb 8). Schneider and others (1993a) analyzed samples for field parameters, major ions, trace elements, pesticides, VOCs, SVOCs, and a few miscellaneous parameters.

Schneider and others (1993b) presented analytical results for eight wells located in Washington, D.C., including three wells in the study area; none of these wells were sampled for the study described in this report. Schneider and others (1993b) analyzed samples for field parameters, major ions, trace elements, pesticides, herbicides, and a few miscellaneous parameters.

Other selected reports contain ground-water-quality analyses for specific areas in the watershed (usually of limited geographical extent), such as the Washington Navy Yard, Anacostia Park, the U.S. National Arboretum, and many others.

Purpose and Scope

Analytical results from 17 ground-water-monitoring wells located within the Anacostia River watershed within Washington, D.C. are presented in this report. The data include analyses from 17 environmental samples, 3 replicate samples (corresponding to one of the environmental samples), 3 field equipment (all sampling equipment) blanks, 1 equipment (pump only) blank, and 8 trip blanks. This report describes the site selection and sampling bias, and sample collection and analysis methods. Quality control and quality assurance of the data also are discussed. The results include all analytical data, summary statistics, and a discussion of the results by major groups of constituents, ground-water types, and spatial distribution of relative concentrations of constituents.

Description of Study Area

The study area includes the Anacostia River watershed, within Washington, D.C. The area is approximately 26 square miles within the Atlantic Coastal Plain Physiographic Province (fig. 1). Monitoring-well sample locations are shown in figure 1. Well location and construction information is provided in table 1.

Wells within the study area are screened in various aquifers of the Atlantic Coastal Plain unconsolidated sediments including: Pleistocene to Holocene alluvium, Pleistocene terrace deposits, and undifferentiated units of the Potomac Group of Cretaceous age (Cooke, 1952; Johnston 1964; Tenbus, 2003) (table 1).

Sample Collection, Analysis, and Quality Control

From September through December 2005, the USGS collected ground-water-quality samples from 17 wells in the Anacostia River watershed, within Washington, D.C. (fig. 1, table 1). Field parameters including temperature, pH, dissolved oxygen, turbidity, alkalinity, and specific conductance were measured at the wells. Samples were collected and analyzed for constituents including major ions, nutrients, trace metals, VOCs, SVOCs, pesticides and degradates, oil and gas, phenols, total PCBs, and cyanide.

Sample Collection and Analysis

Ground-water-quality samples were collected from 17 wells in the Anacostia watershed and processed using protocols designed to obtain samples representative of the aquifers while minimizing sample contamination and measurement variability (U.S. Geological Survey, 1997). Wells were purged to remove standing water in the casing (a minimum of three well volumes) before samples were collected. Purging continued until stabilization of water temperature ($\pm 0.2^{\circ}\text{C}$, degrees Celsius), pH (± 0.1 units), dissolved oxygen (± 0.3 mg/L, milligrams per liter), specific conductance (± 3 percent), and turbidity (± 10 percent). Field parameters were measured using a multiple-parameter sonde with a flow-through chamber, or a bucket to collect water as it was pumped from the well with continuous laminar overflow. Water-quality samples were collected using a stainless steel submersible pump or a peristaltic pump through Teflon tubing; an additional 2 feet of flexible silicon tubing was used in wells sampled using the peristaltic pump. Water from a subset of samples intended for analysis of dissolved constituents was passed through a capsule filter with $0.45\text{-}\mu\text{m}$ (micrometer) pores (for inorganic constituents) or a baked glass fiber filter with $0.7\text{-}\mu\text{m}$ pores (for pesticides and degradates); selected trace elements and major-ion samples were preserved with

nitric acid or hydrochloric acid to a pH below 2. Selected raw-water samples were preserved with sulfuric acid or nitric acid. Bottles were chilled to maintain a temperature of 4°C during shipment to the laboratory. Prior to and between collection of all samples, all tubing was cleaned following USGS protocols (U.S. Geological Survey, 1997) by rinsing with a tap water and Liquinox mixture, followed by soaking for 10 minutes in 10 percent nitric acid, and a final rinse of nanopure deionized water (greater than 18 MegaOhms). All other sampling equipment was cleaned prior to sampling following USGS protocols (U.S. Geological Survey, 1997).

Samples were analyzed for concentrations of major ions, trace elements, nutrients, selected pesticides and pesticide degradates, VOCs, SVOCs, phenols, PCBs, and oil and grease. Bicarbonate concentrations were calculated on the basis of field titrations for alkalinity (Radtke and others, 1998). Chemical analyses were conducted at the USGS National Water-Quality Laboratory in Denver, Colorado, following methods and procedures described by American Public Health Association (1995, 1998); Fishman (1993); Fishman and Friedman (1989); Furlong and others (2001); Garbarino (1999); Garbarino and Damrau (2001); Garbarino and others (2006); Lee and others (2002); McLain (1993); Patton and Truitt (1992, 2000); Wershaw and others (1987); Zaugg and others (1995), and at Severn Trent Laboratory in Arvada, Colorado, following methods described in U.S. Environmental Protection Agency (1986). A complete list of chemical constituents, reporting limits, and methods is provided in appendix 1.

Quality Control

Quality-control samples were collected to provide an estimate of sample contamination and measurement variability associated with the data-collection process (Koterba

and others, 1995; U.S. Geological Survey, 1997). Blank and replicate samples were collected, preserved, and analyzed using the same methods as those used for the environmental samples. Equipment and field blanks were collected to ensure that equipment was adequately cleaned to minimize potential cross-contamination and to ensure that sample collection and processing did not result in contamination. Sequential replicate samples were collected immediately following the environmental samples using the same equipment. These samples assist in determining the variability of the chemical analyses and the consistency of sampling techniques.

Field blanks indicate that reported concentrations of selected major ions and trace elements (10 out of 32 compounds analyzed) may contain minimal bias due to sample contamination during collection, processing, or shipment (table 2), but concentrations detected in the blank samples are negligible when compared to typical concentrations in environmental samples. In March 2006, after sample collection was completed, the laboratory determined that the blank water lot used for equipment blanks for this study was found to have higher pH and specific conductance as well as higher concentrations of aluminum, barium, and strontium. Laboratory investigations determined that concentrations of aluminum in the blank water ranged from 10 to 70 µg/L, instead of less than 1.6 µg/L. The detected blank water concentrations may be a result of concentrations in the blank water used, rather than sample contamination during collection, processing, or shipping. No other compounds were detected in field blanks at concentrations exceeding laboratory reporting levels. Replicate analyses indicate minimal variability in laboratory and sampling techniques (table 2). Estimated uncertainties in reported concentrations exceeded 10 percent only for several trace elements (cadmium, copper, uranium, and zinc), nitrite, organic nitrogen, and caffeine (table 2).

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Table 2. Estimated uncertainty in reported concentrations of selected constituents in ground water from selected wells in the Anacostia River watershed within Washington, D.C., September–December 2005.

[B_N, number of field blanks; B_{ND}, number of blanks in which compound was detected above the laboratory reporting level; B_{MAX}, maximum reported concentration in field blanks; R_N, number of replicate sets; R_{NAGREE}, number of replicate sets within which compound was consistently detected or not detected; R_{UNC}, median estimated uncertainty in reported concentrations in percent; NC, not computed because no replicate sets had consistent detected concentrations; --, not applicable; µg/L, micrograms per liter; mg/L, milligrams per liter; M, presence verified but not quantified; STL, Severn Trent Laboratory; NWQL, U.S. Geological Survey National Water Quality Laboratory]

Compound or ion	Contamination bias			Sampling uncertainty		
	B _N	B _{ND}	B _{MAX}	R _N	R _{NAGREE}	R _{UNC} ¹ (%)
Major ions and trace elements						
Aluminum, dissolved	4	3	17 µg/L	3	3	5.30
Antimony, dissolved	4	0	--	3	3	NC
Arsenic, dissolved	4	0	--	3	3	6.15
Barium, dissolved	4	1	M	3	3	0.52
Beryllium, dissolved	4	0	--	3	3	1.24
Cadmium, dissolved	4	0	--	3	3	16.71 ^a
Calcium, dissolved	4	3	0.16 mg/L	3	3	1.25
Chloride, dissolved	4	0	--	3	3	1.79
Chromium, dissolved	4	2	0.13 µg/L	3	3	4.37
Cobalt, dissolved	4	0	--	3	3	0.96
Copper, dissolved	4	2	0.7 µg/L	3	3	14.61 ^a
Cyanide, total	2	0	--	2	1	NC
Fluoride, dissolved	4	0	--	3	3	6.91
Iron, dissolved	4	0	--	3	3	1.13
Lead, dissolved	4	2	0.26 µg/L	3	3	NC
Magnesium, dissolved	4	0	--	3	3	0.82
Manganese, dissolved	4	0	--	3	3	0.74
Mercury, dissolved	4	0	--	3	3	NC
Molybdenum, dissolved	4	0	--	3	3	4.90
Nickel, dissolved	4	1	0.12 µg/L	3	3	5.48
Potassium, dissolved	4	0	--	3	3	1.41
Selenium, dissolved	4	0	--	3	3	NC
Silica, dissolved	4	3	1.6 mg/L	3	3	0.13
Silver, dissolved	4	0	--	3	3	NC
Sodium, dissolved	4	2	0.31 mg/L	3	3	0.38
Sulfate, dissolved	4	0	--	3	3	0.82
Thallium, dissolved	4	0	--	3	3	6.73
Uranium, natural, dissolved	4	0	--	3	3	10.88 ^b
Zinc, dissolved	4	2	6.2 µg/L	3	3	27.01 ^a
Nutrients						
Nitrogen, ammonia + organic nitrogen, total	4	0	--	3	3	3.80
Nitrogen, ammonia, dissolved	4	0	--	3	3	3.34
Nitrogen, nitrite + nitrate, dissolved	4	0	--	3	3	0.33
Nitrogen, nitrite, dissolved	4	0	--	3	3	12.86 ^b
Phosphorus, dissolved	4	0	--	3	3	4.07
Phosphorus, total	4	0	--	3	3	2.13
Pesticides and degradates						
2,4-D	4	0	--	3	3	NC
2,4-D methyl ester	4	0	--	3	3	NC
2,4-DB	4	0	--	3	3	NC
2-Chloro-4-isopropylamino-6-amino-s-triazine (CIAT)	4	0	--	3	3	NC

Table 2. Estimated uncertainty in reported concentrations of selected constituents in ground water from selected wells in the Anacostia River watershed within Washington, D.C., September–December 2005.—Continued

[B_N, number of field blanks; B_{ND}, number of blanks in which compound was detected above the laboratory reporting level; B_{MAX}, maximum reported concentration in field blanks; R_N, number of replicate sets; R_{NAGREE}, number of replicate sets within which compound was consistently detected or not detected; R_{UNC}, median estimated uncertainty in reported concentrations in percent; NC, not computed because no replicate sets had consistent detected concentrations; --, not applicable; µg/L, micrograms per liter; mg/L, milligrams per liter; M, presence verified but not quantified; STL, Severn Trent Laboratory; NWQL, U.S. Geological Survey National Water Quality Laboratory]

Compound or ion	Contamination bias			Sampling uncertainty		
	B _N	B _{ND}	B _{MAX}	R _N	R _{NAGREE}	R _{UNC} ¹ (%)
Pesticides and degradates—Continued						
2-Chloro-6-ethylamino-4-amino-s-triazine (CEAT)	4	0	--	3	3	NC
2-Hydroxy-4-isopropylamino-6-ethylamino-s-triazine (OIET)	4	0	--	3	2	6.06
3(4-Chlorophenyl)-1-methyl urea	4	0	--	3	3	NC
3-Hydroxycarbofuran	4	0	--	3	3	NC
3-Ketocarbofuran	4	0	--	3	3	NC
Acifluorfen	4	0	--	3	3	NC
Alachlor	2	0	--	2	2	NC
Aldicarb	4	0	--	2	2	NC
Aldicarb sulfone	4	0	--	3	3	NC
Aldicarb sulfoxide	4	0	--	3	3	NC
Aldrin, total recoverable	4	0	--	3	3	NC
<i>alpha</i> -Endosulfan, total recoverable	4	0	--	3	3	NC
Aminomethylphosphonic acid (AMPA), filtered water	4	0	--	3	3	NC
Atrazine	4	0	--	3	3	NC
Bendiocarb	4	0	--	3	3	NC
Benomyl	4	0	--	3	3	NC
Bensulfuron-methyl	4	0	--	3	3	NC
Bentazon	4	0	--	3	3	NC
Bromacil	4	0	--	3	3	NC
Bromoxynil	4	0	--	3	3	NC
Carbaryl	4	0	--	3	3	NC
Carbofuran	4	0	--	3	3	NC
Chloramben, methyl ester	4	0	--	3	3	NC
Chlordane, technical mix, total recoverable	4	0	--	3	3	NC
Chlordiamino-s-triazine (CAAT)	4	0	--	3	3	NC
Chlorimuron-ethyl	4	0	--	3	3	NC
Chlorothalonil	4	0	--	3	3	NC
Clpyralid	4	0	--	3	3	NC
Cycloate	4	0	--	3	3	NC
Dacthal monoacid	4	0	--	3	3	NC
Dicamba	4	0	--	3	3	NC
Dichlorprop	4	0	--	3	3	NC
Dieldrin, total recoverable	4	0	--	3	3	NC
Dinoseb	4	0	--	3	3	NC
Diphenamid	4	0	--	3	3	NC
Diuron	4	0	--	3	3	NC
Endrin, total recoverable	4	0	--	3	3	NC
Fenuron	4	0	--	3	3	NC
Flumetsulam	4	0	--	3	3	NC
Fluometuron	4	0	--	3	3	NC
Glufosinate, filtered water	4	0	--	3	3	NC

8 Summary of Ground-Water-Quality Data in the Anacostia River Watershed, Washington, D.C., 2005

Table 2. Estimated uncertainty in reported concentrations of selected constituents in ground water from selected wells in the Anacostia River watershed within Washington, D.C., September–December 2005—Continued

[B_N, number of field blanks; B_{ND}, number of blanks in which compound was detected above the laboratory reporting level; B_{MAX}, maximum reported concentration in field blanks; R_N, number of replicate sets; R_{NAGREE}, number of replicate sets within which compound was consistently detected or not detected; R_{UNC}, median estimated uncertainty in reported concentrations in percent; NC, not computed because no replicate sets had consistent detected concentrations; --, not applicable; µg/L, micrograms per liter; mg/L, milligrams per liter; M, presence verified but not quantified; STL, Severn Trent Laboratory; NWQL, U.S. Geological Survey National Water Quality Laboratory]

Compound or ion	Contamination bias			Sampling uncertainty		
	B _N	B _{ND}	B _{MAX}	R _N	R _{NAGREE}	R _{UNC} ¹ (%)
Pesticides and degradates—Continued						
Glyphosate, filtered water	4	0	--	3	3	NC
Heptachlor epoxide, total recoverable	4	0	--	3	3	3.05
Heptachlor, total recoverable	4	0	--	3	3	NC
Imazaquin	4	0	--	3	3	NC
Imazethapyr	4	0	--	3	3	NC
Imidacloprid	4	0	--	3	3	NC
Lindane, total recoverable	4	0	--	3	3	NC
Linuron	4	0	--	3	3	NC
MCPA	4	0	--	3	3	NC
MCPB	4	0	--	3	3	NC
Metalaxyl	4	0	--	3	3	NC
Methiocarb	4	0	--	3	3	NC
Methomyl	4	0	--	3	3	NC
Metsulfuron methyl	4	0	--	3	3	5.52
Mirex, total recoverable	4	0	--	3	3	NC
Neburon	4	0	--	3	3	NC
Nicosulfuron	4	0	--	3	3	NC
Norflurazon	4	0	--	3	3	NC
Oryzalin	4	0	--	3	3	NC
Oxamyl	4	0	--	3	3	NC
p,p'-DDD, total recoverable	4	0	--	3	3	NC
p,p'-DDE, total recoverable	4	0	--	3	3	NC
p,p'-DDT, total recoverable	4	0	--	3	3	NC
p,p'-Methoxychlor, total recoverable	4	0	--	3	3	NC
Picloram	4	0	--	3	3	NC
Propham	4	0	--	3	3	NC
Propiconazole	4	0	--	3	3	NC
Propoxur	4	0	--	3	3	NC
Siduron	4	0	--	3	3	NC
Sulfometuron-methyl	4	0	--	3	3	NC
Tebuthiuron	4	0	--	3	3	NC
Terbacil	4	0	--	3	3	NC
Toxaphene, total recoverable	4	0	--	3	3	NC
Triclopyr	4	0	--	3	3	NC
Volatile organic compounds						
1,1,1,2-Tetrachloroethane	10	0	--	2	2	NC
1,1,1-Trichloroethane	10	0	--	2	2	NC
1,1,2,2-Tetrachloroethane	10	0	--	2	2	NC
1,1,2-Trichloroethane	10	0	--	2	2	NC
1,1-Dichloroethane	10	0	--	2	2	NC
1,1-Dichloroethene	10	0	--	2	2	NC

Table 2. Estimated uncertainty in reported concentrations of selected constituents in ground water from selected wells in the Anacostia River watershed within Washington, D.C., September–December 2005—Continued

[B_N, number of field blanks; B_{ND}, number of blanks in which compound was detected above the laboratory reporting level; B_{MAX}, maximum reported concentration in field blanks; R_N, number of replicate sets; R_{NAGREE}, number of replicate sets within which compound was consistently detected or not detected; R_{UNC}, median estimated uncertainty in reported concentrations in percent; NC, not computed because no replicate sets had consistent detected concentrations; --, not applicable; µg/L, micrograms per liter; mg/L, milligrams per liter; M, presence verified but not quantified; STL, Severn Trent Laboratory; NWQL, U.S. Geological Survey National Water Quality Laboratory]

Compound or ion	Contamination bias			Sampling uncertainty		
	B _N	B _{ND}	B _{MAX}	R _N	R _{NAGREE}	R _{UNC} ¹ (%)
Volatile organic compounds—Continued						
1,1-Dichloropropene	10	0	--	2	2	NC
1,2,3-Trichlorobenzene	10	0	--	2	2	NC
1,2,3-Trichloropropane	10	0	--	2	2	NC
1,2,4-Trichlorobenzene	10	0	--	2	2	NC
1,2,4-Trimethylbenzene	10	0	--	2	2	NC
1,2-Dibromoethane	10	0	--	2	2	NC
1,2-Dichlorobenzene	10	0	--	2	2	NC
1,2-Dichloroethane	10	0	--	2	2	NC
1,2-Dichloropropane	10	0	--	2	2	NC
1,3,5-Trimethylbenzene	10	0	--	2	2	NC
1,3-Dichlorobenzene	10	0	--	2	2	NC
1,3-Dichloropropane	10	0	--	2	2	NC
1,4-Dichlorobenzene	10	0	--	2	2	NC
2,2-Dichloropropane	10	0	--	2	2	NC
2-Chlorotoluene	10	0	--	2	2	NC
4-Chlorotoluene	10	0	--	2	2	NC
4-Isopropyltoluene	10	0	--	2	2	NC
Acrylonitrile	10	0	--	2	2	NC
Benzene	10	0	--	2	2	NC
Bromobenzene	10	0	--	2	2	NC
Bromochloromethane	10	0	--	2	2	NC
Bromodichloromethane	10	0	--	2	2	NC
Bromomethane	10	0	--	2	2	NC
Chlorobenzene	10	0	--	2	2	NC
Chloroethane	10	0	--	2	2	NC
Chloromethane	10	0	--	2	2	NC
<i>cis</i> -1,2-Dichloroethene	10	0	--	2	2	NC
<i>cis</i> -1,3-Dichloropropene	10	0	--	2	2	NC
Dibromochloromethane	10	0	--	2	2	NC
Dibromochloropropane	10	0	--	2	2	NC
Dibromomethane	10	0	--	2	2	NC
Dichlorodifluoromethane (CFC-12)	10	0	--	2	2	NC
Dichloromethane	10	0	--	2	2	NC
Ethylbenzene	10	0	--	2	2	NC
Hexachlorobutadiene	10	0	--	2	2	NC
Isopropylbenzene	10	0	--	2	2	NC
meta- + para-Xylene, total	1	0	--	1	1	NC
Methyl <i>tert</i> -butyl ether	10	0	--	2	2	NC
Naphthalene	10	0	--	2	2	NC
n-Butylbenzene	10	0	--	2	2	NC
n-Propylbenzene	10	0	--	2	2	NC

Table 2. Estimated uncertainty in reported concentrations of selected constituents in ground water from selected wells in the Anacostia River watershed within Washington, D.C., September–December 2005—Continued

[B_N, number of field blanks; B_{ND}, number of blanks in which compound was detected above the laboratory reporting level; B_{MAX}, maximum reported concentration in field blanks; R_N, number of replicate sets; R_{NAGREE}, number of replicate sets within which compound was consistently detected or not detected; R_{UNC}, median estimated uncertainty in reported concentrations in percent; NC, not computed because no replicate sets had consistent detected concentrations; --, not applicable; µg/L, micrograms per liter; mg/L, milligrams per liter; M, presence verified but not quantified; STL, Severn Trent Laboratory; NWQL, U.S. Geological Survey National Water Quality Laboratory]

Compound or ion	Contamination bias			Sampling uncertainty		
	B _N	B _{ND}	B _{MAX}	R _N	R _{NAGREE}	R _{UNC} ¹ (%)
Volatile organic compounds—Continued						
o-Xylene	1	0	--	1	1	NC
sec-Butylbenzene	10	0	--	2	2	NC
Styrene	10	0	--	2	2	NC
tert-Butylbenzene	10	0	--	2	2	NC
Tetrachloroethene	10	0	--	2	2	NC
Tetrachloromethane	10	0	--	2	2	NC
Toluene	10	0	--	2	2	NC
trans-1,2-Dichloroethene	10	0	--	2	2	NC
trans-1,3-Dichloropropene	10	0	--	2	2	NC
Tribromomethane	10	0	--	2	2	NC
Trichloroethene	10	0	--	2	2	NC
Trichlorofluoromethane (CFC-11)	10	0	--	2	2	NC
Trichloromethane	10	0	--	2	2	NC
Vinyl chloride	10	0	--	2	2	NC
Xylenes, total	10	0	--	2	2	NC
Semivolatile organic compounds						
2,4,6-Trichlorophenol	2	0	--	2	2	NC
2,4-Dichlorophenol	2	0	--	2	2	NC
2,4-Dimethylphenol	2	0	--	2	2	NC
2,4-Dinitrophenol	2	0	--	2	2	NC
2,4-Dinitrotoluene	2	0	--	2	2	NC
2,6-Dinitrotoluene	2	0	--	2	2	NC
2-Chloronaphthalene	2	0	--	2	2	NC
2-Chlorophenol	2	0	--	2	2	NC
2-Methyl-4,6-dinitrophenol (DNOC)	2	0	--	2	2	NC
2-Nitrophenol	2	0	--	2	2	NC
3,3-Dichlorobenzidine	2	0	--	2	2	NC
4-Bromophenyl phenyl ether	2	0	--	2	2	NC
4-Chloro 3-methylphenol	2	0	--	2	2	NC
4-Chlorophenyl phenyl ether	2	0	--	2	2	NC
4-Nitrophenol	2	0	--	2	2	NC
9H-Fluorene	2	0	--	2	2	NC
Acenaphthene	2	0	--	2	2	NC
Acenaphthylene	2	0	--	2	2	NC
Anthracene	2	0	--	2	2	NC
Benz(ghi)perylene	2	0	--	2	2	NC
Benzidine	2	0	--	2	2	NC
Benzo(a)anthracene	2	0	--	2	2	NC
Benzo(a)pyrene	2	0	--	2	2	NC
Benzo(b)fluoranthene	2	0	--	2	2	NC
Benzo(k)fluoranthene	2	0	--	2	2	NC

Table 2. Estimated uncertainty in reported concentrations of selected constituents in ground water from selected wells in the Anacostia River watershed within Washington, D.C., September–December 2005—Continued

[B_N, number of field blanks; B_{ND}, number of blanks in which compound was detected above the laboratory reporting level; B_{MAX}, maximum reported concentration in field blanks; R_N, number of replicate sets; R_{NAGREE}, number of replicate sets within which compound was consistently detected or not detected; R_{UNC}, median estimated uncertainty in reported concentrations in percent; NC, not computed because no replicate sets had consistent detected concentrations; --, not applicable; µg/L, micrograms per liter; mg/L, milligrams per liter; M, presence verified but not quantified; STL, Severn Trent Laboratory; NWQL, U.S. Geological Survey National Water Quality Laboratory]

Compound or ion	Contamination bias			Sampling uncertainty		
	B _N	B _{ND}	B _{MAX}	R _N	R _{NAGREE}	R _{UNC} ¹ (%)
Semivolatile organic compounds—Continued						
Benzyl n-butyl phthalate	2	0	--	2	2	NC
bis(2-Chloroethoxy) methane	2	0	--	2	2	NC
bis(2-Chloroethyl) ether	2	0	--	2	2	NC
bis(2-Chloroisopropyl) ether	2	0	--	2	2	NC
bis(2-Ethylhexyl) phthalate	2	0	--	2	2	NC
Chrysene	2	0	--	2	2	NC
Dibenz(a,h)anthracene	2	0	--	2	2	NC
Diethyl phthalate	2	0	--	2	2	NC
Dimethyl phthalate	2	0	--	2	2	NC
Di-n-butyl phthalate	2	0	--	2	2	NC
Di-n-octyl phthalate	2	0	--	2	2	NC
Fluoranthene	2	0	--	2	2	NC
Hexachlorobenzene	2	0	--	2	2	NC
Hexachlorocyclopentadiene	2	0	--	2	2	NC
Hexachloroethane	2	0	--	2	2	NC
Indeno(1,2,3-cd)pyrene	2	0	--	2	2	NC
Isophorone	2	0	--	2	2	NC
Naphthalene	10	0	--	2	2	NC
Nitrobenzene	2	0	--	2	2	NC
N-Nitrosodimethylamine	2	0	--	2	2	NC
N-Nitrosodi-n-propylamine	2	0	--	2	2	NC
N-Nitrosodiphenylamine	2	0	--	2	2	NC
Pentachlorophenol	2	0	--	2	2	NC
Phenanthrene	2	0	--	2	2	NC
Phenols, NWQL	3	0	--	2	2	NC
Phenols, STL	2	0	--	2	2	NC
Diesel-range, gasoline-range, and other organic constituents						
Diesel range organics	2	0	--	2	1	NC
Gasoline range organics	2	0	--	2	2	NC
Oil and grease	2	0	--	2	2	NC
Petroleum hydrocarbons	2	0	--	2	2	NC
Polychlorinated biphenyls, total recoverable	4	0	--	3	3	NC
Caffeine	4	0	--	3	2	14.03 ^b

^a Estimated uncertainty above 10 percent. Only two replicate sets were used in the calculation.

^b Estimated uncertainty above 10 percent. Only one replicate set was used in the calculation.

¹ Estimated uncertainty is the median of the relative standard deviation of reported concentrations for replicate sets in which the compound was detected in all replicates. The relative standard deviation is the standard deviation divided by the mean.

Ground-Water Quality and Occurrence and Distribution of Selected Constituents

Results from all environmental, replicate, and blank samples are listed in appendix 2 (field parameters and inorganics, including trace elements) and appendix 3 (pesticides and degradates, VOCs, SVOCs, and other organic compounds). Concentrations are reported with a remark code of '<' (less than symbol) when a constituent is not detected in a sample, or may be present but is below the detection or reporting level for the constituent. A concentration is estimated and reported with a remark code of 'E' when the presence of a constituent has been confirmed but there is greater uncertainty in the concentration.

Many regulations and criteria exist for field parameters and concentrations of chemical constituents, such as pH, major ions, trace metals, VOCs, SVOCs, pesticides and other constituents in ground water. For comparison purposes, the Washington, D.C. ground-water standards (District of Columbia, 1993) and surface-water-quality standards (District of Columbia, 2003), U.S. Environmental Protection Agency (USEPA) maximum contaminant levels (MCLs) (U.S. Environmental Protection Agency, 2006b), and USEPA Region III Risk-Based Concentrations (RBCs) (U.S. Environmental Protection Agency Region III, 2006) are listed in appendixes 2 and 3. Specific details and information regarding the comparison of individual values for the listed criteria should be obtained from the references or agencies listed. The comparison of data from the September through December 2005 samples with the Washington, D.C. surface-water-quality regulations and the USEPA Region III RBCs should be made with consideration of the sources for various standards as well as sample types. For example, the ground-water samples may have been analyzed for dissolved constituent concentrations, but the Washington, D.C. surface-water-quality criteria may be reported for a whole water sample. Additionally, there may be differences in sample collection and processing techniques and caution is advised when making direct comparisons between the ground-water sample results and the criteria listed in appendixes 2 and 3. Although comparison of ground-water-sample concentration data with surface-water criteria is inappropriate for most purposes, these criteria are included in appendixes 2 and 3 because of the potential interaction of ground water and surface water in the study area.

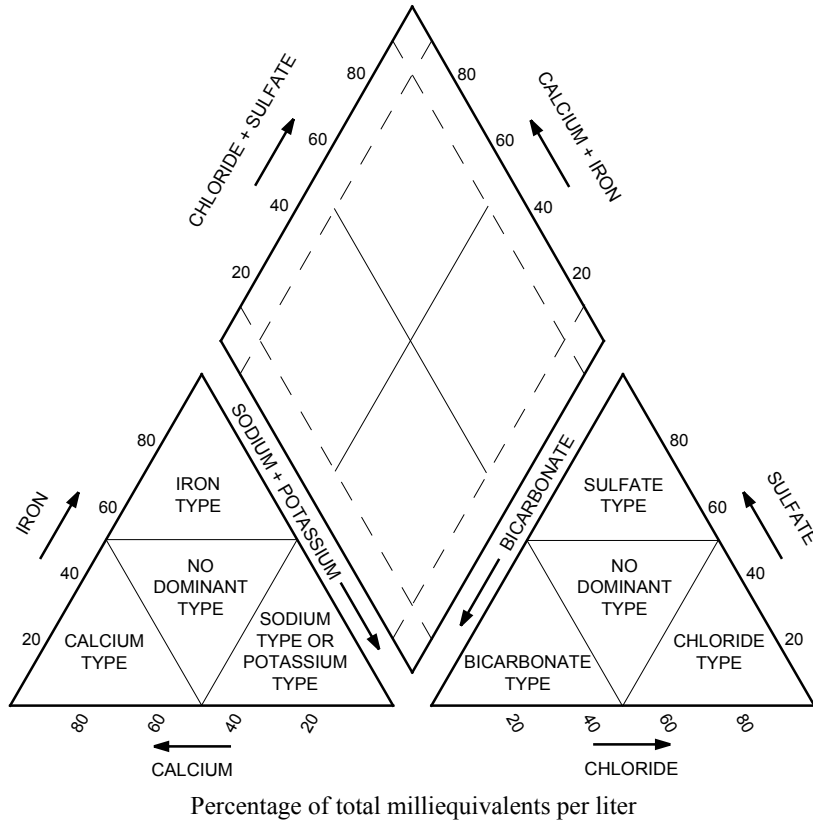
Inorganic Water Chemistry

A trilinear diagram is used to classify and compare water types based on the ionic composition of the water samples (Hem, 1985). Dominant cation (calcium, iron, sodium, and potassium) and anion (bicarbonate, sulfate, and chloride) concentrations for each ground-water sample are converted to total milliequivalents per liter and plotted as percentages of their respective totals in two triangles (fig. 2a). The relative percentages of cations and anions in each triangle are then projected into a quadrilateral polygon that describes the water type or hydrochemical facies (Back, 1966). The relative ionic composition of ground-water samples collected from the study area is plotted on a trilinear diagram (fig. 2b). The samples are predominantly calcium-bicarbonate type water; iron is an important cation and sulfate or chloride are dominant anions in some of the samples (fig. 2b).

Selected field parameters, major-ion, and trace-element concentrations are summarized in tables 3, 4, and 5. Concentrations of these constituents generally did not exceed USEPA standards or Washington, D.C. ground-water regulations (appendix 2). Concentrations of dissolved iron varied throughout the study area (fig. 3, table 4). Iron was detected above the Washington, D.C. ground-water standard (300 µg/L, micrograms per liter) in 11 wells and above the Washington, D.C. surface-water standard (1,000 µg/L) in 9 wells (appendix 2). Iron was detected above the USEPA Region III RBC (11,000 µg/L) in six wells; the highest concentration was detected in well WE Bb 3, just west of the Anacostia River south of New York Avenue, N.E. The high iron concentrations likely result from reducing conditions in the aquifers. Chloride concentrations were detected above the Washington, D.C. ground-water standard (250 mg/L) in one sample collected from well WE Ca 32, located along heavy traffic heavy roads. Manganese was detected above the Washington, D.C. ground-water standard (50 µg/L) in 15 wells and above the USEPA Region III RBC (730 µg/L) in 5 wells (fig. 4); the highest manganese concentrations were detected in well WE Ca 33 (6,830 µg/L) and well WE Cb 11 (5,890 µg/L).

Arsenic generally was detected at low levels (median value of 0.38 µg/L) in all of the wells (table 5, appendix 2). The spatial distribution of arsenic concentrations is shown in figure 5. Concentrations of arsenic were above the proposed USEPA MCL (10 µg/L) in the sample from well AC Aa 1 (39.9 µg/L) located between the Anacostia Park Recreation Center and the Anacostia River. This concentration was verified by re-analyzing the sample at the laboratory. Cyanide was detected in 5 of the 17 wells, but the concentrations were not quantified (table 5, appendix 2). Selenium was detected in 9 of the 17 wells and thallium was detected in 6 of the 17 wells; all of the detections were less than the District of Columbia standards and the USEPA standards (table 5, appendix 2). Mercury was detected in 2 of the 17 wells; the detected concentrations were less than 0.5 µg/L in both samples (table 5, appendix 2).

(a)



(b)

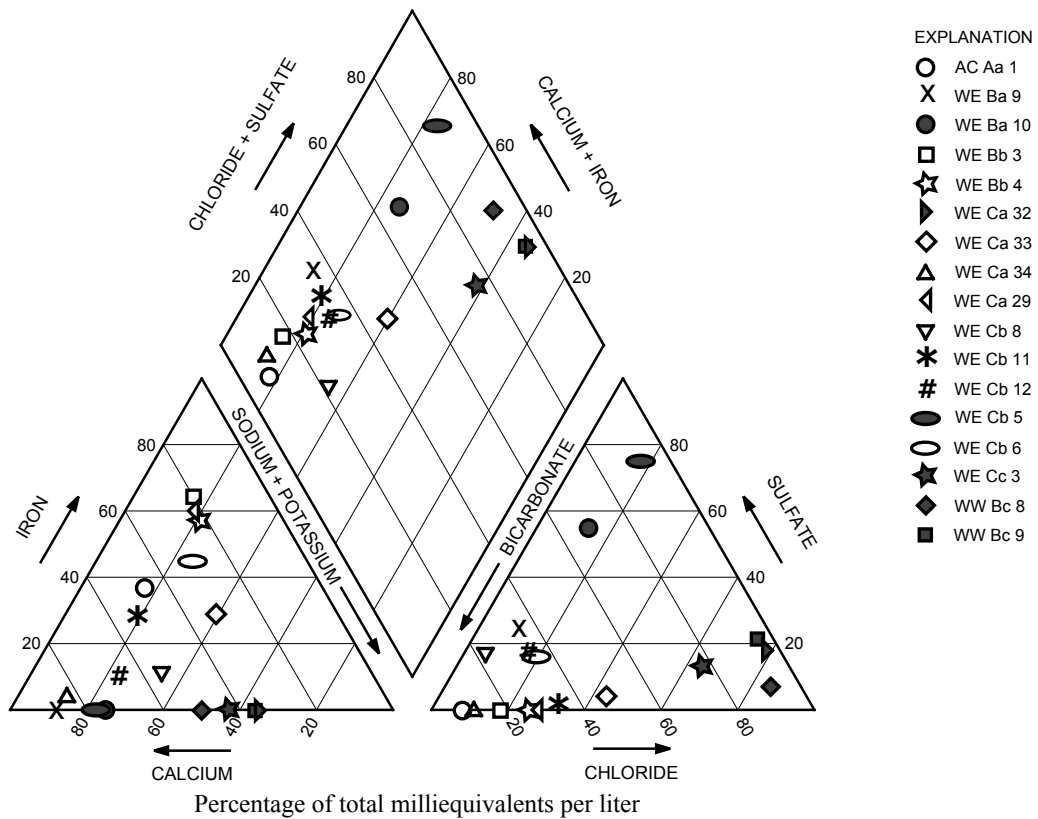


Figure 2. Trilinear diagram showing A, general water types for ground water (modified from Back, 1966); and B, water types for ground-water samples from the Anacostia River watershed in Washington, D.C., September–December 2005.

Table 3. Summary statistics for field parameters measured in ground-water samples from the Anacostia River watershed within Washington, D.C., September–December 2005.

[°C, degrees Celsius; $\mu\text{S}/\text{cm}$, microsiemens per centimeter; mg/L , milligrams per liter; CaCO_3 , calcium carbonate; HCO_3 , bicarbonate; <, less than]

Parameter	Units	Number of samples	Summary statistics		
			Minimum	Median	Maximum
Water temperature	°C	17	11.5	17.0	18.5
Specific conductance	$\mu\text{S}/\text{cm}$ @25°C	17	87	355	1,100
Dissolved oxygen	mg/L	14	<1.0	1.0	5.8
pH	standard units	17	4.8	6.0	7.3
Alkalinity	mg/L as CaCO_3	17	5	64	317
Bicarbonate	mg/L as HCO_3	17	7	78	386

Table 4. Summary statistics for major ions measured in ground-water samples from the Anacostia River watershed within Washington, D.C., September–December 2005.

[mg/L , milligrams per liter; $\mu\text{g}/\text{L}$, micrograms per liter; <, less than]

Compound or ion	Units	Number of detections	Number of samples	Summary statistics		
				Minimum	Median	Maximum
Calcium, dissolved	mg/L	17	17	2.47	23.7	103
Magnesium, dissolved	mg/L	17	17	1.03	10.3	25.9
Sodium, dissolved	mg/L	17	17	1.65	9.4	122
Potassium, dissolved	mg/L	17	17	1.22	3.82	10.1
Chloride, dissolved	mg/L	17	17	2.91	24.2	257
Sulfate, dissolved	mg/L	13*	17	<0.2	11.8	81.1
Fluoride, dissolved	mg/L	13*	17	<0.1	<0.1	0.4
Iron, dissolved	$\mu\text{g}/\text{L}$	15*	17	<6	3,070	54,400
Silica, dissolved	mg/L	17	17	6.2	11.8	22.4

* One or more detections reported below laboratory reporting level.

Table 5. Summary statistics for trace elements and cyanide measured in ground-water samples from the Anacostia River watershed within Washington, D.C., September–December 2005.

[µg/L, micrograms per liter; mg/L, milligrams per liter; <, less than; E, estimated]

Compound or ion	Units	Number of detections	Number of samples	Summary statistics		
				Minimum	Median	Maximum
Aluminum, dissolved	µg/L	10	17	<2	2	172
Arsenic, dissolved	µg/L	17*	17	E0.06	0.38	39.9
Barium, dissolved	µg/L	17	17	25	136	586
Beryllium, dissolved	µg/L	8*	17	<0.06	<0.06	1.44
Cadmium, dissolved	µg/L	9*	17	<0.04	<0.04	0.49
Chromium, dissolved	µg/L	15	17	<0.04	0.15	1.1
Cobalt, dissolved	µg/L	15*	15	E0.02	2.81	61.4
Copper, dissolved	µg/L	10*	15	<0.4	<0.4	9.9
Cyanide, total	mg/L	5*	17	<0.01	<0.01	<0.01
Lead, dissolved	µg/L	6*	17	<0.08	<0.08	7.84
Manganese, dissolved	µg/L	17	17	2.8	296	6,830
Mercury, dissolved	µg/L	2*	17	<0.01	<0.01	0.33
Molybdenum, dissolved	µg/L	9*	17	<0.4	<0.4	4.9
Nickel, dissolved	µg/L	14	14	0.62	4.44	29.4
Selenium, dissolved	µg/L	9*	17	<0.08	<0.08	2.1
Uranium, natural, dissolved	µg/L	6*	17	<0.04	<0.04	0.18
Thallium, dissolved	µg/L	6*	17	<0.04	<0.04	0.18
Zinc, dissolved	µg/L	15*	17	<0.6	2.0	372

* One or more detections reported below laboratory reporting level.

Nutrients in Ground Water

Nutrients are compounds containing nitrogen and phosphorus that are necessary for plant growth, but may also contribute to eutrophication in surface-water bodies or, in high doses, may have human-health effects (Ferrari, 2002). Although nutrients occur naturally, concentrations may be increased by human-related activity, such as fertilizer or manure application, sewage and septic effluent, or atmospheric deposition from the burning of coal and petroleum products.

Nitrite plus nitrate was detected in seven wells sampled in the study area (fig. 6, table 6), and was above the MCL (10 mg/L) in one well (WW Bc 8, 11.2 mg/L) (appendix 2). Ammonia was detected in 13 of the 17 wells sampled and concentrations were above the RBC (0.21 mg/L) in 7 wells (table 6 and appendix 2). The highest ammonia concentrations were detected in samples from four wells located along the Anacostia River (WE Bb 3, AC Aa 1, WE Ca 34, and WE Bb 4) (fig. 7, appendix 2). Phosphorus concentrations were low throughout the study area, ranging from 0.02 to 0.7 mg/L (table 6, appendix 2).

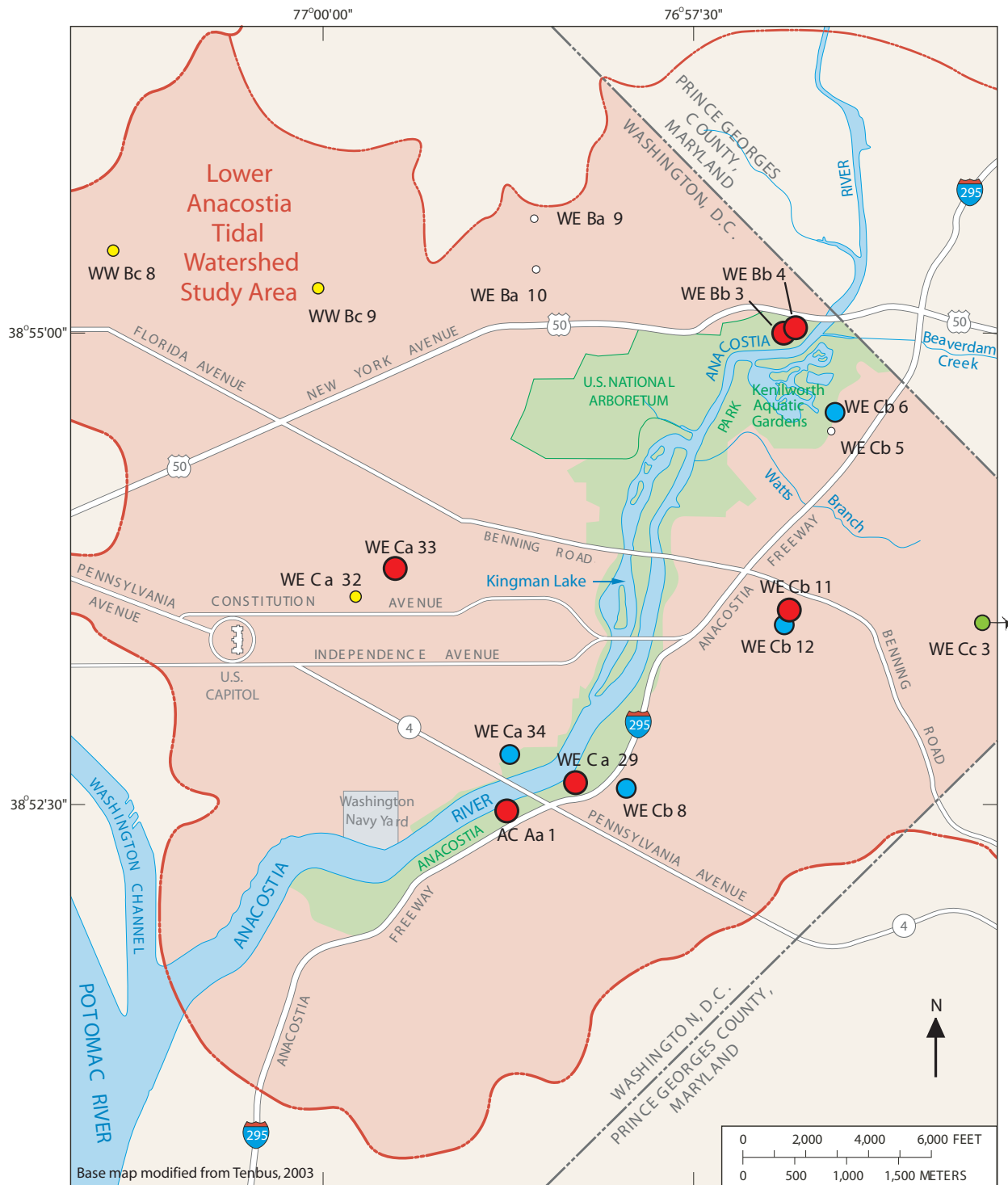


Figure 3. Spatial distribution of iron concentrations in ground-water samples from the Anacostia River watershed within Washington, D.C., September–December 2005.

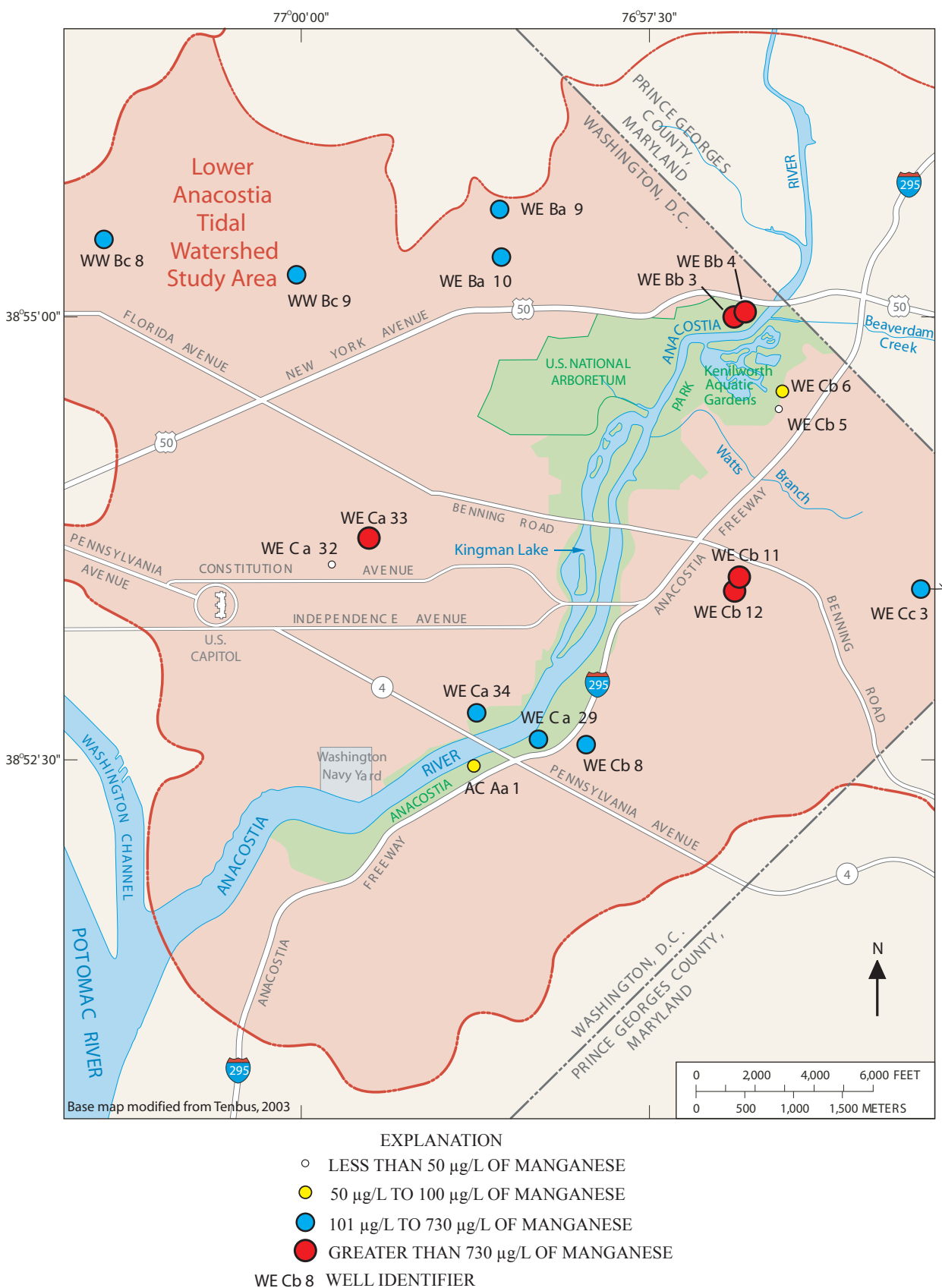


Figure 4. Spatial distribution of manganese concentrations in ground-water samples from the Anacostia River watershed within Washington, D.C., September–December 2005.

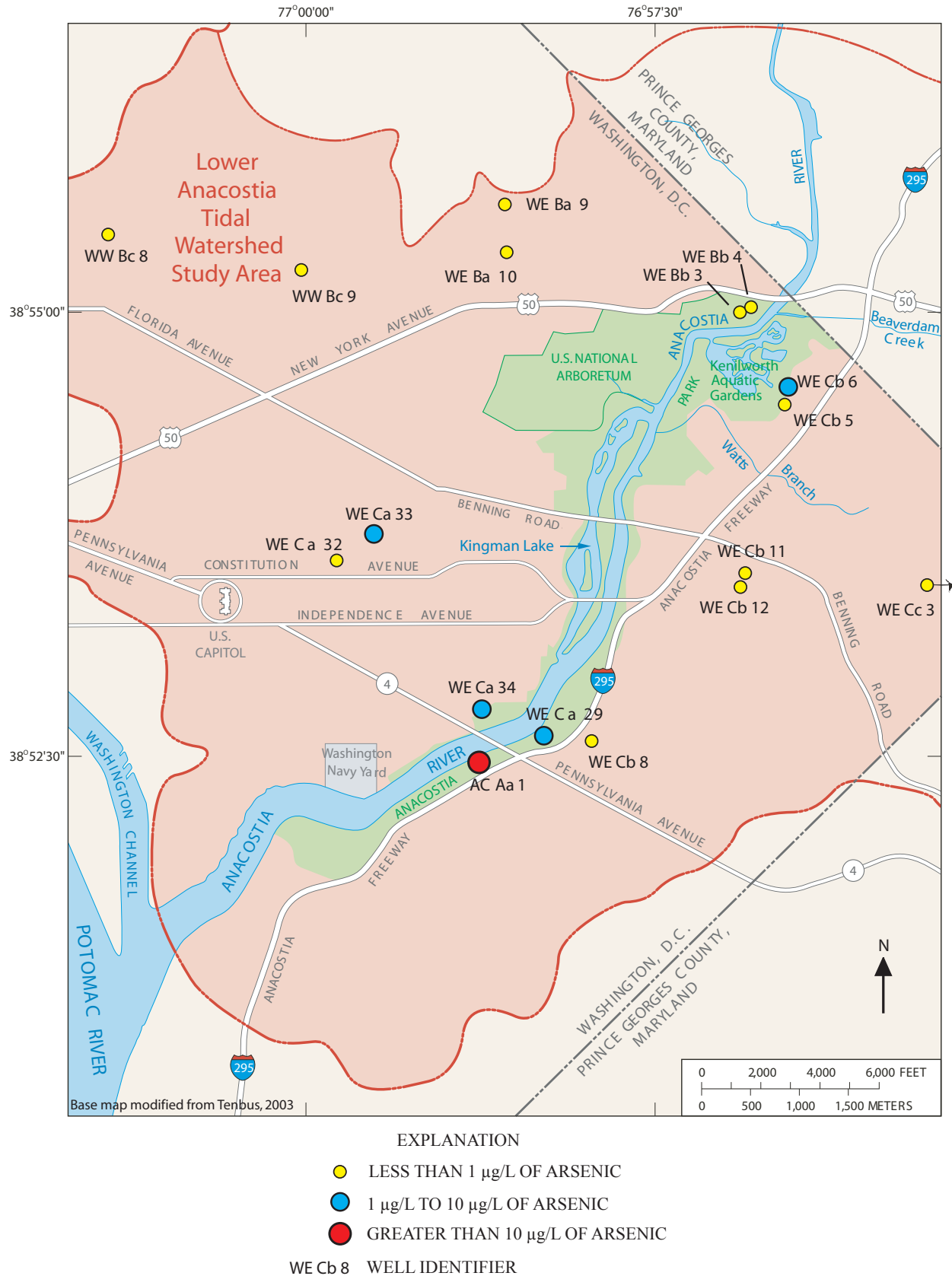


Figure 5. Spatial distribution of arsenic concentrations in ground-water samples from the Anacostia River watershed within Washington, D.C., September–December 2005.

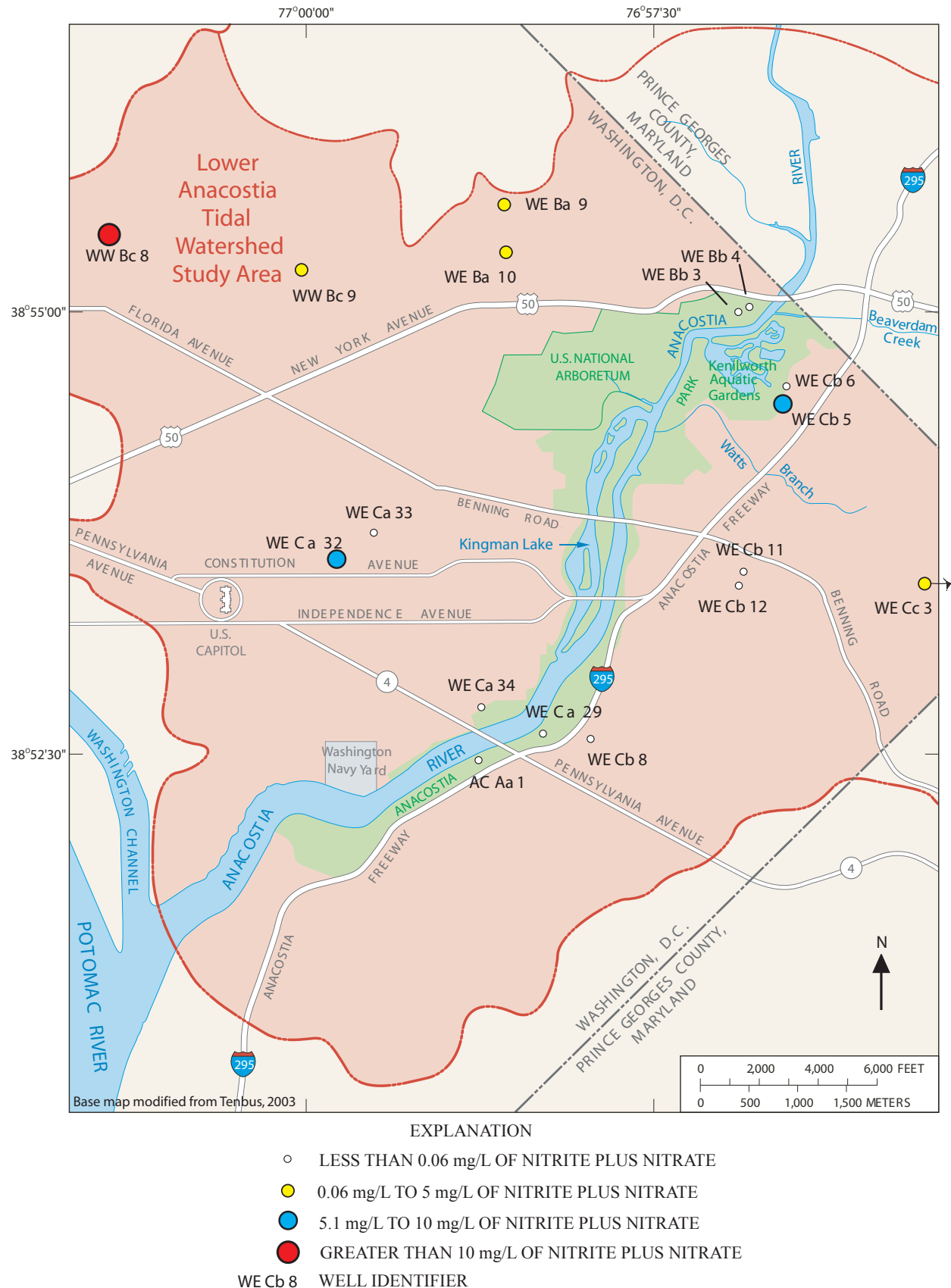


Figure 6. Spatial distribution of nitrite plus nitrate in ground-water samples from the Anacostia River watershed within Washington, D.C., September–December 2005.

Table 6. Summary statistics for nutrients measured in ground-water samples from the Anacostia River watershed within Washington, D.C., September–December 2005.

[mg/L, milligrams per liter; <, less than]

Compound or ion ¹	Units	Number of detections	Number of samples	Summary statistics		
				Minimum	Median	Maximum
Nitrogen, ammonia	mg/L	13*	17	<0.04	0.13	4.38
Nitrogen, nitrite	mg/L	5*	17	<0.008	<0.008	0.009
Nitrogen, ammonia + organic nitrogen	mg/L	16*	17	<0.10	0.18	5.0
Nitrogen, nitrite + nitrate	mg/L	7	17	<0.06	<0.06	11.2
Phosphorus, unfiltered	mg/L	8*	17	<0.04	<0.04	0.7
Phosphorus, filtered	mg/L	7*	17	<0.04	<0.04	0.49

¹ Concentrations of nitrogen species are presented in this report as equivalent concentrations of elemental nitrogen.

* One or more detections reported below laboratory reporting level.

Pesticides in Ground Water

Several pesticides and degradation products (degradates) were detected in ground water in the study area (table 7 and appendix 3). The spatial distribution of pesticide and degradate detections is shown in figure 8. Of the 66 pesticides and 13 pesticide degradates analyzed, 12 compounds (7 pesticides and 5 degradates) were detected at low levels in at least one of the 17 wells sampled (table 7). Concentrations of pesticides and degradates were below 0.2 µg/L and were well below established standards (table 7, appendix 3). Of the 17 wells sampled, 6 wells had detectable pesticide or degradate concentrations (fig. 8); as many as 7 compounds were detected in 1 well (WE Ca 32) located on Constitution Avenue, N.E.

Dieldrin, 2-chloro-4-isopropylamino-6-amino-s-triazine (CIAT), and heptachlor epoxide were each detected in two ground-water samples (table 7, appendix 3). The use of dieldrin, an insecticide, was discontinued in the United States for agricultural application in 1970 and for termite control in 1987. Detection of dieldrin in ground water, surface water, rain, and air in both agricultural and residential settings in the United States reflects historical application patterns (Gilliom and others, 2006; Barbash and Resek, 1996). In fact, dieldrin was the most commonly detected insecticide in shallow ground water in urban areas across the Nation (Gilliom and others, 2006). CIAT, also known as deethylatrazine, is one of the principal degradation products of atrazine, an herbicide

commonly used for weed control. Atrazine (and deethylatrazine) are also among the most commonly detected herbicides in shallow ground water in urban areas across the Nation (Gilliom and others, 2006). Atrazine degradates, including 6-amino-2-chloro-4-ethylamino-s-triazine (CEAT) and 2-hydroxy-4-isopropylamino-t-ethylamino-s-triazine (OIET), also were detected in wells WW Bc 9 and WE Cc 3, respectively (fig. 8). Heptachlor epoxide is not produced commercially, but is formed from the chemical and biological transformation of heptachlor, a non-agricultural insecticide. Its use was discontinued in 1978 except for fire ant control in buried, pad-mounted electric power transformers, and in underground cable television and telephone cable boxes (U.S. Environmental Protection Agency, 2006a). Heptachlor epoxide adsorbs strongly to soil and is extremely resistant to biodegradation, persisting for many years in the upper soil layers. Low levels of this compound were detected in shallow wells WE Ca 32 and WE Cc 3 (appendix 3).

Concentrations of two additional banned compounds (Chlordane and DDE) were detected at low levels in ground-water samples from wells WE Ca 32 and WE Ba 9, respectively. Chlordane was commonly used for termite control before being banned in the United States in 1988 (Extension Toxicity Network, 1996). DDE, a degradation product of DDT, which was banned in the 1970s in the United States, was detected in one well (WE Ba 9) (fig. 8).

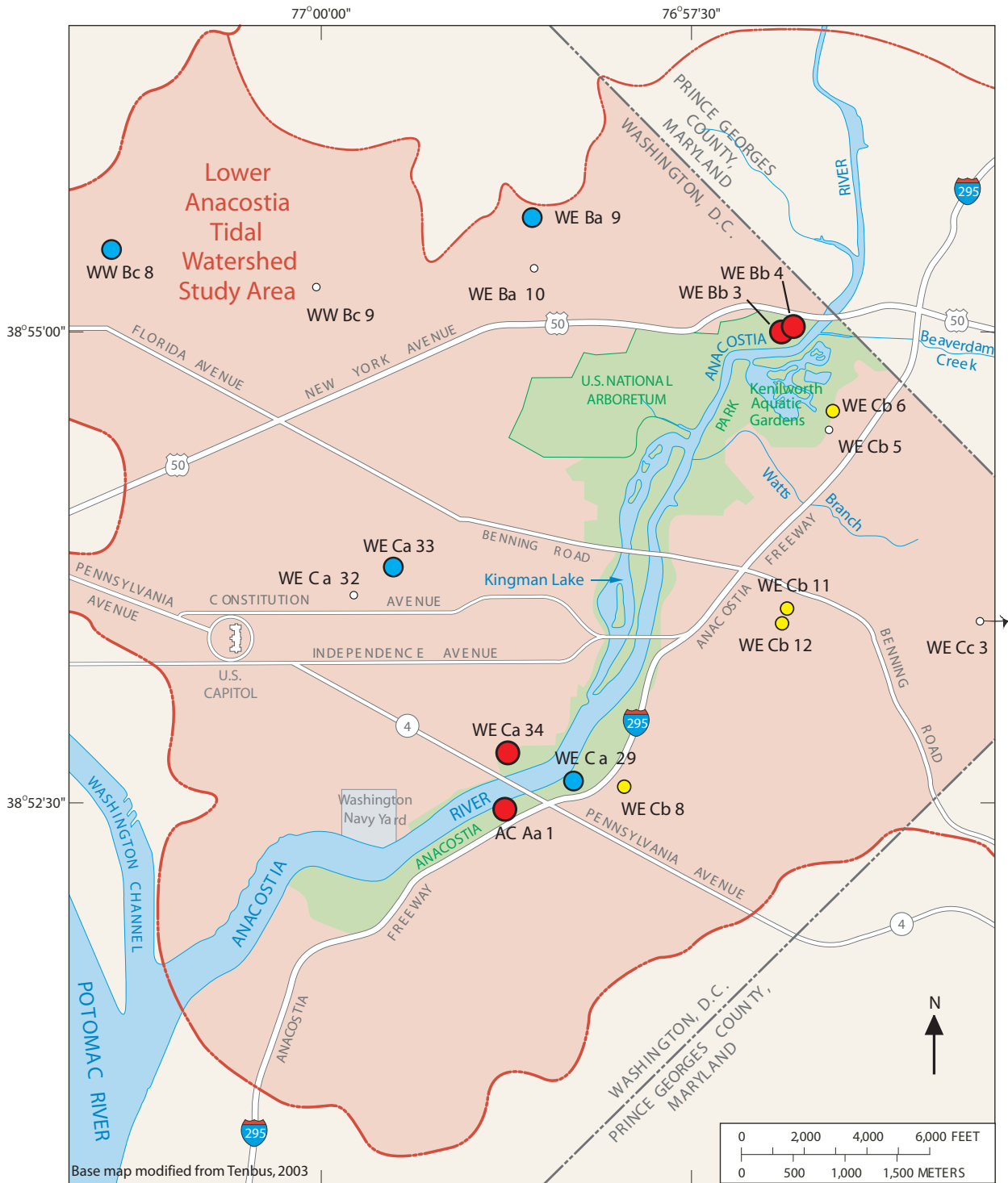


Figure 7. Spatial distribution of ammonia in ground-water samples from the Anacostia River watershed within Washington, D.C., September–December 2005.

Table 7. Summary statistics for pesticides and degradates detected in ground-water samples from the Anacostia River watershed within Washington D.C., September–December 2005.

[CEAT, 2-Chloro-6-ethylamino-4-amino-s-triazine; CIAT, 2-Chloro-4-isopropylamino-6-amino-s-triazine; OIET, 2-Hydroxy-4-isopropylamino-6-ethylamino-s-triazine; µg/L, micrograms per liter; <, less than; E, estimated]

Compound	Units	Number of detections	Number of samples	Summary statistics		
				Minimum	Median	Maximum
Atrazine	µg/L	1	17	<0.008	<0.008	0.02
Bromacil	µg/L	1*	17	<0.02	<0.02	<0.02
CEAT	µg/L	1*	17	<0.08	<0.08	<0.08
CIAT	µg/L	2*	17	<0.03	<0.03	<0.03
Dieldrin	µg/L	2	17	<0.001	<0.001	0.065
Heptachlor epoxide	µg/L	2	17	<0.001	<0.001	0.007
Imidacloprid	µg/L	1	17	<0.020	<0.020	0.301
Metsulfuron	µg/L	1	17	<0.03	<0.03	E0.04
OIET	µg/L	1*	17	<0.032	<0.032	<0.032
p,p'-DDE	µg/L	1	17	<0.002	<0.002	0.004
Chlordane, technical mix	µg/L	1	17	<0.1	<0.1	E0.1
Tebuthiuron	µg/L	1	17	<0.026	<0.026	0.193

* One or more detections reported below laboratory reporting level.

Volatile Organic Compounds, Semivolatile Organic Compounds, and Other Organic Compounds in Ground Water

Of the 62 VOCs and 51 SVOCs analyzed in the ground-water samples from the study area, 11 VOCs were detected in a total of 9 wells and 2 SVOCs were detected in 3 wells (fig. 9, table 8, appendix 3). Six VOCs (gasoline oxygenates) were detected in well WE Ca 33 (appendix 3); the well is in a grassy triangle near a recently constructed playground and is surrounded by multi-unit and single-unit residential buildings. Six solvents (five VOCs and one SVOC, bis(2-ethylhexyl) phthalate) were detected in well WW Bc 8. One of the five VOCs detected in well WW Bc 8, tetrachloroethene (68 mg/L), exceeded the Washington, D.C. ground-water standard of 5 mg/L. Phenolic SVOCs (phenols) were detected in two wells (WE Ca 32 and WE Cb 5). Concentrations of phenols were higher in the shallow well at Kenilworth Aquatic Gardens (WE Cb 5) than in well WE Ca 32 on Constitution Avenue, N.E. (fig. 9, table 8, appendix 3).

Trichloromethane and dichloromethane (both solvents) and methyl *tert*-butyl ether (MTBE), an additive in reformulated gasoline, were the most frequently detected VOCs in ground water in the study area (table 8, appendix 3). These compounds were detected below established USEPA MCLs, where applicable. Wells with detections were scattered spatially around the study area. Trichloromethane was detected in five wells (WE Ca 32, WE Cb 5, WE Cb 12, WW Bc 8, and WW Bc 9) with detected concentrations ranging from 0.95 (estimated value) to 11 µg/L. Dichloromethane was detected in four wells (WE Ca 29, WE Bb 3, WE Bb 4, and WW Bc 8), with all four detected concentrations greater than the method detection level of 0.26 µg/L and less than the laboratory reporting level of 5 µg/L. MTBE was detected in samples from well WE Ca 33 (6.7 µg/L) and well WE Cb 5 (1.4 µg/L, estimated) (fig. 9, table 8, appendix 3).

Concentrations of gasoline-range organics were detected in five wells with concentrations 10 times higher in well WE Ca 33 (540 µg/L) than in wells AC Aa 1, WE Ca 32, WE Cb 12, and WW Bc 8 (ranging from 5.5 to 47 µg/L) (appendix 3).

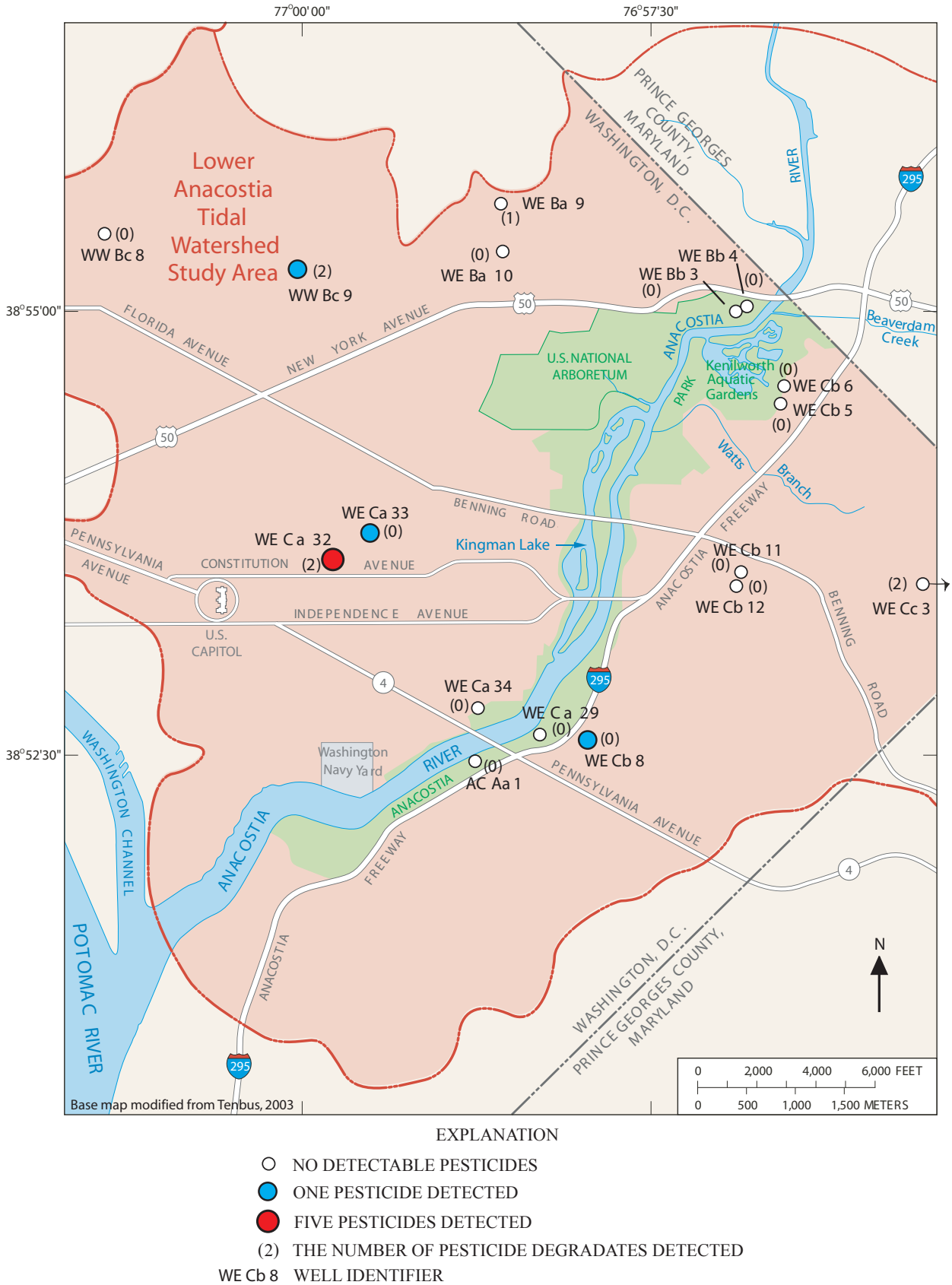


Figure 8. Spatial distribution of pesticide and degradate detections in ground-water samples from the Anacostia River watershed within Washington, D.C., September–December 2005.

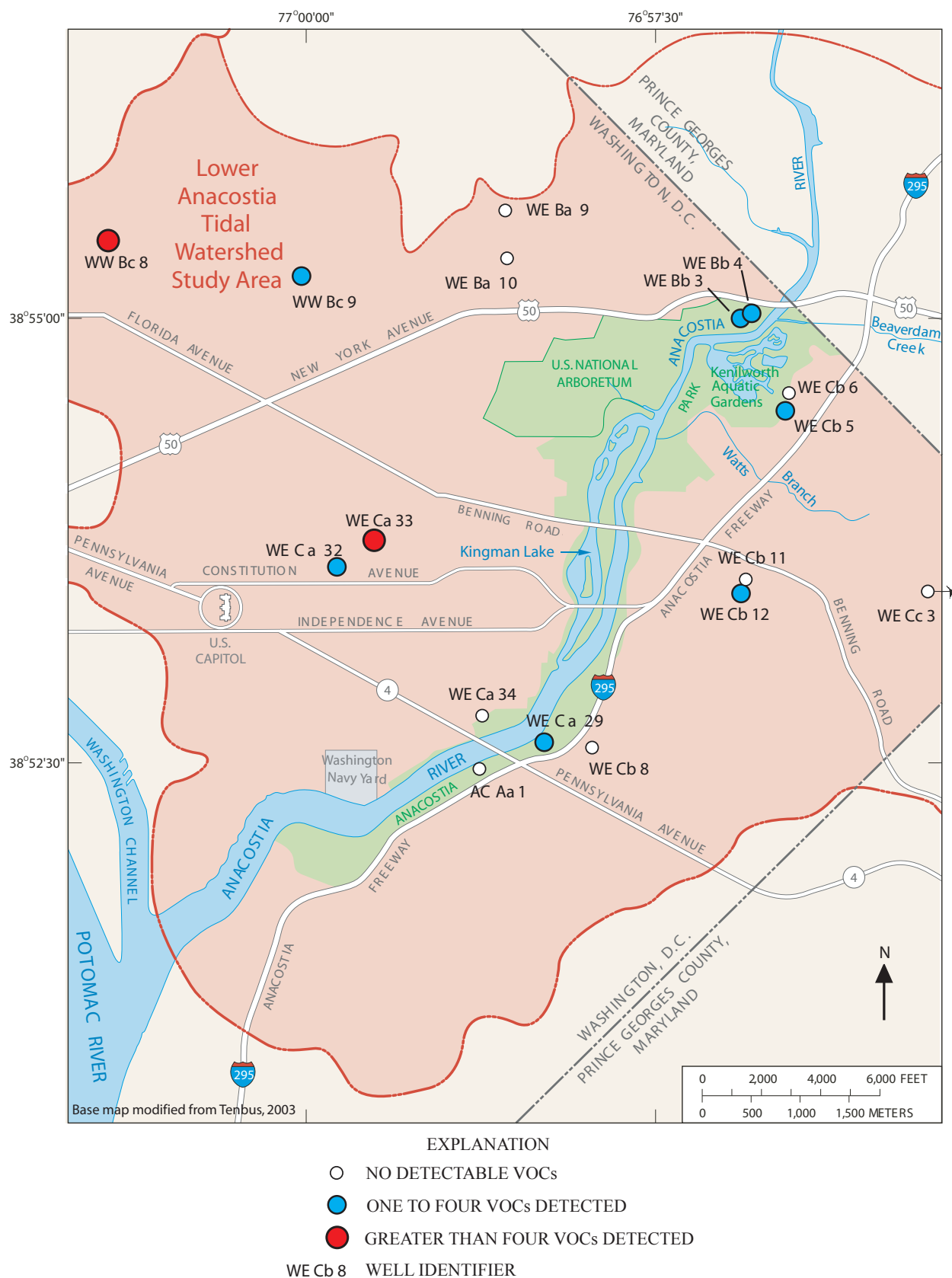


Figure 9. Spatial distribution of volatile organic compound (VOC) detections in ground-water samples from the Anacostia River watershed within Washington, D.C., September–December 2005.

Table 8. Summary statistics for organic compounds detected in ground-water samples from the Anacostia River watershed within Washington D.C., September–December 2005.[MTBE, methyl *tert*-butyl ether; µg/L, micrograms per liter; <, less than; E, estimated; mg/L, milligrams per liter]

Compound	Units	Number of detections	Number of samples	Summary statistics		
				Minimum	Median	Maximum
Volatile organic compounds						
1,2-Dichloroethane	µg/L	1*	17	<1.0	<1.0	<1.0
Dichloromethane	µg/L	4*	17	<5.0	<5.0	<5.0
Isopropylbenzene	µg/L	1	17	<1.0	<1.0	4.4
methyl <i>tert</i> -butyl benzene	µg/L	2*	17	<5	<5	6.7
n-Butylbenzene	µg/L	1	17	<1.0	<1.0	21
sec-Butylbenzene	µg/L	1	17	<1.0	<1.0	19
<i>tert</i> -Butylbenzene	µg/L	1*	17	<1.0	<1.0	<2.5
Tetrachloroethene	µg/L	1	17	<1.0	<1.0	68
Toluene	µg/L	1*	17	<0.50	<0.50	<0.50
Trichloroethene	µg/L	1	17	<1.0	<1.0	E1.6
Trichloromethane	µg/L	5*	17	<1.0	<1.0	11
Semivolatile organic compounds						
bis(2-Ethylhexyl) phthalate	µg/L	1*	17	<10	<10	<10
Phenols, total recoverable	µg/L	2*	13	<16	<16	E93
Diesel-range/gasoline-range organics						
Diesel-range organics	mg/L	5*	17	<0.25	<0.25	1.1
Gasoline-range organics	µg/L	5*	17	<25	<25	540
Oil and grease	mg/L	2*	17	<5.00	<5.00	<5.00
Other						
Caffeine	µg/L	4*	17	<0.02	<0.02	0.03

* One or more detections reported below laboratory reporting level.

Summary

This report presents ground-water-quality data collected by the U.S. Geological Survey from September through December 2005 from 17 monitoring wells in the Anacostia River watershed within Washington, D.C. Ground-water samples were analyzed for major ions, trace elements, nutrients, pesticides and degradates, volatile organic compounds, semivolatile organic compounds, oil and grease, phenols, total polychlorinated biphenyls, and other selected constituents. Major ion concentrations indicate predominantly calcium-bicarbonate type water, with some wells containing a higher percentage of milliequivalents per liter of iron (cation), and chloride or sulfate (anions). Concentrations of trace elements were generally low, with some variability in concentrations of arsenic, barium, cobalt, manganese, nickel, selenium, and zinc. Concentrations of nutrients were generally low, with concentrations of phosphorus less than 1 milligram per liter, ammonia less than 5 milligrams per liter, and a median and

maximum concentration of nitrite plus nitrate of less than 0.06 milligrams per liter and 11.2 milligrams per liter, respectively. Concentrations of organic constituents were generally less than the laboratory reporting levels. Of the 66 pesticides and 13 degradates analyzed, 7 pesticides and 5 degradates were detected in 6 wells. The most frequently detected pesticides and degradates were dieldrin, 2-chloro-4-isopropylamino-6-amino-s-triazine, and heptachlor epoxide. Of the 62 volatile organic compounds and 51 semivolatile organic compounds analyzed, 11 volatile organic compounds and 2 semivolatile organic compounds were detected in 9 wells. The most frequently detected volatile organic compounds were trichloromethane, dichloromethane, and methyl *tert*-butyl ether. The two detected semivolatile organic compounds were bis(2-ethylhexyl) phthalate, and total phenols. Constituents were generally below the published values for the District of Columbia ground-water standards, District of Columbia surface-water standards, U.S. Environmental Protection Agency maximum contaminant levels, and U.S. Environmental Protection Agency Region III risk-based concentrations.

Acknowledgments

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Appendixes 1–3.

Appendix 1. List of chemical constituents, reporting limits, and methods of analysis used during the study.

[USGS, U.S. Geological Survey; CASRN®, Chemical Abstracts Service registry number; na, not applicable; mg/L, milligrams per liter; µg/L, micrograms per liter; mrl, minimum reporting level; lrl, interim reporting level; MS, mass spectrometry; GC, gas chromatography; HPLC, high-performance liquid chromatography; ICP, inductively coupled plasma; ASF, automated-segmented flow; EC, electrolytic conductivity]

CASRN®	Chemical constituent	Reporting level	Units	Report-ing level type	Reference	Method ID	Method description
7440-70-2	Calcium, dissolved	0.02	mg/L	lrl	Fishman, 1993	I-1472-87	ICP - atomic emission spectrometry
16887-00-6	Chloride, dissolved	0.2	mg/L	lrl	Fishman and Friedman, 1989	I-2057-85	Ion chromatography
16984-48-8	Fluoride, dissolved	0.1	mg/L	lrl	Fishman and Friedman, 1989	I-2327-89	ASF, ion-selective electrode
7439-89-6	Iron, dissolved	6	µg/L	lrl	Fishman, 1993	I-1472-87	ICP - atomic emission spectrometry
7439-95-4	Magnesium, dissolved	0.008	mg/L	lrl	Fishman, 1993	I-1472-87	ICP - atomic emission spectrometry
7439-96-5	Manganese, dissolved	0.6	µg/L	lrl	Fishman, 1993	I-1472-87	ICP - atomic emission spectrometry
7440-09-7	Potassium, dissolved	0.16	mg/L	lrl	American Public Health Association, 1998	3120-ICP	ICP - atomic emission spectrometry
7631-86-9	Silica, dissolved	0.2	mg/L	lrl	Fishman and Friedman, 1989	I-2700-89	Colorimetry, ASF, Molybdate blue
7440-23-5	Sodium, dissolved	0.2	mg/L	lrl	Fishman, 1993	I-1472-87	ICP - atomic emission spectrometry
14808-79-8	Sulfate, dissolved	0.18	mg/L	lrl	Fishman and Friedman, 1989	I-2057-85	Ion chromatography
7429-90-5	Aluminum, dissolved	1.6	µg/L	lrl	Faires, 1993	I-2477-92	ICP MS
7440-36-0	Antimony, dissolved	0.2	µg/L	lrl	Faires, 1993	I-2477-92	ICP MS
7440-39-3	Barium, dissolved	0.2	µg/L	lrl	Faires, 1993	I-2477-92	ICP MS
7440-41-7	Beryllium, dissolved	0.06	µg/L	lrl	Faires, 1993	I-2477-92	ICP MS
7440-43-9	Cadmium, dissolved	0.04	µg/L	lrl	Faires, 1993	I-2477-92	ICP MS
7440-47-3	Chromium, dissolved	0.04	µg/L	lrl	Garbarino and others, 2006; or McLain, 1993	I-2020-05 or I-1233-93	Collision/reaction cell ICP-MS or graphite furnace atomic absorption spectrometry
7440-48-4	Cobalt, dissolved	0.04	µg/L	lrl	Garbarino and others, 2006; or Faires, 1993	I-2020-05 or I-2477-92	Collision/reaction cell ICP-MS or ICP MS
7440-50-8	Copper, dissolved	0.4	µg/L	lrl	Garbarino and others, 2006; or Faires, 1993	I-2020-05 or I-2477-92	Collision/reaction cell ICP-MS or ICP MS
7439-92-1	Lead, dissolved	0.08	µg/L	lrl	Faires, 1993	I-2477-92	ICP MS
7439-96-5	Manganese, dissolved	0.2	µg/L	lrl	Faires, 1993	I-2477-92	ICP MS
7439-98-7	Molybdenum, dissolved	0.4	µg/L	lrl	Faires, 1993	I-2477-92	ICP MS
7440-02-0	Nickel, dissolved	0.06	µg/L	lrl	Garbarino and others, 2006; or Faires, 1993	I-2020-05 or I-2477-92	Collision/reaction cell ICP-MS or ICP MS
7440-22-4	Silver, dissolved	0.2	µg/L	lrl	Faires, 1993	I-2477-92	ICP MS
7440-61-1	Uranium, natural, dissolved	0.04	µg/L	lrl	Faires, 1993	I-2477-92	ICP MS
7440-66-6	Zinc, dissolved	0.6	µg/L	lrl	Garbarino and others, 2006; or Faires, 1993	I-2020-05 or I-2477-92	Collision/reaction cell ICP-MS or ICP MS
7664-41-7	Nitrogen, ammonia, dissolved	0.04	mg/L	lrl	Fishman, 1993, p. 125	I-2522-90	Salicylate-hypochlorite colorimetry and ASF analyzer
17778-88-0	Nitrogen, ammonia + organic nitrogen, total	0.1	mg/L	lrl	Patton and Truitt, 2000	I-4515-91	Colorimetry, ASF, Microkjeldahl digestion
14797-65-0	Nitrogen, nitrite, dissolved	0.008	mg/L	lrl	Fishman, 1993, p. 143	I-2540-90	Diazotization colorimetry and ASF analyzer

Appendix 1. List of chemical constituents, reporting limits, and methods of analysis used during the study.—Continued

[USGS, U.S. Geological Survey; CASRN®, Chemical Abstracts Service registry number; na, not applicable; mg/L, milligrams per liter; µg/L, micrograms per liter; lrl, laboratory reporting level; mrl, minimum reporting level; iri, interim reporting level; MS, mass spectrometry; GC, gas chromatography; HPLC, high-performance liquid chromatography; ICP, inductively coupled plasma; ASF, automated-segmented flow; EC, electrolytic conductivity]

CASRN®	Chemical constituent	Reporting level	Units	Report- ing level type	Reference	Method ID	Method description
na	Nitrogen, nitrite + nitrate, dissolved	0.06	mg/L	lrl	Fishman, 1993	I-2545-90	Diazotization colorimetry, ASF, cadmium reduction
7723-14-0	Phosphorus, dissolved	0.04	mg/L	lrl	Patton and Truitt, 1992	I-2610-99	Colorimetry, ASF, Microkjeldahl digestion
7723-14-0	Phosphorus, total	0.04	mg/L	lrl	Patton and Truitt, 1992	I-4610-91	Colorimetry, ASF, Microkjeldahl digestion
7439-97-6	Mercury, dissolved	0.01	µg/L	lrl	Garbarino and Damrau, 2001	I-2464-01	Atomic fluorescence cold vapor
7440-28-0	Thallium, dissolved	0.04	µg/L	lrl	Garbarino, 1999	I-2477-92	ICP MS
7440-38-2	Arsenic, dissolved	0.12	µg/L	lrl	Garbarino, 1999; or Garbarino and others, 2006	I-2020-05 or I-2477-92	Collision/reaction cell ICP-MS or ICP MS
7782-49-2	Selenium, dissolved	0.08	µg/L	lrl	Garbarino, 1999; or Garbarino and others, 2006	I-2020-05 or I-2477-92	Collision/reaction cell ICP-MS or ICP MS
108-95-2	Phenols, total recoverable	16	µg/L	lrl	American Public Health Association, 1995	5530	
309-00-2	Aldrin, total recoverable	0.001	µg/L	lrl	Wershaw and others, 1987	O-3104-83	GC with electron-capture detectors
57-74-9	Chlordane, technical mix, total recoverable	0.1	µg/L	mrl	Wershaw and others, 1987	O-3104-83	GC with electron-capture detectors
60-57-1	Dieldrin, total recoverable	0.001	µg/L	lrl	Wershaw and others, 1987	O-3104-83	GC with electron-capture detectors
959-98-8	<i>alpha</i> -Endosulfan, total recoverable	0.0012	µg/L	lrl	Wershaw and others, 1987	O-3104-83	GC with electron-capture detectors
72-20-8	Endrin, total recoverable	0.0019	µg/L	lrl	Wershaw and others, 1987	O-3104-83	GC with electron-capture detectors
76-44-8	Heptachlor, total recoverable	0.0008	µg/L	lrl	Wershaw and others, 1987	O-3104-83	GC with electron-capture detectors
1024-57-3	Heptachlor epoxide, total recoverable	0.0012	µg/L	lrl	Wershaw and others, 1987	O-3104-83	GC with electron-capture detectors
58-89-9	Lindane, total recoverable	0.002	µg/L	lrl	Wershaw and others, 1987	O-3104-83	GC with electron-capture detectors
72-43-5	<i>p,p'</i> -Methoxychlor, total recoverable	0.0028	µg/L	lrl	Wershaw and others, 1987	O-3104-83	GC with electron-capture detectors
2385-85-5	Mirex, total recoverable	0.0011	µg/L	lrl	Wershaw and others, 1987	O-3104-83	GC with electron-capture detectors
72-54-8	<i>p,p'</i> -DDD, total recoverable	0.0024	µg/L	lrl	Wershaw and others, 1987	O-3104-83	GC with electron-capture detectors
72-55-9	<i>p,p'</i> -DDE, total recoverable	0.0019	µg/L	lrl	Wershaw and others, 1987	O-3104-83	GC with electron-capture detectors
50-29-3	<i>p,p'</i> -DDT, total recoverable	0.0019	µg/L	lrl	Wershaw and others, 1987	O-3104-83	GC with electron-capture detectors
1336-36-3	Polychlorinated biphenyls, total recoverable	0.1	µg/L	mrl	Wershaw and others, 1987	O-3104-83	GC with electron-capture detectors
8001-35-2	Toxaphene, total recoverable	1	µg/L	mrl	Wershaw and others, 1987	O-3104-83	GC with electron-capture detectors
1066-51-9	Aminomethylphosphonic acid (AMPA), filtered water	0.31	µg/L	irl	Lee and others, 2002	O-2136-01	Solid-phase extraction and HPLC/MS
51276-47-2	Glufosinate, filtered water	0.14	µg/L	irl	Lee and others, 2002	O-2136-01	Solid-phase extraction and HPLC/MS
1071-83-6	Glyphosate, filtered water	0.15	µg/L	irl	Lee and others, 2002	O-2136-01	Solid-phase extraction and HPLC/MS

Appendix 1. List of chemical constituents, reporting limits, and methods of analysis used during the study.—Continued

[USGS, U.S. Geological Survey; CASRN®, Chemical Abstracts Service registry number; na, not applicable; mg/L, milligrams per liter; µg/L, micrograms per liter; lrl, laboratory reporting level; mrl, minimum reporting level; lrl, interim reporting level; MS, mass spectrometry; GC, gas chromatography; HPLC, high-performance liquid chromatography; ICP, inductively coupled plasma; ASF, automated-segmented flow; EC, electrolytic conductivity]

CASRN®	Chemical constituent	Reporting level	Units	Report- ing level type	Reference	Method ID	Method description
94-75-7	2,4-D	0.038	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
1928-38-7	2,4-D methyl ester	0.19	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
94-82-6	2,4-DB	0.02	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
6190-65-4	2-Chloro-4-isopropylamino-6-amino-s-triazine (CIAT)	0.028	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
1007-28-9	2-Chloro-6-ethylamino-4-amino-s-triazine (CEAT)	0.08	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
2163-68-0	2-Hydroxy-4-isopropylamino-6-ethylamino-s-triazine (OIET)	0.032	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
5352-88-5	3-(4-Chlorophenyl)-1-methyl urea	0.036	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
16655-82-6	3-Hydroxycarbofuran	0.008	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
16709-30-1	3-Ketocarbofuran	0.02	µg/L	lrl	Furlong and others, 2002	O-2060-02	Solid-phase extraction and HPLC/MS
50594-66-6	Acifluorfen	0.028	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
116-06-3	Aldicarb	0.15	µg/L	mrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
1646-88-4	Aldicarb sulfone	0.018	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
1646-87-3	Aldicarb sulfoxide	0.1	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
1912-24-9	Atrazine	0.008	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
22781-23-3	Bendiocarb	0.08	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
17804-35-2	Benomyl	0.022	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
83055-99-6	Bensulfuron-methyl	0.018	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
25057-89-0	Bentazon	0.024	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
314-40-9	Bromacil	0.018	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
1689-84-5	Bromoxynil	0.044	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
58-08-2	Caffeine	0.018	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
63-25-2	Carbaryl	0.018	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
1563-66-2	Carbofuran	0.016	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
7286-84-2	Chloramben, methyl ester	0.024	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
3397-62-4	Chlordiamino-s-triazine (CAAT)	0.04	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
90982-32-4	Chlorimuron-ethyl	0.032	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
1897-45-6	Chlorothalonil	0.034	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
1702-17-6	Clopyralid	0.067	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
1134-23-2	Cycloate	0.014	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
887-54-7	Dacthal monoacid	0.028	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
1918-00-9	Dicamba	0.036	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
120-36-5	Dichlorprop	0.028	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
88-85-7	Dinoseb	0.038	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
957-51-7	Diphenamid	0.01	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
330-54-1	Diuron	0.016	µg/L	mrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS

Appendix 1. List of chemical constituents, reporting limits, and methods of analysis used during the study.—Continued

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CASRN®	Chemical constituent	Reporting level	Units	Report-ing level type	Reference	Method ID	Method description
101-42-8	Fenuron	0.1	µg/L	mrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
98967-40-9	Flumetsulam	0.04	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
2164-17-2	Fluometuron	0.016	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
81335-37-7	Imazaquin	0.036	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
81335-77-5	Imazethapyr	0.038	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
138261-41-3	Imidacloprid	0.02	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
330-55-2	Linuron	0.014	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
94-74-6	MCPA	0.07	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
94-81-5	MCPB	0.1	µg/L	mrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
57837-19-1	Metalaxyl	0.03	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
2032-65-7	Methiocarb	0.034	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
16752-77-5	Methomyl	0.07	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
74223-64-6	Metsulfuron methyl	0.067	µg/L	mrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
555-37-3	Neburon	0.012	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
111991-09-4	Nicosulfuron	0.04	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
27314-13-2	Norflurazon	0.02	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
19044-88-3	Oryzalin	0.023	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
23135-22-0	Oxamyl	0.05	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
1918-02-1	Picloram	0.032	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
122-42-9	Proptham	0.03	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
60207-90-1	Propiconazole	0.01	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
114-26-1	Propoxur	0.008	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
1982-49-6	Siduron	0.02	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
74222-97-2	Sulfometuron-methyl	0.09	µg/L	mrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
34014-18-1	Tebuthiuron	0.026	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
5902-51-2	Terbacil	0.026	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS
55335-06-3	Triclopyr	0.026	µg/L	lrl	Furlong and others, 2001	O-2060-01	Solid-phase extraction and HPLC/MS

Appendix 1. List of chemical constituents, reporting limits, and methods of analysis used during the study.—Continued

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CASRN®	Chemical constituent	Laboratory reporting level	Units	Method detection level	Reference	Method ID	Method description
630-20-6	1,1,1,2-Tetrachloroethane	1	µg/L	0.17	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
71-55-6	1,1,1-Trichloroethane	1	µg/L	0.18	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
79-34-5	1,1,2,2-Tetrachloroethane	1	µg/L	0.16	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
79-00-5	1,1,2-Trichloroethane	1	µg/L	0.24	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
75-34-3	1,1-Dichloroethane	1	µg/L	0.24	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
75-35-4	1,1-Dichloroethene	1	µg/L	0.27	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
563-58-6	1,1-Dichloropropene	1	µg/L	0.14	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
87-61-6	1,2,3-Trichlorobenzene	1	µg/L	0.34	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
96-18-4	1,2,3-Trichloropropane	1	µg/L	0.26	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
120-82-1	1,2,4-Trichlorobenzene	1	µg/L	0.32	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
95-63-6	1,2,4-Trimethylbenzene	1	µg/L	0.28	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
96-12-8	Dibromochloropropane	2	µg/L	0.63	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
106-93-4	1,2-Dibromoethane	1	µg/L	0.2	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
95-50-1	1,2-Dichlorobenzene	1	µg/L	0.25	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
107-06-2	1,2-Dichloroethane	1	µg/L	0.12	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
78-87-5	1,2-Dichloropropane	1	µg/L	0.17	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
108-67-8	1,3,5-Trimethylbenzene	1	µg/L	0.26	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
541-73-1	1,3-Dichlorobenzene	1	µg/L	0.21	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
142-28-9	1,3-Dichloropropane	1	µg/L	0.17	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
106-46-7	1,4-Dichlorobenzene	1	µg/L	0.2	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
594-20-7	2,2-Dichloropropane	5	µg/L	0.13	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
95-49-8	2-Chlorotoluene	1	µg/L	0.25	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
106-43-4	4-Chlorotoluene	1	µg/L	0.82	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
99-87-6	4-Isopropyltoluene	1	µg/L	0.22	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
107-13-1	Acrylonitrile	20	µg/L	2.3	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
71-43-2	Benzene	1	µg/L	0.15	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
108-86-1	Bromobenzene	1	µg/L	0.19	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
74-97-5	Bromochloromethane	1	µg/L	0.2	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
75-27-4	Bromodichloromethane	1	µg/L	0.15	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
75-25-2	Tribromomethane	1	µg/L	0.33	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
74-83-9	Bromomethane	2	µg/L	0.26	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
56-23-5	Tetrachloromethane	1	µg/L	0.19	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
108-90-7	Chlorobenzene	1	µg/L	0.19	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
75-00-3	Chloroethane	2	µg/L	0.31	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
67-66-3	Trichloromethane	1	µg/L	0.15	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
74-87-3	Chloromethane	2	µg/L	0.25	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
156-59-2	cis-1,2-Dichloroethene	1	µg/L	0.14	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
10061-01-5	cis-1,3-Dichloropropene	1	µg/L	0.12	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
124-48-1	Dibromochloromethane	1	µg/L	0.12	U.S. Environmental Protection Agency, 1986	8260B	GC/MS

Appendix 1. List of chemical constituents, reporting limits, and methods of analysis used during the study.—Continued

[USGS, U.S. Geological Survey; CASRN®, Chemical Abstracts Service registry number; na, not applicable; mg/L, milligrams per liter; µg/L, micrograms per liter; lrl, laboratory reporting level; mrl, minimum reporting level; lrl, interim reporting level; MS, mass spectrometry; GC, gas chromatography; HPLC, high-performance liquid chromatography; ICP, inductively coupled plasma; ASF, automated-segmented flow; EC, electrolytic conductivity]

CASRN®	Chemical constituent	Laboratory reporting level	Units	Method detection level	Reference	Method ID	Method description
74-95-3	Dibromomethane	1	µg/L	0.13	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
75-71-8	Dichlorodifluoromethane	2	µg/L	0.26	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
100-41-4	Ethylbenzene	1	µg/L	0.22	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
87-68-3	Hexachlorobutadiene	1	µg/L	0.33	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
98-82-8	Isopropylbenzene	1	µg/L	0.25	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
1634-04-4	Methyl <i>tert</i> -butyl ether	5	µg/L	0.19	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
75-09-2	Dichloromethane	5	µg/L	0.26	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
91-20-3	Naphthalene	1	µg/L	0.29	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
104-51-8	n-Butylbenzene	1	µg/L	0.27	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
103-65-1	n-Propylbenzene	1	µg/L	0.29	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
135-98-8	sec-Butylbenzene	1	µg/L	0.24	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
100-42-5	Styrene	1	µg/L	0.17	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
98-06-6	<i>tert</i> -Butylbenzene	1	µg/L	0.23	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
127-18-4	Tetrachloroethene	1	µg/L	0.2	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
108-88-3	Toluene	1	µg/L	0.17	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
156-60-5	<i>trans</i> -1,2-Dichloroethene	1	µg/L	0.17	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
10061-02-6	<i>trans</i> -1,3-Dichloropropene	1	µg/L	0.15	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
79-01-6	Trichloroethene	1	µg/L	0.19	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
75-69-4	Trichlorofluoromethane	2	µg/L	0.33	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
75-01-4	Vinyl chloride	1	µg/L	0.28	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
1330-20-7	Xylenes (total)	2	µg/L	0.45	U.S. Environmental Protection Agency, 1986	8260B	GC/MS
120-82-1	1,2,4-Trichlorobenzene	10	µg/L	1.5	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
95-50-1	1,2-Dichlorobenzene	10	µg/L	1.4	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
541-73-1	1,3-Dichlorobenzene	10	µg/L	1.5	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
88-06-2	2,4,6-Trichlorophenol	10	µg/L	1.5	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
120-83-2	2,4-Dichlorophenol	10	µg/L	1.3	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
105-67-9	2,4-Dimethylphenol	10	µg/L	1.4	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
51-28-5	2,4-Dinitrophenol	50	µg/L	10	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
121-14-2	2,4-Dinitrotoluene	10	µg/L	1.8	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
606-20-2	2,6-Dinitrotoluene	10	µg/L	1.6	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
91-58-7	2-Chloronaphthalene	10	µg/L	1.7	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
95-57-8	2-Chlorophenol	10	µg/L	1.7	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
88-75-5	2-Nitrophenol	10	µg/L	1.5	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
91-94-1	3,3'-Dichlorobenzidine	50	µg/L	0.63	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
534-52-1	2-Methyl-4,6-dinitrophenol	50	µg/L	9.8	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
101-55-3	4-Bromophenyl phenyl ether	10	µg/L	2.1	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
59-50-7	4-Chloro-3-methylphenol	10	µg/L	1.3	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
7005-72-3	4-Chlorophenyl phenyl ether	10	µg/L	2	U.S. Environmental Protection Agency, 1986	8270C	GC/MS

Appendix 1. List of chemical constituents, reporting limits, and methods of analysis used during the study.—Continued

[USGS, U.S. Geological Survey; CASRN®, Chemical Abstracts Service registry number; na, not applicable; mg/L, milligrams per liter; µg/L, micrograms per liter; lrl, laboratory reporting level; mrl, minimum reporting level; lrl, interim reporting level; MS, mass spectrometry; GC, gas chromatography; HPLC, high-performance liquid chromatography; ICP, inductively coupled plasma; ASF, automated-segmented flow; EC, electrolytic conductivity]

CASRN®	Chemical constituent	Laboratory reporting level	Units	Method detection level	Reference	Method ID	Method description
100-02-7	4-Nitrophenol	50	µg/L	11	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
83-32-9	Acenaphthene	10	µg/L	1.7	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
208-96-8	Acenaphthylene	10	µg/L	1.8	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
15972-60-8	Alachlor	10	µg/L	1.5	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
120-12-7	Anthracene	10	µg/L	1.9	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
19112-24-9	Atrazine	50	µg/L	13	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
92-87-5	Benzidine	100	µg/L	40	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
56-55-3	Benzo(a)anthracene	10	µg/L	1.7	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
50-32-8	Benzo(a)pyrene	10	µg/L	1.3	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
205-99-2	Benzo(b)fluoranthene	10	µg/L	1.4	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
191-24-2	Benzo(ghi)perylene	10	µg/L	2	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
207-08-9	Benzo(k)fluoranthene	10	µg/L	2.1	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
111-91-1	bis(2-Chloroethoxy)methane	10	µg/L	1.4	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
111-44-4	bis(2-Chloroethyl) ether	10	µg/L	1.8	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
108-60-1	bis(2-chloroisopropyl) ether	10	µg/L	1.4	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
117-81-7	bis(2-Ethylhexyl) phthalate	10	µg/L	1.4	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
85-68-7	Benzyl n-butyl phthalate	10	µg/L	1.7	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
218-01-9	Chrysene	10	µg/L	2	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
53-70-3	Dibenz(a,h)anthracene	10	µg/L	1.4	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
84-66-2	Diethyl phthalate	10	µg/L	1.8	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
131-11-3	Dimethyl phthalate	10	µg/L	1.7	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
84-74-2	Di-n-butyl phthalate	10	µg/L	1.9	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
117-84-0	Di-n-octyl phthalate	10	µg/L	1.1	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
206-44-0	Fluoranthene	10	µg/L	1.8	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
86-73-7	9H-Fluorene	10	µg/L	1.7	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
118-74-1	Hexachlorobenzene	10	µg/L	2.1	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
87-68-3	Hexachlorobutadiene	10	µg/L	1.3	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
77-47-4	Hexachlorocyclopentadiene	50	µg/L	5	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
67-72-1	Hexachloroethane	10	µg/L	1.4	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
193-39-5	Indeno(1,2,3-cd)pyrene	10	µg/L	1.5	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
78-59-1	Isophorone	10	µg/L	1.5	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
91-20-3	Naphthalene	10	µg/L	1.5	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
98-95-3	Nitrobenzene	10	µg/L	1.2	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
62-75-9	N-Nitrosodimethylamine	10	µg/L	1.6	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
621-64-7	N-Nitrosodi-n-propylamine	10	µg/L	1.4	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
86-30-6	N-Nitrosodiphenylamine	10	µg/L	2.6	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
87-86-5	Pentachlorophenol	50	µg/L	10	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
85-01-8	Phenanthrene	10	µg/L	2	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
108-95-2	Phenol	10	µg/L	1.4	U.S. Environmental Protection Agency, 1986	8270C	GC/MS

Appendix 1. List of chemical constituents, reporting limits, and methods of analysis used during the study.—Continued

[USGS, U.S. Geological Survey; CASRN®, Chemical Abstracts Service registry number; na, not applicable; mg/L, milligrams per liter; µg/L, micrograms per liter; lrl, laboratory reporting level; mrl, minimum reporting level; lrl, interim reporting level; MS, mass spectrometry; GC, gas chromatography; HPLC, high-performance liquid chromatography; ICP, inductively coupled plasma; ASF, automated-segmented flow; EC, electrolytic conductivity]

CASRN®	Chemical constituent	Minimum reporting level	Units	Reference	Method ID	Method description
na	Oil and grease	5	mg/L	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
na	Petroleum hydrocarbons	5	mg/L	U.S. Environmental Protection Agency, 1986	8270C	GC/MS
CASRN®	Chemical constituent	Laboratory reporting level	Units	Reference	Method ID	Method description
na	Diesel-range organics	0.25	mg/L	U.S. Environmental Protection Agency, 1986	8015B	GC with flame ionization detector
na	Gasoline-range organics	0.025	mg/L	U.S. Environmental Protection Agency, 1986	8015B	GC with flame ionization detector
CASRN®	Chemical constituent	Minimum reporting level	Units	Reference	Method ID	Method description
na	meta- + para-Xylene, total	0.5	µg/L	U.S. Environmental Protection Agency, 1986	8021B	GC using photoionization and/or EC detectors
1634-04-4	Methyl <i>tert</i> -butyl ether, total	5	µg/L	U.S. Environmental Protection Agency, 1986	8021B	GC using photoionization and/or EC detectors
95-47-6	o-Xylene, total	0.5	µg/L	U.S. Environmental Protection Agency, 1986	8021B	GC using photoionization and/or EC detectors
1330-20-7	Xylene, total	0.5	µg/L	U.S. Environmental Protection Agency, 1986	8021B	GC using photoionization and/or EC detectors
57-12-5	Cyanide, total	0.01	mg/L	U.S. Environmental Protection Agency, 1986	9012B	Automated colorimetric, with off-line distillation

38 Summary of Ground-Water-Quality Data in the Anacostia River Watershed, Washington, D.C., 2005

Appendix 2. Concentrations of inorganic constituents in ground water from selected wells in the Anacostia River watershed within Washington, D.C., September–December 2005, and selected water-quality criteria.

[--, no value reported; na, not applicable; gal/min, gallons per minute; NTRU, nephelometric turbidity ratio unit; mm Hg, millimeters of mercury; $\mu\text{S}/\text{cm}$, microsiemens per centimeter at 25 degrees Celsius; mg/L, milligrams per liter; $\mu\text{g}/\text{L}$, micrograms per liter; N, nitrogen; CaCO_3 , calcium carbonate; <, less than; E, estimated; M, presence verified but not quantified; d, diluted sample: method high range exceeded; n, value is below the laboratory reporting level and above the long-term method detection level; o, result determined by alternate method; NAVD 88, North American Vertical Datum of 1988; CASRN®, Chemical Abstracts Service Registry Number; USGS, U.S. Geological Survey; USEPA, U.S. Environmental Protection Agency; ***, Please refer to District of Columbia (2003) for this value; **bold**, environmental sample results; **bold italics**, replicate sample results; plain text, blank sample results]

USGS well number	USGS site identifier	Date	Time	Sample type	Flow rate, instantaneous, gal/min	Pumped period prior to sampling, in minutes	Turbidity, NTRU	Barometric pressure, in mm Hg	Dissolved oxygen, mg/L	pH, water, unfiltered, field, standard units	Specific conductance, water, unfiltered, $\mu\text{S}/\text{cm}$
CASRN					na	na	na	na	na	na	na
AC Aa 1	385225076590101	9/21/2005	1030	Environmental	0.75	80	7.7	769	3.1	6.7	291
AC Aa 1	385225076590101	9/21/2005	1035	Field equipment blank	--	--	--	--	--	--	--
WE Ba 9	385606076584101	10/12/2005	1230	Environmental	0.17	90	5	765	<1	6.2	765
WE Ba 10	385534076582101	10/12/2005	930	Environmental	0.4	60	2	765	<1	5.4	261
WE Ba 10	385534076582101	10/12/2005	935	Field equipment blank	--	--	--	--	--	--	--
WE Bb 3	385504076563801	9/20/2005	1000	Environmental	1	90	30	768	1	5.9	363
WE Bb 3	385504076563801	9/20/2005	1010	Replicate	--	--	--	--	--	--	--
WE Bb 4	385504076563802	9/20/2005	1430	Environmental	0.66	55	0.8	768	1.6	6	279
WE Ca 29	385238076581501	9/19/2005	1400	Environmental	1	55	12	770	1.1	6	179
WE Ca 32	385332076594701	9/22/2005	1000	Environmental	0.75	90	7.5	765	5.8	5.6	1,100
WE Ca 33	385349076592801	10/14/2005	1030	Environmental	0.75	75	3	762	<1	6.7	710
WE Ca 33	385349076592801	10/14/2005	800	Field equipment blank	--	--	--	--	--	--	--
WE Ca 34	385245076583501	9/27/2005	1330	Environmental	1	90	1.4	764	<1	7.3	696
WE Cb 5	385443076562801	9/14/2005	1400	Environmental	1	50	1.3	764	4.5	5.2	286
WE Cb 6	385443076562802	9/14/2005	1030	Environmental	1	93	2.3	764	<1	6.2	87
WE Cb 8	385252076572801	12/20/2005	1430	Environmental	--	150	--	763	--	6.8	151
WE Cb 8	385252076572801	12/20/2005	1435	Replicate	--	--	--	--	--	--	--
WE Cb 8	385252076572801	12/21/2005	1730	Field equipment blank	--	--	--	--	--	--	--
WE Cb 11	385332076564101	12/19/2005	1430	Environmental	--	40	--	769	--	6.2	355
WE Cb 12	385332076564102	9/27/2005	1000	Environmental	0.85	75	0.9	764	<1	5.8	164
WE Cc 3	385327076544801	10/6/2005	1000	Environmental	0.4	85	0.4	768	2	5.9	854
WE Cc 3	385327076544801	10/6/2005	1010	Replicate	--	--	--	--	--	--	--
WW Bc 8	385519077012601	10/13/2005	1100	Environmental	0.2	50	1	761	1.7	5	482
WW Bc 9	385527077000701	12/19/2005	1100	Environmental	0.18	40	--	775	--	4.8	371
Selected water-quality criteria											
District of Columbia ground-water standards (District of Columbia, 1993)					--	--	***	--	--	6.5–8.5	--
District of Columbia surface-water standards (District of Columbia, 2003)											
A					--	--	***	--	--	6.0–8.5	--
B					--	--	***	--	--	6.0–8.5	--
C					--	--	***	--	4–5	6.0–8.5	--
D					--	--	--	--	--	--	--
USEPA Maximum Contaminant Levels (U.S. Environmental Protection Agency, 2006b)					--	--	--	--	--	--	--
USEPA Region III Risk-Based Concentrations for tap water (U.S. Environmental Protection Agency Region III, 2006)					--	--	--	--	--	--	--

40 Summary of Ground-Water-Quality Data in the Anacostia River Watershed, Washington, D.C., 2005

Appendix 2. Concentrations of inorganic constituents in ground water from selected wells in the Anacostia River watershed within Washington, D.C., September–December 2005, and selected water-quality criteria.—Continued

[--, no value reported; na, not applicable; gal/min, gallons per minute; NTRU, nephelometric turbidity ratio unit; mm Hg, millimeters of mercury; μ S/cm, microsiemens per centimeter at 25 degrees Celsius; mg/L, milligrams per liter; μ g/L, micrograms per liter; N, nitrogen; CaCO₃, calcium carbonate; <, less than; E, estimated; M, presence verified but not quantified; d, diluted sample: method high range exceeded; n, value is below the laboratory reporting level and above the long-term method detection level; o, result determined by alternate method; NAVD 88, North American Vertical Datum of 1988; CASRN®, Chemical Abstracts Service Registry Number; USGS, U.S. Geological Survey; USEPA, U.S. Environmental Protection Agency; ***, Please refer to District of Columbia (2003) for this value; **bold**, environmental sample results; **bold italics**, replicate sample results; plain text, blank sample results]

USGS well number	USGS site identifier	Date	Time	Sample type	Ammonia, water, dissolved, mg/L as N	Nitrite + nitrate, water, dissolved, mg/L as N	Nitrite, water, dissolved, mg/L as N	Phosphorus, water, dissolved, mg/L	Phosphorus, water, total, mg/L	Aluminum, water, dissolved, μ g/L
CASRN					7664-41-7	na	14797-65-0	7723-14-0	7723-14-0	7429-90-5
AC Aa 1	385225076590101	9/21/2005	1030	Environmental	3.81d	<.06	E.006n	0.43	0.47	<2
AC Aa 1	385225076590101	9/21/2005	1035	Field equipment blank	<.04	<.06	<.008	<.04	<.04	15 ^K
WE Ba 9	385606076584101	10/12/2005	1230	Environmental	0.27	1.36	<.008	<.04	<.04	<2
WE Ba 10	385534076582101	10/12/2005	930	Environmental	<.04	1.15	<.008	<.04	<.04	2
WE Ba 10	385534076582101	10/12/2005	935	Field equipment blank	<.04	<.06	<.008	<.04	<.04	17 ^K
WE Bb 3	385504076563801	9/20/2005	1000	Environmental	4.38d	<.06	<.008	0.49	.70d	2
WE Bb 3	385504076563801	9/20/2005	1010	Replicate	4.35d	<.06	<.008	0.52	0.72	2
WE Bb 4	385504076563802	9/20/2005	1430	Environmental	1.76d	<.06	<.008	0.43	0.48	2
WE Ca 29	385238076581501	9/19/2005	1400	Environmental	0.54	<.06	E.005n	E.04n	0.18	<2
WE Ca 32	385332076594701	9/22/2005	1000	Environmental	<.04	7.74d	<.008	<.04	<.04	4
WE Ca 33	385349076592801	10/14/2005	1030	Environmental	0.24	<.06	<.008	<.20d	E.02n	<2
WE Ca 33	385349076592801	10/14/2005	800	Field equipment blank	<.04	<.06	<.008	<.04	<.04	6 ^K
WE Ca 34	385245076583501	9/27/2005	1330	Environmental	3.27d	<.06	<.008	0.14	0.2	2
WE Cb 5	385443076562801	9/14/2005	1400	Environmental	<.04	5.41d	<.008	<.04	<.04	2
WE Cb 6	385443076562802	9/14/2005	1030	Environmental	0.11	<.06	0.009	0.13	0.17	<2
WE Cb 8	385252076572801	12/20/2005	1430	Environmental	0.06	<.06	E.006n	0.21	0.29	<2
WE Cb 8	385252076572801	12/20/2005	1435	Replicate	0.07	<.06	E.005n	0.2	0.3	<2
WE Cb 8	385252076572801	12/21/2005	1730	Field equipment blank	<.04	<.06	<.008	<.04	<.04	<2 ^K
WE Cb 11	385332076564101	12/19/2005	1430	Environmental	0.13	<.06	<.008	<.04	<.04	<2
WE Cb 12	385332076564102	9/27/2005	1000	Environmental	0.11	<.06	E.006n	<.04	<.04	2
WE Cc 3	385327076544801	10/6/2005	1000	Environmental	E.03n	3.03	<.008	<.04	<.04	7
WE Cc 3	385327076544801	10/6/2005	1010	Replicate	E.02n	3.01	<.008	<.04	<.04	6
WW Bc 8	385519077012601	10/13/2005	1100	Environmental	0.5	11.2d	<.008	<.04	<.04	172
WW Bc 9	385527077000701	12/19/2005	1100	Environmental	<.04	2.92	<.008	<.04	<.04	107
Selected water-quality criteria										
District of Columbia ground-water standards (District of Columbia, 1993)					--	10	1	--	--	--
District of Columbia surface-water standards (District of Columbia, 2003)										
A					--	--	--	--	--	--
B					--	--	--	--	--	--
C					***	--	--	--	--	--
D					--	--	--	--	--	--
USEPA Maximum Contaminant Levels (U.S. Environmental Protection Agency, 2006b)					--	10	1	0.00073	0.00073	--
USEPA Region III Risk-Based Concentrations for tap water (U.S. Environmental Protection Agency Region III, 2006)					0.21	na	3.7	--	--	--

Antimony, water, dissolved, µg/L	Arsenic, water, dissolved, µg/L	Barium, water, dissolved, µg/L	Beryllium, water, dissolved, µg/L	Cadmium, water, dissolved, µg/L	Chromium, water, dissolved, µg/L	Cobalt, water, dissolved, µg/L	Copper, water, dissolved, µg/L	Cyanide, water, total, mg/L	Iron, water, dissolved, µg/L	Lead, water, dissolved, µg/L	Manga- nese, water, dissolved, µg/L	Mercury, water, dissolved, µg/L
7440-36-0	7440-38-2	7440-39-3	7440-41-7	7440-43-9	7440-47-3	7440-48-4	7440-50-8	57-12-5	7439-89-6	7439-92-1	7439-96-5	7439-97-6
<.20	39.9o	97	<.06	<.04	0.17	3.9o	<.40o	<.01	22,500d	<.08	63.1	<.01
<.20	E.08no	<.2	<.06	<.04	0.11	<.014	0.4	--	<6	0.26	<.2	<.01
<.20	E.10n	58	<.06	E.04n	0.09	2.81o	.7o	<.01	<6	<.08	554	<.01
<.20	E.06n	25	0.08	E.03n	<.04	.364o	E.3no	<.01	<6	E.04n	176	<.01
<.20	<.12	M	<.06	<.04	<.04	<.040o	.7o	--	<6	0.21	<.2	<.01
<.20	.38o	178	E.03n	0.1	0.75	2.2o	E.26no	<.01	54,400d	<.08	2,330	<.01
<.20	.42o	177	E.03n	0.16	0.8	2.2o	E.24no	--	53,600d	<.08	2,320	<.01
<.20	.40o	163	E.04n	0.13	0.57	1.9o	E.20no	<.01	36,900d	<.08	1,600	<.01
<.20	3.1o	117	E.03n	<.04	0.18	E.02no	<.40o	<.01	23,900d	<.08	141	<.01
<.20	.43o	87	<.06	0.07	1.1	0.423	1.2	M	13	0.14	2.8	<.01
<.20	5.8	142	<.06	<.04	0.26	7.23o	<.4o	M	37,800d	<.08	6,830d	<.01
<.20	<.12	<.2	<.06	<.04	0.13	<.040o	<.4o	<.01	<6	E.04n	<.2	<.01
<.20	2.1	404	<.06	<.04	0.15	0.334	E.4n	M	7,930	<.08	643	<.01
<.20	E.06no	29	0.07	0.32	.47o	--	--	<.01	E3n	0.1	19.3	<.01
<.20	3.4o	72	<.06	<.04	.08o	--	--	<.01	5,210	<.08	92	<.01
<.20	E.11n	173	<.06	<.04	0.12	.543o	<.4o	<.01	3,070	<.08	189	<.01
<.20	0.12	172	<.06	<.04	0.29	.562o	<.4o	<.01	3,080	<.08	187	<.01
<.20	<.12	<.2	<.06	<.04	<.04	<.040o	<.4o	<.01	<6	<.08	<.2	<.01
<.20	0.79	535	<.06	<.04	<.04	61.4o	<.4o	M	17,200d	<.08	5,890	<.01
<.20	0.3	136	<.06	<.04	0.12	8.77	E.3n	M	3,060	0.13	1,400	<.01
<.20	0.12	63	0.09	0.36	0.05	10.3o	.5o	<.01	815	<.08	255	<.01
<.20	0.12	63	0.08	0.36	0.05	10.4o	E.4no	M	797	<.08	244	<.01
<.20	0.28	586	1.44	0.41	0.09	29.6o	9.9o	<.01	8	7.84	480	E.01n
<.20	0.2	174	0.28	0.49	0.55	3.20o	1.9o	<.01	7	E.07n	296	.33d
--	50	1,000	--	5	100 ^A	--	1,000	0.2 ^B	300	50	50	2
--	--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--	--
--	150–340	--	--	***	11–16 ^J	--	***	0.0052–0.022	1,000	***	--	0.77–1.4 ^G
4,300	0.14	--	--	--	--	--	--	0.14	--	***	100	0.15 ^G
6	10	2,000	4	5	100	--	1,300 ^C	0.2	--	15 ^L	--	2 ^D
15	0.045	7,300	73	18	110–55,000 ^E	--	1,500	0.73	11,000	--	730	--

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Appendix 2. Concentrations of inorganic constituents in ground water from selected wells in the Anacostia River watershed within Washington, D.C., September–December 2005, and selected water-quality criteria.—Continued

[--, no value reported; na, not applicable; gal/min, gallons per minute; NTRU, nephelometric turbidity ratio unit; mm Hg, millimeters of mercury; μ S/cm, microsiemens per centimeter at 25 degrees Celsius; mg/L, milligrams per liter; μ g/L, micrograms per liter; N, nitrogen; CaCO₃, calcium carbonate; <, less than; E, estimated; M, presence verified but not quantified; d, diluted sample: method high range exceeded; n, value is below the laboratory reporting level and above the long-term method detection level; o, result determined by alternate method; NAVD 88, North American Vertical Datum of 1988; CASRN®, Chemical Abstracts Service Registry Number; USGS, U.S. Geological Survey; USEPA, U.S. Environmental Protection Agency; ***, Please refer to District of Columbia (2003) for this value; **bold**, environmental sample results; **bold italics**, replicate sample results; plain text, blank sample results]

USGS well number	USGS site identifier	Date	Time	Sample type	Molybdenum, water, dissolved, μ g/L	Nickel, water, dissolved, μ g/L	Selenium, water, dissolved, μ g/L	Silver, water, dissolved, μ g/L	Thallium, water, dissolved, μ g/L	Zinc, water, dissolved, μ g/L	Uranium, natural, water, dissolved, μ g/L
CASRN					7439-98-7	7440-02-0	7782-49-2	7440-22-4	7440-28-0	7440-66-6	7440-61-1
AC Aa 1	385225076590101	9/21/2005	1030	Environmental	4.9	1.0o	E.06no	<.2	<.04	372o	<.04
AC Aa 1	385225076590101	9/21/2005	1035	Field equipment blank	<.4	0.12	<.08o	<.2	<.04	0.6	<.04
WE Ba 9	385606076584101	10/12/2005	1230	Environmental	0.4	5.71o	0.29	<.2	0.07	3.6o	0.18
WE Ba 10	385534076582101	10/12/2005	930	Environmental	<.4	4.71o	E.04n	<.2	<.04	1.8o	E.02n
WE Ba 10	385534076582101	10/12/2005	935	Field equipment blank	<.4	<.06o	<.08	<.2	<.04	6.2	<.04
WE Bb 3	385504076563801	9/20/2005	1000	Environmental	E.2n	.62o	<.08o	<.2	<.04	.73o	<.04
WE Bb 3	385504076563801	9/20/2005	1010	Replicate	E.2n	.67o	<.08o	<.2	<.04	E.34no	<.04
WE Bb 4	385504076563802	9/20/2005	1430	Environmental	<.4	.98o	<.08o	<.2	<.04	E.44no	<.04
WE Ca 29	385238076581501	9/19/2005	1400	Environmental	0.5	--	<.08o	<.2	<.04	E.35no	<.04
WE Ca 32	385332076594701	9/22/2005	1000	Environmental	<.4	4.22	2.1o	<.2	0.08	2	<.04
WE Ca 33	385349076592801	10/14/2005	1030	Environmental	0.8	1.36o	<.08	<.2	<.04	<.60	<.04
WE Ca 33	385349076592801	10/14/2005	800	Field equipment blank	<.4	<.06o	<.08	<.2	<.04	<.60	<.04
WE Ca 34	385245076583501	9/27/2005	1330	Environmental	E.3n	3.49	0.7	<.2	<.04	0.9	E.03n
WE Cb 5	385443076562801	9/14/2005	1400	Environmental	<.4	--	.91o	<.2	E.02n	2.4o	<.04
WE Cb 6	385443076562802	9/14/2005	1030	Environmental	E.4n	--	<.08o	<.2	<.04	.64o	<.04
WE Cb 8	385252076572801	12/20/2005	1430	Environmental	<.4	.77o	<.08	<.2	<.04	<.60	<.04
WE Cb 8	385252076572801	12/20/2005	1435	Replicate	<.4	.96o	<.08	<.2	<.04	<.60	<.04
WE Cb 8	385252076572801	12/21/2005	1730	Field equipment blank	<.4	E.06no	<.08	<.2	<.04	<.60	<.04
WE Cb 11	385332076564101	12/19/2005	1430	Environmental	<.4	11.9o	<.08	<.6d	<.04	7.9o	<.04
WE Cb 12	385332076564102	9/27/2005	1000	Environmental	E.2n	4.65	<.4	<.2	<.04	4.5	<.04
WE Cc 3	385327076544801	10/6/2005	1000	Environmental	E.4n	13.1o	1.2	<.2	0.11	13.7	0.14
WE Cc 3	385327076544801	10/6/2005	1010	Replicate	0.4	13.2o	1.2	<.2	0.1	13.2	0.12
WW Bc 8	385519077012601	10/13/2005	1100	Environmental	<.4	29.4o	0.23	<.2	0.18	122o	0.05
WW Bc 9	385527077000701	12/19/2005	1100	Environmental	<.4	21.1o	0.82	<.2	0.08	37.0o	0.04
Selected water-quality criteria											
District of Columbia ground-water standards (District of Columbia, 1993)					--	--	50	50	--	5,000	--
District of Columbia surface-water standards (District of Columbia, 2003)											
A					--	--	--	--	--	--	--
B					--	--	--	--	--	--	--
C					--	***	5–20	***	--	***	--
D					--	4,600	4,200 ^G	65,000	0.47	26,000	--
USEPA Maximum Contaminant Levels (U.S. Environmental Protection Agency, 2006b)					--	--	50	--	2	--	30
USEPA Region III Risk-Based Concentrations for tap water (U.S. Environmental Protection Agency Region III, 2006)					180	730	180	180	2.6	11,000	7.3–110 ^F

Appendix 2. Footnotes.

^A The District of Columbia has two ground-water standards for chromium: hexavalent chromium is 100 µg/L, and trivalent chromium is 100 µg/L.

^B The District of Columbia ground-water standard for cyanide is “free” cyanide, whereas the reported USGS values for cyanide are total or whole values.

^C The value listed for copper is a USEPA “action level,” not an MCL.

^D The MCL listed for mercury is for inorganic mercury (CASRN 7487-94-7).

^E The USEPA Region III RBC value for trivalent chromium is 55,000 µg/L and the value for hexavalent chromium is 110 µg/L.

^F The USEPA Region III RBCs include two values: a value from the Integrated Risk Information System (IRIS) of 110 µg/L and a “provisional” value of 7.3 µg/L.

^G The District of Columbia surface-water standard for mercury is for total recoverable mercury. The results from the 2005 ground-water samples are for dissolved mercury.

^H The District of Columbia surface-water standard for selenium is for total recoverable selenium. The results from the 2005 ground-water samples are for dissolved selenium.

^J The District of Columbia surface-water standards contain values of 11 to 16 µg/L for dissolved hexavalent chromium. Please refer to the District of Columbia surface-water regulations for the table or equation for the dissolved trivalent chromium value. The results from the 2005 ground-water samples are for dissolved chromium.

^K In March 2006, the blank water lots used for this sample were found to have concentrations of aluminum between 10 and 70 µg/L instead of less than 1.6 µg/L.

^L This value is a USEPA “action level,” not an MCL.

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Appendix 3. Concentrations of pesticides, degradates, volatile organic compounds, and semivolatile organic compounds in ground water from selected wells in the Anacostia River watershed within Washington, D.C., September–December 2005, and selected water-quality criteria.

[STL, Severn Trent Laboratory; USGS, U.S. Geological Survey; NWQL, USGS National Water Quality laboratory; <, less than; E, estimated; mg/L, milligrams per liter; µg/L, micrograms per liter; --, no value reported; na, not applicable; M, presence verified but not quantified; b, value extrapolated at low end; d, diluted sample; m, value is highly variable by this method; n, below the laboratory reporting level and above the long-term method detection level; t, below the long-term method detection level; v, analyte detected in laboratory blank; r, sample ruined in preparation; CIAT, 2-chloro-4-isopropylamino-6-amino-s-triazine; CEAT, 6-amino-2-chloro-4-ethylamino-s-triazine; OIET, 2-hydroxy-4-isopropylamino-6-ethylamino-s-triazine; CASRN®, Chemical Abstracts Service Registry Number; USEPA, U.S. Environmental Protection Agency; ***, Please refer to District of Columbia (2003) for this value; **bold**, environmental sample results; **bold italics**, replicate sample results; plain text, blank sample results]

USGS well number	USGS site identifier	Date	Time	Sample type	2,4-D methyl ester, filtered, µg/L	2,4-D, filtered, µg/L	2,4-DB, filtered, µg/L	CIAT, filtered, µg/L	CEAT, filtered, µg/L	OIET, filtered, µg/L	3-Hydroxy-carbo-furan, filtered, µg/L	3-Keto-carbo-furan, filtered, µg/L
CASRN					1928-38-7	94-75-7	94-82-6	6190-65-4	1007-28-9	2163-68-0	16655-82-6	16709-30-1
AC Aa 1	385225076590101	9/21/2005	1030	Environmental	<.016	<.08	<.02	<.03	<.08m	<.032	<.008	<.02m
AC Aa 1	385225076590101	9/21/2005	1035	Field equipment blank	<.016	<.04	<.02	<.03	<.08m	<.032	<.008	<.02m
WE Ba 9	385606076584101	10/12/2005	1230	Environmental	<.016	<.04	<.02	<.03	<.08m	<.032	<.008	<.02m
WE Ba 9	385606076584101	10/12/2005	2359	STL trip blank	--	--	--	--	--	--	--	--
WE Ba 10	385534076582101	10/12/2005	930	Environmental	<.016	<.04	<.02	<.03	<.08m	<.032	<.008	<.02m
WE Ba 10	385534076582101	10/12/2005	935	Field equipment blank	<.016	<.04	<.02	<.03	<.08m	<.032	<.008	<.02m
WE Ba 10	385534076582101	10/12/2005	2359	STL trip blank	--	--	--	--	--	--	--	--
WE Bb 3	385504076563801	9/20/2005	1000	Environmental	<.016	<.04	<.02	<.03	<.08m	<.032	<.008	<.02m
WE Bb 3	385504076563801	9/20/2005	1010	Replicate	<.016	<.04	<.02	<.03	<.08m	0.044	<.008	<.02m
WE Bb 4	385504076563802	9/20/2005	1430	Environmental	<.016	<.04	<.02	<.03	<.08m	<.032	<.008	<.02m
WE Ca 29	385238076581501	9/19/2005	1400	Environmental	<.016	<.04	<.02	<.03	<.08m	<.032	<.008	<.02m
WE Ca 32	385332076594701	9/22/2005	1000	Environmental	<.016	<.04	<.02	E.02n	<.08m	<.032	<.008	<.02m
WE Ca 33	385349076592801	10/14/2005	1030	Environmental	<.016	<.04	<.02	<.03	<.08m	<.032	<.008	<.02m
WE Ca 33	385349076592801	10/14/2005	800	Field equipment blank	<.016	<.04	<.02	<.03	<.08m	<.032	<.008	<.02m
WE Ca 34	385245076583501	9/27/2005	1330	Environmental	<.016	<.04	<.02	<.03	<.08m	<.032	<.008	<.02m
WE Ca 34	385245076583501	9/27/2005	2359	STL trip blank	--	--	--	--	--	--	--	--
WE Cb 5	385443076562801	9/14/2005	1400	Environmental	<.016	<.04	<.02	<.03	<.08m	<.032	<.008	<.02m
WE Cb 6	385443076562802	9/14/2005	1030	Environmental	<.016	<.04	<.02	<.03	<.08m	<.032	<.008	<.02m
WE Cb 8	385252076572801	12/20/2005	1430	Environmental	<.016	<.04	<.02	<.03	<.08m	<.032	<.008	<.02m
WE Cb 8	385252076572801	12/20/2005	1435	Replicate	<.016	<.04	<.02	<.03	<.08m	<.032	<.008	<.02m
WE Cb 8	385252076572801	12/21/2005	1730	Field equipment blank	<.016	<.04	<.02	<.03	<.08m	<.032	<.008	<.02m
WE Cb 11	385332076564101	12/19/2005	1430	Environmental	<.016	<.04	<.02	<.03	<.08m	<.032	<.008	<.02m
WE Cb 12	385332076564102	9/27/2005	1000	Environmental	<.023	<.04	<.02	<.03	<.08m	<.032	<.008	<.09m
WE Cb 12	385332076564102	9/27/2005	2359	STL trip blank	--	--	--	--	--	--	--	--
WE Cc 3	385327076544801	10/6/2005	1000	Environmental	<.016	<.04	<.02	<.03	<.08m	E.007t	<.008	<.02m
WE Cc 3	385327076544801	10/6/2005	1010	Replicate	<.016	<.04	<.02	<.03	<.08m	E.007t	<.008	<.02m
WE Cc 3	385327076544801	10/6/2005	2359	STL trip blank	--	--	--	--	--	--	--	--
WW Bc 8	385519077012601	10/13/2005	1100	Environmental	<.016	<.04	<.02	<.03	<.08m	<.032	<.008	<.02m
WW Bc 8	385519077012601	10/13/2005	2359	STL trip blank	--	--	--	--	--	--	--	--
WW Bc 9	385527077000701	12/19/2005	1100	Environmental	<.016	<.04	<.02	E.01t	E.01mt	<.032	<.008	<.02m
WW Bc 9	385527077000701	12/19/2005	2359	STL trip blank	--	--	--	--	--	--	--	--
Selected water-quality criteria												
District of Columbia ground-water standards (District of Columbia, 1993)					--	100	--	--	--	--	--	--
District of Columbia surface-water standards (District of Columbia, 2003)												
A					--	--	--	--	--	--	--	--
B					--	--	--	--	--	--	--	--
C					--	--	--	--	--	--	--	--
D					--	--	--	--	--	--	--	--
USEPA Maximum Contaminant Levels (U.S. Environmental Protection Agency, 2006b)					--	70	--	--	--	--	--	--
USEPA Region III Risk-Based Concentrations for tap water (U.S. Environmental Protection Agency Region III, 2006)					--	370	290	--	--	--	--	--

^aSee USEPA drinking water standards - the total for trihalomethanes (THM) is 80 µg/L.

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Appendix 3. Concentrations of pesticides, degradates, volatile organic compounds, and semivolatile organic compounds in ground water from selected wells in the Anacostia River watershed within Washington, D.C., September–December 2005, and selected water-quality criteria.—Continued

[STL, Severn Trent Laboratory; USGS, U.S. Geological Survey; NWQL, USGS National Water Quality laboratory; <, less than; E, estimated; mg/L, milligrams per liter; µg/L, micrograms per liter; --, no value reported; na, not applicable; M, presence verified but not quantified; b, value extrapolated at low end; d, diluted sample; m, value is highly variable by this method; n, below the laboratory reporting level and above the long-term method detection level; t, below the long-term method detection level; v, analyte detected in laboratory blank; r, sample ruined in preparation; CIAT, 2-chloro-4-isopropylamino-6-amino-s-triazine; CEAT, 6-amino-2-chloro-4-ethylamino-s-triazine; OIET, 2-hydroxy-4-isopropylamino-6-ethylamino-s-triazine; CASRN®, Chemical Abstracts Service Registry Number; USEPA, U.S. Environmental Protection Agency; ***, Please refer to District of Columbia (2003) for this value; **bold**, environmental sample results; **bold italics**, replicate sample results; plain text, blank sample results]

USGS well number	USGS site identifier	Date	Time	Sample type	Brom-oxyuil, filtered, µg/L	Carbaryl, filtered, µg/L	Carbo-furan, filtered, µg/L	Chlor-amben methyl ester, filtered, µg/L	Chlordane, technical mix, unfiltered, µg/L	Chlori-muron, filtered, µg/L	Chloro-diamino-s-triazine, filtered, µg/L
CASRN					1689-84-5	63-25-2	1563-66-2	7286-84-2	57-74-9	90982-32-4	3397-62-4
AC Aa 1	385225076590101	9/21/2005	1030	Environmental	<.03	<.02	<.016	<.02	<.1	<.032m	<.04vm
AC Aa 1	385225076590101	9/21/2005	1035	Field equipment blank	<.03	<.02	<.016	<.02	<.1	<.032m	<.04vm
WE Ba 9	385606076584101	10/12/2005	1230	Environmental	<.03	<.02	<.016	<.02	<.1	<.032m	<.04vm
WE Ba 9	385606076584101	10/12/2005	2359	STL trip blank	--	--	--	--	--	--	--
WE Ba 10	385534076582101	10/12/2005	930	Environmental	<.03	<.02	<.016	<.02	<.1	<.032m	<.04vm
WE Ba 10	385534076582101	10/12/2005	935	Field equipment blank	<.03	<.02	<.016	<.02	<.1	<.032m	<.04vm
WE Ba 10	385534076582101	10/12/2005	2359	STL trip blank	--	--	--	--	--	--	--
WE Bb 3	385504076563801	9/20/2005	1000	Environmental	<.03	<.02	<.016	<.02	<.1	<.032m	<.04vm
WE Bb 3	385504076563801	9/20/2005	1010	Replicate	<.03	<.02	<.016	<.02	<.1	<.032m	<.04vm
WE Bb 4	385504076563802	9/20/2005	1430	Environmental	<.03	<.02	<.016	<.02	<.1	<.032m	<.04vm
WE Ca 29	385238076581501	9/19/2005	1400	Environmental	<.03	<.02	<.016	<.02	<.1	<.032m	<.04vm
WE Ca 32	385332076594701	9/22/2005	1000	Environmental	<.03	<.02	<.016	<.02	E.1b	<.032m	<.04vm
WE Ca 33	385349076592801	10/14/2005	1030	Environmental	<.03	<.02	<.016	<.02	<.1	<.032m	<.04vm
WE Ca 33	385349076592801	10/14/2005	800	Field equipment blank	<.03	<.02	<.016	<.02	<.1	<.032m	<.04vm
WE Ca 34	385245076583501	9/27/2005	1330	Environmental	<.03	<.02	<.016	<.02	<.1	<.032m	<.04vm
WE Ca 34	385245076583501	9/27/2005	2359	STL trip blank	--	--	--	--	--	--	--
WE Cb 5	385443076562801	9/14/2005	1400	Environmental	<.03	<.02	<.016	<.02	<.1	<.032m	<.04vm
WE Cb 6	385443076562802	9/14/2005	1030	Environmental	<.03	<.02	<.016	<.02	<.1	<.032m	<.04vm
WE Cb 8	385252076572801	12/20/2005	1430	Environmental	<.03	<.02	<.016	<.02	<.1	<.032m	<.04vm
WE Cb 8	385252076572801	12/20/2005	1435	Replicate	<.03	<.02	<.016	<.02	<.1	<.032m	<.04vm
WE Cb 8	385252076572801	12/21/2005	1730	Field equipment blank	<.03	<.02	<.016	<.02	<.1	<.032m	<.04vm
WE Cb 11	385332076564101	12/19/2005	1430	Environmental	<.03	<.02	<.016	<.02	<.1	<.032m	<.04vm
WE Cb 12	385332076564102	9/27/2005	1000	Environmental	<.03	<.02	<.016	<.02	<.1	<.032m	<.04vm
WE Cb 12	385332076564102	9/27/2005	2359	STL trip blank	--	--	--	--	--	--	--
WE Cc 3	385327076544801	10/6/2005	1000	Environmental	<.03	<.02	<.016	<.02	<.1	<.032m	<.04vm
WE Cc 3	385327076544801	10/6/2005	1010	Replicate	<.03	<.02	<.016	<.02	<.1	<.032m	<.04vm
WE Cc 3	385327076544801	10/6/2005	2359	STL trip blank	--	--	--	--	--	--	--
WW Bc 8	385519077012601	10/13/2005	1100	Environmental	<.03	<.02	<.016	<.02	<.1	<.032m	<.04vm
WW Bc 8	385519077012601	10/13/2005	2359	STL trip blank	--	--	--	--	--	--	--
WW Bc 9	385527077000701	12/19/2005	1100	Environmental	<.03	<.02	<.016	<.02	<.1	<.032m	<.04vm
WW Bc 9	385527077000701	12/19/2005	2359	STL trip blank	--	--	--	--	--	--	--
Selected water-quality criteria											
District of Columbia ground-water standards (District of Columbia, 1993)					--	--	--	--	--	--	--
District of Columbia surface-water standards (District of Columbia, 2003)											
A					--	--	--	--	--	--	--
B					--	--	--	--	--	--	--
C					--	--	--	--	0.0043–2.4	--	--
D					--	--	--	--	0.00081	--	--
USEPA Maximum Contaminant Levels (U.S. Environmental Protection Agency, 2006b)					--	--	40	--	2	--	--
USEPA Region III Risk-Based Concentrations for tap water (U.S. Environmental Protection Agency Region III, 2006)					--	3,700	--	--	0.19	--	--

^aSee USEPA drinking water standards - the total for trihalomethanes (THM) is 80 µg/L.

Pesticides and degradates—Continued

Chloro- thalonil, filtered, µg/L	Clopy- ralid, filtered, µg/L	Cycloate, filtered, µg/L	Dacthal- monoacid, filtered, µg/L	Dicamba, filtered, µg/L	Dichlor- prop, filtered, µg/L	Dieldrin, unfiltered, µg/L	Dinoseb, filtered, µg/L	Diphen- amid, filtered, µg/L	Diuron, filtered, µg/L	Endrin, unfiltered, µg/L	Fenuron, filtered, µg/L	Flumet- sulam, filtered, µg/L	Fluome- turon, filtered, µg/L
1897-45-6	1702-17-6	1134-23-2	887-54-7	1918-00-9	120-36-5	60-57-1	88-85-7	957-51-7	330-54-1	72-20-8	101-42-8	98967-40-9	2164-17-2
<.04m <.04m	<.02 <.02	<.01 <.01	<.41 <.03	<.04 <.04	<.03 <.03	<.001 <.001	<.04 <.04	<.01 <.01	<.01v <.01v	<.002 <.002	<.02 <.02	<.04 <.04	<.02 <.02
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m <.04m --	<.02 <.02 --	<.01 <.01 --	<.03 <.03 --	<.04 <.04 --	<.03 <.03 --	<.001 <.001 --	<.04 <.04 --	<.01 <.01 --	<.01v <.01v --	<.002 <.002 --	<.02 <.02 --	<.04 <.04 --	<.02 <.02 --
<.04m <.04m	<.02 <.02	<.01 <.01	<.03 <.03	<.04 <.04	<.03 <.03	<.001 <.001	<.04 <.04	<.01 <.01	<.01v <.01v	<.002 <.002	<.02 <.02	<.04 <.04	<.02 <.02
<.04m	<.02	<.01	<.03	<.04	<.03	<.001	<.04	<.01	<.01v	<.002	<.02	<.04	<.02
<.04m	<.02	<.01	<.03	<.04	<.03	<.001	<.04	<.01	<.01v	<.002	<.02	<.04	<.02
<.04m	<.02	<.01	<.03	<.04	<.03	<.001	<.04	<.01	<.01v	<.002	<.02	<.04	<.02
<.04m <.04m	<.02 <.02	<.01 <.01	<.03 <.03	<.04 <.04	<.03 <.03	0.065 <.001	<.04 <.04	<.01 <.01	<.01v <.01v	<.002 <.002	<.02 <.02	<.04 <.04	<.02 <.02
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m <.04m	<.02 <.02	<.01 <.01	<.03 <.03	<.04 <.04	<.03 <.03	<.001 <.001	<.04 <.04	<.01 <.01	<.01v <.01v	<.002 <.002	<.02 <.02	<.04 <.04	<.02 <.02
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m <.04m	<.02 <.02	<.01 <.01	<.03 <.03	<.04 <.04	<.03 <.03	<.001 <.001	<.04 <.04	<.01 <.01	<.01v <.01v	<.002 <.002	<.02 <.02	<.04 <.04	<.02 <.02
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m --	<.02 --	<.01 --	<.03 --	<.04 --	<.03 --	<.001 --	<.04 --	<.01 --	<.01v --	<.002 --	<.02 --	<.04 --	<.02 --
<.04m 													

48 Summary of Ground-Water-Quality Data in the Anacostia River Watershed, Washington, D.C., 2005

Appendix 3. Concentrations of pesticides, degradates, volatile organic compounds, and semivolatile organic compounds in ground water from selected wells in the Anacostia River watershed within Washington, D.C., September–December 2005, and selected water-quality criteria.—Continued

[STL, Severn Trent Laboratory; USGS, U.S. Geological Survey; NWQL, USGS National Water Quality laboratory; <, less than; E, estimated; mg/L, milligrams per liter; µg/L, micrograms per liter; --, no value reported; na, not applicable; M, presence verified but not quantified; b, value extrapolated at low end; d, diluted sample; m, value is highly variable by this method; n, below the laboratory reporting level and above the long-term method detection level; t, below the long-term method detection level; v, analyte detected in laboratory blank; r, sample ruined in preparation; CIAT, 2-chloro-4-isopropylamino-6-amino-s-triazine; CEAT, 6-amino-2-chloro-4-ethylamino-s-triazine; OIET, 2-hydroxy-4-isopropylamino-6-ethylamino-s-triazine; CASRN®, Chemical Abstracts Service Registry Number; USEPA, U.S. Environmental Protection Agency; ***, Please refer to District of Columbia (2003) for this value; **bold**, environmental sample results; **bold italics**, replicate sample results; plain text, blank sample results]

USGS well number	USGS site identifier	Date	Time	Sample type	Glufosinate, filtered, µg/L	Glyphosate, filtered, µg/L	Heptachlor epoxide, unfiltered, µg/L	Heptachlor, unfiltered, µg/L	Imazaquin, filtered, µg/L	Imazethapyr, filtered, µg/L	Imidacloprid, filtered, µg/L
CASRN					51276-47-2	1071-83-6	1024-57-3	76-44-8	81335-37-7	81335-77-5	138261-41-3
AC Aa 1	385225076590101	9/21/2005	1030	Environmental	<.140	<.150	<.001	<.001	<.04m	<.04	<.020
AC Aa 1	385225076590101	9/21/2005	1035	Field equipment blank	<.140	<.150	<.001	<.001	<.04m	<.04	<.020
WE Ba 9	385606076584101	10/12/2005	1230	Environmental	<.140	<.150	<.001	<.001	<.04m	<.04	<.020
WE Ba 9	385606076584101	10/12/2005	2359	STL trip blank	--	--	--	--	--	--	--
WE Ba 10	385534076582101	10/12/2005	930	Environmental	<.140	<.150	<.001	<.001	<.04m	<.04	<.020
WE Ba 10	385534076582101	10/12/2005	935	Field equipment blank	<.140	<.150	<.001	<.001	<.04m	<.04	<.020
WE Ba 10	385534076582101	10/12/2005	2359	STL trip blank	--	--	--	--	--	--	--
WE Bb 3	385504076563801	9/20/2005	1000	Environmental	<.140	<.150	<.001	<.001	<.04m	<.04	<.020
WE Bb 3	385504076563801	9/20/2005	1010	Replicate	<.140	<.150	<.001	<.001	<.04m	<.13	<.020
WE Bb 4	385504076563802	9/20/2005	1430	Environmental	<.140	<.150	<.001	<.001	<.04m	<.04	<.020
WE Ca 29	385238076581501	9/19/2005	1400	Environmental	<.140	<.150	<.001	<.001	<.04m	<.04	<.020
WE Ca 32	385332076594701	9/22/2005	1000	Environmental	<.140	<.150	0.005	<.001	<.04m	<.04	0.301
WE Ca 33	385349076592801	10/14/2005	1030	Environmental	<.140	<.150	<.001	<.001	<.04m	<.04	<.020
WE Ca 33	385349076592801	10/14/2005	800	Field equipment blank	<.140	<.150	<.001	<.001	<.04m	<.04	<.020
WE Ca 34	385245076583501	9/27/2005	1330	Environmental	<.140	<.150	<.001	<.001	<.04m	<.04	<.020
WE Ca 34	385245076583501	9/27/2005	2359	STL trip blank	--	--	--	--	--	--	--
WE Cb 5	385443076562801	9/14/2005	1400	Environmental	<.140	<.150	<.001	<.001	<.04m	<.04	<.020
WE Cb 6	385443076562802	9/14/2005	1030	Environmental	<.140	<.150	<.001	<.001	<.04m	<.04	<.020
WE Cb 8	385252076572801	12/20/2005	1430	Environmental	<.140	<.150	<.001	<.001	<.04m	<.04	<.020
WE Cb 8	385252076572801	12/20/2005	1435	Replicate	<.140	<.150	<.001	<.001	<.04m	<.04	<.020
WE Cb 8	385252076572801	12/21/2005	1730	Field equipment blank	<.140	<.150	<.001	<.001	<.04m	<.04	<.020
WE Cb 11	385332076564101	12/19/2005	1430	Environmental	<.140	<.150	<.001	<.001	<.04m	<.04	<.020
WE Cb 12	385332076564102	9/27/2005	1000	Environmental	<.140	<.150	<.001	<.001	<.04m	<.04	<.020
WE Cb 12	385332076564102	9/27/2005	2359	STL trip blank	--	--	--	--	--	--	--
WE Cc 3	385327076544801	10/6/2005	1000	Environmental	<.140	<.150	0.007	<.001	<.04m	<.04	<.020
WE Cc 3	385327076544801	10/6/2005	1010	Replicate	<.140	<.150	0.007	<.001	<.04m	<.04	<.020
WE Cc 3	385327076544801	10/6/2005	2359	STL trip blank	--	--	--	--	--	--	--
WW Bc 8	385519077012601	10/13/2005	1100	Environmental	<.140	<.150	<.001	<.001	<.04m	<.04	<.020
WW Bc 8	385519077012601	10/13/2005	2359	STL trip blank	--	--	--	--	--	--	--
WW Bc 9	385527077000701	12/19/2005	1100	Environmental	<.140	<.150	<.001	<.001	<.04m	<.04	<.020
WW Bc 9	385527077000701	12/19/2005	2359	STL trip blank	--	--	--	--	--	--	--
Selected water-quality criteria											
District of Columbia ground-water standards (District of Columbia, 1993)					--	--	--	--	--	--	--
District of Columbia surface-water standards (District of Columbia, 2003)											
A					--	--	--	--	--	--	--
B					--	--	--	--	--	--	--
C					--	--	0.0038–0.52	0.0038–0.52	--	--	--
D					--	--	0.000039	0.000079	--	--	--
USEPA Maximum Contaminant Levels (U.S. Environmental Protection Agency, 2006b)					--	700	0.2	0.4	--	--	--
USEPA Region III Risk-Based Concentrations for tap water (U.S. Environmental Protection Agency Region III, 2006)					--	3,700	0.0074	0.015	--	9,100	--

^aSee USEPA drinking water standards - the total for trihalomethanes (THM) is 80 µg/L.

Pesticides and degradates—Continued

Lindane, unfiltered, µg/L	Linuron, filtered, µg/L	MCPA, filtered, µg/L	MCPB, filtered, µg/L	Metalaxyl, filtered, µg/L	Methio- carb, filtered, µg/L	Methomyl, filtered, µg/L	Metsulfuron methyl, filtered, µg/L	Mirex, unfiltered, µg/L	3(4- Chloro- phenyl)- 1-methyl- urea, µg/L	Neburon, filtered, µg/L	Nicosul- furon, filtered, µg/L	Norflur- azon, filtered, µg/L	Oryzalin, filtered, µg/L
58-89-9	330-55-2	94-74-6	94-81-5	57837-19-1	2032-65-7	16752-77-5	74223-64-6	2385-85-5	5352-88-5	555-37-3	111991-09-4	27314-13-2	19044-88-3
<.0020	<.01	<.03	<.01	<.01	<.010	<.020	<.03m	<.001	<.04	<.01	<.04m	<.02	<.01
<.0020	<.01	<.03	<.01	<.01	<.010	<.020	<.03m	<.001	<.04	<.01	<.04m	<.02	<.01
<.0020	<.01	<.03	<.01	<.01	<.010	<.020	<.03m	<.001	<.04	<.01	<.04m	<.02	<.01
--	--	--	--	--	--	--	--	--	--	--	--	--	--
<.0020	<.01	<.03	<.01	<.01	<.010	<.020	<.03m	<.001	<.04	<.01	<.04m	<.02	<.01
<.0020	<.01	<.03	<.01	<.01	<.010	<.020	<.03m	<.001	<.04	<.01	<.04m	<.02	<.01
--	--	--	--	--	--	--	--	--	--	--	--	--	--
<.0020	<.01	<.03	<.01	<.01	<.010	<.020	<.03m	<.001	<.04	<.01	<.04m	<.02	<.01
<.0020	<.01	<.03	<.01	<.01	<.010	<.020	<.03m	<.001	<.04	<.01	<.04m	<.02	<.01
--	--	--	--	--	--	--	--	--	--	--	--	--	--
<.0020	<.01	<.03	<.01	<.01	<.010	<.020	<.03m	<.001	<.04	<.01	<.04m	<.02	<.01
<.0020	<.01	<.03	<.01	<.01	<.010	<.020	<.03m	<.001	<.04	<.01	<.04m	<.02	<.01
--	--	--	--	--	--	--	--	--	--	--	--	--	--
<.0020	<.01	<.03	<.01	<.01	<.010	<.020	<.03m	<.001	<.04	<.01	<.04m	<.02	<.01
<.0020	<.01	<.03	<.01	<.01	<.010	<.020	<.03m	<.001	<.04	<.01	<.04m	<.02	<.01
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<.0020	<.01	<.03	<.01	<.01	<.010	<.020	<.03m	<.001	<.04	<.01	<.04m	<.02	<.01
<.0020	<.01	<.03	<.01	<.01	<.010	<.020	<.03m	<.001	<.04	<.01	<.04m	<.02	<.01
--	--	--	--	--	--	--	--	--	--	--	--	--	--
<.0020	<.01	<.03	<.01	<.01	<.010	<.020	<.03m	<.001	<.04	<.01	<.04m	<.02	<.01
<.0020	<.01	<.03	<.01	<.01	<.010	<.020	<.03m	<.001	<.04	<.01	<.04m	<.02	<.01
--	--	--	--	--	--	--	--	--	--	--	--	--	--
<.0020	<.01	<.03	<.01	<.01	<.010	<.020	<.03m	<.001	<.04	<.01	<.04m	<.02	<.01
<.0020	<.01	<.03	<.01	<.01	<.010	<.020	<.03m	<.001	<.04	<.01	<.04m	<.02	<.01
--	--	--	--	--	--	--	--	--	--	--	--	--	--
<.0020	<.01	<.03	<.01	<.01	<.010	<.020	<.03m	<.001	<.04	<.01	<.04m	<.02	<.01
<.0020	<.01	<.03	<.01	<.01	<.010	<.020	<.03m	<.001	<.04	<.01	<.04m	<.02	<.01
--	--	--	--	--	--	--	--	--	--	--	--	--	--
<.0020	<.01	<.03	<.01	<.01	<.010	<.020	<.03m	<.001	<.04	<.01	<.04m	<.02	<.01
<.0020	<.01	<.03	<.01	<.01	<.010	<.020	<.03m	<.001	<.04	<.01	<.04m	<.02	<.01
--	--	--	--	--	--	--	--	--	--	--	--	--	--
<.0020	<.01	<.03	<.01	<.01	<.010	<.020	<.03m	<.001	<.04	<.01	<.04m	<.02	<.01
<.0020	<.01	<.03	<.01	<.01	<.010	<.020	<.03m	<.001	<.04	<.01	<.04m	<.02	<.01
--	--	--	--	--	--	--	--	--	--	--	--	--	--
<.0020	<.01	<.03	<.01	<.01	<.010	<.020	<.03m	<.001	<.04	<.01	<.04m	<.02	<.01
<.0020	<.01	<.03	<.01	<.01	<.010	<.020	<.03m	<.001	<.04	<.01	<.04m	<.02	<.01
--	--	--	--	--	--	--	--	--	--	--	--	--	--
4	--	--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--	--	--
0.08–2.0	--	--	--	--	--	--	--	0.001	--	--	--	--	--
0.063	--	--	--	--	--	--	--	--	--	--	--	--	--
0.2	--	--	--	--	--	--	--	--	--	--	--	--	--
0.052	--	18	370	--	--	--	--	7.3	--	--	--	--	1,800

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Appendix 3. Concentrations of pesticides, degradates, volatile organic compounds, and semivolatile organic compounds in ground water from selected wells in the Anacostia River watershed within Washington, D.C., September–December 2005, and selected water-quality criteria.—Continued

[STL, Severn Trent Laboratory; USGS, U.S. Geological Survey; NWQL, USGS National Water Quality laboratory; <, less than; E, estimated; mg/L, milligrams per liter; µg/L, micrograms per liter; --, no value reported; na, not applicable; M, presence verified but not quantified; b, value extrapolated at low end; d, diluted sample; m, value is highly variable by this method; n, below the laboratory reporting level and above the long-term method detection level; t, below the long-term method detection level; v, analyte detected in laboratory blank; r, sample ruined in preparation; CIAT, 2-chloro-4-isopropylamino-6-amino-s-triazine; CEAT, 6-amino-2-chloro-4-ethylamino-s-triazine; OIET, 2-hydroxy-4-isopropylamino-6-ethylamino-s-triazine; CASRN®, Chemical Abstracts Service Registry Number; USEPA, U.S. Environmental Protection Agency; ***, Please refer to District of Columbia (2003) for this value; **bold**, environmental sample results; **bold italics**, replicate sample results; plain text, blank sample results]

Pesticides and degradates—Continued												
USGS well number	USGS site identifier	Date	Time	Sample type	Oxamyl, filtered, µg/L	p,p'-DDD, unfiltered, µg/L	p,p'-DDE, unfiltered, µg/L	p,p'-DDT, unfiltered, µg/L	p,p'-Methoxy-chlor, unfiltered, µg/L	Picloram, filtered, µg/L	Propham, filtered, µg/L	
CASRN					23135-22-0	72-54-8	72-55-9	50-29-3	72-73-5	1918-02-1	122-42-9	
AC Aa 1	385225076590101	9/21/2005	1030	Environmental	<.03	<.002	<.002	<.002	<.003	<.03	<.030	
AC Aa 1	385225076590101	9/21/2005	1035	Field equipment blank	<.03	<.002	<.002	<.002	<.003	<.03	<.030	
WE Ba 9	385606076584101	10/12/2005	1230	Environmental	<.03	<.002	0.004	<.002	<.003	<.03	<.030	
WE Ba 9	385606076584101	10/12/2005	2359	STL trip blank	--	--	--	--	--	--	--	
WE Ba 10	385534076582101	10/12/2005	930	Environmental	<.03	<.002	<.002	<.002	<.003	<.03	<.030	
WE Ba 10	385534076582101	10/12/2005	935	Field equipment blank	<.03	<.002	<.002	<.002	<.003	<.03	<.030	
WE Ba 10	385534076582101	10/12/2005	2359	STL trip blank	--	--	--	--	--	--	--	
WE Bb 3	385504076563801	9/20/2005	1000	Environmental	<.03	<.002	<.002	<.002	<.003	<.03	<.030	
WE Bb 3	385504076563801	9/20/2005	1010	Replicate	<.03	<.002	<.002	<.002	<.003	<.03	<.030	
WE Bb 4	385504076563802	9/20/2005	1430	Environmental	<.03	<.002	<.002	<.002	<.003	<.03	<.030	
WE Ca 29	385238076581501	9/19/2005	1400	Environmental	<.03	<.002	<.002	<.002	<.003	<.03	<.030	
WE Ca 32	385332076594701	9/22/2005	1000	Environmental	<.03	<.002	<.002	<.002	<.003	<.03	<.030	
WE Ca 33	385349076592801	10/14/2005	1030	Environmental	<.03	<.002	<.002	<.002	<.003	<.03	<.030	
WE Ca 33	385349076592801	10/14/2005	800	Field equipment blank	<.03	<.002	<.002	<.002	<.003	<.03	<.030	
WE Ca 34	385245076583501	9/27/2005	1330	Environmental	<.03	<.002	<.002	<.002	<.003	<.03	<.030	
WE Ca 34	385245076583501	9/27/2005	2359	STL trip blank	--	--	--	--	--	--	--	
WE Cb 5	385443076562801	9/14/2005	1400	Environmental	<.03	<.002	<.002	<.002	<.003	<.03	<.030	
WE Cb 6	385443076562802	9/14/2005	1030	Environmental	<.03	<.002	<.002	<.002	<.003	<.03	<.030	
WE Cb 8	385252076572801	12/20/2005	1430	Environmental	<.03	<.002	<.002	<.002	<.003	<.03	<.030	
WE Cb 8	385252076572801	12/20/2005	1435	Replicate	<.03	<.002	<.002	<.002	<.003	<.03	<.030	
WE Cb 8	385252076572801	12/21/2005	1730	Field equipment blank	<.03	<.002	<.002	<.002	<.003	<.03	<.030	
WE Cb 11	385332076564101	12/19/2005	1430	Environmental	<.03	<.002	<.002	<.002	<.003	<.03	<.030	
WE Cb 12	385332076564102	9/27/2005	1000	Environmental	<.03	<.002	<.002	<.002	<.003	<.03	<.030	
WE Cb 12	385332076564102	9/27/2005	2359	STL trip blank	--	--	--	--	--	--	--	
WE Cc 3	385327076544801	10/6/2005	1000	Environmental	<.03	<.002	<.002	<.002	<.003	<.03	<.500	
WE Cc 3	385327076544801	10/6/2005	1010	Replicate	<.03	<.002	<.002	<.002	<.003	<.03	<.500	
WE Cc 3	385327076544801	10/6/2005	2359	STL trip blank	--	--	--	--	--	--	--	
WW Bc 8	385519077012601	10/13/2005	1100	Environmental	<.03	<.002	<.002	<.002	<.003	<.03	<.030	
WW Bc 8	385519077012601	10/13/2005	2359	STL trip blank	--	--	--	--	--	--	--	
WW Bc 9	385527077000701	12/19/2005	1100	Environmental	<.03	<.002	<.002	<.002	<.003	<.03	<.030	
WW Bc 9	385527077000701	12/19/2005	2359	STL trip blank	--	--	--	--	--	--	--	
Selected water-quality criteria												
District of Columbia ground-water standards (District of Columbia, 1993)					--	--	--	--	100	--	--	
District of Columbia surface-water standards (District of Columbia, 2003)												
A					--	--	--	--	--	--	--	
B					--	--	--	--	--	--	--	
C					--	0.001–1.1	0.001–1.1	0.001–1.1	--	--	--	
D					--	0.00031	0.00022	0.00022	--	--	--	
USEPA Maximum Contaminant Levels (U.S. Environmental Protection Agency, 2006b)					200	--	--	--	--	500	--	
USEPA Region III Risk-Based Concentrations for tap water (U.S. Environmental Protection Agency Region III, 2006)					910	0.28	0.2	0.2	180	--	--	

^aSee USEPA drinking water standards - the total for trihalomethanes (THM) is 80 µg/L.

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Appendix 3. Concentrations of pesticides, degradates, volatile organic compounds, and semivolatile organic compounds in ground water from selected wells in the Anacostia River watershed within Washington, D.C., September–December 2005, and selected water-quality criteria.—Continued

[STL, Severn Trent Laboratory; USGS, U.S. Geological Survey; NWQL, USGS National Water Quality laboratory; <, less than; E, estimated; mg/L, milligrams per liter; µg/L, micrograms per liter; --, no value reported; na, not applicable; M, presence verified but not quantified; b, value extrapolated at low end; d, diluted sample; m, value is highly variable by this method; n, below the laboratory reporting level and above the long-term method detection level; t, below the long-term method detection level; v, analyte detected in laboratory blank; r, sample ruined in preparation; CIAT, 2-chloro-4-isopropylamino-6-amino-s-triazine; CEAT, 6-amino-2-chloro-4-ethylamino-s-triazine; OIET, 2-hydroxy-4-isopropylamino-6-ethylamino-s-triazine; CASRN®, Chemical Abstracts Service Registry Number; USEPA, U.S. Environmental Protection Agency; ***, Please refer to District of Columbia (2003) for this value; **bold**, environmental sample results; **bold italics**, replicate sample results; plain text, blank sample results]

USGS well number	USGS site identifier	Date	Time	Sample type	1,1-Di-chloro-ethene, unfiltered, µg/L	1,1-Di-chloro-propene, unfiltered, µg/L	1,2,3-Trichloro-benzene, unfiltered, µg/L	1,2,3-Trichloro-propane, unfiltered, µg/L	1,2,4-Trichloro-benzene, unfiltered, µg/L	1,2,4-Trimethyl-benzene, unfiltered, µg/L	Di-bromo-chloro-propane, unfiltered, µg/L
CASRN					75-35-4	563-58-6	87-61-6	96-18-4	120-82-1	95-63-6	96-12-8
AC Aa 1	385225076590101	9/21/2005	1030	Environmental	<1.0	<1.0	<1.0	<1.0	<1	<1.0	<2.0
AC Aa 1	385225076590101	9/21/2005	1035	Field equipment blank	--	--	--	--	--	--	--
WE Ba 9	385606076584101	10/12/2005	1230	Environmental	<1.0	<1.0	<1.0	<1.0	<1	<1.0	<2.0
WE Ba 9	385606076584101	10/12/2005	2359	STL trip blank	<1.0	<1.0	<1.0	<1.0	<1	<1.0	<2.0
WE Ba 10	385534076582101	10/12/2005	930	Environmental	<1.0	<1.0	<1.0	<1.0	<1	<1.0	<2.0
WE Ba 10	385534076582101	10/12/2005	935	Field equipment blank	--	--	--	--	--	--	--
WE Ba 10	385534076582101	10/12/2005	2359	STL trip blank	<1.0	<1.0	<1.0	<1.0	<1	<1.0	<2.0
WE Bb 3	385504076563801	9/20/2005	1000	Environmental	<1.0	<1.0	<1.0	<1.0	<1	<1.0	<2.0
WE Bb 3	385504076563801	9/20/2005	1010	Replicate	--	--	--	--	--	--	--
WE Bb 4	385504076563802	9/20/2005	1430	Environmental	<1.0	<1.0	<1.0	<1.0	<1	<1.0	<2.0
WE Ca 29	385238076581501	9/19/2005	1400	Environmental	<1.0	<1.0	<1.0	<1.0	<1	<1.0	<2.0
WE Ca 32	385332076594701	9/22/2005	1000	Environmental	<1.0	<1.0	<1.0	<1.0	<1	<1.0	<2.0
WE Ca 33	385349076592801	10/14/2005	1030	Environmental	<1.0	<1.0	<1.0	<1.0	<1	<1.0	<2.0
WE Ca 33	385349076592801	10/14/2005	800	Field equipment blank	<1.0	<1.0	<1.0	<1.0	<1	<1.0	<2.0
WE Ca 34	385245076583501	9/27/2005	1330	Environmental	<1.0	<1.0	<1.0	<1.0	<1	<1.0	<2.0
WE Ca 34	385245076583501	9/27/2005	2359	STL trip blank	<1.0	<1.0	<1.0	<1.0	<1	<1.0	<2.0
WE Cb 5	385443076562801	9/14/2005	1400	Environmental	<1.0	<1.0	<1.0	<1.0	<1	<1.0	<2.0
WE Cb 6	385443076562802	9/14/2005	1030	Environmental	<1.0	<1.0	<1.0	<1.0	<1	<1.0	<2.0
WE Cb 8	385252076572801	12/20/2005	1430	Environmental	<1.0	<1.0	<1.0	<1.0	<1	<1.0	<2.0
WE Cb 8	385252076572801	12/20/2005	1435	Replicate	<1.0	<1.0	<1.0	<1.0	<1	<1.0	<2.0
WE Cb 8	385252076572801	12/21/2005	1730	Field equipment blank	<1.0	<1.0	<1.0	<1.0	<1	<1.0	<2.0
WE Cb 11	385332076564101	12/19/2005	1430	Environmental	<1.0	<1.0	<1.0	<1.0	<1	<1.0	<2.0
WE Cb 12	385332076564102	9/27/2005	1000	Environmental	<1.0	<1.0	<1.0	<1.0	<1	<1.0	<2.0
WE Cb 12	385332076564102	9/27/2005	2359	STL trip blank	<1.0	<1.0	<1.0	<1.0	<1	<1.0	<2.0
WE Cc 3	385327076544801	10/6/2005	1000	Environmental	<1.0	<1.0	<1.0	<1.0	<1	<1.0	<2.0
WE Cc 3	385327076544801	10/6/2005	1010	Replicate	<1.0	<1.0	<1.0	<1.0	<1	<1.0	<2.0
WE Cc 3	385327076544801	10/6/2005	2359	STL trip blank	<1.0	<1.0	<1.0	<1.0	<1	<1.0	<2.0
WW Bc 8	385519077012601	10/13/2005	1100	Environmental	<2.5d	<2.5d	<2.5d	<2.5d	<2d	<2.5d	<5.0d
WW Bc 8	385519077012601	10/13/2005	2359	STL trip blank	<1.0	<1.0	<1.0	<1.0	<1	<1.0	<2.0
WW Bc 9	385527077000701	12/19/2005	1100	Environmental	<1.0	<1.0	<1.0	<1.0	<1	<1.0	<2.0
WW Bc 9	385527077000701	12/19/2005	2359	STL trip blank	<1.0	<1.0	<1.0	<1.0	<1	<1.0	<2.0
Selected water-quality criteria											
District of Columbia ground-water standards (District of Columbia, 1993)					7	--	--	--	--	--	--
District of Columbia surface-water standards (District of Columbia, 2003)											
A					--	--	--	--	--	--	--
B					--	--	--	--	--	--	--
C					1,000	--	--	--	--	--	--
D					3.2	--	--	--	--	--	--
USEPA Maximum Contaminant Levels (U.S. Environmental Protection Agency, 2006b)					7	--	--	--	70	--	--
USEPA Region III Risk-Based Concentrations for tap water (U.S. Environmental Protection Agency Region III, 2006)					3,500	--	--	0.0053	61	--	--

^aSee USEPA drinking water standards - the total for trihalomethanes (THM) is 80 µg/L.

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Appendix 3. Concentrations of pesticides, degradates, volatile organic compounds, and semivolatile organic compounds in ground water from selected wells in the Anacostia River watershed within Washington, D.C., September–December 2005, and selected water-quality criteria.—Continued

[STL, Severn Trent Laboratory; USGS, U.S. Geological Survey; NWQL, USGS National Water Quality laboratory; <, less than; E, estimated; mg/L, milligrams per liter; µg/L, micrograms per liter; --, no value reported; na, not applicable; M, presence verified but not quantified; b, value extrapolated at low end; d, diluted sample; m, value is highly variable by this method; n, below the laboratory reporting level and above the long-term method detection level; t, below the long-term method detection level; v, analyte detected in laboratory blank; r, sample ruined in preparation; CIAT, 2-chloro-4-isopropylamino-6-amino-s-triazine; CEAT, 6-amino-2-chloro-4-ethylamino-s-triazine; OIET, 2-hydroxy-4-isopropylamino-6-ethylamino-s-triazine; CASRN®, Chemical Abstracts Service Registry Number; USEPA, U.S. Environmental Protection Agency; ***, Please refer to District of Columbia (2003) for this value; **bold**, environmental sample results; **bold italics**, replicate sample results; plain text, blank sample results]

USGS well number	USGS site identifier	Date	Time	Sample type	Benzene, unfiltered, µg/L	Bromo-benzene, unfiltered, µg/L	Bromo-chloro-methane, unfiltered, µg/L	Bromo-dichloro-methane, unfiltered, µg/L	Bromo-methane, unfiltered, µg/L	Chloro-benzene, unfiltered, µg/L	Chloro-ethane, unfiltered, µg/L
CASRN					71-43-2	108-86-1	74-97-5	75-27-4	74-83-9	108-90-7	75-00-3
AC Aa 1	385225076590101	9/21/2005	1030	Environmental	<.50	<1.0	<1.0	<1.0	<2.0	<.50	<2.0
AC Aa 1	385225076590101	9/21/2005	1035	Field equipment blank	--	--	--	--	--	--	--
WE Ba 9	385606076584101	10/12/2005	1230	Environmental	<.50	<1.0	<1.0	<1.0	<2.0	<.50	<2.0
WE Ba 9	385606076584101	10/12/2005	2359	STL trip blank	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0
WE Ba 10	385534076582101	10/12/2005	930	Environmental	<.50	<1.0	<1.0	<1.0	<2.0	<.50	<2.0
WE Ba 10	385534076582101	10/12/2005	935	Field equipment blank	--	--	--	--	--	--	--
WE Ba 10	385534076582101	10/12/2005	2359	STL trip blank	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0
WE Bb 3	385504076563801	9/20/2005	1000	Environmental	<.50	<1.0	<1.0	<1.0	<2.0	<.50	<2.0
WE Bb 3	385504076563801	9/20/2005	1010	Replicate	--	--	--	--	--	--	--
WE Bb 4	385504076563802	9/20/2005	1430	Environmental	<.50	<1.0	<1.0	<1.0	<2.0	<.50	<2.0
WE Ca 29	385238076581501	9/19/2005	1400	Environmental	<.50	<1.0	<1.0	<1.0	<2.0	<.50	<2.0
WE Ca 32	385332076594701	9/22/2005	1000	Environmental	<.50	<1.0	<1.0	<1.0	<2.0	<.50	<2.0
WE Ca 33	385349076592801	10/14/2005	1030	Environmental	<.50	<1.0	<1.0	<1.0	<2.0	<.50	<2.0
WE Ca 33	385349076592801	10/14/2005	800	Field equipment blank	<.50	<1.0	<1.0	<1.0	<2.0	<.50	<2.0
WE Ca 34	385245076583501	9/27/2005	1330	Environmental	<.50	<1.0	<1.0	<1.0	<2.0	<.50	<2.0
WE Ca 34	385245076583501	9/27/2005	2359	STL trip blank	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0
WE Cb 5	385443076562801	9/14/2005	1400	Environmental	<.50	<1.0	<1.0	<1.0	<2.0	<.50	<2.0
WE Cb 6	385443076562802	9/14/2005	1030	Environmental	<.50	<1.0	<1.0	<1.0	<2.0	<.50	<2.0
WE Cb 8	385252076572801	12/20/2005	1430	Environmental	<.50	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0
WE Cb 8	385252076572801	12/20/2005	1435	Replicate	<.50	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0
WE Cb 8	385252076572801	12/21/2005	1730	Field equipment blank	<.50	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0
WE Cb 11	385332076564101	12/19/2005	1430	Environmental	<.50	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0
WE Cb 12	385332076564102	9/27/2005	1000	Environmental	<.50	<1.0	<1.0	<1.0	<2.0	<.50	<2.0
WE Cb 12	385332076564102	9/27/2005	2359	STL trip blank	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0
WE Cc 3	385327076544801	10/6/2005	1000	Environmental	<.50	<1.0	<1.0	<1.0	<2.0	<.50	<2.0
WE Cc 3	385327076544801	10/6/2005	1010	Replicate	<.50	<1.0	<1.0	<1.0	<2.0	<.50	<2.0
WE Cc 3	385327076544801	10/6/2005	2359	STL trip blank	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0
WW Bc 8	385519077012601	10/13/2005	1100	Environmental	<.50	<2.5d	<2.5d	<2.5d	<5.0d	<.50	<5.0d
WW Bc 8	385519077012601	10/13/2005	2359	STL trip blank	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0
WW Bc 9	385527077000701	12/19/2005	1100	Environmental	<.50	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0
WW Bc 9	385527077000701	12/19/2005	2359	STL trip blank	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<2.0
Selected water-quality criteria											
District of Columbia ground-water standards (District of Columbia, 1993)					5	--	--	--	--	--	--
District of Columbia surface-water standards (District of Columbia, 2003)											
A					--	--	--	--	--	--	--
B					--	--	--	--	--	--	--
C					1,000	--	--	--	--	--	--
D					51	--	--	22	4,000	21,000	--
USEPA Maximum Contaminant Levels (U.S. Environmental Protection Agency, 2006b)					5	--	--	80 ^A	--	100	--
USEPA Region III Risk-Based Concentrations for tap water (U.S. Environmental Protection Agency Region III, 2006)					0.34	--	--	0.17	8.5	90	3.6

^ASee USEPA drinking water standards - the total for trihalomethanes (THM) is 80 µg/L.

Volatile organic compounds—Continued

Chloro- methane, unfiltered, µg/L	<i>cis</i> -1,2- Dichloro- ethene, unfiltered, µg/L	<i>cis</i> -1,3- Dichloro- propene, unfiltered, µg/L	Di- bromo- chloro- methane, unfiltered, µg/L	Dibromo- methane, unfiltered, µg/L	Di- chloro- difluoro- methane, unfiltered, µg/L	Dichloro- methane, unfiltered, µg/L	Ethyl- benzene, unfiltered, µg/L	Hexa- chloro- butadiene, unfiltered, µg/L	Isopropyl- benzene, unfiltered, µg/L	meta- + para- Xylene, unfiltered, µg/L	Naph- thalene, unfiltered, µg/L	n-Butyl- benzene, unfiltered, µg/L
74-87-3	156-59-2	10061-01-5	124-48-1	74-95-3	75-71-8	75-09-2	100-41-4	87-68-3	98-82-8	na	91-20-3	104-51-8
<2.0	<1.0	<1.0	<1.0	<1.0	<2.0	<5.0	<50	<1	<1.0	<.50	<1	<1.0
--	--	--	--	--	--	--	--	--	--	--	--	--
<2.0	<1.0	<1.0	<1.0	<1.0	<2.0	<5.0	<50	<1	<1.0	<.50	<1	<1.0
E.59	<1.0	<1.0	<1.0	<1.0	<2.0	<5.0	<1.0	<1	<1.0	--	<1	<1.0
<2.0	<1.0	<1.0	<1.0	<1.0	<2.0	<5.0	<50	<1	<1.0	<.50	<1	<1.0
--	--	--	--	--	--	--	--	--	--	--	--	--
E.48	<1.0	<1.0	<1.0	<1.0	<2.0	<5.0	<1.0	<1	<1.0	--	<1	<1.0
<2.0	<1.0	<1.0	<1.0	<1.0	<2.0	E.46v	<50	<1	<1.0	<.50	<1	<1.0
--	--	--	--	--	--	--	--	--	--	--	--	--
<2.0	<1.0	<1.0	<1.0	<1.0	<2.0	E.40v	<50	<1	<1.0	<.50	<1	<1.0
<2.0	<1.0	<1.0	<1.0	<1.0	<2.0	E.41v	<50	<1	<1.0	<.50	<1	<1.0
<2.0	<1.0	<1.0	<1.0	<1.0	<2.0	<5.0	<50	<1	<1.0	<.50	<1	<1.0
<2.0	<1.0	<1.0	<1.0	<1.0	<2.0	<5.0	<50	<1	4.4	<.50	<1	21
<2.0	<1.0	<1.0	<1.0	<1.0	<2.0	<5.0	<50	<1	<1.0	<.50	<1	<1.0
<2.0	<1.0	<1.0	<1.0	<1.0	<2.0	<5.0	<50	<1	<1.0	<.50	<1	<1.0
E.42	<1.0	<1.0	<1.0	<1.0	<2.0	<5.0	<1.0	<1	<1.0	--	<1	<1.0
<2.0	<1.0	<1.0	<1.0	<1.0	<2.0	<5.0	<50	<1	<1.0	<.50	<1	<1.0
<2.0	<1.0	<1.0	<1.0	<1.0	<2.0	<5.0	<50	<1	<1.0	<.50	<1	<1.0
<2.0	<1.0	<1.0	<1.0	<1.0	<2.0	<5.0	<50	<1	<1.0	--	<1	<1.0
<2.0	<1.0	<1.0	<1.0	<1.0	<2.0	<5.0	<50	<1	<1.0	--	<1	<1.0
<2.0	<1.0	<1.0	<1.0	<1.0	<2.0	<5.0	<50	<1	<1.0	--	<1	<1.0
<2.0	<1.0	<1.0	<1.0	<1.0	<2.0	<5.0	<50	<1	<1.0	<.50	<1	<1.0
<2.0	<1.0	<1.0	<1.0	<1.0	<2.0	E.66	<1.0	<1	<1.0	--	<1	<1.0
<2.0	<1.0	<1.0	<1.0	<1.0	<2.0	<5.0	<50	<1	<1.0	<.50	<1	<1.0
<2.0	<1.0	<1.0	<1.0	<1.0	<2.0	<5.0	<50	<1	<1.0	<.50	<1	<1.0
<2.0	<1.0	<1.0	<1.0	<1.0	<2.0	<5.0	<1.0	<1	<1.0	--	<1	<1.0
<5.0d	<2.5d	<2.5d	<2.5d	<2.5d	<5.0d	E1.3vd	<50	<2d	<2.5d	<.50	<2d	<2.5d
E.38	<1.0	<1.0	<1.0	<1.0	<2.0	E.94v	<1.0	<1	<1.0	--	<1	<1.0
<2.0	<1.0	<1.0	<1.0	<1.0	<2.0	<5.0	<50	<1	<1.0	--	<1	<1.0
<2.0	<1.0	<1.0	<1.0	<1.0	<2.0	<5.0	<1.0	<1	<1.0	--	<1	<1.0
--	70	--	--	--	--	--	700	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	40	10	--	--	600	--
--	--	--	34	--	--	1,600	2,100	18	--	--	--	--
--	70	--	80 ^A	--	--	5	700	--	--	--	--	--
190	61	--	0.13	61	350	4.1	1,300	0.86	660	--	6.5	--

56 Summary of Ground-Water-Quality Data in the Anacostia River Watershed, Washington, D.C., 2005

Appendix 3. Concentrations of pesticides, degradates, volatile organic compounds, and semivolatile organic compounds in ground water from selected wells in the Anacostia River watershed within Washington, D.C., September–December 2005, and selected water-quality criteria.—Continued

[STL, Severn Trent Laboratory; USGS, U.S. Geological Survey; NWQL, USGS National Water Quality laboratory; <, less than; E, estimated; mg/L, milligrams per liter; µg/L, micrograms per liter; --, no value reported; na, not applicable; M, presence verified but not quantified; b, value extrapolated at low end; d, diluted sample; m, value is highly variable by this method; n, below the laboratory reporting level and above the long-term method detection level; t, below the long-term method detection level; v, analyte detected in laboratory blank; r, sample ruined in preparation; CIAT, 2-chloro-4-isopropylamino-6-amino-s-triazine; CEAT, 6-amino-2-chloro-4-ethylamino-s-triazine; OIET, 2-hydroxy-4-isopropylamino-6-ethylamino-s-triazine; CASRN®, Chemical Abstracts Service Registry Number; USEPA, U.S. Environmental Protection Agency; ***, Please refer to District of Columbia (2003) for this value; **bold**, environmental sample results; **bold italics**, replicate sample results; plain text, blank sample results]

USGS well number	USGS site identifier	Date	Time	Sample type	n-propyl-benzene, unfiltered, µg/L	o-Xylene, unfiltered, µg/L	sec-Butyl-benzene, unfiltered, µg/L	Styrene, unfiltered, µg/L	Methyl tert-butyl ether, unfiltered, µg/L	tert-Butyl-benzene, unfiltered, µg/L
CASRN					103-65-1	95-47-6	135-98-8	100-42-5	1634-04-4	98-06-6
AC Aa 1	385225076590101	9/21/2005	1030	Environmental	<1.0	<.50	<1.0	<1.0	<5.0	<1.0
AC Aa 1	385225076590101	9/21/2005	1035	Field equipment blank	--	--	--	--	--	--
WE Ba 9	385606076584101	10/12/2005	1230	Environmental	<1.0	<.50	<1.0	<1.0	<5.0	<1.0
WE Ba 9	385606076584101	10/12/2005	2359	STL trip blank	<1.0	--	<1.0	<1.0	<5.0	<1.0
WE Ba 10	385534076582101	10/12/2005	930	Environmental	<1.0	<.50	<1.0	<1.0	<5.0	<1.0
WE Ba 10	385534076582101	10/12/2005	935	Field equipment blank	--	--	--	--	--	--
WE Ba 10	385534076582101	10/12/2005	2359	STL trip blank	<1.0	--	<1.0	<1.0	<5.0	<1.0
WE Bb 3	385504076563801	9/20/2005	1000	Environmental	<1.0	<.50	<1.0	<1.0	<5.0	<1.0
WE Bb 3	385504076563801	9/20/2005	1010	Replicate	--	--	--	--	--	--
WE Bb 4	385504076563802	9/20/2005	1430	Environmental	<1.0	<.50	<1.0	<1.0	<5.0	<1.0
WE Ca 29	385238076581501	9/19/2005	1400	Environmental	<1.0	<.50	<1.0	<1.0	<5.0	<1.0
WE Ca 32	385332076594701	9/22/2005	1000	Environmental	<1.0	<.50	<1.0	<1.0	<5.0	<1.0
WE Ca 33	385349076592801	10/14/2005	1030	Environmental	<1.0	<.50	19	<1.0	6.7	E.72
WE Ca 33	385349076592801	10/14/2005	800	Field equipment blank	<1.0	<.50	<1.0	<1.0	<5.0	<1.0
WE Ca 34	385245076583501	9/27/2005	1330	Environmental	<1.0	<.50	<1.0	<1.0	<5.0	<1.0
WE Ca 34	385245076583501	9/27/2005	2359	STL trip blank	<1.0	--	<1.0	<1.0	<5.0	<1.0
WE Cb 5	385443076562801	9/14/2005	1400	Environmental	<1.0	<.50	<1.0	<1.0	E1.4	<1.0
WE Cb 6	385443076562802	9/14/2005	1030	Environmental	<1.0	<.50	<1.0	<1.0	<5.0	<1.0
WE Cb 8	385252076572801	12/20/2005	1430	Environmental	<1.0	--	<1.0	<1.0	<5.0	<1.0
WE Cb 8	385252076572801	12/20/2005	1435	Replicate	<1.0	--	<1.0	<1.0	<5.0	<1.0
WE Cb 8	385252076572801	12/21/2005	1730	Field equipment blank	<1.0	--	<1.0	<1.0	<5.0	<1.0
WE Cb 11	385332076564101	12/19/2005	1430	Environmental	<1.0	--	<1.0	<1.0	<5.0	<1.0
WE Cb 12	385332076564102	9/27/2005	1000	Environmental	<1.0	<.50	<1.0	<1.0	<5.0	<1.0
WE Cb 12	385332076564102	9/27/2005	2359	STL trip blank	<1.0	--	<1.0	<1.0	<5.0	<1.0
WE Cc 3	385327076544801	10/6/2005	1000	Environmental	<1.0	<.50	<1.0	<1.0	<5.0	<1.0
WE Cc 3	385327076544801	10/6/2005	1010	Replicate	<1.0	<.50	<1.0	<1.0	<5.0	<1.0
WE Cc 3	385327076544801	10/6/2005	2359	STL trip blank	<1.0	--	<1.0	<1.0	<5.0	<1.0
WW Bc 8	385519077012601	10/13/2005	1100	Environmental	<2.5d	<.50	<2.5d	<2.5d	<5.0	<2.5d
WW Bc 8	385519077012601	10/13/2005	2359	STL trip blank	<1.0	--	<1.0	<1.0	<5.0	<1.0
WW Bc 9	385527077000701	12/19/2005	1100	Environmental	<1.0	--	<1.0	<1.0	<5.0	<1.0
WW Bc 9	385527077000701	12/19/2005	2359	STL trip blank	<1.0	--	<1.0	<1.0	<5.0	<1.0
Selected water-quality criteria										
District of Columbia ground-water standards (District of Columbia, 1993)					--	--	--	--	--	--
District of Columbia surface-water standards (District of Columbia, 2003)										
A					--	--	--	--	--	--
B					--	--	--	--	--	--
C					--	--	--	--	--	--
D					--	--	--	--	--	--
USEPA Maximum Contaminant Levels (U.S. Environmental Protection Agency, 2006b)					--	--	--	100	--	--
USEPA Region III Risk-Based Concentrations for tap water (U.S. Environmental Protection Agency Region III, 2006)					--	--	--	1,600	2.6	--

^aSee USEPA drinking water standards - the total for trihalomethanes (THM) is 80 µg/L.

Volatile organic compounds—Continued

Tetra- chloro- ethene, unfiltered, µg/L	Tetra- chloro- methane, unfiltered, µg/L	Toluene, unfiltered, µg/L	<i>trans</i> -1,2- Dichloro- ethene, unfiltered, µg/L	<i>trans</i> -1,3- Dichloro- propene, unfiltered, µg/L	Tribromo- methane, unfiltered, µg/L	Trichloro- ethene, unfiltered, µg/L	Tri- chloro- fluoro- methane, unfiltered, µg/L	Trichloro- methane, unfiltered, µg/L	Vinyl chloride, unfiltered, µg/L
127-18-4	56-23-5	108-88-3	156-60-5	10061-02-6	75-25-2	79-01-6	75-69-4	67-66-3	75-01-4
<1.0	<1.0	<.50	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
--	--	--	--	--	--	--	--	--	--
<1.0	<1.0	<.50	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
<1.0	<1.0	<.50	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
--	--	--	--	--	--	--	--	--	--
<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
<1.0	<1.0	<.50	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
--	--	--	--	--	--	--	--	--	--
<1.0	<1.0	<.50	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
<1.0	<1.0	<.50	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
<1.0	<1.0	<.50	<1.0	<1.0	<1.0	<1.0	<2.0	11	<1.0
<1.0	<1.0	M	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
<1.0	<1.0	<.50	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
<1.0	<1.0	<.50	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
<1.0	<1.0	<.50	<1.0	<1.0	<1.0	<1.0	<2.0	E.95	<1.0
<1.0	<1.0	<.50	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
<1.0	<1.0	<.50	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
<1.0	<1.0	<.50	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
<1.0	<1.0	<.50	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
<1.0	<1.0	<.50	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
<1.0	<1.0	<.50	<1.0	<1.0	<1.0	<1.0	<2.0	3.9	<1.0
<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
<1.0	<1.0	<.50	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
<1.0	<1.0	<.50	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
68d	<2.5d	<.50	<2.5d	<2.5d	<2.5d	E1.6d	<5.0d	4.2d	<2.5d
<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
<1.0	<1.0	<.50	<1.0	<1.0	<1.0	<1.0	<2.0	11	<1.0
<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
5	5	11,000	100	--	--	5	--	--	2
--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--
800	1,000	600	1,000	--	--	1,000	--	3,000	--
3.3	1.6	15,000	--	--	360	30	--	470	2.4
5	5	1,000	100	--	80 ^A	5	--	80 ^A	2
0.1	0.16	2,300	120	--	8.5	0.026	1,300	0.15	0.015

58 Summary of Ground-Water-Quality Data in the Anacostia River Watershed, Washington, D.C., 2005

Appendix 3. Concentrations of pesticides, degradates, volatile organic compounds, and semivolatile organic compounds in ground water from selected wells in the Anacostia River watershed within Washington, D.C., September–December 2005, and selected water-quality criteria.—Continued

[STL, Severn Trent Laboratory; USGS, U.S. Geological Survey; NWQL, USGS National Water Quality laboratory; <, less than; E, estimated; mg/L, milligrams per liter; µg/L, micrograms per liter; --, no value reported; na, not applicable; M, presence verified but not quantified; b, value extrapolated at low end; d, diluted sample; m, value is highly variable by this method; n, below the laboratory reporting level and above the long-term method detection level; t, below the long-term method detection level; v, analyte detected in laboratory blank; r, sample ruined in preparation; CIAT, 2-chloro-4-isopropylamino-6-amino-s-triazine; CEAT, 6-amino-2-chloro-4-ethylamino-s-triazine; OIET, 2-hydroxy-4-isopropylamino-6-ethylamino-s-triazine; CASRN®, Chemical Abstracts Service Registry Number; USEPA, U.S. Environmental Protection Agency; ***, Please refer to District of Columbia (2003) for this value; **bold**, environmental sample results; ***bold italics***, replicate sample results; plain text, blank sample results]

USGS well number	USGS site identifier	Date	Time	Sample type	2,4,6-Tri-chloro-phenol, unfiltered, µg/L	2,4-Di-chloro-phenol, unfiltered, µg/L	2,4-Di-methyl-phenol, unfiltered, µg/L	2,4-Di-nitro-phenol, unfiltered, µg/L	2,4-Di-nitro-toluene, unfiltered, µg/L	2,6-Di-nitro-toluene, unfiltered, µg/L
CASRN					88-06-2	120-83-2	105-67-9	51-28-5	121-14-2	606-20-2
AC Aa 1	385225076590101	9/21/2005	1030	Environmental	<10	<10	<10.0	<50	<10	<10
AC Aa 1	385225076590101	9/21/2005	1035	Field equipment blank	--	--	--	--	--	--
WE Ba 9	385606076584101	10/12/2005	1230	Environmental	<10	<10	<10.0	<50	<10	<10
WE Ba 9	385606076584101	10/12/2005	2359	STL trip blank	--	--	--	--	--	--
WE Ba 10	385534076582101	10/12/2005	930	Environmental	<10	<10	<10.0	<50	<10	<10
WE Ba 10	385534076582101	10/12/2005	935	Field equipment blank	--	--	--	--	--	--
WE Ba 10	385534076582101	10/12/2005	2359	STL trip blank	--	--	--	--	--	--
WE Bb 3	385504076563801	9/20/2005	1000	Environmental	<10	<10	<10.0	<50	<10	<10
WE Bb 3	385504076563801	9/20/2005	1010	Replicate	--	--	--	--	--	--
WE Bb 4	385504076563802	9/20/2005	1430	Environmental	<10	<10	<10.0	<50	<10	<10
WE Ca 29	385238076581501	9/19/2005	1400	Environmental	<10	<10	<10.0	<50	<10	<10
WE Ca 32	385332076594701	9/22/2005	1000	Environmental	<10	<10	<10.0	<50	<10	<10
WE Ca 33	385349076592801	10/14/2005	1030	Environmental	<10	<10	<10.0	<50	<10	<10
WE Ca 33	385349076592801	10/14/2005	800	Field equipment blank	<10	<10	<10.0	<50	<10	<10
WE Ca 34	385245076583501	9/27/2005	1330	Environmental	<10	<10	<10.0	<50	<10	<10
WE Ca 34	385245076583501	9/27/2005	2359	STL trip blank	--	--	--	--	--	--
WE Cb 5	385443076562801	9/14/2005	1400	Environmental	<10	<10	<10.0	<50	<10	<10
WE Cb 6	385443076562802	9/14/2005	1030	Environmental	<10	<10	<10.0	<50	<10	<10
WE Cb 8	385252076572801	12/20/2005	1430	Environmental	<10	<10	<10.0	<50	<10	<10
WE Cb 8	385252076572801	12/20/2005	1435	Replicate	<10	<10	<10.0	<50	<10	<10
WE Cb 8	385252076572801	12/21/2005	1730	Field equipment blank	<10	<10	<10.0	<50	<10	<10
WE Cb 11	385332076564101	12/19/2005	1430	Environmental	<10	<10	<10.0	<50	<10	<10
WE Cb 12	385332076564102	9/27/2005	1000	Environmental	<10	<10	<10.0	<50	<10	<10
WE Cb 12	385332076564102	9/27/2005	2359	STL trip blank	--	--	--	--	--	--
WE Cc 3	385327076544801	10/6/2005	1000	Environmental	<10	<10	<10.0	<50	<10	<10
WE Cc 3	385327076544801	10/6/2005	1010	Replicate	<10	<10	<10.0	<50	<10	<10
WE Cc 3	385327076544801	10/6/2005	2359	STL trip blank	--	--	--	--	--	--
WW Bc 8	385519077012601	10/13/2005	1100	Environmental	<10	<10	<10.0	<50	<10	<10
WW Bc 8	385519077012601	10/13/2005	2359	STL trip blank	--	--	--	--	--	--
WW Bc 9	385527077000701	12/19/2005	1100	Environmental	<10	<10	<10.0	<50	<10	<10
WW Bc 9	385527077000701	12/19/2005	2359	STL trip blank	--	--	--	--	--	--
Selected water-quality criteria										
District of Columbia ground-water standards (District of Columbia, 1993)					--	--	--	--	--	--
District of Columbia surface-water standards (District of Columbia, 2003)										
A					--	--	--	--	--	--
B					--	--	--	--	--	--
C					--	200	200	20	33	--
D					2.4	290	850	14,000	3.4	--
USEPA Maximum Contaminant Levels (U.S. Environmental Protection Agency, 2006b)					--	--	--	--	--	--
USEPA Region III Risk-Based Concentrations for tap water (U.S. Environmental Protection Agency Region III, 2006)					6.1	110	730	73	73	37

^aSee USEPA drinking water standards - the total for trihalomethanes (THM) is 80 µg/L.

[illegible]

60 Summary of Ground-Water-Quality Data in the Anacostia River Watershed, Washington, D.C., 2005

Appendix 3. Concentrations of pesticides, degradates, volatile organic compounds, and semivolatile organic compounds in ground water from selected wells in the Anacostia River watershed within Washington, D.C., September–December 2005, and selected water-quality criteria.—Continued

[STL, Severn Trent Laboratory; USGS, U.S. Geological Survey; NWQL, USGS National Water Quality laboratory; <, less than; E, estimated; mg/L, milligrams per liter; µg/L, micrograms per liter; --, no value reported; na, not applicable; M, presence verified but not quantified; b, value extrapolated at low end; d, diluted sample; m, value is highly variable by this method; n, below the laboratory reporting level and above the long-term method detection level; t, below the long-term method detection level; v, analyte detected in laboratory blank; r, sample ruined in preparation; CIAT, 2-chloro-4-isopropylamino-6-amino-s-triazine; CEAT, 6-amino-2-chloro-4-ethylamino-s-triazine; OIET, 2-hydroxy-4-isopropylamino-6-ethylamino-s-triazine; CASRN®, Chemical Abstracts Service Registry Number; USEPA, U.S. Environmental Protection Agency; ***, Please refer to District of Columbia (2003) for this value; **bold**, environmental sample results; **bold italics**, replicate sample results; plain text, blank sample results]

USGS well number	USGS site identifier	Date	Time	Sample type	Anthracene, unfiltered, µg/L	Atrazine, unfiltered, µg/L	Benzidine, unfiltered, µg/L	Benzo-[a]-anthracene, unfiltered, µg/L	Benzo-[a]-pyrene, unfiltered, µg/L	Benzo-[b]-fluoranthene, unfiltered, µg/L	Benzo-[ghi]-perylene, unfiltered, µg/L
CASRN					120-12-7	19112-24-9	92-87-5	56-55-3	50-32-8	205-99-2	191-24-2
AC Aa 1	385225076590101	9/21/2005	1030	Environmental	<10	<50.0	<100	<10	<10	<10	<10
AC Aa 1	385225076590101	9/21/2005	1035	Field equipment blank	--	--	--	--	--	--	--
WE Ba 9	385606076584101	10/12/2005	1230	Environmental	<10	<50.0	<100	<10	<10	<10	<10
WE Ba 9	385606076584101	10/12/2005	2359	STL trip blank	--	--	--	--	--	--	--
WE Ba 10	385534076582101	10/12/2005	930	Environmental	<10	<50.0	<100	<10	<10	<10	<10
WE Ba 10	385534076582101	10/12/2005	935	Field equipment blank	--	--	--	--	--	--	--
WE Ba 10	385534076582101	10/12/2005	2359	STL trip blank	--	--	--	--	--	--	--
WE Bb 3	385504076563801	9/20/2005	1000	Environmental	<10	<50.0	<100	<10	<10	<10	<10
WE Bb 3	385504076563801	9/20/2005	1010	Replicate	--	--	--	--	--	--	--
WE Bb 4	385504076563802	9/20/2005	1430	Environmental	<10	<50.0	<100	<10	<10	<10	<10
WE Ca 29	385238076581501	9/19/2005	1400	Environmental	<10	<50.0	<100	<10	<10	<10	<10
WE Ca 32	385332076594701	9/22/2005	1000	Environmental	<10	<50.0	<100	<10	<10	<10	<10
WE Ca 33	385349076592801	10/14/2005	1030	Environmental	<10	<50.0	<100	<10	<10	<10	<10
WE Ca 33	385349076592801	10/14/2005	800	Field equipment blank	<10	<50.0	<100	<10	<10	<10	<10
WE Ca 34	385245076583501	9/27/2005	1330	Environmental	<10	<50.0	<100	<10	<10	<10	<10
WE Ca 34	385245076583501	9/27/2005	2359	STL trip blank	--	--	--	--	--	--	--
WE Cb 5	385443076562801	9/14/2005	1400	Environmental	<10	<50.0	<100	<10	<10	<10	<10
WE Cb 6	385443076562802	9/14/2005	1030	Environmental	<10	<50.0	<100	<10	<10	<10	<10
WE Cb 8	385252076572801	12/20/2005	1430	Environmental	<10	<50.0	<100	<10	<10	<10	<10
WE Cb 8	385252076572801	12/20/2005	1435	Replicate	<10	<50.0	<100	<10	<10	<10	<10
WE Cb 8	385252076572801	12/21/2005	1730	Field equipment blank	<10	<50.0	<100	<10	<10	<10	<10
WE Cb 11	385332076564101	12/19/2005	1430	Environmental	<10	<50.0	<100	<10	<10	<10	<10
WE Cb 12	385332076564102	9/27/2005	1000	Environmental	<10	<50.0	<100	<10	<10	<10	<10
WE Cb 12	385332076564102	9/27/2005	2359	STL trip blank	--	--	--	--	--	--	--
WE Cc 3	385327076544801	10/6/2005	1000	Environmental	<10	<50.0	<100	<10	<10	<10	<10
WE Cc 3	385327076544801	10/6/2005	1010	Replicate	<10	<50.0	<100	<10	<10	<10	<10
WE Cc 3	385327076544801	10/6/2005	2359	STL trip blank	--	--	--	--	--	--	--
WW Bc 8	385519077012601	10/13/2005	1100	Environmental	<10	<50.0	<100	<10	<10	<10	<10
WW Bc 8	385519077012601	10/13/2005	2359	STL trip blank	--	--	--	--	--	--	--
WW Bc 9	385527077000701	12/19/2005	1100	Environmental	<10	<50.0	<100	<10	<10	<10	<10
WW Bc 9	385527077000701	12/19/2005	2359	STL trip blank	--	--	--	--	--	--	--
Selected water-quality criteria											
District of Columbia ground-water standards (District of Columbia, 1993)					--	--	--	--	--	--	--
District of Columbia surface-water standards (District of Columbia, 2003)											
A					--	--	--	--	--	--	--
B					--	--	--	--	--	--	--
C					--	--	250	--	--	--	--
D					40,000	--	0.0002	0.018	0.018	0.018	--
USEPA Maximum Contaminant Levels (U.S. Environmental Protection Agency, 2006b)					--	3	--	--	0.2	--	--
USEPA Region III Risk-Based Concentrations for tap water (U.S. Environmental Protection Agency Region III, 2006)					1,800	0.3	0.0001	0.03	0.003	0.03	--

^aSee USEPA drinking water standards - the total for trihalomethanes (THM) is 80 µg/L.

Semivolatile organic compounds—Continued												
Benzo-[k]-fluoranthene, unfiltered, µg/L	Benzyl-n-butyl phthalate, unfiltered, µg/L	Bis(2-chloro-ethoxy) methane, unfiltered, µg/L	Bis(2-chloro-ethyl) ether, unfiltered, µg/L	Bis(2-chloro-isopropyl) ether, unfiltered, µg/L	Bis(2-ethyl-hexyl) phthalate, unfiltered, µg/L	Chrysene, unfiltered, µg/L	Dibenzo [a,h]-anthracene, unfiltered, µg/L	Di-ethyl phthalate, unfiltered, µg/L	Dimethyl-phthalate, unfiltered, µg/L	Di-n-butyl phthalate, unfiltered, µg/L	Di-n-octyl phthalate, unfiltered, µg/L	Fluor-anthene, unfiltered, µg/L
207-08-9	85-68-7	111-91-1	111-44-4	108-60-1	117-81-7	218-01-9	53-70-3	84-66-2	131-11-3	84-74-2	117-84-0	206-44-0
<10 --	<10 --	<10 --	<10 --	<10 --	<10 --	<10 --	<10 --	<10 --	<10 --	<10 --	<10 --	<10 --
<10 --	<10 --	<10 --	<10 --	<10 --	<10 --	<10 --	<10 --	<10 --	<10 --	<10 --	<10 --	<10 --
<10 -- --	<10 -- --	<10 -- --	<10 -- --	<10 -- --	<10 -- --	<10 -- --	<10 -- --	<10 -- --	<10 -- --	<10 -- --	<10 -- --	<10 -- --
<10 --	<10 --	<10 --	<10 --	<10 --	<10 --	<10 --	<10 --	<10 --	<10 --	<10 --	<10 --	<10 --
<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
<10 	<10 	<10 	<10 	<10 	<10 E3	<10 	<10 	<10 	<10 	<10 	<10 	<10
<10 --	<10 --	<10 --	<10 --	<10 --	<10 --	<10 --	<10 --	<10 --	<10 --	<10 --	<10 --	<10 --
<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
<10 	<10 	<10 	<10 	<10 	<10 	<10 	<10 	<10 	<10 	<10 	<10 	<10
<10 	<10 	<10 	<10 	<10 	<10 	<10 	<10 	<10 	<10 	<10 	<10 	<10
<10 	<10 	<10 	<10 	<10 	<10 	<10 	<10 	<10 	<10 	<10 	<10 	<10
<10 -- 	<10 -- 	<10 -- 	<10 -- 	<10 -- 	<10 -- 	<10 -- 	<10 -- 	<10 -- 	<10 -- 	<10 -- 	<10 -- 	<10 --
<10 	<10 	<10 	<10 	<10 	<10 	<10 	<10 	<10 	<10 	<10 	<10 	<10
<10 	<10 	<10 	<10 	<10 	E2	<10 -- 	<10 -- 	<10 -- 	<10 -- 	<10 -- 	<10 -- 	<10 --
<10 -- 	<10 -- 	<10 -- 	<10 -- 	<10 -- 	<10 -- 	<10 -- 	<10 -- 	<10 -- 	<10 -- 	<10 -- 	<10 -- 	<10 --
--	--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--	--
--	100	--	1,000	1,000	100	--	--	100	100	100	--	400
0.018	--	--	1.4	170,000	5.9	0.018	0.018	120,000	2,900,000	12,000	--	140
--	--	--	--	--	6	--	--	--	--	--	--	--
0.3	7,300	--	0.0096	0.26	4.8	3	0.003	29,000	--	3,700	--	1,500

62 Summary of Ground-Water-Quality Data in the Anacostia River Watershed, Washington, D.C., 2005

Appendix 3. Concentrations of pesticides, degradates, volatile organic compounds, and semivolatile organic compounds in ground water from selected wells in the Anacostia River watershed within Washington, D.C., September–December 2005, and selected water-quality criteria.—Continued

[STL, Severn Trent Laboratory; USGS, U.S. Geological Survey; NWQL, USGS National Water Quality laboratory; <, less than; E, estimated; mg/L, milligrams per liter; µg/L, micrograms per liter; --, no value reported; na, not applicable; M, presence verified but not quantified; b, value extrapolated at low end; d, diluted sample; m, value is highly variable by this method; n, below the laboratory reporting level and above the long-term method detection level; t, below the long-term method detection level; v, analyte detected in laboratory blank; r, sample ruined in preparation; CIAT, 2-chloro-4-isopropylamino-6-amino-s-triazine; CEAT, 6-amino-2-chloro-4-ethylamino-s-triazine; OIET, 2-hydroxy-4-isopropylamino-6-ethylamino-s-triazine; CASRN®, Chemical Abstracts Service Registry Number; USEPA, U.S. Environmental Protection Agency; ***, Please refer to District of Columbia (2003) for this value; **bold**, environmental sample results; **bold italics**, replicate sample results; plain text, blank sample results]

					Semivolatile organic compounds—Continued						
USGS well number	USGS site identifier	Date	Time	Sample type	Hexa-chloro-benzene, unfiltered, µg/L	Hexa-chlorocyclopentadiene, unfiltered, µg/L	Indeno-[1,2,3-cd]-pyrene, unfiltered, µg/L	Isophorone, unfiltered, µg/L	Nitro-benzene, unfiltered, µg/L	N-Nitro-sodimethylamine, unfiltered, µg/L	N-Nitro-sodi-n-propylamine, unfiltered, µg/L
CASRN					118-74-1	77-47-4	193-39-5	78-59-1	98-95-3	62-75-9	621-64-7
AC Aa 1	385225076590101	9/21/2005	1030	Environmental	<10	<50	<10	<10	<10	<10	<10
AC Aa 1	385225076590101	9/21/2005	1035	Field equipment blank	--	--	--	--	--	--	--
WE Ba 9	385606076584101	10/12/2005	1230	Environmental	<10	<50	<10	<10	<10	<10	<10
WE Ba 9	385606076584101	10/12/2005	2359	STL trip blank	--	--	--	--	--	--	--
WE Ba 10	385534076582101	10/12/2005	930	Environmental	<10	<50	<10	<10	<10	<10	<10
WE Ba 10	385534076582101	10/12/2005	935	Field equipment blank	--	--	--	--	--	--	--
WE Ba 10	385534076582101	10/12/2005	2359	STL trip blank	--	--	--	--	--	--	--
WE Bb 3	385504076563801	9/20/2005	1000	Environmental	<10	<50	<10	<10	<10	<10	<10
WE Bb 3	385504076563801	9/20/2005	1010	Replicate	--	--	--	--	--	--	--
WE Bb 4	385504076563802	9/20/2005	1430	Environmental	<10	<50	<10	<10	<10	<10	<10
WE Ca 29	385238076581501	9/19/2005	1400	Environmental	<10	<50	<10	<10	<10	<10	<10
WE Ca 32	385332076594701	9/22/2005	1000	Environmental	<10	<50	<10	<10	<10	<10	<10
WE Ca 33	385349076592801	10/14/2005	1030	Environmental	<10	<50	<10	<10	<10	<10	<10
WE Ca 33	385349076592801	10/14/2005	800	Field equipment blank	<10	<50	<10	<10	<10	<10	<10
WE Ca 34	385245076583501	9/27/2005	1330	Environmental	<10	<50	<10	<10	<10	<10	<10
WE Ca 34	385245076583501	9/27/2005	2359	STL trip blank	--	--	--	--	--	--	--
WE Cb 5	385443076562801	9/14/2005	1400	Environmental	<10	<50	<10	<10	<10	<10	<10
WE Cb 6	385443076562802	9/14/2005	1030	Environmental	<10	<50	<10	<10	<10	<10	<10
WE Cb 8	385252076572801	12/20/2005	1430	Environmental	<10	<50	<10	<10	<10	<10	<10
WE Cb 8	385252076572801	12/20/2005	1435	Replicate	<10	<50	<10	<10	<10	<10	<10
WE Cb 8	385252076572801	12/21/2005	1730	Field equipment blank	<10	<50	<10	<10	<10	<10	<10
WE Cb 11	385332076564101	12/19/2005	1430	Environmental	<10	<50	<10	<10	<10	<10	<10
WE Cb 12	385332076564102	9/27/2005	1000	Environmental	<10	<50	<10	<10	<10	<10	<10
WE Cb 12	385332076564102	9/27/2005	2359	STL trip blank	--	--	--	--	--	--	--
WE Cc 3	385327076544801	10/6/2005	1000	Environmental	<10	<50	<10	<10	<10	<10	<10
WE Cc 3	385327076544801	10/6/2005	1010	Replicate	<10	<50	<10	<10	<10	<10	<10
WE Cc 3	385327076544801	10/6/2005	2359	STL trip blank	--	--	--	--	--	--	--
WW Bc 8	385519077012601	10/13/2005	1100	Environmental	<10	<50	<10	<10	<10	<10	<10
WW Bc 8	385519077012601	10/13/2005	2359	STL trip blank	--	--	--	--	--	--	--
WW Bc 9	385527077000701	12/19/2005	1100	Environmental	<10	<50	<10	<10	<10	<10	<10
WW Bc 9	385527077000701	12/19/2005	2359	STL trip blank	--	--	--	--	--	--	--
Selected water-quality criteria											
District of Columbia ground-water standards (District of Columbia, 1993)					--	--	--	--	--	--	--
District of Columbia surface-water standards (District of Columbia, 2003)											
A					--	--	--	--	--	--	--
B					--	--	--	--	--	--	--
C					--	0.5	--	1,000	1,000	600	600
D					0.00077	1,100	0.018	960	690	8.1	--
USEPA Maximum Contaminant Levels (U.S. Environmental Protection Agency, 2006b)					1	50	--	--	--	--	--
USEPA Region III Risk-Based Concentrations for tap water (U.S. Environmental Protection Agency Region III, 2006)					0.042	220	0.03	70	3.5	0.0013	0.0096

^aSee USEPA drinking water standards - the total for trihalomethanes (THM) is 80 µg/L.

						Miscellaneous compounds					
<i>N</i> -Nitroso-di-phenyl-amine, unfiltered, µg/L	Pentachlorophenol, unfiltered, µg/L	Phenanthrene, unfiltered, µg/L	Phenols, STL, unfiltered, µg/L	Phenols, NWQL, unfiltered, µg/L	Hexachloroethane, unfiltered, µg/L	Oil and grease, unfiltered, mg/L	Diesel-range organic compounds, unfiltered, mg/L	Gasoline-range organic compounds, unfiltered, µg/L	Petroleum hydrocarbons, unfiltered, mg/L	PCBs, unfiltered, µg/L	Caffeine, filtered, µg/L
86-30-6	87-86-5	85-01-8	108-95-2	108-95-2	67-72-1	na	na	na	na	1336-36-3	58-08-2
<10	<50	<10	<10.0	--	<10	<5.00	<.250	E5.5	<5.0	<.1	<.018
--	--	--	--	--	--	--	--	--	--	<.1	<.018
<10	<50	<10	<10.0	<16	<10	E.85	<.250	<25	<5.0	<.1	<.018
--	--	--	--	--	--	--	--	--	--	--	--
<10	<50	<10	<10.0	<16	<10	<5.00	<.250	<25	<5.0	<.1	<.018
--	--	--	--	<16	--	--	--	--	--	<.1	<.018
--	--	--	--	--	--	--	--	--	--	--	--
<10	<50	<10	<10.0	--	<10	<5.00	<.250	<25	<5.0	<.1	<.018
--	--	--	--	--	--	--	--	--	--	<.1	<.018
<10	<50	<10	<10.0	--	<10	<5.00	<.250	<25	<5.0	<.1	<.018
<10	<50	<10	<10.0	--	<10	<5.00	<.250	<25	<5.0	<.1	<.018
<10	<50	<10	<10.0	--	<10	<5.00	<.250	<25	<5.0	<.1	0.03
<10	<50	<10	<10.0	E3	<10	<5.00	0.41	E11	<5.0	<.1	<.018
<10	<50	<10	<10.0	<16	<10	<5.00	0.39	540	<5.0	<.1	<.018
<10	<50	<10	<10.0	<16	<10	<5.00	<.250	<25	<5.0	<.1	E.005t
<10	<50	<10	<10.0	<16	<10	<5.00	E.028	<25	<5.0	<.1	<.018
--	--	--	--	--	--	--	--	--	--	--	--
<10	<50	<10	<10.0	E93	<10	<5.00	<.250	<25	<5.0	<.1	<.018
<10	<50	<10	<10.0	<16	<10	<5.00	<.250	<25	<5.0	<.1	<.018
<10	<50	<10	<10.0	<16	<10	<5.00	<.250	<10	<5.0	<.1	E.006t
<10	<50	<10	<10.0	<16	<10	<5.00	<.250	<10	<5.0	<.1	E.007t
<10	<50	<10	<10.0	<16	<10	<5.00	<.250	<10	<5.0	<.1	<.018
<10	<50	<10	<10.0	<16	<10	E1.40	<.250	<10	<5.0	<.1	E.007t
<10	<50	<10	<10.0	<16	<10	<5.00	E.021	47	<5.0	<.1	<.018
--	--	--	--	--	--	--	--	--	--	--	--
<10	<50	<10	<10.0	<16	<10	<5.00	<.250	<25	<5.0	<.1	<.018
<10	<50	<10	<10.0	<16	<10	<5.00	E.015	<25	<5.0	<.1	E.017n
--	--	--	--	--	--	--	--	--	--	--	--
<10	<50	<10	<10.0	<16	<10	<5.00	1.1	35	<5.0	<.1	<.018
--	--	--	--	--	--	--	--	--	--	--	--
<10	<50	<10	<10.0	<16	<10	<5.00	<.250	<10	<5.0	<.1	E.007t
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
600	***	--	--	--	--	--	--	--	--	0.014	--
16	3	--	1,700,000	--	--	--	--	--	--	0.000064	--
--	1	--	--	--	--	--	--	--	--	0.5	--
14	0.56	--	11,000.00	na	4.8	--	--	--	--	0.033	--

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Appendix 3. Concentrations of pesticides, degradates, volatile organic compounds, and semivolatile organic compounds in ground water from selected wells in the Anacostia River watershed within Washington, D.C., September–December 2005, and selected water-quality criteria.—Continued

[STL, Severn Trent Laboratory; USGS, U.S. Geological Survey; NWQL, USGS National Water Quality laboratory; <, less than; E, estimated; mg/L, milligrams per liter; µg/L, micrograms per liter; --, no value reported; na, not applicable; M, presence verified but not quantified; b, value extrapolated at low end; d, diluted sample; m, value is highly variable by this method; n, below the laboratory reporting level and above the long-term method detection level; t, below the long-term method detection level; v, analyte detected in laboratory blank; r, sample ruined in preparation; CIAT, 2-chloro-4-isopropylamino-6-amino-s-triazine; CEAT, 6-amino-2-chloro-4-ethylamino-s-triazine; OIET, 2-hydroxy-4-isopropylamino-6-ethylamino-s-triazine; CASRN®, Chemical Abstracts Service Registry Number; USEPA, U.S. Environmental Protection Agency; ***, Please refer to District of Columbia (2003) for this value; **bold**, environmental sample results; **bold italics**, replicate sample results; plain text, blank sample results]

USGS well number	USGS site identifier	Date	Time	Sample type	Surrogates for laboratory quality control					
					2,4,5-T surrogate, filtered, percent recovery	alpha-HCH-d6, surrogate, unfiltered, percent recovery	Barban, surrogate, filtered, percent recovery	Caffeine-13C, surrogate, filtered, percent recovery	Isdrin, surrogate, unfiltered, percent recovery	PCB 207, surrogate, unfiltered, percent recovery
CASRN					na	na	na	na	na	na
AC Aa 1	385225076590101	9/21/2005	1030	Environmental	E93.1	89.4	162	109	87.2	90.8
AC Aa 1	385225076590101	9/21/2005	1035	Field equipment blank	E182	85.2	111	138	80.1	87.7
WE Ba 9	385606076584101	10/12/2005	1230	Environmental	E154	E102	E106	108	80.8	E115
WE Ba 9	385606076584101	10/12/2005	2359	STL trip blank	--	--	--	--	--	--
WE Ba 10	385534076582101	10/12/2005	930	Environmental	122	E105	124	88.9	76.3	E114
WE Ba 10	385534076582101	10/12/2005	935	Field equipment blank	124	95.6	E102	129	60.7	E94.9
WE Ba 10	385534076582101	10/12/2005	2359	STL trip blank	--	--	--	--	--	--
WE Bb 3	385504076563801	9/20/2005	1000	Environmental	E152	82.9	110	98.5	75.5	86.7
WE Bb 3	385504076563801	9/20/2005	1010	Replicate	E142	50.8	93.8	64.6	56	70
WE Bb 4	385504076563802	9/20/2005	1430	Environmental	E111	90.8	104	111	86.6	96.5
WE Ca 29	385238076581501	9/19/2005	1400	Environmental	E108	E104	99.6	112	97.2	E114
WE Ca 32	385332076594701	9/22/2005	1000	Environmental	E146	92.4	105	106	88.7	93.8
WE Ca 33	385349076592801	10/14/2005	1030	Environmental	104	E105	88.3	83.2	109	E129
WE Ca 33	385349076592801	10/14/2005	800	Field equipment blank	131	96	87	129	87.3	E107
WE Ca 34	385245076583501	9/27/2005	1330	Environmental	87.7	E103	69.2	82.1	97	102
WE Ca 34	385245076583501	9/27/2005	2359	STL trip blank	--	--	--	--	--	--
WE Cb 5	385443076562801	9/14/2005	1400	Environmental	E128	94.7	119	129	87.7	98.6
WE Cb 6	385443076562802	9/14/2005	1030	Environmental	E113	97	104	150	93.3	E110
WE Cb 8	385252076572801	12/20/2005	1430	Environmental	115	87.3	81.8	104	80.8	95.1
WE Cb 8	385252076572801	12/20/2005	1435	Replicate	118	88.8	90.5	104	78	93
WE Cb 8	385252076572801	12/21/2005	1730	Field equipment blank	125	91.3	102	86.1	E90.8	93.5
WE Cb 11	385332076564101	12/19/2005	1430	Environmental	77.4	93.6	75.9	90	90.1	102
WE Cb 12	385332076564102	9/27/2005	1000	Environmental	83.3	E107	84.1	83.2	88.7	E110
WE Cb 12	385332076564102	9/27/2005	2359	STL trip blank	--	--	--	--	--	--
WE Cc 3	385327076544801	10/6/2005	1000	Environmental	111	E106	110	63	96.9	E119
WE Cc 3	385327076544801	10/6/2005	1010	Replicate	117	E107	116	72.3	100	E123
WE Cc 3	385327076544801	10/6/2005	2359	STL trip blank	--	--	--	--	--	--
WW Bc 8	385519077012601	10/13/2005	1100	Environmental	136	E110	E109	93.8	106	E117
WW Bc 8	385519077012601	10/13/2005	2359	STL trip blank	--	--	--	--	--	--
WW Bc 9	385527077000701	12/19/2005	1100	Environmental	101	90.4	124	91.2	83	101
WW Bc 9	385527077000701	12/19/2005	2359	STL trip blank	--	--	--	--	--	--
Selected water-quality criteria										
District of Columbia ground-water standards (District of Columbia, 1993)					na	na	na	na	na	na
District of Columbia surface-water standards (District of Columbia, 2003)										
A					na	na	na	na	na	na
B					na	na	na	na	na	na
C					na	na	na	na	na	na
D					na	na	na	na	na	na
USEPA Maximum Contaminant Levels (U.S. Environmental Protection Agency, 2006b)					na	na	na	na	na	na
USEPA Region III Risk-Based Concentrations for tap water (U.S. Environmental Protection Agency Region III, 2006)					na	na	na	na	na	na

^aSee USEPA drinking water standards - the total for trihalomethanes (THM) is 80 µg/L.

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