

Water Resources Data Ohio Water Year 2000

Volume 2. St. Lawrence River Basin and Statewide Project Data

Water-Data Report OH-00-2



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



Prepared in cooperation with the
State of Ohio
and with other agencies

CALENDAR FOR WATER YEAR 2000

2000

OCTOBER							NOVEMBER							DECEMBER						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
1	2	3	4	5	6	7				1	2	3	4						1	2
8	9	10	11	12	13	14	5	6	7	8	9	10	11	3	4	5	6	7	8	9
15	16	17	18	19	20	21	12	13	14	15	16	17	18	10	11	12	13	14	15	16
22	23	24	25	26	27	28	19	20	21	22	23	24	25	17	18	19	20	21	22	23
29	30	31					26	27	28	29	30			24	25	26	27	28	29	30
														31						

2001

JANUARY							FEBRUARY							MARCH						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
	1	2	3	4	5	6					1	2	3					1	2	3
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21	22	23	24	25	26	27	18	19	20	21	22	23	24	18	19	20	21	22	23	24
28	29	30	31				25	26	27	28				25	26	27	28	29	30	31

APRIL							MAY							JUNE						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
1	2	3	4	5	6	7			1	2	3	4	5						1	2
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22	23	24	25	26	27	28	20	21	22	23	24	25	26	17	18	19	20	21	22	23
29	30						27	28	29	30	31			24	25	26	27	28	29	30

JULY							AUGUST							SEPTEMBER						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
1	2	3	4	5	6	7				1	2	3	4							1
8	9	10	11	12	13	14	5	6	7	8	9	10	11	2	3	4	5	6	7	8
15	16	17	18	19	20	21	12	13	14	15	16	17	18	9	10	11	12	13	14	15
22	23	24	25	26	27	28	19	20	21	22	23	24	25	16	17	18	19	20	21	22
29	30	31					26	27	28	29	30	31		23	24	25	26	27	28	29
														30						

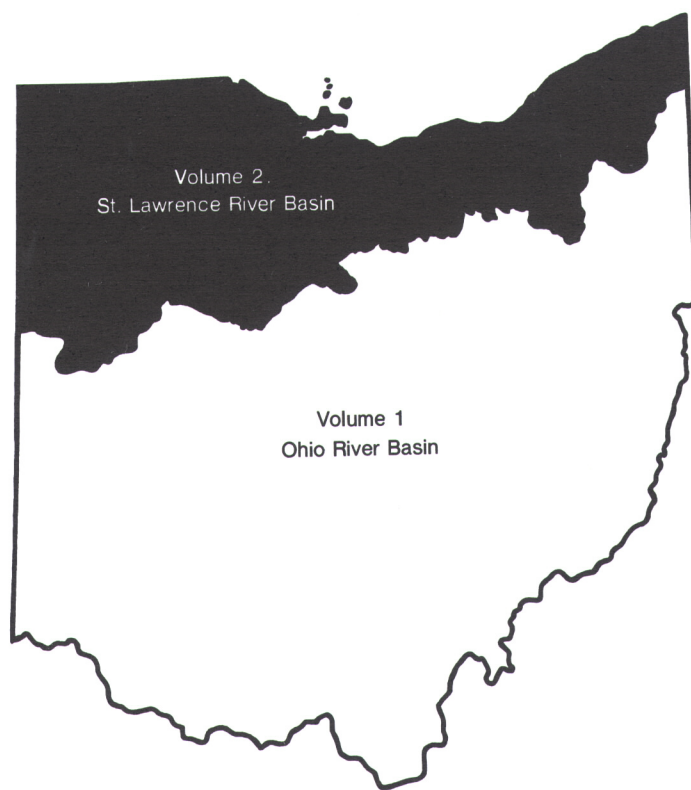
U.S. Department of the Interior
U.S. Geological Survey

Water Resources Data Ohio Water Year 2000

Volume 2. St. Lawrence River Basin and Statewide Project Data

By H.L. Shindel, J. P. Mangus, and L.E. Trimble

Water-Data Report OH-00-1



Prepared in cooperation with the
State of Ohio and with other agencies



U.S. Department of the Interior
Gale A. Norton, Secretary

U.S. Geological Survey
Charles G. Groat, Director

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PREFACE

This volume of the annual hydrologic data report of Ohio is one of a series of annual reports that document hydrologic data gathered from the U.S. Geological Survey's surface- and ground-water data-collection networks in each State, Puerto Rico, and Trust Territories. These records of streamflow, ground-water levels, and quality of water provide the hydrologic information needed by State, local, and Federal agencies and the private sector for developing and managing our Nation's land and water resources. Hydrologic data for Ohio are contained in two volumes:

Volume 1. Ohio River Basin Excluding Project Data

Volume 2. St. Lawrence River Basin and Statewide Project Data

This report is the culmination of a concerted effort by dedicated personnel of the U.S. Geological Survey who collected, compiled, analyzed, verified, and organized the data, and who typed, edited, and assembled the report. In addition to the authors, who had primary responsibility for assuring that the information contained herein is accurate, complete, and adheres to Geological Survey policy and established guidelines, the following individuals contributed significantly to the collection, processing, and tabulation of the data:

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This report was prepared in cooperation with the State of Ohio and with other agencies under the general supervision of S.M. Hindall, District Chief, Ohio.

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[Maps showing project study areas are at the beginning of each project-data listing]

SURFACE-WATER STATIONS, IN DOWNSTREAM ORDER, FOR WHICH RECORDS ARE PUBLISHED

[Letters after station names designate type of data: (c) chemical, (d) discharge, (S) daily suspended-sediment data]

	Station number	Page
<u>Lake Erie Basin</u>		
Ottawa River Basin		
Ottawa River at University of Toledo, Toledo (d).....	04177000.....	38
Maumee River Basin		
Tiffin River at Stryker (d).....	04185000.....	39
Unnamed tributary to Lost Creek near Farmer (d)	04185440.....	40
Auglaize River near Fort Jennings (d).....	04186500.....	41
Blanchard River near Findlay (d).....	04189000.....	42
Auglaize River near Defiance (d).....	04191500.....	43
Maumee River near Defiance (cdS).....	04192500.....	44
Maumee River at Waterville (cdS).....	04193500.....	48
Portage River Basin		
Portage River at Woodville (d)	04195500.....	53
Portage River at Elmore (d)	04195820.....	54
Sandusky River Basin		
Sandusky River near Bucyrus (d).....	04196000.....	55
Tymochtee Creek at Crawford (d).....	04196800.....	56
Honey Creek at Melmore (d).....	04197100.....	57
Rock Creek at Tiffin (d)	04197170.....	58
Sandusky River near Fremont (cdS)	04198000.....	59
Huron River Basin		
Huron River at Milan (d).....	04199000.....	63
Old Woman's Creek Basin		
Old Woman's Creek at Berlin Road near Huron (d).....	04199155.....	64
Black River Basin		
Black River at Elyria (d)	04200500.....	65
Rocky River Basin		
Rocky River near Berea (d).....	04201500.....	66
Cuyahoga River Basin		
Cuyahoga River at Hiram Rapids (d).....	04202000.....	67
Cuyahoga River at Cuyahoga Falls (d)	04203900.....	68
Cuyahoga River at Old Portage (d).....	04206000.....	69
Yellow Creek:		
North Fork at Bath Center (d).....	04206212.....	70
Yellow Creek at Botzum (d).....	04206220.....	71
Tinkers Creek at Bedford (d).....	04207200.....	72
Cuyahoga River at Independence (cdS).....	04208000.....	73
Cuyahoga River at LTV Steel at Cleveland (d)	04208504.....	77
Grand River Basin		
Grand River near Painesville (d).....	04212100.....	78
Conneaut Creek Basin		
Conneaut Creek at Conneaut (d).....	04213000.....	79

GROUND-WATER STATIONS FOR WHICH RECORDS ARE PUBLISHED

[Letters after station names designate type of data: (c) chemical, (l) water level]

	Well Number	Local Number	Page
CRAWFORD COUNTY			
Bucyrus (l).....	404838082563100.....	Cr-1.....	82
GEAUGA COUNTY			
Southeast of Chagrin Falls (l).....	412518081221500.....	Ge-3a.....	83
HANCOCK COUNTY			
South of Vanlue (l).....	405940083275500.....	Ha-3.....	84
HARDIN COUNTY			
Southeast of Dola (l).....	404648083412600.....	Hn-2a.....	85
HENRY COUNTY			
Southwest of McClure (l).....	412123083574000.....	Hy-2.....	86
LUCAS COUNTY			
Toledo (l).....	413704083362200.....	Lu-1.....	87
MEDINA COUNTY			
Lodi (l).....	410142082005900.....	Md-1.....	88
OTTAWA COUNTY			
Catawba Island (l).....	413434082494000.....	O-2.....	89
PORTAGE COUNTY			
East of Kent (l).....	410931081192900.....	Po-123.....	90
PUTNAM COUNTY			
Columbus Grove (l).....	405505084032900.....	Pu-1.....	91
SANDUSKY COUNTY			
Fremont (l).....	411914083045300.....	S-3.....	92
Woodville (l).....	412703083213600.....	S-2.....	93
SENECA COUNTY			
Tiffin (l).....	410802083093900.....	Se-2.....	94
SUMMIT COUNTY			
Akron (l).....	410330081282000.....	Su-6.....	95
Cuyahoga Falls (l).....	410846081271600.....	Su-7.....	96
VAN WERT COUNTY			
Van Wert (l).....	405215084335400.....	VW-1.....	97
WILLIAMS COUNTY			
Bryan (l).....	412821084313600.....	Wm-1.....	98
Bryan (l).....	412930084320900.....	Wm-3.....	99
East of Blakeslee (l).....	413108084415300.....	Wm-12.....	100
WYANDOT COUNTY			
Upper Sandusky (l).....	405009083172600.....	Wy-1.....	101

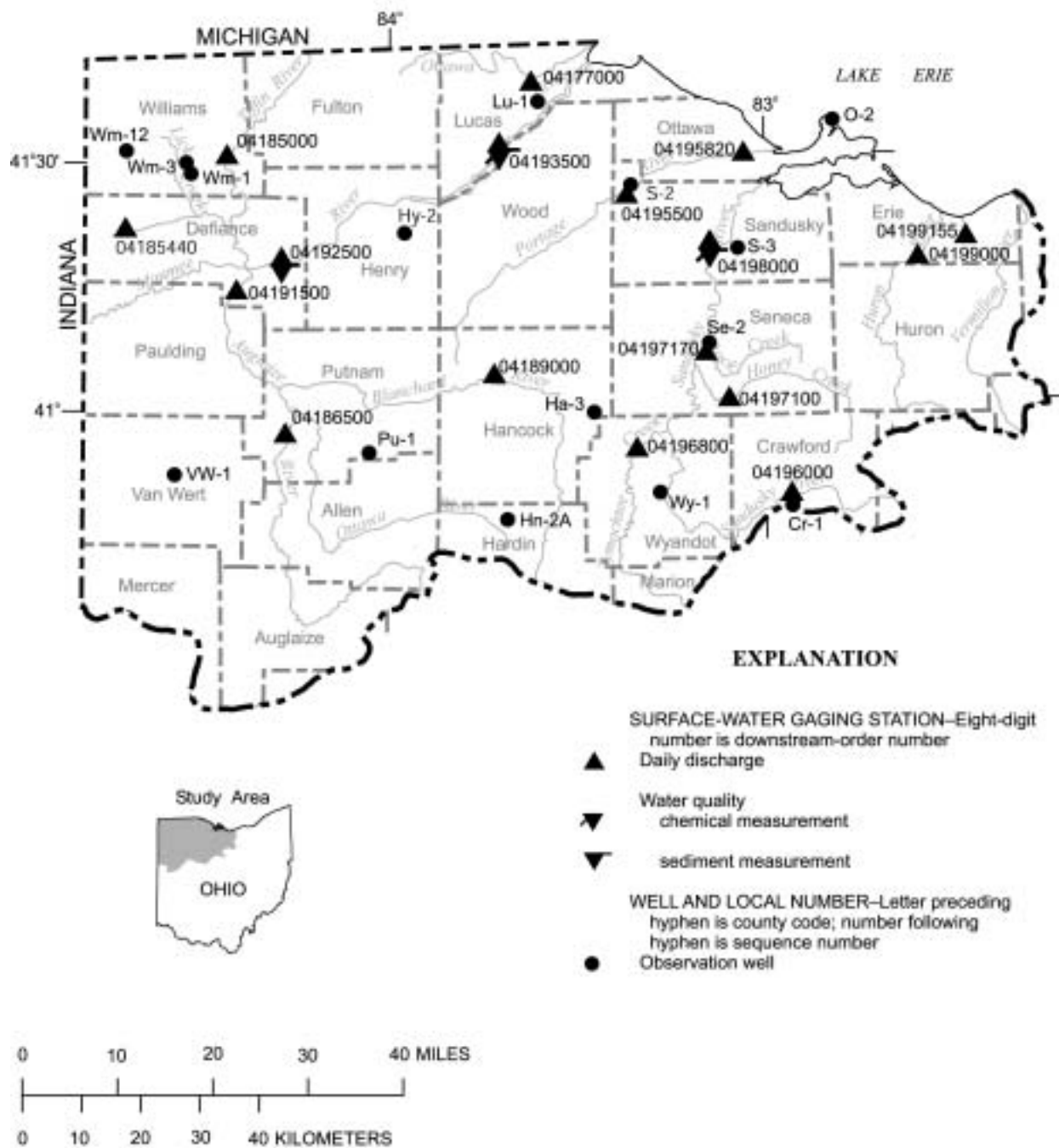


Figure 1a. Location of data-collection stations and wells.

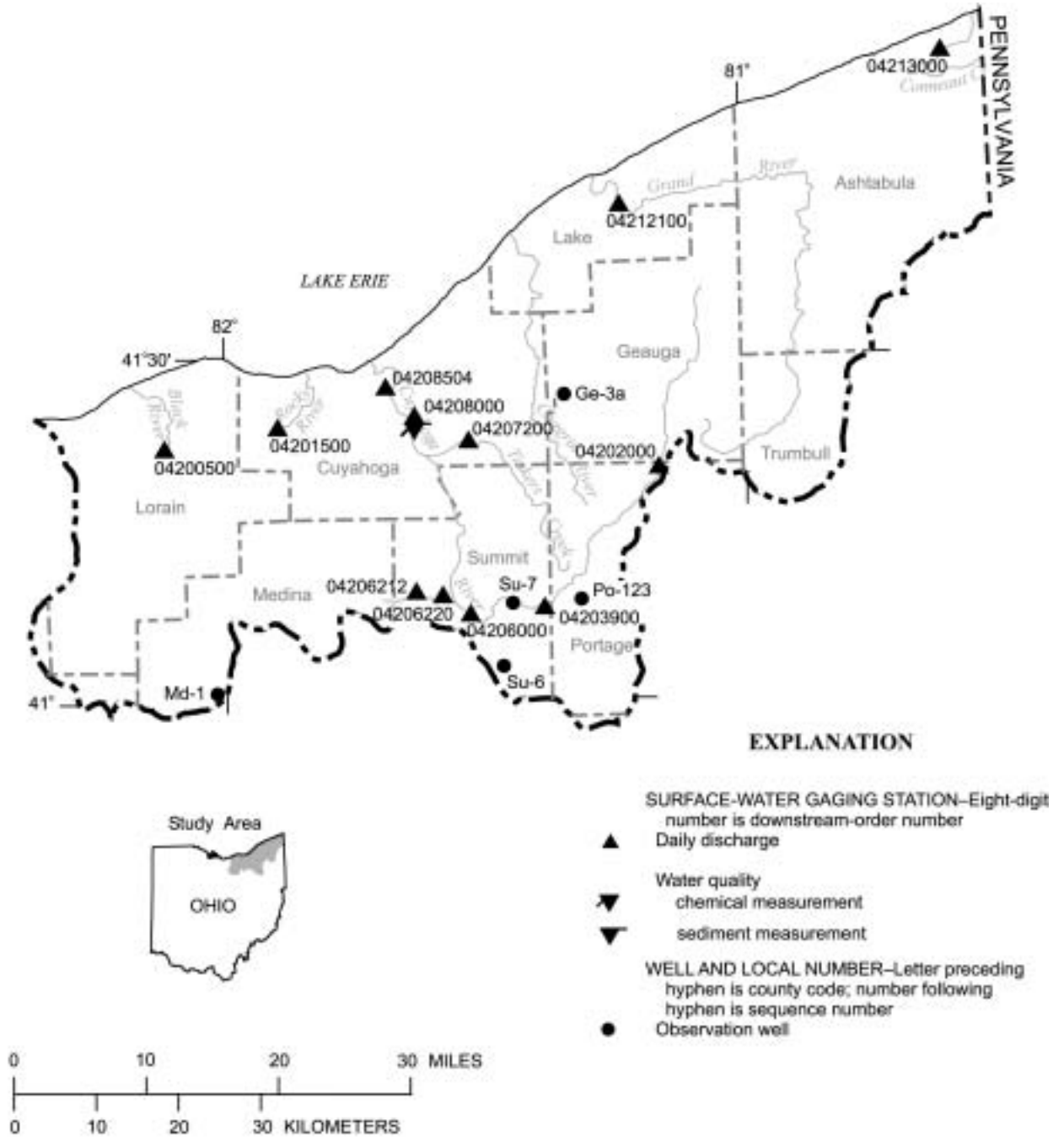


Figure 1b. Location of data-collection stations and wells.

Discontinued Surface-Water-Discharge Stations

The following continuous-record surface-water-discharge or stage-only stations (gaging stations) have been discontinued. Daily discharge or stage records were collected and published for the period of record, expressed in water years, shown for each station. Discontinued project stations with less than 3 years of record have not been included. Information regarding these stations may be obtained from the District Office at the address given on the back side of the title page of this report.

[mi², square miles; a---, not determined for canals.]

Station name	Station number	Drainage area (mi ²)	Period of record
St. Joseph River near Blakeslee	04177500	394	1926-32
St. Marys River near Willshire	04181000	354	1926-32
Maumee River at Antwerp	04183500	2,129	1922-35 1939-82
Maumee River near Sherwood	04184000	2,275	1903-06
Bean Creek at Powers	04184500	206	1941-81
Tiffin River near Brunersburg	04185500	736	1928-36
Miami and Erie Canal at Delphos	04186000	a---	1928-33
Ottawa River at Lima	04187100	128	1988-99
Ottawa River at Allentown	04187500	160	1924-36 1943-82
Ottawa River at Kalida	04188000	309	1930-36
Eagle Creek near Findlay	04188500	55.0	1947-57
Blanchard River at Glandorf	04189500	644	1921-28 1947-52
Blanchard River at Dupont	04190000	756	1928-35
Roller Creek at Ohio City	04190500	5.14	1946-48
Town Creek near Van Wert	04191000	21.2	1945-53
Miami and Erie Canal near Defiance	04192000	a---	1925-29 1953-69
Miami and Erie Canal at Waterville	04193000	a---	1921-29
Swan Creek at Toledo	04194000	199	1945-48
Portage River near Pemberville	04194500	337	1930-35
North Branch Portage River near Bowling Green	04195000	45.1	1924-32
Lacarbe Creek near Oak Harbor	04195825	2.95	1988-92
Bayou Ditch near Oak Harbor	04195830	2.82	1964-82 1988-92
Broken Sword Creek at Nevada	04196200	83.8	1976-82
Sandusky River near Upper Sandusky	04196500	298	1922-35 1938-82
Tymochtee Creek near Marseilles	04196600	137	1970-74
Sandusky River near Mexico	04197000	774	1923-36 1938-83
Honey Creek near New Washington	04197020	17	1976-90
Wolf Creek at Bettsville	04197300	66.2	1976-82
East Branch Wolf Creek near Bettsville	04197450	82.4	1976-82
Havens Creek at Havens	04197500	4.28	1946-49
East Branch Huron River near Norwalk	04198500	85.5	1924-35

Discontinued Surface-Water-Discharge Stations—Continued

[mi², square miles; a---, not determined for canals.]

Station name	Station number	Drainage area (mi ²)	Period of record
Old Woman's Creek at U.S. Highway 6 at Huron	04199165	26.5	1980-94
Lake Erie at Ruggles Beach	04199175		1987-94
Vermilion River near Fitchville	04199287	112	1978-89 1991-93
Vermilion River near Vermilion	04199500	262	1950-81
East Branch Black River at Elyria	04200000	217	1922-36
West Branch Black River above Lake Street at Elyria	04200430	174	1980-85
Cuyahoga River near Kent	04202500	210	1934-35
Breakneck Creek near Kent	04203000	77.6	1927-35
Little Cuyahoga River at Mogadore	04204000	14.3	1946-79
Cuyahoga River at Massillon Road at Akron	04204500	31.6	1946-74
Springfield Lake Outlet at Akron	04205000	9.72	1946-49 1961-74
Little Cuyahoga River at Akron	04205500	44.4	1920 1928-34
Little Cuyahoga River Below Ohio Canal at Akron	04205700	59.2	1974-80
Yellow Creek at Ghent	04206208	12.7	1992-98
North Fork at Bath	04206210	2.81	1992-98
Park Creek at Bath Center	04206211	0.826	1992-98
Bath Creek at Bath Center	04206215	3.52	1992-98
Cuyahoga River at Ira	04206250	478	1973-80
Ohio Canal Feeder at Brecksville	04207000	a---	1923-24
Ohio Canal at Independence	04207500	a---	1922-23 1927-36 1941 1949-81
Big Creek at Cleveland	04208502	35.3	1973-86
Euclid Creek near Euclid	04208690	22.6	1977-80 1983-86
Grand River near North Bristol	04209500	85.4	1942-47
Chagrin River at Willoughby	04209000	246	1925-35 1940-84 1988-94 1996 1998-99
Phelps Creek near Windsor	04210000	25.6	1942-59
Grand River near Rome	04210500	251	1942-47
Rock Creek near Rock Creek	04211000	69.2	1942-66
Mill Creek near Jefferson	04211500	82.0	1942-75
Grand River near Madison	04212000	581	1923-35 1938-74
Ashtabula River near Ashtabula	04212500	111	1924-36 1939-48 1950-80

Discontinued Surface-Water-Quality Stations

The following continuous-record surface-water-quality stations have been discontinued. Daily records of temperature, specific conductance, pH, dissolved oxygen, or sediment were collected and published for the period of record, expressed in water years, shown for each station. Discontinued project stations with less than 3 years of record have not been included. Information regarding these stations may be obtained from the District Office at the address given on the back side of the title page of this report.

[mi², square miles; letters designate type of record: do, dissolved oxygen; pH, pH; s, sediment; sc, specific conductance; t, temperature]

Station name	Station number	Drainage area (mi ²)	Type of record	Period of record
Maumee River at Antwerp	04183500	2,129	t	1939-82
Maumee River at Defiance	04184100	2,316	do, sc, t	1966-70
			pH	1973-78
Tiffin River at Evansport	04185300	541	do, pH, sc, t	1968-78
Auglaize River near Ft. Jennings	04186500	332	do, pH, sc, t	1969-78
Ottawa River at Allentown	04187500	160	sc, t	1969-82
			do, pH.	1977-82
Auglaize River at Cloverdale	04188200	713	do, pH, sc, t	1967-78
Blanchard River near Findlay	04189000	346	do, pH, sc, t	1968-80
Auglaize River near Defiance	04191500	2,318	s	1936
			do, pH, sc, t	1966-76
Maumee River near Waterville	04193490	6,313	do, pH, sc, t	1977-91
Miami River at Waterville	04193500	6,329	do, pH, sc, t	1963-77
Maumee River at mouth at Toledo	04194023	6,608	do, pH, sc, t	1967-75
Middle Branch Portage River near Portage	04194310	217	sc, t	1969-75
Portage River at Railroad Bridge at Woodville	04195600	428	do, pH, sc, t	1968-80
Portage River at Elmore	04195800	432	t	1950-52
			s	1950-53
			do	1970-80
Sandusky River near Upper Sandusky	04196500	298	do, sc, t	1969-79
			pH	1977-79
Tymochtee Creek at Crawford	04196800	229	do, pH, sc, t	1968-75
Sandusky River at St. Johns Bridge near Mexico	04196990	711	do, sc, t	1969-76
Honey Creek at Melmore	04197100	141	s	1988-89
Sandusky River below Fremont	04198005	1,264	do, pH, sc, t	1966-80
West Branch Huron River near Willard	04198018	86.0	sc, t	1968-75
Huron River at Milan	04199000	371	s	1970-74
				1988-91
Huron River below Milan	04199100	385	do, pH, sc, t	1968-78
Vermilion River near Fitchville	04199287	112	s	1987-89
Vermilion River near Vermilion	04199500	262	sc, t	1969-76
			do, pH	1976-80
East Branch Black River at Grafton	04199900	170	sc, t	1969-75
West Branch Black River near Elyria	04200400	170	sc, t	1969-75
West Branch Black River above Lake Street at Elyria	04200430	174	s	1980-81
Black River at Elyria	04200500	396	t	1962-70
			sc	1964-70
			s	1980-81

Discontinued Surface-Water-Quality Stations—Continued

[mi², square miles; letters designate type of record: do, dissolved oxygen; pH, pH; s, sediment; sc, specific conductance; t, temperature]

Station name	Station number	Drainage area (mi ²)	Type of record	Period of record
Black River below Elyria	04200550	412	do, sc, t	1966-82
			pH	1976-82
Cuyahoga River at Old Portage	04205700	59.2	do, pH, sc, t	1970-84
			s	1972-81
Cuyahoga River at Botzum	04206200	443	t	1947-49
Tinkers Creek at Bedford	04207200	83.9	s	1972-79
Cuyahoga River at Independence	04208000	707	do, sc, t	1965-91
			pH	1972-91
Big Creek at Cleveland	04208502	35.3	s	1978
Cuyahoga River at Dupont Intake in Cleveland	04208505	794	sc	1964-75
Cuyahoga River at West Third Street Bridge	04208506	798	do, pH, sc, t	1966-87
Cuyahoga River at Superior Street Bridge in Cleveland	04208510	808	do, pH, sc, t	1964-66
Chagrin River at Willoughby	04209000	246	t	1950
			s	1969-74
Grand River at Painesville	04212200	701	do, pH, sc, t	1966-82
Fields Brook at Ashtabula	04212680	3.63	do, pH, sc, t	1983-91
Ashtabula River at Ashtabula	04212700	136	do, pH, sc, t	1968-79

INTRODUCTION

The Water Resources Division of the U.S. Geological Survey (USGS), in cooperation with state agencies, obtains a large amount of data each water year (a water year is the 12-month period from October 1 through September 30 and is identified by the calendar year in which it ends) pertaining to the water resources of Ohio. These data, accumulated during many years, constitute a valuable data base for developing an improved understanding of the water resources of the State. To make these data readily available to interested parties outside the USGS, they are published annually in this report series entitled "Water Resources Data—Ohio."

This report (in two volumes) includes records on surface water and ground water in the State. Specifically, it contains (1) discharge records for streamflow-gaging stations, miscellaneous sites, and crest-stage stations, (2) stage and content records for streams, lakes, and reservoirs, (3) water-quality data for streamflow-gaging stations, wells, synoptic sites, and partial-record sites, and (4) water-level data for observation wells. Locations of lake- and streamflow-gaging stations, water-quality stations, and observation wells for which data are presented in this volume are shown in figures 1a through 1d. The data in this report represent that part of the National Water Information System collected by the USGS and cooperating State and Federal agencies in Ohio.

This series of annual reports for Ohio began with the 1961 water year with a report that contained only data relating to the quantities of surface water. For the 1964 water year, a similar report was introduced that contained only data relating to water quality. Beginning with the 1975 water year, the report was changed to present (in two to three volumes) data on quantities of surface water, quality of surface and ground water, and ground-water levels.

Prior to the introduction of this series, and for several years concurrent with it, water-resources data for Ohio were published in a series of USGS Water-Supply Papers. Data on stream discharge and stage and on lake or reservoir contents and stage through September 1960 were published annually under the title "Surface-Water Supply of the United States, Parts 3 and 4." For the 1961 through 1970 water years, the data were published in two 5-year reports. Data on chemical quality, temperature, and suspended sediment for the 1941 through 1970 water years were published annually under the title "Quality of Surface Waters of the United States," and ground-water levels for the 1935 through 1974 water years were published under the title "Ground-Water Levels in the United States." The above-mentioned Water-Supply Papers can be found in libraries of the principal cities of the United States and can be purchased from the U.S. Geological Survey, Information Services, Box 25286, Denver, CO 80225.

Publications similar to this report are published annually by the USGS for all states. These official USGS reports are identified by means of a number consisting of the two-letter state abbreviation, the last two digits of the water year, and the volume number. For example, this volume is identified as "U.S. Geological Survey Water-Data Report OH-00-2." For archiving and general distribution, the reports for 1971-74 water years are also identified as water-data reports. These water-data reports can be purchased in paper copy or in microfiche from the National Technical Information Service, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, VA 22161.

USGS water data can be accessed on the World Wide Web at <http://water.usgs.gov>. Data at this Web site include historical daily values and peaks, real-time water data, and spatial data. (The USGS Ohio District's Web site can be accessed at <http://oh.water.usgs.gov>).

Additional information for ordering specific reports, including current prices, may be obtained by writing the District Chief at the address given on the back of title page or by telephoning (614) 430-7700.

COOPERATION

The USGS has had cooperative agreements for the collection of water-resources data since 1898. The following organizations assisted in collecting data in this report:

Cities of Akron, Canton, Cincinnati, Columbus (Water Division and Sewerage & Drainage Division), Cuyahoga Falls, Fremont, Warren, and Westerville
 Counties of Clermont, Cuyahoga (Board of Health and Sanitary Engineering Division), Geauga, Knox Madison, Ross, and Summit
 Cuyahoga River Community Planning Organization
 Eastgate Development and Transportation Agency
 Federal Emergency Management Agency, Region V
 Miami Conservancy District
 Northeast Ohio Regional Sewer District
 Ohio Departments of Environmental Protection, Natural Resources (Minerals Management and Water Divisions), and Transportation
 Ohio Mine Lands Partnership
 Ottawa River Coalition
 State of Ohio Adjutant General's Department
 Village of South Russell
 U.S. Air Force, Air Force Materiel Command, Aeronautical Systems Center, Environmental Management Directorate, Restoration Branch
 U.S. Army Corps of Engineers (Buffalo, Huntington, Louisville, and Pittsburgh Districts, and Industrial Operations)
 U.S. Environmental Protection Agency (NERL-MICROBIAL and Chemical Exposure Assessment Research Division, and Superfund Division, Region V)
 Universities of Toledo and West Virginia

SUMMARY OF HYDROLOGIC CONDITIONS

Ohio is part of three physiographic provinces. Each province has its own distinctive hydrologic characteristics. The topography of the Till Plains Section of the Central Lowlands Physiographic Province (fig. 2) consists of gently rolling ground moraine, bands of terminal moraine, and outwash-filled valleys. Glaciation altered the courses of most streams in this area. The Eastern Lake Section (fig. 2) consists of wide expanses of level or nearly level land interrupted only by the sporadic sandy ridges that are the last visible remnants of glacial-lake beaches. Much of the area was swamp prior to development, and marshes are still present along Lake Erie near Toledo. The Lexington Plain Section of the Interior Low Plateaus Province (fig. 2) is characterized by rolling terrain and a few isolated large hills and ridges. The "barbed" drainage pattern formed when small streams were captured as their headwaters cut back into the hills over time. Streams have carved the Kanawha Section of the Appalachian Plateaus Province (fig. 2) into an intricate series of hollows and steep-sided ridges. Only the large streams in the section have any appreciable flood plain. In the southern New York Section (fig. 2), successive waves of glaciation have subdued the relief, buried many preglacial valleys, and rerouted many streams.

Precipitation

The average annual precipitation in Ohio is about 38 inches. The annual precipitation decreases from around 42 inches on the southern border to about 32 inches in the northwest. An anomalous area of high precipitation (as much as 44 inches) in northeastern Ohio results from air masses that pick up moisture and heat from Lake Erie and subsequently release precipitation over a range of hills stretching northeastward from Cleveland.

Monthly precipitation typically is greatest from May through July and least in October, December, and February. Of the approximate 38 inches of average annual precipitation, about 10 inches runs off immediately, 2 inches is retained at or near the surface and evaporates and transpires, and 26 inches enters the ground. Of the 26 inches that enters the ground, 20 inches is retained in the unsaturated zone and is later lost by evapotranspiration.

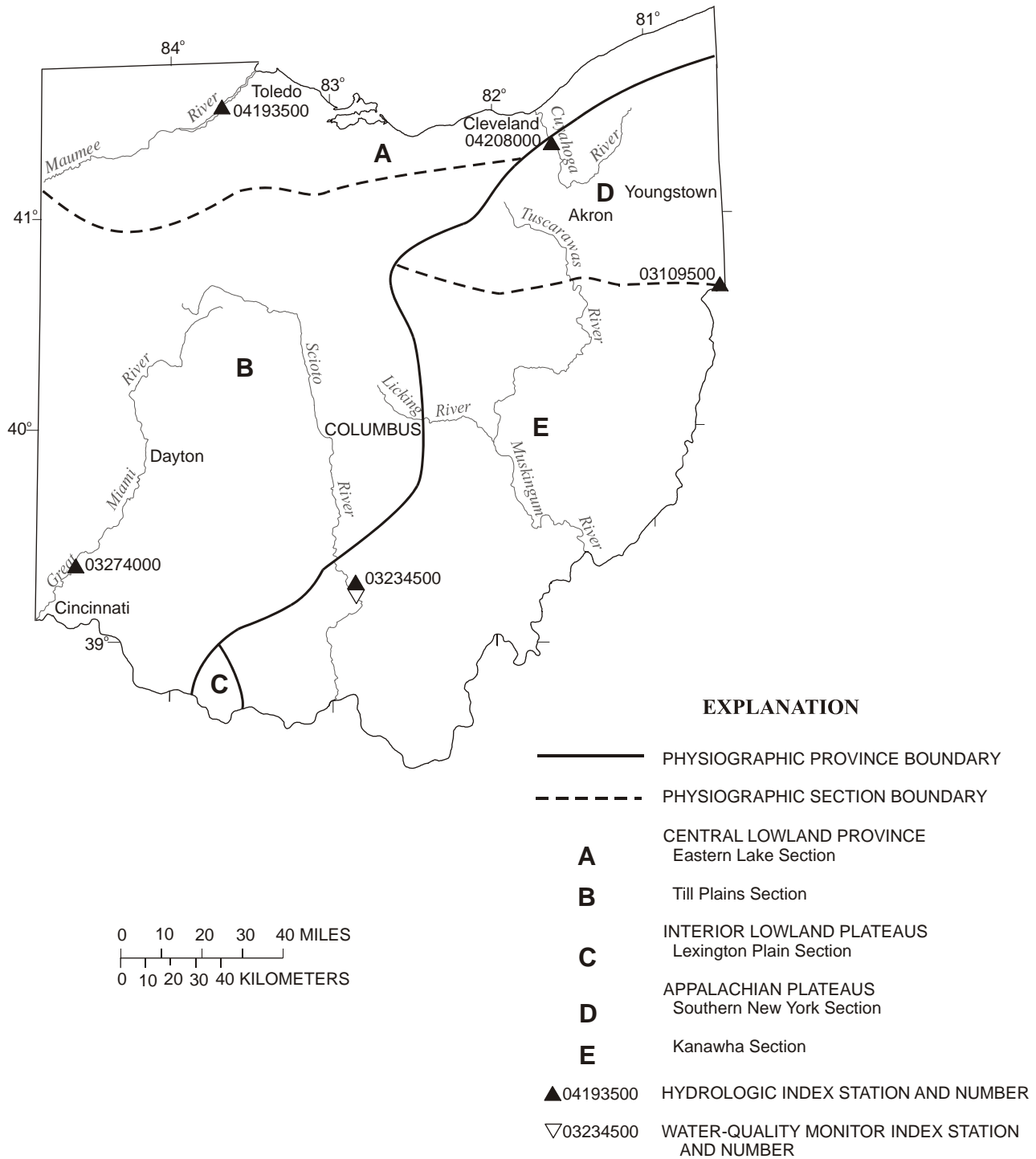


Figure 2. Physiographic divisions and location of hydrologic index stations.

The remaining 6 inches reaches the water table. Of this 6 inches, 2 inches eventually discharges to streams, and the rest is lost by evapotranspiration and consumptive use. Average runoff ranges from about 15 to 18 inches along the southern border to about 8 to 12 inches along most of the northern border, except in the northeast, where runoff is as much as 20 inches. The pattern of streamflow differs from the pattern of precipitation because of the contributions of snowmelt to streamflow in the early spring and the reduction in flows by evapotranspiration from June through September.

Surface Water

Streamflow

Streamflow-data-collection stations are distributed irregularly throughout the State and tend to be concentrated on the main river systems. The stations are used to sample a wide variety of conditions. The drainage areas range from less than 4 to 6,330 square miles and represent a wide diversity of topography and other physical characteristics. Streamflow ranges from unregulated to highly regulated.

Statewide Streamflow, Water Year 2000. At the beginning of water year 2000, streamflow was in the below normal* range for much of the State. Deficient flows prevailed in response to below-normal precipitation for the period October to December except for northeast Ohio, where streamflow was in the normal range. By January, flows were generally deficient in western Ohio and normal in eastern Ohio.

Above-normal precipitation in February caused flow to rise into the normal range except in south-central Ohio, where flow was excessive. Flooding occurred on small streams in southern Ohio in mid-February. The flooding caused some loss of life and property damage.

In March, streamflow fell into the normal range in south-central Ohio in response to below-normal precipitation. Streamflow fell into the deficient range for the rest of the State.

Near-normal precipitation prevailed in April and May, and streamflow was generally in the normal range for most of the State.

Excessive flows in northwest Ohio and normal flows elsewhere occurred for the remainder of the water year in response to normal to above-normal precipitation.

A comparison of streamflows for 2000 with long-term median flows at four representative stations is shown in figure 3.

Water Quality

The only active long-term monitoring program in Ohio is the National Water-Quality Assessment (NAWQA) Program, a program designed to assess the status and trends in the quality of ground- and surface-water resources in major hydrologic systems (study units) of the United States. The National Stream Quality Accounting Network (NASQAN) and the Hydrologic Benchmark Network (BENCHMARK) are other long-term national water-quality programs; however, work in Ohio on NASQAN and BENCHMARK were discontinued in 1996 and 1998, respectively. Sampling in NAWQA began in 1991 in the Nation and in 1996 at some sites in Ohio as part of the Lake Erie-Lake St. Clair (LERI) study unit. Sampling began in 1999 at some sites as part of the Great Miami and Little Miami River Basins (MIAM) NAWQA study unit. During water year 2000, the LERI NAWQA was in its low-intensity data-collection phase; therefore, water-quality data were collected at only one fixed station, the Maumee River at Waterville. During water year 2000, the MIAM NAWQA was in its high-intensity data-collection phase and collected water-quality data at eight fixed sites, one of which was the Mad River at St. Paris Pike near

* For streamflow, "normal" is defined as being between the 25th and 75th percentiles as measured during the base period, water years 1961-90.

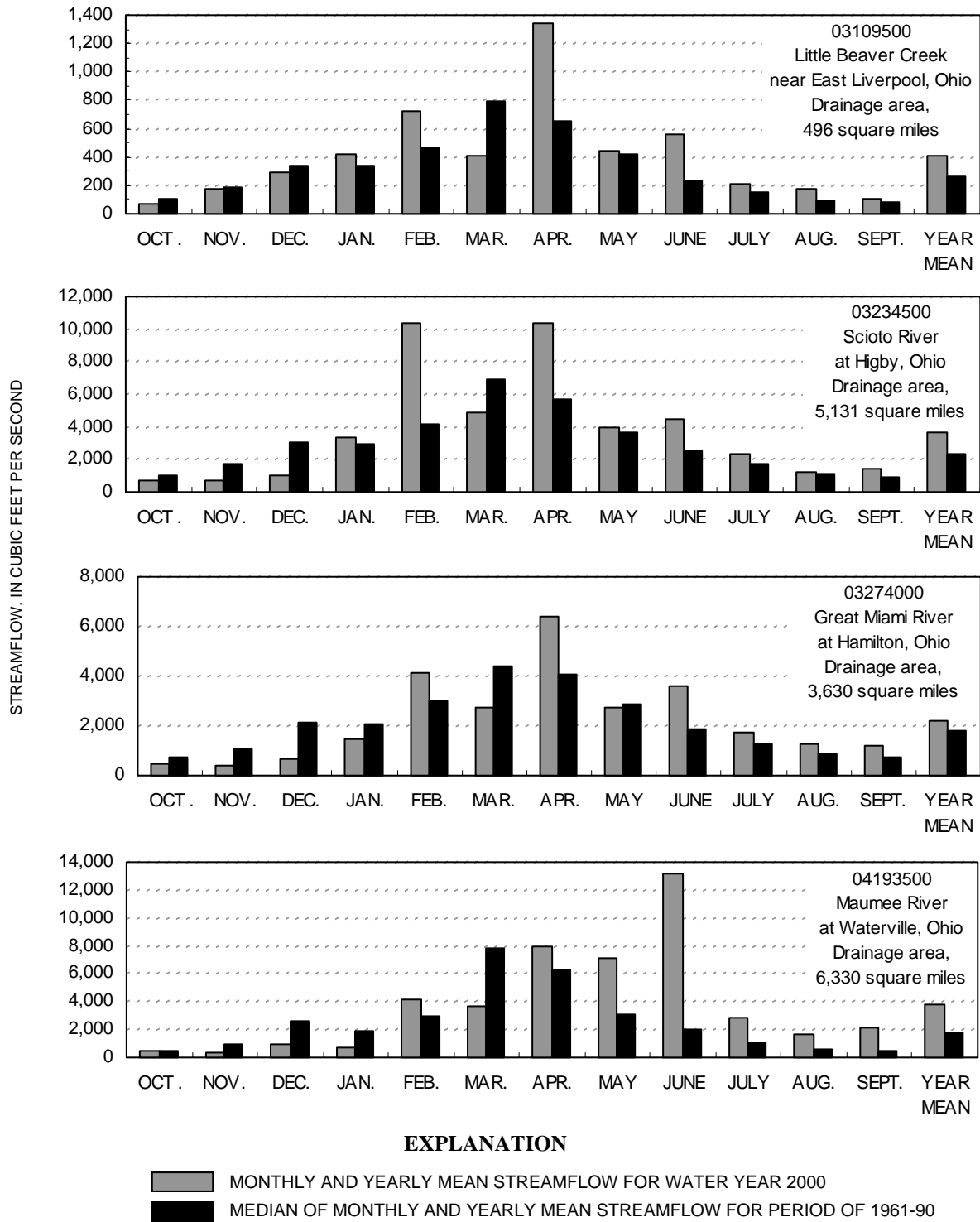


Figure 3. Streamflow during water year 2000 compared with median streamflow for period 1961-90 for four representative gaging stations.

Eagle City, Ohio. Whereas water-quality sampling in the NASQAN program was done quarterly, sampling in the NAWQA program is done much more frequently. For example, during water year 2000, 14 samples were collected at the Maumee River at Waterville and 21 samples were collected at the Mad River at St. Paris Pike. Samples for NAWQA were collected over a range of streamflows and were analyzed for major anions and cations, nutrients, pesticides, suspended sediment, selected physical properties, and *Escherichia coli*.

None of the samples collected during water year 2000 for nitrate plus nitrite concentrations at the Maumee River at Waterville or the Mad River at St. Paris Pike exceeded the U.S. Environmental Protection Agency maximum contaminant level for finished drinking water (10 milligrams per liter, as N). In Ohio, fertilizers are a major source of nitrate. Land use in the Maumee River Basin is mixed and consists of row-crop agriculture upstream and urban and industrial areas downstream. Concentrations of nitrate plus nitrite in the Maumee River in water year 2000 ranged from 0.31 to 10 milligrams per liter (mg/L) with a median concentration of 6.6 mg/L. At the Mad River site, which is in a predominantly agricultural area, concentrations of nitrate plus nitrite ranged from 1.4 to 6.5 mg/L, with a median concentration of 3.9 mg/L.

Agricultural runoff and municipal and industrial point sources are the principal sources of phosphorus in Ohio. Increased phosphorus concentrations may lead to a high rate of production of plant materials in water and eutrophication of the receiving water. During water year 2000, median concentrations of total phosphorus were 0.143 mg/L for the Maumee River and 0.068 mg/L for the Mad River. Only one sample had an extreme total phosphorus concentration of greater than 1 mg/L; this sample was collected from the Mad River during a January runoff event.

The Maumee and Mad Rivers are in areas of heavy herbicide use. Not surprisingly, herbicides were frequently detected in water samples collected during water year 2000. For example, atrazine and metolachlor were detected in 100 percent of the water samples collected from the Maumee River and 95 percent of those from the Mad River. Simazine was detected in 100 percent and 65 percent of samples from the Maumee and Mad Rivers, respectively. Acetochlor was detected less frequently—in 79 percent of the samples from the Maumee River and only 25 percent of the samples from the Mad River. Atrazine and simazine concentrations in two samples collected from the Maumee River exceeded the U.S. Environmental Protection Agency's Maximum Contaminant Levels (MCLs) (0.003 mg/L and 0.004 mg/L, respectively); MCLs have not been developed for acetochlor and metolachlor. No MCL exceedances were found in Mad River samples. The highest concentration found among these four herbicides during water year 2000 was 0.0082 mg/L in the Maumee River.

Escherichia coli (*E. coli*) is a bacterial indicator of fecal contamination of water and is the preferred and most useful indicator of the quality of recreational freshwater for body contact. *Escherichia coli* concentrations in the Maumee River ranged from 500 to 1,100 colonies per 100 milliliters (col/100 mL) and for the Mad River ranged from 20 to 10,600 col/100 mL. The single-sample standard for primary-contact recreation (suitable for full-body contact, such as swimming and canoeing) in Ohio is 298 col/100 mL. Fifty percent of the samples collected from the Maumee River and 41 percent from the Mad River met the primary-contact standard. Fecal contamination of waters can come from a variety of point and nonpoint sources including sewage-treatment plants; septic tanks; overflows from sanitary, combined, and storm sewers; feedlots; animal-production facilities; agricultural lands receiving manure applications; and pasture lands.

Ground Water

Ground water serves the needs of 46 percent of Ohio's population. An estimated 800 million gallons of ground water per day is withdrawn for public-supply, domestic, industrial, and agricultural purposes. Many people in Ohio depend on ground water as the only practical source of supply.

Ohio's unconsolidated aquifers are composed of either coarse- or fine-grained sediments. Both types are composed mainly of materials of glacial origin. The coarse-grained unconsolidated aquifers generally consist of highly permeable sand and gravel. Much of the sand and gravel is alluvium derived from glaciofluvial outwash

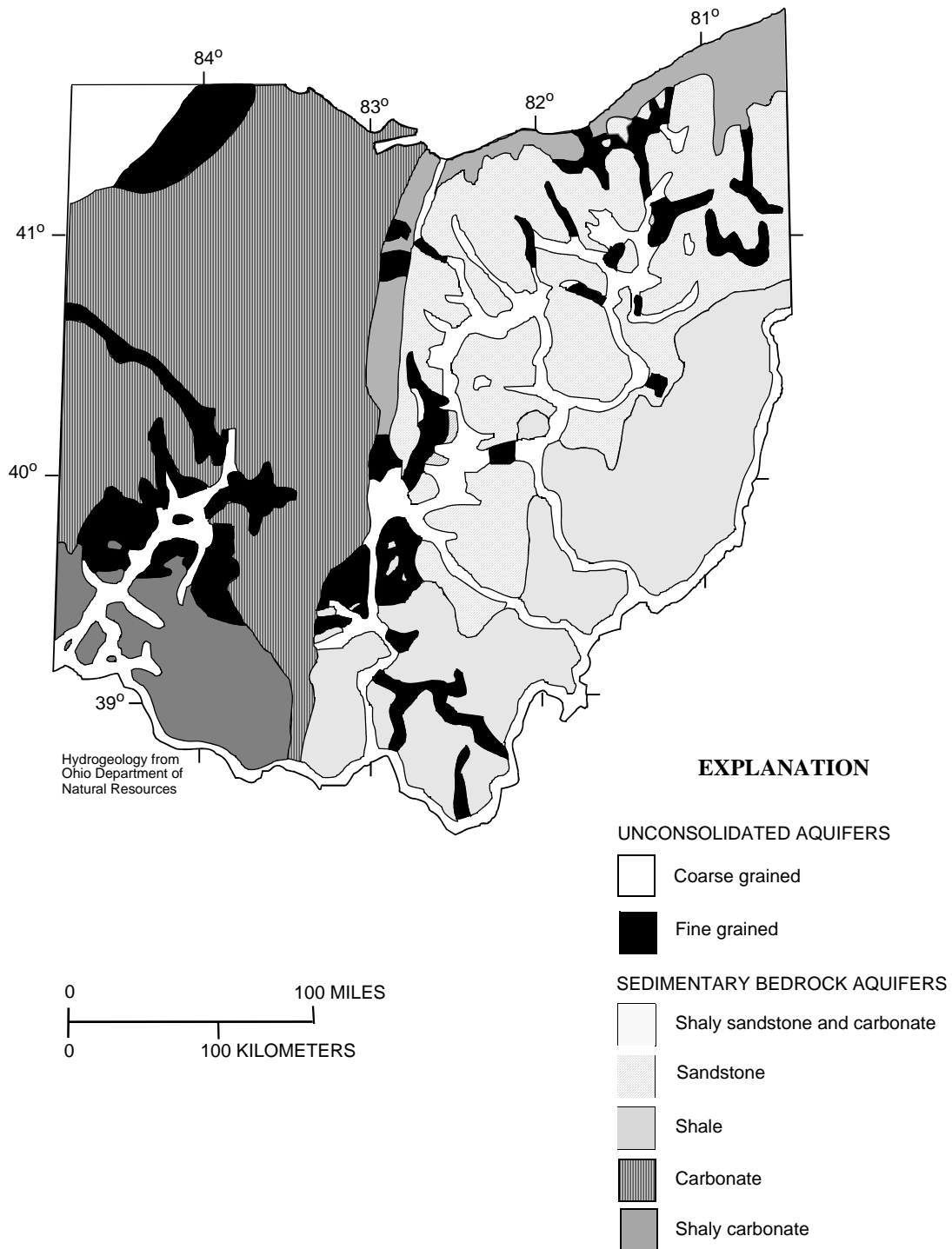


Figure 4. Geographic distribution of principal aquifers in Ohio.

along the courses of some modern streams; thus, these aquifers sometimes are referred to as “watercourse” aquifers. Coarse-grained unconsolidated aquifers in the northwestern corner of the State (fig. 4) underlie glacial till, are locally confined under artesian pressure, and are highly productive. Extensive kame-terrace deposits of water-bearing gravel and sand are widely used ground-water sources in northeastern Ohio. The fine-grained unconsolidated aquifers are similar to the coarse-grained unconsolidated aquifers in form and origin but are less permeable because of higher percentages of mixed fine sand, silt, and clay. Included in the fine-grained unconsolidated aquifers are tills that contain thin or localized stratified lenses of sand and gravel.

Ground-water supply for much of the unglaciated upland area of southeastern Ohio is from bedrock aquifers composed of shaly sandstone and thin limestone. These strata, which range from Mississippian to Permian in age, are dominated by low-yielding shales and shaly sandstones that include numerous coal-bearing strata. In some places, small water supplies are available from fractured coal beds. Several sandstone aquifers in northeastern Ohio are of regional extent and are major ground-water sources for individual and small public supplies. These include the Berea and Black Hand Sandstones of Mississippian age and several sandstone members of the Pottsville and Allegheny Formations of Pennsylvanian age. The Lake Erie coastline of northeastern Ohio is underlain by shale of Devonian and Mississippian age (fig. 4) that yields only small amounts of water to wells. Silurian-age limestone and dolomite and Devonian limestone comprise the carbonate aquifer system (fig. 4) of much of western Ohio. Glacial cover is uneven and consists of valley fill and terminal moraine in some places. The northeastern part of western Ohio contains an area of high-yielding wells that tap a preferentially weathered zone, which developed when carbonate section was periodically exposed as land mass during the Paleozoic Era. The southwestern corner of Ohio near Cincinnati is underlain by shale and a thin limestone aquifer of Ordovician age. Away from the watercourse (coarse unconsolidated) aquifers that traverse the area, the rocks that form the uplands yield only very small amounts of ground water.

Ground-Water Levels

Most ground-water observation wells in Ohio tap unconsolidated sand and gravel aquifers associated with the State's principal streams. Sample 1-year and 5-year hydrographs of a well completed in an unconfined unconsolidated sand-and-gravel aquifer are shown in figure 5. The observation-well network also includes some bedrock wells in areas where consolidated aquifers are heavily used for water supply, such as in the carbonate-rock region of northwestern Ohio. Sample 1-year and 5-year hydrographs of a well completed in a confined carbonate-rock aquifer are shown in figure 6. The yearly low for most wells occurs during the winter months, especially in cold, dry years or near the end of the growing season. Highs for the year usually occur from March through June, which is the peak of the recharge season. The yearly water-level fluctuation due to climatic conditions in water-table and confined-aquifer wells is commonly 3 to 5 feet but can be as much as 10 feet.

At the beginning of water year 2000, ground-water levels were below normal* for most of the State. Levels declined in October and November and remained below normal, with monthly record lows established at some wells.

In December and January, ground-water levels stabilized in response to near-normal precipitation but remained below normal throughout the State. Ground-water levels rose during February through April but levels continued to be below normal statewide.

The remainder of the water year was characterized by seasonal ground-water-level declines. Levels were generally below normal statewide from May through September.

* For ground-water, “normal” is defined as being between the 25th and 75th percentiles of the range values recorded during the reference period.

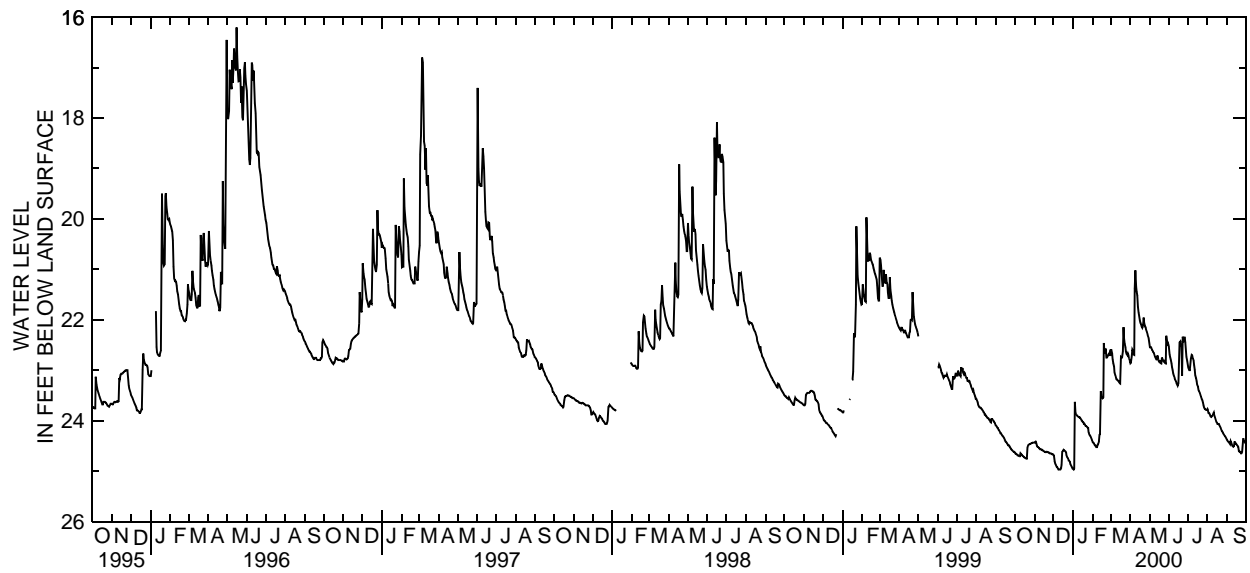
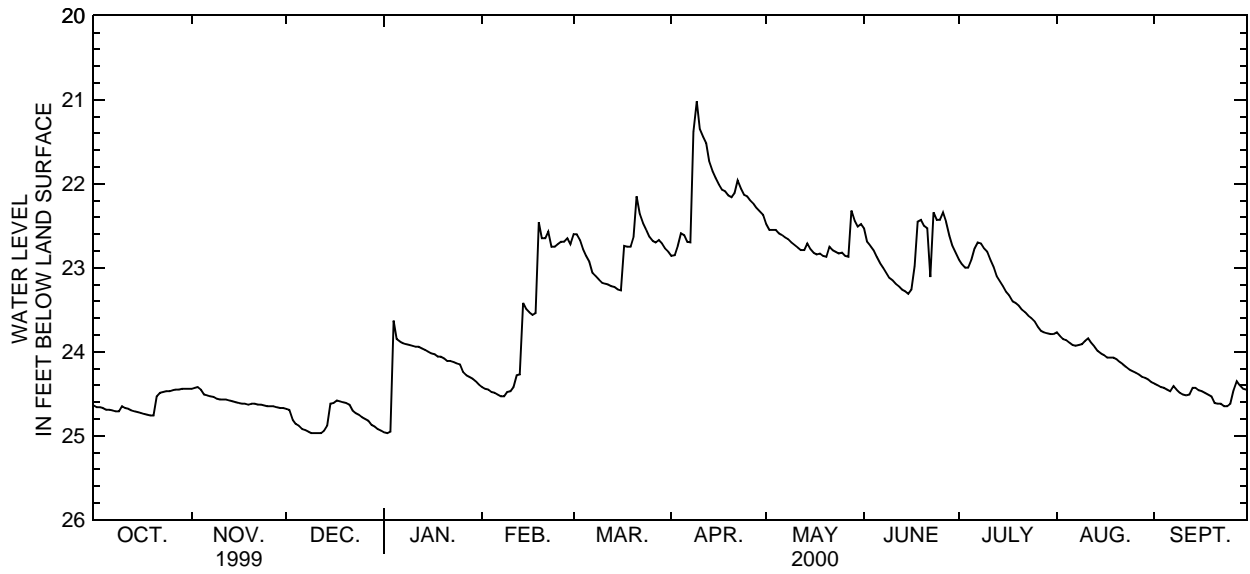


Figure 5. Sample of 1-year and 5-year hydrographs of well H-1 (391214084470100), completed in a unconfined unconsolidated aquifer.

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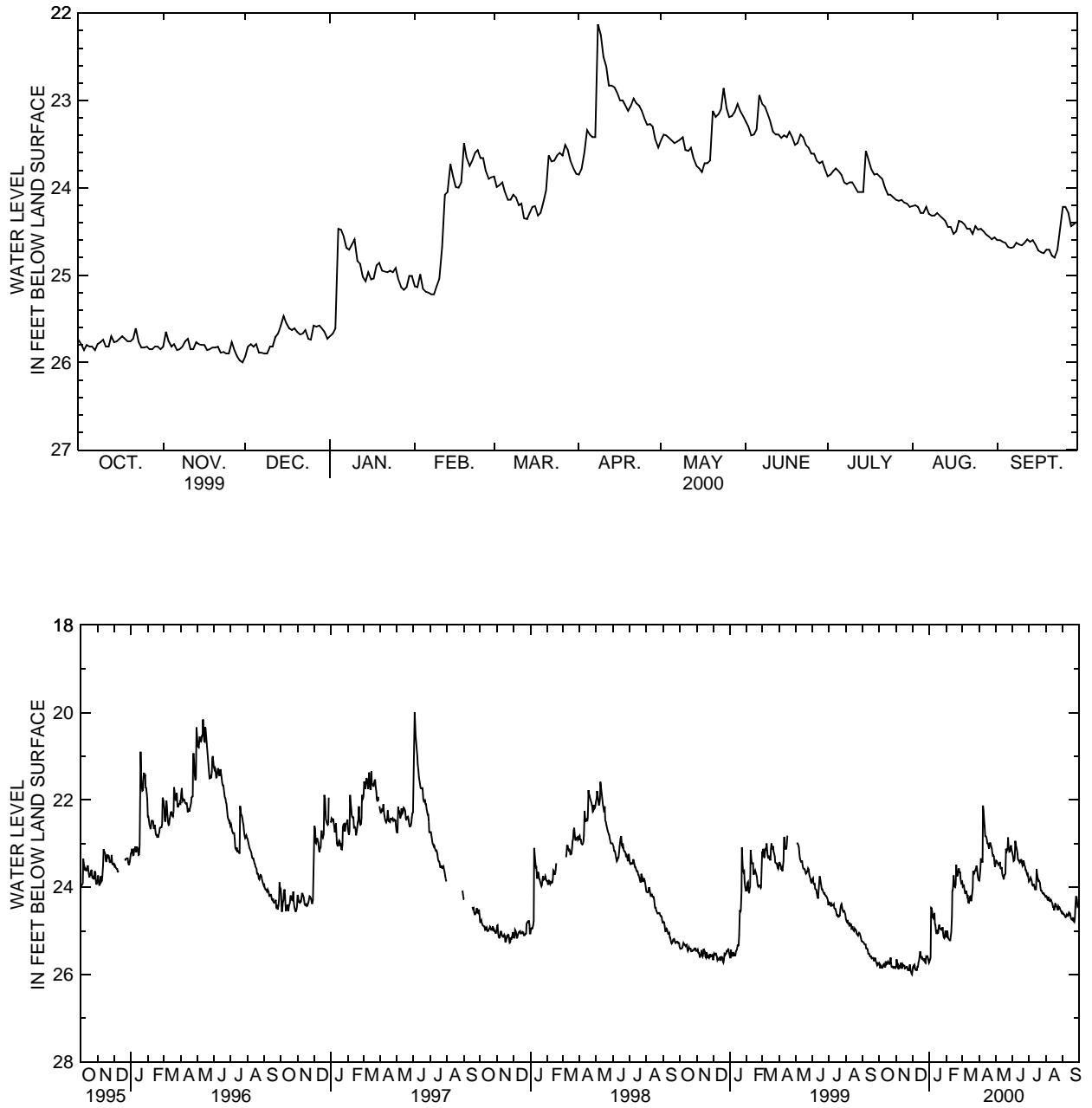


Figure 6. Sample of 1-year and 5-year hydrographs of well U-4 (401826083255200), completed in a confined carbonate-rock aquifer.

SPECIAL NETWORKS AND PROGRAM

Hydrologic Benchmark Network is a network of 50 sites in small drainage basins around the country whose purpose is to provide consistent data on the hydrology, including water quality, and related factors in representative undeveloped watersheds nationwide and to provide analyses on a continuing basis to compare and contrast conditions observed in basins more obviously affected by human activities.

National Stream-Quality Accounting Network (NASQAN) monitors the water quality of large rivers within four of the Nation's largest river basins—the Mississippi, Columbia, Colorado, and Rio Grande. Samples are collected with sufficient frequency that the flux of a wide range of constituents can be estimated. The objective of NASQAN is to characterize the water quality of these large rivers by measuring concentration and mass transport of a wide range of dissolved and suspended constituents, including nutrients, major ions, dissolved and sediment-bound heavy metals, common pesticides, and inorganic and organic forms of carbon. This information will be used (1) to describe the long-term trends and changes in concentration and transport of these constituents, (2) to test findings of the National Water-Quality Assessment Program (NAWQA), (3) to characterize processes unique to large-river systems, such as storage and remobilization of sediments and associated contaminants, and (4) to refine existing estimates of off-continent transport of water, sediment, and chemicals for assessing human effects on the world's oceans and for determining global cycles of carbon, nutrients, and other chemicals.

The National Atmospheric Deposition Program/National Trends Network (NADP/NTN) provides continuous measurement and assessment of the chemical climate of precipitation throughout the United States. As the lead Federal agency, the USGS works together with over 100 organizations to provide scientific investigators world-wide with a long-term, high-quality database of atmospheric deposition for research support in the areas of air quality, water quality, agricultural effects, forest productivity, materials effects, ecosystem studies, watershed studies and human health.

Data from the network, as well as information about individual sites, are available through the World Wide Web at <http://nadp.sws.uiuc.edu>.

The National Water-Quality Assessment (NAWQA) Program of the U.S. Geological Survey is a long-term program with goals to describe the status and trends of water-quality conditions for a large, representative part of the Nation's ground- and surface-water resources; provide an improved understanding of the primary natural and human factors affecting these observed conditions and trends; and provide information that supports development and evaluation of management, regulatory, and monitoring decisions by other agencies.

Assessment activities are being conducted in selected study units (major watersheds and aquifer systems) that represent a wide range of environmental settings nationwide and that account for a large percentage of the Nation's water use. A wide array of chemical constituents are being measured in ground water, surface water, streambed sediments, and fish tissues. The coordinated application of comparative hydrologic studies at a wide range of spatial and temporal scales will provide information for decision making by water-resources managers and a foundation for aggregation and comparison of findings to address water-quality issues of regional and national interest.

Communication and coordination between USGS personnel and other local, state, and Federal interests are critical components of the NAWQA Program. Each study unit has a local liaison committee consisting of representatives from key Federal, state, and local water-resources agencies, Indian nations, and universities in the study unit. Liaison committees typically meet semiannually to discuss their information needs, monitoring plans and progress, desired information products, and opportunities to collaborate efforts among the agencies.

Additional information about the NAWQA Program is available through the World Wide Web at http://water.usgs.gov/nawqa/nawqa_home.html.

EXPLANATION OF THE RECORDS

The records in this report are for the 2000 water year that began October 1, 1999, and ended September 30, 2000. A calendar of the water year is provided on the inside of the front cover. The records contain streamflow data, stage and content data for lakes and reservoirs, water-quality data for surface and ground water, and ground-water-level data. The following sections of the introductory text are presented to provide users with a more detailed explanation of how the hydrologic data published in this report were collected, analyzed, computed, and arranged for presentation.

Station Identification Numbers

Each data station, whether onstream or at a well, is assigned a unique identification number. The number is generally assigned when a station is first established and is retained for that station indefinitely. The systems used by the USGS to assign identification numbers for surface-water stations and for ground-water well sites differ, but both are based on geographic locations. The “downstream order” system is used for regular surface-water stations and the “latitude-longitude” system is used for wells and, in Ohio, for surface-water stations where only infrequent measurements are made.

Downstream Order System

Since October 1, 1950, the order of listing hydrologic-station records in USGS reports is in a downstream direction along the main stream. All stations on a tributary entering upstream from a main-stream station are listed before that station. A station on a tributary that enters between two main-stream stations is listed between them. A similar order is followed in listing stations on first rank, second rank, and other ranks of tributaries. The rank of any tributary with respect to the stream to which it is immediately tributary is indicated by an indentation in a “List of Stations” in the front of the report. Each indentation represents one rank. This downstream order and system of indentation show which stations are on tributaries between any two stations and the rank of the tributary on which each station is situated.

The station-identification number is assigned according to the above-mentioned downstream order. In assigning station numbers, no distinction is made between partial-record stations and other stations; therefore, the station number for a partial-record station indicates downstream-order position in a list made up of both types of stations. Gaps are left in the series of numbers to allow for new stations that may be established; hence, the numbers are not consecutive. The complete eight-digit number for each station such as 04041000, which appears just to the left of the station name, includes the two-digit part number “04” plus the six-digit downstream order number “041000.” The part number designates the major river basin; for example, part “03” is the Ohio River Basin, and part “04” is the St. Lawrence River Basin.

Latitude-Longitude System

The identification numbers for wells and miscellaneous surface-water sites are assigned according to the grid system of latitude and longitude. The number consists of 15 digits. The first six digits denote the degrees, minutes, and seconds of latitude, the next seven digits denote degrees, minutes, and seconds of longitude, and the last two digits (assigned sequentially) identify the wells or other sites within a 1-second grid. In the rare instance where the initial determination of latitude and longitude are found to be in error, the station will retain its initial identification number; however, its true latitude and longitude will be listed in the LOCATION paragraph of the station description. (See figure 7.)

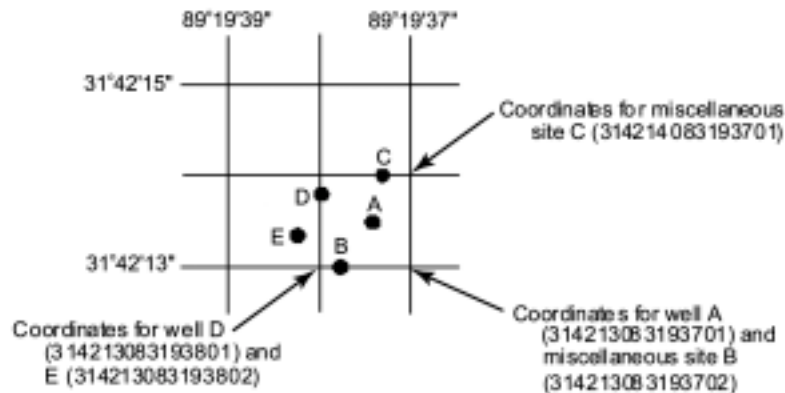


Figure 7. System for numbering wells and miscellaneous sites (latitude and longitude).

Records of Stage and Water Discharge

Records of stage and water discharge may be complete or partial. Complete records of discharge are those obtained using a continuous stage-recording device through which either instantaneous or mean discharge may be computed for any time, or any period of time, during the period of record. Complete records of lake or reservoir contents, similarly, are those for which stage or content may be computed or estimated with reasonable accuracy for any time or period of time. They may be obtained using a continuous stage-recording device but need not be. Because daily mean discharges and end-of-day contents commonly are published for such stations, they are referred to as “daily stations.”

By contrast, partial records are obtained through discrete measurements often without using a continuous stage-recording device and pertain only to a few flow characteristics, or perhaps only one. The nature of a partial record is indicated by table titles such as CREST-STAGE PARTIAL RECORDS or LOW-FLOW PARTIAL RECORDS. Records of miscellaneous discharge measurements or of measurements from special studies, such as low-flow seepage studies, may be considered as partial records, but they are presented separately in this report. Location of all complete-record and crest-stage stations for which data are given in this volume are shown in figures 1a through 1d.

Data Collection and Computation

The data obtained at a complete-record gaging station on a stream or canal consist of a continuous record of stage, individual measurements of discharge throughout a range of stages, and notations regarding factors that may affect the relations between stage and discharge. These data, together with supplemental information such as weather records, are used to compute daily discharges. The data obtained at a complete-record gaging station on a lake or reservoir consist of a record of stage and of notations regarding factors that may affect the relations between stage and lake content. These data are used with stage-area and stage-capacity curves or tables to compute water-surface areas and lake storage.

Continuous records of stage are obtained with digital recorders that store stage data on solid-state storage media at selected time intervals. Measurements of discharge are made with current meters using methods adapted by the USGS as a result of experience accumulated since 1880. These methods are described in standard textbooks, in Water-Supply Paper 2175, and in USGS Techniques of Water-Resources Investigations, Book 3, Chapter A6.

In computing discharge records, results of individual measurements are plotted against the corresponding

stages, and stage-discharge relation curves are then constructed. From these curves, rating tables indicating the approximate discharge for any stage within the range of the measurements are prepared. If it is necessary to define extremes of discharge outside the range of the current-meter measurements, the curves are extended using (1) logarithmic plotting, (2) velocity-area studies, (3) results of indirect measurements of peak discharge, such as slope-area or contracted-opening measurements, and computations of flow-over-dams or weirs, or (4) step-backwater techniques.

Daily mean discharges are computed by applying stages (gage heights) to the stage discharge curves or tables. If the stage-discharge relation is subject to change because of frequent or continual change in the physical features that form the control, the daily mean discharge is determined by the shifting-control method, in which correction factors based on the individual discharge measurements and notes of the personnel making the measurements are applied to the gage heights before the discharges are determined from the curve or tables. This shifting-control method also is used if the stage-discharge relation is changed temporarily because of aquatic growth or debris on the control. For some stations, formation of ice in the winter may so obscure the stage-discharge relation that daily mean discharges must be estimated from other information such as temperature and precipitation records, notes of observations, and records for other stations in the same or nearby basins for comparable periods.

At some stream-gaging stations the stage-discharge relation is affected by the backwater from reservoirs, tributary streams, or other sources. This necessitates the use of the slope method, in which the slope or fall in a reach of the stream is a factor in computing discharge. The slope or fall is obtained by means of an auxiliary gage set at some distance from the base gage. At some stations the stage-discharge relation is affected by changing stage; at these stations the rate of change in stage is used as a factor in computing discharge.

In computing records of lake or reservoir contents, it is necessary to have available from surveys or curves, tables defining the relation of stage and contents. The application of stage to the stage-contents curves or tables give the contents from which daily, monthly, or yearly changes are then determined. If the stage-contents relation changes because of deposition of sediment in a lake or reservoir, periodic resurveys may be necessary to redefine the relation. Even when this is done, the contents computed may become increasingly in error as time since the last survey increases. Discharges over lake or reservoir spillways are computed from stage-discharge relation much as other stream discharges are computed.

For some gaging stations there are periods when no gage-height record is obtained or the recorded gage height is so faulty that it cannot be used to compute daily discharge or contents. This happens when the recorder stops or otherwise fails to operate properly, intakes are plugged, the float is frozen in the well, or for various other reasons. For such periods, the daily discharges are estimated from the recorded range in stage, previous or following record, discharge measurements, weather records, and comparison with other station records from the same or nearby basins. Likewise, daily contents may be estimated from operator's logs, previous or following record, inflow-outflow studies, and other information.

At some gaging stations, acoustic velocity meter (AVM) systems are used to compute discharge. The AVM system measures the stream's velocity at one or more paths in the cross section. Coefficients are developed to relate this path velocity to the mean velocity in the cross section. Because the AVM sensors are fixed in position, the adjustment coefficients generally vary with stage. Cross-sectional area curves are developed to relate stage, recorded as noted above, to cross-section area. Discharge is computed by multiplying path velocity by the appropriate stage-related coefficient and area.

Data Presentation

The records published for each gaging station consist of two parts—the manuscript or station description and the data table for the current water year.

Station Manuscript. The manuscript provides, under various headings, descriptive information such as station location, period of record, historical extremes outside the period of record, record accuracy, and other remarks pertinent to station operation and regulation. The following information, as appropriate, is provided with each continuous record of discharge or lake content. Comments to follow clarify information presented under the various headings of the station description.

LOCATION.—Information on locations is obtained from the most accurate maps available. The location of the gage with respect to the cultural and physical features in the vicinity and with respect to the reference place mentioned in the station name is given. River mileage, given for only a few stations, was determined by methods given in “River Mileage Measurement,” Bulletin 14, Revision of October 1968, prepared by the Water Resources Council, or were provided by the U.S. Army Corps of Engineers.

DRAINAGE AREA.—Drainage areas are measured using the most accurate maps available. Because the types of maps available vary from one drainage basin to another, the accuracy of the drainage areas likewise varies. Drainage areas are updated as better maps become available.

PERIOD OF RECORD.—This indicates the period for which there are published records for the station or for an equivalent station. An equivalent station is one that was in operation at a time that the present station was not, and whose location was such that records from it can reasonably be considered equivalent with records from the present station.

REVISED RECORDS.—Published records, because of new information, occasionally are found to be incorrect, and revisions are printed in later reports. Listed under this heading are all the reports in which revisions have been published for the station and the water years to which the revisions apply. If a revision did not include daily, monthly, or annual figures of discharge, that fact is noted after the year dates as follows: (M) means that only the instantaneous maximum discharge was revised, (m) that only the instantaneous minimum was revised, and (P) that only the peak discharges were revised. If the drainage area has been revised, the report in which the most recently revised figure was first published is given.

GAGE.—The type of gage in current use, the datum of the current gage referred to sea level (National Geodetic Vertical Datum of 1929) unless otherwise noted, and a condensed history of the types, locations, and datums of previous gages are given under this heading.

REMARKS.—All periods of estimated daily discharge record will either be identified by date in this paragraph of the station description for water-discharge stations or be flagged in the daily discharge table. (See the section, “Identifying Estimated Daily Discharge.”) If a “remarks” statement is used to identify estimated record, the paragraph will begin with this information presented as the first entry. The paragraph is also used to present information relative to the accuracy of the records, to special methods of computation, and to conditions that affect natural flow at the station, in addition, possibly, to other pertinent items. For reservoir stations, information is given on the dam forming the reservoir, the capacity, outlet works and spillway, and purpose and use of the reservoir.

COOPERATION.—Records provided by a cooperating organization or obtained for the USGS by a cooperating organization are identified here.

EXTREMES FOR PERIOD OF RECORD.—In some headings “Extremes for Period of Record” is presented as a paragraph separate from summary statistics. Extremes may include maximum and minimum stages and maximum and minimum discharges or contents. Unless otherwise qualified, the maximum discharge or content is the instantaneous maximum corresponding to the highest stage that occurred. The highest stage may have been obtained from a graphic or digital recorder, from a crest-stage gage, or by direct observation of a nonrecording gage. If the maximum stage did not occur on the same day as the maximum discharge or content, it is given separately. Similarly, the minimum is the instantaneous minimum discharge, unless otherwise qualified, and was determined and is reported in the same manner as the maximum.

EXTREMES OUTSIDE PERIOD OF RECORD.—Included here is information concerning major floods or unusually low flows that occurred outside the stated period of record. The information may or may not have been obtained by USGS.

PEAK DISCHARGES ABOVE BASE FOR CURRENT YEAR—Presented as a separate table. For stations meeting certain criteria, all peak discharges and stages occurring during the water year and greater than a selected base discharge are presented under this heading. All peaks greater than the base discharge are listed with the maximum for the year footnoted by an asterisk (*). Peak discharges are not published for canals, ditches, drains, or streams for which the peaks are subject to substantial regulation or at locations where the instantaneous peak discharge does not exceed the mean daily discharge by 10 percent. The time of occurrence for peaks is expressed in 24-hour local standard time. For example, 12:30 a.m. is 0030, and 1:30 p.m. is 1330.

REVISIONS.—If a critical error in published records is discovered, a revision is included in the first report following discovery of the error.

Although rare, occasionally the records of a discontinued gaging station may need revision. Because, for these stations, there would be no current or, possibly, future station manuscript published to document the revision in a REVISED RECORDS entry, users of data for these stations who obtained the data from previously published data reports may wish to contact the District office to determine if the published records were ever revised after the station was discontinued. Of course, if the data were obtained by computer retrieval, the data would be current and there would be no need to check because any published retrieval of data is always accompanied by revisions of the corresponding data in computer storage.

Manuscript information for lakes or reservoir stations differs from that for stream stations in the nature of the REMARKS and in the inclusion of a skeleton stage-capacity table when daily contents are given.

Data Table of Daily Mean Values. The daily table for stream-gaging stations gives mean discharge for each day and is followed by monthly and yearly summaries. In the monthly summary below the daily table, the line headed TOTAL gives the sum of the daily figures. The line headed MEAN gives the average flow in cubic feet per second during the month. The lines headed MAX and MIN give the maximum and minimum daily discharges, respectively, for the month. Discharge for the month is often expressed in cubic feet per square mile (line headed CFM), or in inches (line headed IN.), or in acre-feet (line headed AC-FT). Figures for cubic feet per second per square mile and runoff in inches are omitted if there is extensive regulation or diversion or if the drainage area includes large noncontributing areas. In the yearly summary below the monthly summary, the figures shown are the appropriate discharges for the calendar and water years. At some stations monthly and (or) yearly observed discharges are adjusted for reservoir storage or diversion, or diversions or reservoir contents are given. These figures are identified by symbol and corresponding footnote.

Statistics of Monthly Mean Data. A tabular summary of the mean (line headed MEAN), maximum (line headed MAX), and minimum (line headed MIN) of monthly mean flows for each month for a designated period is provided below the mean values table. The water years of the first occurrence of the maximum and minimum monthly flows are provided immediately below those figures. The designated period will be expressed as FOR WATER YEARS ____ - ____ BY WATER YEAR (WY), and will list the first and last water years of the range of years selected from the PERIOD OF RECORD paragraph in the station manuscript. It will consist of all of the station record within the specified water years, inclusive, including complete months of record for partial water years, if any, and may coincide with the period of record for the station. The water years for which the statistics are computed will be consecutive, unless a break in the station record is indicated in the manuscript.

Summary Statistics. A table titled SUMMARY STATISTICS follows the statistics of monthly mean data tabulation. This table consists of four columns, with the first column containing the line headings of the statistics being reported. The table provides a statistical summary of yearly, daily, and instantaneous flows, not only for the current water year but also for the previous calendar year and for a designated period, as appropriate. The designated period selected, WATER YEARS ____ - ____, will consist of all of the station record within the specified water years, inclusive, including complete months of record for partial water years, if any, and may coincide with the period of record for the station. The water years for which the statistics are computed will be consecutive, unless a break in the station record is indicated in the manuscript. All of the calculations for the statistical characteristics designated ANNUAL (See line headings below), except for the ANNUAL SEVEN-DAY

MINIMUM statistic, are calculated for the designated period using complete water years. The other statistical characteristics may be calculated using partial water years.

The date or water year, as appropriate, of the first occurrence of each statistic reporting extreme values of discharge is provided adjacent to the statistic. Repeated occurrences may be noted in the REMARKS paragraph of the manuscript or in the footnotes. When the maximum or minimum statistic occurred outside the designated period, that statistic is listed in the EXTREMES FOR PERIOD OF RECORD paragraph in the manuscript. Selected streamflow-duration-curve statistics and runoff data are also given. Runoff data may be omitted if there is extensive regulation or diversion of flow in the drainage basin.

The following summary statistics data, as appropriate, are provided with each continuous record of discharge. Comments to follow clarify information presented under the various line headings of the summary statistics table.

ANNUAL TOTAL.—The sum of the daily mean values of discharge for the year. At some stations the annual total discharge is adjusted for reservoir storage or diversion. The adjusted figures are identified by a symbol and corresponding footnotes.

ANNUAL MEAN.—The arithmetic mean of the individual daily mean discharges for the year noted or for the designated period. At some stations the yearly mean discharge is adjusted for reservoir storage or diversion. The adjusted figures are identified by a symbol and corresponding footnotes.

HIGHEST ANNUAL MEAN.—The maximum annual mean discharge occurring for the designated period.

LOWEST ANNUAL MEAN.—The minimum annual mean discharge occurring for the designated period.

HIGHEST DAILY MEAN.—The maximum daily mean discharge for the year or for the designated period.

LOWEST DAILY MEAN.—The minimum daily mean discharge for the year or for the designated period.

ANNUAL SEVEN-DAY MINIMUM.—The lowest mean discharge for 7 consecutive days for a calendar year or a water year. Note that most low-flow frequency analyses of annual 7-day minimum flows use a climatic year (April 1-March 31). The date shown in the summary statistics table is the initial date of the 7-day period. (This value should not be confused with the 7-day 10-year low-flow statistic.)

INSTANTANEOUS PEAK FLOW.—The maximum instantaneous stage occurring for the water year or for the designated period. Note that secondary instantaneous peak discharges above a selected base discharge are given in the table “Peak Discharges and Stages at Continuous-Record Surface Discharge Stations.”

INSTANTANEOUS PEAK STAGE.—The maximum instantaneous stage occurring for the water year or for the designated period. If the dates of occurrence for the instantaneous peak flow and instantaneous peak stage differ, the “Remarks” paragraph in the manuscript or a footnote may be used to provide further information.

INSTANTANEOUS LOW FLOW.—The minimum instantaneous discharge occurring for the water year or for the designated period.

ANNUAL RUNOFF.—Indicates the total quantity of water in runoff for a drainage area for the year. Data reports may use any of the following units of measurement in presenting annual runoff data:

Acre-foot (AC-FT) is the quantity of water required to cover 1 acre to a depth of 1 foot and is equivalent to 43,560 cubic feet or about 326,000 gallons or 1,233 cubic meters.

Cubic feet per second per square mile (CFSM) is the average number of cubic feet of water flowing per second from each square mile of area drained, assuming that the runoff is distributed uniformly in time and area for the area. Inches (INCHES) indicates the depth to which the drainage area would be covered if all the runoff for a given time period were uniformly distributed on it.

10 PERCENT EXCEEDS.—The discharge that has been exceeded 10 percent of the time for the designated period.

50 PERCENT EXCEEDS.—The discharge that has been exceeded 50 percent of the time for the designated period.

90 PERCENT EXCEEDS.—The discharge that has been exceeded 90 percent of the time for the designated period.

Data collected at partial-record stations follow the information for continuous-record sites. Data for partial-record discharge stations are usually presented in two tables. The first is a table of annual maximum stage and discharge at crest-stage stations, and the second, when collected, is a table of discharge measurements at low-flow partial-record stations. The tables of partial-record stations are followed by a listing of discharge measurements made at sites other than continuous-record or partial-record stations. These measurements are generally made in time of drought or flood to give better areal coverage to those events. Those measurements and others collected for some special reason are called measurements at miscellaneous sites.

Identifying Estimated Daily Discharge

Estimated daily discharge values published in the water-discharge tables of annual state data reports are identified either by flagging individual daily values with the letter “e” and printing a table footnote, “e Estimated,” or by listing the dates of the estimated record in the REMARKS paragraph of the station description.

Accuracy of the Records

The accuracy of streamflow records depends primarily on (1) the stability of the stage-discharge relation or, if the control is unstable, the frequency of discharge measurements, and (2) the accuracy of measurements of stage, measurements of discharge, and interpretation of records.

The accuracy attributed to the records is indicated under REMARKS. “Excellent” means that about 95 percent of the daily discharges are within 5 percent of the true; “good,” within 10 percent; and “fair,” within 15 percent. Records that do not meet the criteria mentioned are rated “poor.” Different accuracies may be attributed to different parts of a given record.

Daily mean discharges in this report are given to the nearest hundredths of a cubic foot per second for values less than 1 ft³/s; to the nearest tenth between 1.0 and 10 ft³/s; to whole numbers between 10 and 1,000 ft³/s; and to three significant figures for more than 1,000 ft³/s. The number of significant figures used is based solely on the magnitude of the discharge value. The same rounding rules apply to discharges listed for partial-record stations and miscellaneous sites.

Discharge at many stations, as indicated by the monthly mean, may not reflect natural runoff due to the effects of diversion, consumption, regulation by storage, increase or decrease in evaporation due to artificial causes, or other factors. For such stations, figures of cubic feet per second per square mile and of runoff, in inches, are not published unless satisfactory adjustments can be made for diversions, for changes in contents of reservoirs, or for other changes incident to use and control. Evaporation from a reservoir is not included in the adjustments for changes in reservoir contents, unless it is so stated. Even at those stations where adjustments are made, large errors in computed runoff may occur if adjustments or losses are large in comparison with the observed discharge.

Other Records Available

Information used in preparing the records in this publication, such as discharge-measurement notes, gage-height records, temperature measurements, and rating tables are on file in the Ohio District office. Also, most of the daily mean discharges are in computer-readable form and have been analyzed statistically. Information on availability of the unpublished information or on results of statistical analyses of the published records may be obtained from the District office.

Records of Surface-Water Quality

Records of surface-water quality ordinarily are obtained at or near stream-gaging stations because interpretation of records of surface-water quality nearly always requires corresponding discharge data. Records of surface-water quality in this report may involve a variety of types of data and measurement frequency.

Classification of Records

Water-quality data for surface-water sites are grouped into one of three classifications. A continuing-record station is a site where data are collected on a regularly scheduled basis. Frequency may be once or more times daily, weekly, monthly, or quarterly. A partial-record station is a site where limited water-quality data are collected systematically over a period of years. Frequency of sampling is usually less than quarterly. A miscellaneous sampling site is a location other than a continuing or partial-record station, where random samples are collected to give better areal coverage to define water-quality conditions in the river basin.

A careful distinction needs to be made between “continuing records” as used in this report and “continuous recordings,” which refers to a continuous series of discrete values collected at short intervals and recorded electronically. Some records of water quality, such as temperature and specific conductance, may be obtained through continuous recording; however, because of cost, most data are obtained only monthly or less frequently. Locations of stations for which records on the quality of surface water appear in this volume are shown in figures 1a and 1b.

Arrangement of Records

Water-quality records collected at a surface-water daily record station are published immediately following that record, regardless of the frequency of sample collection. Station number and name are the same for both records. Where a surface-water daily record station is not available or where the water quality differs significantly from that at a nearby surface-water station, the continuing water-quality record is published with its own station number and name in the regular downstream-order sequence. Water-quality data for partial-record stations and for miscellaneous sampling sites appear in separate tables following the table of “DISCHARGE MEASUREMENTS.”

Onsite Measurement and Sample Collection

In obtaining water-quality data, a major concern is that the data obtained represent the in quality of the water. To ensure this, certain measurements, such as water temperature, pH, and dissolved oxygen, need to be made on site when the samples are taken. To ensure that measurements made in the laboratory also represent the in situ water, carefully prescribed procedures need to be followed in collecting the samples, in treating the sample to prevent changes in quality pending analysis, and in shipping the samples to the laboratory. Procedures for onsite measurements and for collecting, treating, and shipping samples are given in water-quality-related chapters in the series “Techniques of Water-Resources Investigations” (TWRI), which are listed in this report, and in other documents listed on the World Wide Web page for the USGS, Water Resources Division, Office of Water Quality (<http://water.usgs.gov/owq>). Additional information on collecting, treating, and shipping samples can be found in USGS Water-Resources Investigations Report 98-4057 “Quality-Assurance/Quality-Control Manual for Collection and Analysis of Water-Quality Data in the Ohio District, U.S. Geological Survey.”

One sample can define adequately the water quality at a given time if the mixture of solutes throughout the stream cross section is homogeneous. However, the concentration of solutes at different locations in the cross section may vary widely with different rates of water discharge, depending on the source of material and the turbulence and mixing of the stream. Some streams must be sampled through several vertical sections to obtain a representative sample needed for an accurate mean concentration and for use in calculating load. All samples

obtained for the National Stream-Quality Accounting Network (see definitions) are obtained from at least several verticals. Whether samples are obtained from the centroid of flow or from several verticals depends on flow conditions and other factors that must be evaluated by the collector.

Chemical-quality data published in this report are considered to be the most representative values available for the stations listed. The values reported represent water-quality conditions at the time of sampling as much as possible, consistent with available sampling techniques and methods of analysis. In the rare case where an apparent inconsistency exists between a reported pH value and the relative abundance of carbon dioxide species (carbonate and bicarbonate), the inconsistency is the result of a slight uptake of carbon dioxide from the air by the sample between measurement of pH in the field and determination of carbonate and bicarbonate in the laboratory.

For chemical-quality stations equipped with digital monitors, the records consist of daily maximum, minimum, and mean values for each constituent measured and are based upon hourly readings beginning at 0100 hours and ending at 2400 hours for each day of record. More detailed records (hourly values) may be obtained from the USGS District Office, whose address is given on the back of the title page of this report.

Water Temperatures

Water temperatures are measured at most of the water-quality stations. In addition, water temperatures are frequently taken at the time of discharge measurements for water-discharge stations. For stations where water temperatures are taken manually once or twice daily, the water temperatures are taken at about the same time each day. Large streams have a small daily temperature change; shallow streams may have a daily range of several degrees and may follow closely the changes in air temperature. Some streams may be affected by waste-heat discharges.

At stations where recording instruments are used, either mean temperatures or maximum and minimum temperatures for each day are published.

Sediment

Suspended-sediment concentrations are determined from samples collected by using depth-integrating samplers. Samples usually are obtained at several verticals in the cross section, or a single sample may be obtained at a fixed point and a coefficient applied to determine the mean concentration in the cross section.

During periods of rapidly changing flow or rapidly changing concentration, samples may have been collected more frequently (twice daily or, in some instances, hourly). The published sediment discharge for days of rapidly changing flow or concentration was computed by the subdivided-day method (time-discharge weighted average). Therefore, for those days when the published sediment discharge values differ from the value computed as the product of discharge times mean concentration times 0.0027, the reader can assume that the sediment discharge for that day was computed by the subdivided-day method. For periods when no samples were collected, daily loads of suspended sediment were estimated on the basis of water discharge, sediment concentrations observed immediately before and after the periods, and suspended-sediment loads for other periods of similar discharge.

At other stations, suspended-sediment samples were collected periodically at many verticals in the stream cross section. Although data collected periodically may represent conditions only at the time of observation, such data are useful in establishing seasonal relations between quality and streamflow and in predicting long term sediment-discharge characteristics of the stream.

In addition to the records of the quantities of suspended sediment, records of periodic measurements of the particle-size distribution of the suspended sediment and bed material are included for some stations.

Laboratory Measurements

Sediment samples, samples for microbiological analyses, and samples for specific conductance, pH, and dissolved oxygen are analyzed locally. All other samples are analyzed in the USGS laboratories in Arvada, Colo., or by a USGS-approved outside laboratory. Methods used in analyzing sediment samples and computing sediment records are given in the series “Techniques of Water-Resources Investigations” (TWRI), which are listed in this report, and in other documents listed on the World Wide Web page for USGS, Water Resources Division, Office of Water Quality (<http://water.usgs.gov/owq>).

Data Presentation

For continuing-record stations, information pertinent to the history of station operation is provided in descriptive headings preceding the tabular data. These descriptive headings give details regarding location, drainage area, period of record, type of data available, instrumentation, general remarks, cooperation, and extremes for parameters currently measured daily. Tables of chemical, physical, biological, radiochemical data, and so forth, obtained at a frequency less than daily, are presented first. Tables of “daily values” of specific conductance, pH, water temperature, dissolved oxygen, and suspended sediment then follow in sequence.

In the descriptive headings, if the location is identical to that of the discharge-gaging station, neither the LOCATION nor the DRAINAGE AREA statements are repeated. The following information, as appropriate, is provided with each continuous-record station. Comments that follow clarify information presented under the various headings of the station description.

LOCATION.—See Data Presentation under “Records of Stage and Water Discharge”; same comments apply.

DRAINAGE AREA.—See Data Presentation under “Records of Stage and Water Discharge”; same comments apply.

PERIOD OF RECORD.—This indicates the periods for which there are published water-quality records for the station. The periods are shown separately for records of parameters measured daily or continuously and those measured less than daily. For those measured daily or continuously, periods of record are given for the parameters individually.

INSTRUMENTATION.—Information on instrumentation is given only if a water-quality monitor, temperature record, sediment pumping sampler, or other sampling device is in operation at a station.

REMARKS.—Remarks provide added information pertinent to the collection, analysis, or computation of the record.

COOPERATION.—Records provided by a cooperating organization or obtained for the USGS by a cooperating organization are identified here.

EXTREMES.—Maximums and minimums are given only for parameters measured daily or more frequently. None are given for parameters measured weekly or less frequently because the true maximums and minimums may not have been sampled. Extremes, when given, are for both the period of record and for the current water year.

REVISIONS.—If errors in published water-quality records are discovered after publication, appropriate updates are made in the USGS computerized data system, the National Water Information System (NWIS). Because the usual volume of updates makes it impractical to document individual changes in the State data-report series or elsewhere, potential users of USGS water-quality data are encouraged to obtain all required data from the appropriate computer file to ensure the most recent updates.

Remark Codes

The following remarks codes may appear with the water-quality data in this report.

E, e	Estimated value
>	Actual value is known to be greater than the value shown
<	Actual value is known to be less than the value shown
K, k	Results based on colony count outside the acceptable range (non-ideal colony count)
L	Biological organism count less than 0.5 percent (organism may be observed rather than counted)
D	Biological organism count equal to or greater than 15 percent (dominant)
&	Biological organism estimated as dominant
V	Analyte was detected in both the environmental sample and the associated blanks

The USGS National Water Quality Laboratory collects quality-control data on a continuing basis to evaluate selected analytical methods to determine long-term method detection levels (LT-MDLs) and laboratory reporting levels (LRLs). These values are re-evaluated each year on the basis of the most recent quality-control data and, consequently, may change from year to year.

This reporting procedure limits the occurrence of false positive error. The chance of falsely reporting a concentration greater than the LT-MDL for a sample in which the analyte is not present is 1 percent or less. Application of the LRL limits the occurrence of false negative error. The chance of falsely reporting a non-detection for a sample in which the analyte is present at a concentration equal to or greater than the LRL is 1 percent or less.

Accordingly, concentrations are reported as <LRL for samples in which the analyte was either not detected or did not pass identification. Analytes that are detected at concentrations between the LT-MDL and LRL and that pass identification criteria are estimated. Estimated concentrations will be noted with a remark code of “E”. These data should be used with the understanding that their uncertainty is greater than that of data reported without the “E” remark code.

Dissolved Trace-Element Concentrations

NOTE.—To confidently produce dissolved trace-element data with insignificant contamination, the USGS began using a new trace-element protocol at some stations in water year 1994 to collect trace-element data at the microgram per liter ($\mu\text{g/L}$) level (refer to USGS Open-File Report 94-539 “U.S. Geological Survey Protocol for the Collection and Processing of Surface-Water Samples for the Subsequent Determination of Inorganic Constituents in Filtered Water”). This protocol was used in the current water year at all stations. Therefore, the trace-element data for samples collected before and after implementation of new protocols are not directly comparable.

Change in National Trends Network Procedures

NOTE.—Sample handling procedures at all National Trends Network stations were changed substantially on January 11, 1994, in order to reduce contamination from the sample shipping container. The data for samples before and after that date are different and not directly comparable. A tabular summary of the differences based on a special intercomparison study, is available from the NADP/NTN Program Office (Telephone: 217-333-7873).

Records of Ground-Water Levels

Water-level data from a network of observation wells (in addition to project wells) are given in this report. The network well data are intended to provide a sampling and historical record of water-level changes in the Nation's most important aquifers. Locations of the observation wells in this network in Ohio are shown in figures 1a and 1b. Water-level data for specific projects are reported under those projects.

Data Collection and Computation

Measurements of water levels are made in many types of wells under varying conditions, but the methods of measurement are standardized to the extent possible. The equipment and measuring techniques used at each observation well ensure that measurements at each well are of consistent accuracy and reliability.

Tables of water-level data are presented by counties arranged in alphabetical order. The prime identification number for a given well is a 15-digit number that is based on latitude and longitude. The secondary identification number is the local well number, which is provided for local needs. Water-level measurements in this report are given in feet with reference to land-surface datum. Land-surface datum is a datum plane that is approximately at land surface at each well. If known, the altitude of the land-surface datum above sea level is given in each well description. The height of the measuring point (MP) above or below land-surface datum is given in each well description.

Water levels are reported to as many significant figures as can be justified by the local conditions. For example, in a measurement of a depth to water of several hundred feet, the error of determining the absolute value of the total depth to water may be a few tenths of a foot, whereas the error in determining the net change of water level between successive measurements may be only a hundredth or a few hundredths of a foot. For lesser depths to water, the accuracy is greater. Accordingly, most measurements are reported to a hundredth of a foot, but some are given to a tenth of a foot or larger units.

Data Presentation

Each well record consists of two parts, the station description and the data table of water levels observed during the water year. The description of the well is presented first through use of descriptive headings preceding the tabular data. The comments to follow clarify information presented under the various headings.

LOCATION.—This paragraph follows the well-identification number and reports the latitude and longitude (given in degrees, minutes, and seconds), a landline location designation, the hydrologic-unit number, the distance and direction from a geographic point of reference, and the owner's name.

AQUIFER.—This entry describes the aquifer by age and composition.

WELL CHARACTERISTICS.--This entry describes the well in terms of depth, diameter, casing depth and (or) screened interval, method of construction, use, and additional information such as casing breaks, collapsed screen, and other changes since construction.

DATUM.—This entry describes both the measuring point and the land-surface altitude at the well. The measuring point is described physically (such as top of collar, notch in top of casing, plug in pump base, and so on) and in relation to land surface (such as 1.3 ft above land-surface datum). The altitude of the land-surface datum is described in feet above (or below) sea level; it is reported with a precision depending on the method of determination.

REMARKS.—This entry describes factors that may influence the water level in a well or the measurement of the water level. It should identify wells that are also water-quality observation wells, and may be used to acknowledge the assistance of local (non-USGS) observers.

PERIOD OF PUBLISHED RECORD.—This entry indicates the period for which there are published records for the well. It reports the month and year of the start of publication of water level records by the USGS or cooperating agency, and the words "to current year" if the records are to be continued

to the following year. Periods for which water-level records are available, but not published by the USGS, may be noted.

EXTREMES FOR PERIOD OF PUBLISHED RECORD.—This entry contains the highest and lowest water levels of the period of published record, with respect to land-surface datum, and the dates of their occurrence.

A table of water levels follows the station description for each well. Water levels are reported in feet below (or above) land-surface datum. All periodic measurements of water levels for wells are listed. For wells equipped with recorders, daily water-level lows are published. The highest and lowest daily lows of the water year are shown on a line below the table. Because only daily lows are published for wells with recorders, the extreme instantaneous high may be a value that is not listed in the table. Missing records are indicated by dashes in place of the water level.

Records of Ground-Water Quality

Records of ground-water quality in this report differ from other types of records in that, for most sampling sites, they consist of only one set of measurements. The quality of ground water ordinarily changes slowly, so that frequent measuring of the same parameter is not necessary unless one is concerned with a particular problem such as monitoring for trends of a particular constituent.

Data Collection and Computation

The records of ground-water quality in this report were obtained mostly as part of special studies in specific areas. Consequently, a number of chemical analyses are presented for some counties, but none are presented for others. As a result, the records for this year, by themselves, do not provide a balanced view of ground-water quality statewide. Such a view can be attained only by considering records for this year in context with similar records obtained for these and other counties in earlier years.

Most methods for collecting and analyzing water samples are described in the TWRI manuals listed in this report and on the World Wide Web page for the Office of Water Quality (<http://water.usgs.gov/owq>). The data presented in this report represent water-quality conditions at the time of sampling as much as possible, consistent with available sampling techniques and methods of analysis. All samples were obtained by trained personnel. The wells sampled were pumped long enough to ensure that the water collected came directly from the aquifer and had not stood for a long time in the well casing, where it would have been exposed to the atmosphere and the material comprising the casings.

Data Presentation

The records of ground-water quality are published intermixed with the ground-water-level data for network wells and with the specific project for project wells.

ACCESS TO USGS WATER DATA

The USGS provides near real-time stage and discharge data for many of the gaging stations equipped with the necessary telemetry and historic daily-mean and peak-flow discharge data for most current or discontinued gaging stations through the World Wide Web. These data may be accessed at <http://water.usgs.gov>

Some water-quality and ground-water data also are available through the web. In addition, data can be provided in various machine-readable formats. Information about the availability of specific types of data or products, and user charges, can be obtained locally from each of the Water Resources Division District Offices.

DEFINITION OF TERMS

Terms related to streamflow, water quality, and other hydrologic data, as used in this report, are defined below. See also the table for converting inch-pound units to International System of units (SI) on the inside of the back cover.

Acid neutralizing capacity (ANC) is the equivalent sum of all bases or base-producing materials, solutes plus particulates, in an aqueous system that can be titrated with acid to an equivalence point. This term designates titration of an “unfiltered” sample (formerly reported as alkalinity).

Acre-foot (AC-FT, acre-ft) is the quantity of water required to cover 1 acre to a depth of 1 foot, and is equivalent to 43,560 cubic feet or about 326,000 gallons or 1,233 cubic meters.

Adenosine triphosphate (ATP) is an organic, phosphate-rich compound important in the transfer of energy in organisms. Its central role in living cells makes it an excellent indicator of the presence of living material in water. A measure of ATP therefore provides a sensitive and rapid estimate of biomass. ATP is reported in micrograms per liter of the original water sample.

Algae are mostly aquatic single-celled, colonial, or multicelled plants, containing chlorophyll and lacking roots, stems, and leaves.

Algal growth potential (AGP) is the maximum dry weight biomass that can be produced in a natural water sample under standardized laboratory conditions. The growth potential is the algal biomass present at stationary phase and is expressed as milligrams dry weight of algae produced per liter of sample.

Alkalinity is the capacity of solutes in an aqueous system to neutralize acid. This term designates titration of a “filtered” sample.

Annual runoff is the total quantity of water in runoff for a drainage area. Runoff data may be reported as inches (depth to which the drainage area would be covered with water if all the runoff were distributed uniformly in time and area) or as acre-feet or cubic feet per second per square mile (both units defined elsewhere in this list).

Aquifer is a geologic formation, group of formations, or part of a formation that contains sufficient saturated permeable material to yield reasonable quantities of water to wells and springs.

Artesian means confined, and is used to describe a well in which the water level stands above the top of the aquifer tapped by the well. A flowing artesian well is one in which the water level is above the land surface.

Bacteria are microscopic unicellular organisms, typically spherical, rodlike, or spiral and threadlike in shape, often clumped into colonies. Some bacteria cause disease, but others perform an essential role in nature in the recycling of materials; for example, by decomposing organic matter into a form available for reuse by plants.

Clostridium perfringens (*C. perfringens*) is a spore-forming bacterium that is common in the feces of humans and other warm-blooded animals. Clostridial spores are being used experimentally as an indicator of past fecal contamination and presence of microorganisms that are resistant to disinfection and environmental stresses. *C. perfringens* is a rod-shaped, anaerobic, gram-positive bacterium that produces acid phosphatase and also toxins that cause gas gangrene and gastroenteritis. After inoculation on mCP agar and anaerobic incubation at 42°C for 24 hours, *C. perfringens* forms colonies that turn pink to magenta upon exposure to ammonium hydroxide fumes.

Enterococcus bacteria are commonly found in the feces of humans and other warm-blooded animals. Although some strains are ubiquitous and not related to fecal pollution, the presence of enterococci in water is an indication of fecal pollution and the possible presence of enteric pathogens. Enterococcus bacteria are those bacteria that produce pink to red colonies with black or reddish-brown precipitate after incubation at 41°C on mE agar and subsequent transfer to EIA medium. Enterococci include *Streptococcus faecalis*, *Streptococcus faecium*, *Streptococcus avium*, and their variants.

Escherichia coli (*E. coli*) are bacteria present in the intestine and feces of warm-blooded animals.

E. coli are a member species of the fecal coliform group of indicator bacteria. In the laboratory they are defined as those bacteria that produce yellow or yellow-brown colonies on a filter pad saturated with urea substrate broth after primary culturing for 22 to 24 hours at 44.5°C on mTEC medium.

Fecal coliform bacteria are bacteria that are present in the intestine or feces of warm-blooded animals. They are often used as indicators of the sanitary quality of the water. In the laboratory, they are defined as all organisms that produce blue colonies within 24 hours when incubated at 44°C ± 0.2°C on M-FC medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

Fecal streptococcal bacteria are bacteria found also in intestine of warm-blooded animals. Their presence in water is considered to verify fecal pollution. They are characterized as gram-positive, cocci bacteria that are capable of growth in brain-heart infusion broth. In the laboratory, they are defined as all the organisms that produce red or pink colonies within 48 hours at 35°C ± 1.0°C on KF-streptococcus medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

Total coliform bacteria are a particular group of bacteria that are used as indicators of possible sewage pollution. They are characterized as aerobic or facultative anaerobic, gram-negative, nonspore-forming, rod-shaped bacteria that ferment lactose with gas formation within 48 hours at 35°C. In the laboratory, these bacteria are defined as the organisms that produce colonies with a golden-green metallic sheen within 24 hours when incubated at 35°C ± 1.0°C on M-Endo medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

Bed material is the unconsolidated material of which a streambed, lake, pond, reservoir, or estuary bottom is composed.

Benthic organisms (invertebrates) are the group of animals inhabiting the bottom of an aquatic environment. They include microinvertebrates (such as bacteria and fungi) and macroinvertebrates (such as insect larvae and nymphs, snails, clams, and crayfish). They are useful as indicators of water quality.

Biochemical oxygen demand (BOD) is a measure of the quantity of dissolved oxygen, in milligrams per liter, necessary for the decomposition of organic matter by microorganisms, such as bacteria.

Biomass is the amount of living matter present at any given time, expressed as the mass per unit area or volume of habitat.

Ash mass is the mass or amount of residue present after the residue from the dry mass determination has been in a muffle furnace at a temperature of 500°C for 1 hour. The ash mass values of zooplankton and phytoplankton are expressed in grams per cubic meter (g/m³) and periphyton and benthic organisms in grams per square meter (g/m²).

Dry mass refers to the mass of residue present after drying in an oven at 105°C for zooplankton and periphyton, until the mass remains unchanged. This mass represents the total organic matter, ash, and sediment, in the sample. Dry-mass values are expressed in the same units as ash mass.

Organic mass or volatile mass of the living substance is the difference between the dry mass and the ash mass and represents the actual mass of the living matter. The organic mass is expressed in the same units as for ash and dry mass.

Wet mass is the mass of living matter plus contained water.

Bottom material: See Bed material.

Cells/volume refers to the number of cells of any organism, which are counted by using a microscope and grid or counting cell. Many planktonic organisms are multicelled and are counted according to the number of contained cells per sample, usually milliliters (mL) or liters (L).

Cfs-day is the volume of water represented by a flow of 1 cubic foot per second for 24 hours. It is equivalent to 86,400 cubic feet, approximately 1.9835 acre-feet, about 646,000 gallons, or 2,447 cubic meters.

Chemical oxygen demand (COD) is a measure of the chemically oxidizable material in the water and furnishes an approximation of the amount of organic and reducing material present. The determined value may correlate with carbonaceous organic pollution from sewage or industrial wastes.

Chlorophyll refers to the green pigments of plants. Chlorophyll *a* and *b* are the two most common pigments in plants.

Coliphages are viruses that infect and replicate in *Escherichia coli* bacteria. They are indicative of sewage contamination of waters and of the survival and transport of viruses in the environment.

Color unit is produced by one milligram per liter of platinum in the form of the chloroplatinate ion. Color is expressed in units of the platinum-cobalt scale.

Contents is the volume of water in a reservoir or lake. Unless otherwise indicated, volume is computed on the basis of a level pool and does not include bank storage.

Control designates a feature downstream from the gage that determines the stage-discharge relation at the gage. This feature may be a natural constriction of the channel, an artificial structure, or a uniform cross section over a long reach of the channel.

Control structure, as used in this report, is a structure on a stream or canal that is used to regulate the flow or stage of the stream.

Cubic foot per second (cfs, ft³/s) is the rate of discharge representing a volume of 1 cubic foot passing a given point during 1 second and is equivalent to approximately 7.48 gallons per second or 448.8 gallons per minute or 0.02832 cubic meters per second.

Cubic feet per second per square mile (CFSM) is the average number of cubic feet of water flowing per second from each square mile of area drained, assuming that the runoff is distributed uniformly in time and area.

Datum, as used in this report, is an elevation above sea level to which gage-height readings are referenced.

Discharge is the volume of water (or more broadly, volume of fluid plus suspended sediment) that passes a given point within a given period of time.

Annual 7-day minimum is the lowest mean discharge for 7 consecutive days in a year. Note that most low-flow frequency analyses of annual 7-day minimum flows use a climatic year (April 1-March 31). The date shown in the summary statistics table is the initial date of the 7-day period. (This value should not be confused with the 7-day 10-year low-flow statistic.)

Mean discharge (MEAN) is the arithmetic mean of individual daily mean discharges during a specific period.

Instantaneous discharge is the discharge at a particular instant of time.

Dissolved: That material in a representative water sample that passes through a 0.45-micrometer membrane filter. This is a convenient operational definition used by Federal agencies that collect water data. Determinations of “dissolved” constituents are made on subsamples of the filtrate.

Dissolved oxygen (DO) content of water in equilibrium with air is a function of atmospheric pressure, temperature, and dissolved-solids concentration of the water. The ability of water to retain oxygen decreases with increasing temperature or dissolved solids, with small temperature changes having the more significant offset. Photosynthesis and respiration may cause diurnal variations in dissolved-oxygen concentration in water from some streams.

Dissolved solids concentration of water is determined either analytically by the “residue-on-evaporation” method, or mathematically by totalling the concentrations of individual constituents reported in a comprehensive chemical analysis. During the analytical determination of dissolved solids, the bicarbonate (generally a major dissolved component of water) is converted to carbonate. Therefore, in the mathematical calculation of dissolved-solids concentration, the bicarbonate value, in milligrams per liter, is multiplied by 0.492 to reflect the change.

Drainage area of a stream at a specific location is that area, measured in a horizontal plane, enclosed by a topographic divide from which direct surface runoff from precipitation normally drains by gravity into the stream above the specified point. Figures of drainage area given herein include all closed

basins, or noncontribution areas, within the area unless otherwise noted.

Drainage basin is a part of the surface of the earth that is occupied by a drainage system, which consists of a surface stream or a body of impounded surface water together with all tributary surface stream and bodies of impounded surface water.

Gage height (G.H.) is the water-surface elevation referred to some arbitrary gage datum. Gage height is often used interchangeably with the more general term “stage,” although gage height is more appropriate when used with a reading on a gage.

Gaging station is a particular site on a stream, canal, lake, or reservoir where systematic observations of hydrologic data are obtained.

Hardness of water is a physical-chemical characteristic that is commonly recognized by the increased quantity of soap required to produce lather. It is attributable to the presence of alkaline earths (principally calcium and magnesium) and is expressed as the equivalent concentration of calcium carbonate (CaCO_3).

Hydrologic benchmark station is one that provides hydrologic data for a basin in which the hydrologic regimen will likely be governed solely by natural conditions. Data collected at a benchmark station may be used to separate effects of natural from human-induced changes in other basins that have been developed and in which the physiography, climate, and geology are similar to those in the undeveloped benchmark basin.

Hydrologic index stations in this report, refers to four continuous record gaging stations that have been selected as representative of streamflow patterns for their respective regions of Ohio. Station locations are shown in figure 2.

Hydrologic unit is a geographic area representing part or all of a surface drainage basin or distinct hydrologic feature as delineated by the Office of Water Data Coordination on the State Hydrologic Unit Maps; each hydrologic unit is identified by an 8-digit number.

Land-surface datum (lsd) is a datum plane that is approximately at land surface at each ground-water observation well.

Measuring point (MP) is an arbitrary permanent reference point from which the distance to the water surface in a well is measured to obtain the water level.

Metamorphic stage refers to the stage of development that an organism exhibits during its transformation from an immature form to an adult form. This developmental process exists for most insects, and the degree of difference from the immature stage to the adult form varies from relatively slight to pronounced, with many intermediates. Examples of metamorphic stages of insects are egg-larva-adult or egg-nymph-adult.

Methylene blue active substance (MBAS) is a measure of apparent detergents. This determination depends on the formation of a blue color when methylene blue dye reacts with synthetic anionic detergent compounds.

Microgram per kilogram (UG/KG, $\mu\text{g}/\text{kg}$) is a unit expressing the concentration of a chemical element as the mass (micrograms) of the element sorbed per unit mass (kilogram) of bottom material.

Micrograms per gram (UG/G, $\mu\text{g}/\text{g}$) is a unit expressing the concentration of a chemical element as the mass (micrograms) of the element sorbed per unit mass (gram) of sediment.

Micrograms per liter (UG/L, $\mu\text{g}/\text{L}$) is a unit expressing the concentration of chemical constituents in solution as mass (micrograms) of solute per unit volume (liter) of water. One thousand micrograms per liter is equivalent to one milligram per liter.

Milligrams per liter (MG/L, mg/L) is a unit for expressing the concentration of chemical constituents in solution. Milligrams per liter represent the mass of solute per unit volume (liter) of water.

Concentration of suspended sediment also is expressed in milligrams per liter, and is based on the mass of dry sediment per liter of water-sediment mixture.

Miscellaneous site, or miscellaneous station, is a site where streamflow, sediment, and/or water-quality data are collected once, or more often on a random or discontinuous basis.

National Geodetic Vertical Datum of 1929 (NGVD of 1929) is a geodetic datum derived from a general adjustment of the first order level nets of the United States and Canada. It was formerly called “Sea

Level Datum of 1929” or “mean sea level” in this series of reports. Although the datum was derived from the average sea level over a period of many years at 26 tide stations along the Atlantic, Gulf of Mexico, and Pacific Coasts, it does not necessarily represent local mean sea level at any particular place. See NOAA web site: <http://www.ngs.noaa.gov/faq.shtml#WhatVD29VD88>

North American Vertical Datum of 1988 (NAVD of 1988) is the vertical control datum established in 1991 by the minimum-constraint adjustment of the Canadian-Mexican-U.S. leveling observations. It held fixed the height of the primary tidal bench mark, referenced to the new International Great Lakes Datum of 1985 local mean sea level height value, at Father Point/Rimouski, Quebec, Canada.

Organic carbon (OC) is a measure of organic matter present in aqueous solution, suspension, or bottom sediments. May be reported as dissolved organic carbon (DOC), suspended organic carbon (SOC), or total organic carbon (TOC).

Organism is any living entity.

Organism count/area refers to the number of organisms collected and enumerated in a sample and adjusted to the number per unit area of habitat, usually square meters (m²), acres, or hectares. Periphyton benthic organisms and macrophytes are expressed in these terms.

Organism count/volume refers to the number of organisms collected and enumerated in a sample and adjusted to the number per sample volume, usually milliliters (mL) or liters (L). Numbers of planktonic organisms can be expressed in these terms.

Total organism count is the total number of organisms collected and enumerated in any particular sample.

Parameter code is a 5-digit number used in the U.S. Geological Survey’s data system, the National Water Information System (NWIS), to uniquely identify a specific constituent. The codes used in NWIS are the same as those used in the U.S. Environmental Protection Agency’s data system, STORET.

Partial-record station is a particular site where limited streamflow and (or) water-quality data are collected systematically over a period of years for use in hydrologic analyses.

Particle size is the diameter, in millimeters (mm), of suspended sediment or bed material determined by either sieve or sedimentation methods. Sedimentation methods determine fall diameter of particles in either distilled water (chemically dispersed) or in native water (the river water at the time and point of sampling).

Particle-size classification used in this report agrees with recommendations made by the American Geophysical Union Subcommittee on Sediment Terminology.

Classification	Size (millimeters)	Method of analysis
Clay	0.00024-0.004	Sedimentation
Silt	0.004-0.062	Sedimentation
Sand	0.062-2.0	Sedimentation or sieve
Gravel	2.0-64.0	Sieve

The particle-size distributions given in this report are not necessarily representative of all particles in transport in the stream. Most of the organic material is removed and the sample is subjected to mechanical and chemical dispersion before analysis in distilled water. Chemical dispersion is not used for native-water analysis.

Percent composition is a unit for expressing the ratio of a particular part of a sample or population to the total sample or population in terms of types, number, mass, or volume.

Periphyton is the assemblage of microorganisms attached to and growing upon solid surfaces. While primarily consisting of algae, they also include bacteria, fungi, protozoa, rotifers, and other small organisms. Periphyton is a useful indicator of water quality.

pH of water is the negative logarithm of the hydrogen-ion activity. Solutions with pH less than 7 are termed “acidic,” and solutions with a pH greater than 7 are termed “basic.” Solutions with a pH of 7

are neutral. The presence and concentration of many dissolved chemical constituents found in water are, in part, influenced by the hydrogen-ion activity of water. Biological processes including growth, distribution of organisms, and toxicity of the water to organisms are also influenced, in part, by the hydrogen-ion activity of water.

Pesticides are chemical compounds used to control undesirable plants and animals. Major categories of pesticides include insecticides, miticides, fungicides, herbicides, and rodenticides. Insecticides and herbicides, which control insects and plants respectively, are the two categories reported.

Picocurie (PCI, pCi) is one trillionth (1×10^{-12}) of the amount of radioactivity represented by a curie (Ci). A curie is the amount of radioactivity that yields 3.7×10^{10} radioactive disintegrations per second. A picocurie yields 2.22 dpm (disintegrations per minute).

Plankton is the community of suspended, floating, or weakly swimming organisms that live in the open water of lakes and rivers.

Phytoplankton is the plant part of the plankton. They are usually microscopic, and their movement is subject to the water currents. Phytoplankton growth is dependent upon solar radiation and nutrient substances. Because they are able to incorporate as well as release materials to the surrounding water, the phytoplankton have a profound effect upon the quality of the water. They are the primary food producers in the aquatic environment, and are commonly known as algae.

Blue-green algae are a group of phytoplankton organisms having a blue pigment, in addition to the green pigment called chlorophyll. Blue-green algae often cause nuisance conditions.

Diatoms are the unicellular or colonial algae having a siliceous shell. Their concentrations are expressed as number of cells per milliliter (cells/mL) of sample.

Green algae have chlorophyll pigments similar in color to those of higher green plants.

Some forms produce algae mats or floating "moss" in lakes. Their concentrations are expressed as number of cells per milliliters (cells/mL) of sample.

Zooplankton is the animal part of the plankton. Zooplankton are capable of extensive movement within the water column and are often large enough to be seen with the unaided eye.

Zooplankton are secondary consumers feeding upon bacteria, phytoplankton, and detritus.

Because they are the grazers in the aquatic environment, the zooplankton are a vital part of the aquatic food web. The zooplankton community is dominated by small crustaceans and rotifers.

Primary productivity is a measure of the rate at which new organic matter is formed and accumulated through photosynthetic and chemosynthetic activity of producer organisms (chiefly, green plants). The rate of primary production is estimated by measuring the amount of oxygen released (oxygen method) or the amount of carbon assimilated by the plants (carbon method).

Milligrams of carbon per area or volume per unit time [$\text{mg C}/(\text{m}^2 \text{ or } \text{m}^3/\text{time})$] for periphyton, macrophytes, and phytoplankton are units for expressing primary productivity. They define the amount of carbon dioxide consumed as measured by radioactive carbon (carbon-14). The carbon-14 method is of greater sensitivity than the oxygen light and dark bottle method, and it is preferred for use in unenriched waters. Unit time may be the hour or day, depending on the incubation period.

Milligrams of oxygen per area or volume per unit time [$\text{mg O}_2/(\text{m}^2 \text{ or } \text{m}^3/\text{time})$] for periphyton, macrophytes, and phytoplankton are units for expressing primary productivity. They define production and respiration rates as estimated from changes in the measured dissolved oxygen concentration. The oxygen light and dark bottle method is preferred if the rate of primary production is sufficient for accurate measurements to be made within 24 hours. Unit time may be either the hour or day, depending on the incubation period.

Recoverable from bottom material is the amount of a given constituent that is in solution after a representative sample of bottom material has been digested by a method (usually using an acid or mixture of acids) that results in dissolution of only readily soluble substances. Complete dissolution of all bottom material is not achieved by the digestion treatment; thus, the determination represents

less than the total amount (that is, less than 95 percent) of the constituent in the sample. To achieve comparability of analytical data, equivalent digestion procedures would be required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

Recurrence interval is the average time interval between occurrences of a hydrological event of a given or greater magnitude, usually expressed in years. May also be called return period.

Runoff in inches (IN., in.) indicates the depth to which the drainage area would be covered if all the runoff for a given time period were uniformly distributed on it.

Sea level refers to the National Geodetic Vertical Datum of 1929 (NGVD of 1929)—a geodetic datum derived from a general adjustment of the first-order level nets of both the United States and Canada, formerly called Sea Level Datum of 1929.

Sediment is solid material that originates mostly from disintegrated rocks and is transported by, suspended in, or deposited from water; it includes chemical and biochemical precipitates and decomposed organic material such as humus. The quantity, characteristics, and cause of the occurrence of sediment in streams are influenced by environmental factors. Some major factors are degree of slope, length of slope, soil characteristics, land use, and quantity and intensity of precipitation.

Bed load is the sediment that is transported in a stream by rolling, sliding, or skipping along the bed and very close to it. In this report, bed load is considered to consist of particles in transit within 0.25 ft of the streambed.

Bed-load discharge (tons per day) is the quantity of bed load measured by dry weight that moves past a section as bed load in a given time.

Suspended sediment is the sediment that at any given time is maintained in suspension by the upward components of turbulent currents or that exists in suspension as a colloid.

Suspended-sediment concentration is the velocity-weighted concentration of suspended sediment in the sampled zone (from the water surface to a point approximately 0.3 ft above the bed) expressed as milligrams of dry sediment per liter of water-sediment mixture (mg/L).

Suspended-sediment discharge (ton/day) is the rate at which dry weight of sediment passes a section of a stream or is the quantity of sediment, as measured by dry weight or volume, that passes a section in a given time. It is computed by multiplying discharge times mg/L times 0.0027.

Suspended-sediment load is the quantity of suspended sediment passing a section in a specified period.

Total sediment discharge (ton/day) is the sum of the suspended-sediment discharge and the bed-load discharge. It is the total quantity of sediment, as measured by dry weight or volume, that passes a section during a given time.

Mean concentration is the time-weighted concentration of suspended sediment passing a stream section during a 24-hour day.

Seven-day, 10-year low flow ($7Q_{10}$) is the discharge at the 10-year recurrence interval taken from a frequency curve of annual values of the lowest mean discharge for 7 consecutive days (the 7-day low flow).

Sodium-adsorption-ratio (SAR) is the expression of relative activity of sodium ions in exchange reactions within soil and is an index of sodium or alkali hazard to the soil. Waters range in respect to sodium hazard from those which can be used for irrigation on almost all soils to those which are generally unsatisfactory for irrigation.

Solute is any substance derived from the atmosphere, vegetation, soil, or rocks that is dissolved in water.

Specific conductance is a measure of the ability of a water to conduct an electrical current. It is expressed in microsiemens per centimeter at 25°C. Specific conductance is related to the type and concentration of ions in solution and can be used for approximating the dissolved-solids content of the water.

Commonly, the concentration of dissolved solids (in milligrams per liter) is about 65 percent of the

specific conductance (in microsiemens). This relation is not constant from stream to stream, and it may vary in the same source with changes in the composition of the water.

Stage-discharge relation is the relation between gage height (stage) and volume of water, per unit of time, flowing in a channel.

Streamflow is the discharge that occurs in a natural channel. Although the term “discharge” can be applied to the flow of a canal, the word “streamflow” uniquely describes the discharge in a surface stream course. The term “streamflow” is more general than “runoff,” because streamflow may be applied to discharge whether or not it is affected by diversion or regulation.

Substrate is the physical surface upon which an organism lives.

Natural substrate refers to any naturally occurring emersed or submersed solid surface, such as a rock or tree, upon which an organism lives.

Artificial substrate is a device that is purposely placed in a stream or lake for colonization of organisms. The artificial substrate simplifies the community structure by standardizing the substrate from which each sample is taken. Examples of artificial substrate are basket samplers (made of wire cages filled with clean streamsize rocks) and multiplate samplers (made of hardboard) for benthic organism collection and plexiglas strips for periphyton.

Surface area of a lake is that area outlined on the latest USGS topographic map as the boundary of the lake and measured by a planimeter or a digitizer, in acres. In localities not covered by topographic maps, the areas are computed from the best maps available at the time planimetered or digitized. All areas shown are those for the stage when the planimetered map was made.

Surficial bed material is the part (0.1 to 0.2 ft) of the bed material that is sampled using U.S. Series Bed-material Samplers.

Suspended (as used in tables of chemical analyses) refers to the amount (concentration) of the total concentration in a water-sediment mixture. The water-sediment mixture is associated with (or sorbed on) that material retained on a 0.45-micrometer filter.

Suspended, recoverable is the amount of a given constituent that is in solution after the part of a representative water-suspended sediment sample that is retained on a 0.45-micrometer membrane filter has been digested by a method (usually using a dilute acid solution) that results in dissolution of only readily soluble substances. Complete dissolution of all the particulate matter is not achieved by the digestion treatment, and thus the determination represents something less than the “total” amount (that is, less than 95 percent) of the constituent present in the sample. To achieve comparability of analytical data, equivalent digestion procedures would be required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results. Determinations of “suspended, recoverable” constituents are made either by analyzing portions of the material collected on the filter or, more commonly, by difference, based on determinations of (1) dissolved and (2) total recoverable concentrations of the constituent.

Suspended, total is the total amount of a given constituent in the part of a representative water-suspended sediment sample that is retained on a 0.45-micrometer membrane filter. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent determined. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to determine when the results should be reported as “suspended, total.” Determinations of “suspended, total” constituents are made either by analyzing portions of the material collected on the filter or, more commonly, by difference, based on determinations of (1) dissolved and (2) total concentrations of the constituent.

Taxonomy is the division of biology concerned with the classification and naming of organisms. The classification of organisms is based upon a hierarchial scheme beginning with Kingdom and ending with Species at the base. The higher the classification level, the fewer features the organisms have in

common. For example, the taxonomy of a particular mayfly, *Hexagenia limbata*, is the following:

Kingdom..... Animal
Phylum..... Arthropoda
Class Insecta
Order Ephemeroptera
Family Ephemeridae
Genus..... *Hexagenia*
Species..... *Hexagenia limbata*

Time-weighted average is computed by multiplying the number of days in the sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the total number of days. A time-weighted average represents the composition of water that would be contained in a vessel or reservoir that had received equal quantities of water from the stream each day for the year.

Tons per acre-foot indicates the dry mass of dissolved solids in 1 acre-foot of water. It is computed by multiplying the concentration of the constituent, in milligrams per liter, by 0.00136.

Tons per day (T/DAY) is the quantity of substance in solution or suspension that passes a stream section during a 24-hour day.

Total is the total amount of a given constituent in a representative water-suspended sediment sample, regardless of the constituent's physical or chemical form. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent present in both the dissolved and suspended phases of the sample. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to judge when the results should be reported as "total." (Note that the word "total" does double duty here, indicating both that the sample consists of a water-suspended sediment mixture and that the analytical method determines all of the constituent in the sample.)

Total in bottom material is the total amount of a given constituent in a representative sample of bottom material. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent determined. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to judge when the results should be reported as "total in bottom material."

Total discharge is the total quantity of any individual constituent, as measured by dry mass or volume, that passes through a stream cross section per unit of time. This term needs to be qualified, such as "total sediment discharge," "total chloride discharge," and so on.

Total load (tons) is the total quantity of any individual constituent, as measured by dry mass or volume, that is dissolved in a specific amount of water (discharge) during a given time. It is computed by multiplying the total discharge, times the concentration of the constituent (in milligrams per liter), times the factor 0.0027, times the number of days.

Total recoverable is the amount of a given constituent that is in solution after a representative water-suspended sediment sample has been digested by a method (usually using a dilute acid solution) that results in dissolution of only readily soluble substances. Complete dissolution of all particulate matter is not achieved by the digestion treatment, and thus the determination represents something less than the "total" amount (that is, less than 95 percent) of the constituent present in the dissolved and suspended phases of the sample. To achieve comparability of analytical data, equivalent digestion procedures would be required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

Turbidity is a measurement of the collective optical properties of a water sample that cause light to be scattered and absorbed rather than transmitted in straight lines; the higher the intensity of scattered light, the higher the turbidity. Turbidity is expressed in nephelometric turbidity units (NTU) or

Formazin turbidity units (FTU) depending on the method and equipment used.

Water year in USGS reports dealing with surface-water supply is the 12-month period October 1 through September 30. The water year is designated by the calendar year in which it ends and which includes 9 of the 12 months. Thus, the year ending September 30, 1980, is called water year 1980.

WDR is used as an abbreviation for “Water-Data Report” in the REVISED RECORDS paragraph to refer to state annual basic-data reports published after 1975.

Weighted average is used in this report to indicate discharge-weighted average. It is computed by multiplying the discharge for a sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the sum of the discharges. A discharge-weighted average approximates the composition of water that would be found in a reservoir containing all the water passing a given location during the water year after thorough mixing in the reservoir.

Well is an excavation (pit, hole, tunnel), generally cylindrical in form and often walled in, drilled, dug, driven, bored, or jetted into the ground to such a depth as to penetrate water-yielding geologic material and allow the water to flow or to be pumped to the surface.

WRD is used as an abbreviation for “Water-Resources Data” in the REVISED RECORDS paragraph to refer to state annual basic-data reports published before 1975.

WSP is used as an abbreviation for “Water-Supply Paper” in references to previously published reports.

PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS

The U.S. Geological Survey publishes a series of manuals describing procedures for planning and conducting specialized work in water-resources investigations. The material is grouped under major subject headings called books and is further divided into sections and chapters. For example, Section A of Book 3 (Applications of Hydraulics) pertains to surface water. The chapter, the unit of publication, is limited to a narrow field of subject matter. This format permits flexibility in revision and publication as the need arises.

The reports listed below are for sale by the U.S. Geological Survey, Branch of Information Services, Box 25286, Federal Center, Denver, CO 80225 (authorized agent of the Superintendent of Documents, Government Printing Office). Prepayment is required. Prices are not included because they are subject to change. Current prices can be obtained by writing to the above address. When ordering or inquiring about prices for any of these publications, please give the title, book number, chapter number, and “U.S. Geological Survey Techniques of Water-Resources Investigations.”

- 1-D1. *Water temperature—influential factors, field measurement, and data presentation*, by H. H. Stevens, Jr., J. F. Ficke, and G. F. Smoot: USGS—TWRI Book 1, Chapter D1. 1975. 65 pages.
- 1-D2. *Guidelines for collection and field analysis of ground-water samples for selected unstable constituents*, by W. W. Wood: USGS—TWRI Book 1, Chapter D2. 1976. 24 pages.
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- 3-A3. *Measurement of peak discharge at culverts by indirect methods*, by G. L. Bodhaine: USGS—TWRI Book 3, Chapter A3. 1968. 60 pages.
- 3-A4. *Measurement of peak discharge at width contractions by indirect methods*, by H. F. Matthai: USGS—TWRI Book 3, Chapter A4. 1967. 44 pages.
- 3-A5. *Measurement of peak discharge at dams by indirect methods*, by Harry Hulsing: USGS—TWRI Book 3, Chapter A5. 1967. 29 pages.
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- 3-A9. *Measurement of time of travel in streams by dye tracing*, by F. A. Kilpatrick and J. F. Wilson, Jr.: USGS—TWRI Book 3, Chapter A9. 1989. 27 pages.
- 3-A10. *Discharge ratings at gaging stations*, by E. J. Kennedy: USGS—TWRI Book 3, Chapter A10. 1984. 59 pages.
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- 3-A12. *Fluorometric procedures for dye tracing*, Revised, by J. F. Wilson, Jr., E. D. Cobb, and F. A. Kilpatrick: USGS—TWRI Book 3, Chapter A12. 1986. 34 pages.
- 3-A13. *Computation of continuous records of streamflow*, by E. J. Kennedy: USGS—TWRI Book 3, Chapter A13. 1983. 53 pages.
- 3-A14. *Use of flumes in measuring discharge*, by F. A. Kilpatrick and V. R. Schneider: USGS—TWRI Book 3, Chapter A14. 1983. 46 pages.
- 3-A15. *Computation of water-surface profiles in open channels*, by Jacob Davidian: USGS—TWRI Book 3, Chapter A15. 1984. 48 pages.
- 3-A16. *Measurement of discharge using tracers*, by F. A. Kilpatrick and E. D. Cobb: USGS—TWRI Book 3, Chapter A16. 1985. 52 pages.
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- 3-A19. *Levels at streamflow gaging stations*, by E.J. Kennedy: USGS—TWRI Book 3, Chapter A19. 1990. 31 pages.
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- 3-A21. *Stream-gaging cableways*, by C. Russell Wagner: USGS—TWRI Book 3, Chapter A21. 1995. 56 pages.
- 3-B1. *Aquifer-test design, observation, and data analysis*, by R. W. Stallman: USG—TWRI Book 3, Chapter B1. 1971. 26 pages.
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- 3-B3. *Type curves for selected problems of flow to wells in confined aquifers*, by J. E. Reed: USGS—TWRI Book 3, Chapter B3. 1980. 106 pages.
- 3-B4. *Regression modeling of ground-water flow*, by R. L. Cooley and R. L. Naff: USGS—TWRI Book 3, Chapter B4. 1990. 232 pages.
- 3-B4. *Supplement 1. Regression modeling of ground-water flow - Modifications to the computer code*

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- 3-C1. *Fluvial sediment concepts*, by H. P. Guy: USGS—TWRI Book 3, Chapter C1. 1970. 55 pages.
- 3-C2. *Field methods for measurement of fluvial sediment*, by Thomas K. Edwards and G. Douglas Glysson: USGS—TWRI Book 3, Chapter C2. 1988. 80 pages.
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- 8-B2. *Calibration and maintenance of vertical-axis type current meters*, by G. F. Smoot and C. E. Novak: USGS—TWRI Book 8, Chapter B2. 1968. 15 pages.
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- 9-A7. *National Field Manual for the Collection of Water-Quality Data: Biological Indicators*, edited by D.N. Myers and F.D. Wilde: USGS—TWRI Book 9, Chapter A7. 1999. Variously paginated.
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SURFACE-WATER RECORDS
Ottawa River Basin

04177000 OTTAWA RIVER AT UNIVERSITY OF TOLEDO, TOLEDO, OHIO

LOCATION.—Latitude 41°39'29", longitude 83°37'19". in NE 1/4 sec. 32, T.9 S., R.7 E., Lucas County, Hydrologic Unit 04100001, on left bank at auto bridge at University of Toledo, Toledo, Ohio, 0.4 mi downstream from Deline Ditch, 5.6 mi upstream from Sibley Creek, and 10.9 mi upstream from mouth.

DRAINAGE AREA.—150 mi². Area at site used prior to Sept 30, 1948, 150 mi², revised.

PERIOD OF RECORD.—March 1945 to September 1948 (published as "Tenmile Creek at Toledo"), August 1976 to current year.

REVISED RECORDS.—WSP 1307: Drainage area.

GAGE.—Water-stage recorder. Datum of gage is 576.28 ft above sea level. (From Aug. 1976 to July, 1979, at site 500 ft downstream. Prior to Sept. 30, 1948, water-stage recorder at site 2,500 ft upstream at datum 3.72 ft higher.

REMARKS.—Records fair except for May 21-June 13 and for periods of estimated record, which are poor. Water-quality data formerly collected at this site.

EXTREMES OUTSIDE PERIOD OF RECORD.—Flood of June 1, 1943, reached a stage of 15.1 ft present datum, from floodmark, Lucas County Sanitary Engineers; discharge, 3,400 ft³/s. Flood of Apr. 25, 1950, reached a stage of 15.0 ft present datum, from floodmark; discharge, 3,300 ft³/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.58	12	5.0	e4.5	e5.0	48	9.2	138	121	64	143	10
2	.36	79	5.8	9.0	e6.0	36	8.7	176	86	45	222	10
3	24	21	8.0	26	e8.0	28	8.5	136	57	124	239	15
4	21	6.8	7.2	23	e10	22	8.6	76	45	149	151	17
5	1.4	6.3	22	10	e8.0	19	7.9	47	85	94	82	12
6	.78	7.1	27	8.2	e7.0	17	8.3	32	85	87	186	11
7	.63	7.8	9.7	9.0	e6.0	15	29	28	92	49	262	9.8
8	2.1	11	6.6	7.8	e7.0	14	22	25	60	36	187	8.4
9	5.4	16	5.9	8.2	e8.0	14	13	69	36	37	93	9.6
10	9.4	20	12	16	41	12	11	101	28	45	52	163
11	8.2	31	7.6	13	45	12	12	88	28	33	36	95
12	7.9	9.8	5.6	9.2	e15	22	9.2	169	651	26	28	204
13	31	5.8	5.3	e8.0	e13	18	8.6	213	1310	22	24	135
14	6.4	3.9	83	e7.4	e12	17	8.1	89	1070	51	21	115
15	1.8	3.8	38	e6.8	e11	22	7.4	42	410	32	22	85
16	6.0	3.6	20	e6.4	e11	31	7.6	29	254	23	17	77
17	22	3.4	e13	e6.0	e10	23	7.5	23	157	21	30	44
18	2.6	4.3	e12	e5.8	e9.6	21	7.6	381	289	17	20	30
19	.99	18	e11	e5.6	e9.2	37	14	1530	259	15	15	24
20	.83	30	e15	e5.2	e9.0	109	622	1940	265	14	14	58
21	.80	9.3	e9.0	e5.2	e11	345	1250	1520	394	12	13	29
22	2.8	5.8	e8.0	e5.0	e20	165	1150	547	288	11	13	20
23	7.9	5.2	e7.4	e4.8	68	75	496	271	159	11	36	147
24	5.4	5.8	e7.0	e4.6	164	51	272	167	191	10	18	150
25	3.4	6.5	e6.4	e4.6	174	38	152	109	828	9.7	14	169
26	4.0	33	e6.0	e4.6	129	27	97	77	1230	9.8	52	95
27	4.3	15	e5.6	e4.6	135	40	58	61	543	9.4	71	47
28	4.3	7.4	e5.2	e4.5	176	33	41	538	260	8.6	20	29
29	2.8	5.7	e5.0	e4.5	90	21	31	877	138	347	16	22
30	3.7	4.9	e4.8	e4.5	---	15	25	420	86	497	15	19
31	9.5	---	e4.6	e4.5	---	11	---	183	---	321	12	---
TOTAL	202.27	399.2	388.7	246.5	1217.8	1358	4402.2	10102	9505	2230.5	2124	1859.8
MEAN	6.52	13.3	12.5	7.95	42.0	43.8	147	326	317	72.0	68.5	62.0
MAX	31	79	83	26	176	345	1250	1940	1310	497	262	204
MIN	.36	3.4	4.6	4.5	5.0	11	7.4	23	28	8.6	12	8.4
CFSM	.04	.09	.08	.05	.28	.29	.98	2.17	2.11	.48	.46	.41
IN.	.05	.10	.10	.06	.30	.34	1.09	2.51	2.36	.55	.53	.46

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1945 - 2000, BY WATER YEAR (WY)

	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
MEAN	57.7	94.4	128	122	167	283	247	143	137	51.6	31.0	41.6																																												
MAX	407	449	380	561	467	729	438	358	437	264	143	406																																												
(WY)	1987	1993	1978	1993	1990	1978	1977	1945	1989	1992	1980	1981																																												
MIN	.85	3.04	6.14	4.92	30.4	43.8	20.4	21.4	7.36	8.46	.82	.13																																												
(WY)	1947	1947	1947	1977	1978	2000	1946	1988	1988	1984	1946	1946																																												

SUMMARY STATISTICS

FOR 1999 CALENDAR YEAR

FOR 2000 WATER YEAR

WATER YEARS 1945 - 2000

ANNUAL TOTAL	35854.07	34035.97	
ANNUAL MEAN	98.2	93.0	125
HIGHEST ANNUAL MEAN			215
LOWEST ANNUAL MEAN			65.5
HIGHEST DAILY MEAN	1790	Jan 25	1940
LOWEST DAILY MEAN	.36	Oct 2	.36
ANNUAL SEVEN-DAY MINIMUM	2.3	Sep 13	3.0
INSTANTANEOUS PEAK FLOW			1990
INSTANTANEOUS PEAK STAGE			11.40
INSTANTANEOUS LOW FLOW			May 20
ANNUAL RUNOFF (CFSM)	.65	.62	14.54
ANNUAL RUNOFF (INCHES)	8.89	8.44	.00
10 PERCENT EXCEEDS	258	207	.83
50 PERCENT EXCEEDS	20	19	11.34
90 PERCENT EXCEEDS	2.9	5.0	39
			6.5

a Peaks above base shown in table of peak discharges and stages at continuous-record surface-water-discharge stations.
e Estimated.

SURFACE-WATER RECORDS
Maumee River Basin

04185000 TIFFIN RIVER AT STRYKER, OHIO

LOCATION.—Latitude 41°30'16", longitude 84°25'47", in SE 1/4 sec. 5, T.6 N., R.4 E., Williams County, Hydrologic Unit 04100006, on left bank 0.5 mi downstream from bridge on State Highway 191 at west edge of Stryker, Ohio, 0.6 mi upstream from Penn Central bridge, and 1.6 mi downstream from Leatherwood Creek.

DRAINAGE AREA.—410 mi².

PERIOD OF RECORD.—September 1921 to September 1928 (published as "near Stryker"), October 1940 to current year.

REVISED RECORDS.—WSP 1144: 1922-28. WSP 1387: 1925. WSP 1912: Drainage area.

GAGE.—Water-stage recorder. Datum of gage is 685.1 ft above sea level. Prior to Sep. 30, 1928, nonrecording gage at site 3.5 mi downstream at different datum. Oct. 13, 1940 to Jan. 17, 1941, nonrecording gage and Jan. 18, 1941 to Sep. 30, 1953, water-stage recorder, at site 0.5 mi downstream at same datum.

REMARKS.—Records fair except for periods of estimated record, which are poor. Small diversion 12.5 mi upstream from gage for municipal supply of Archbold. Diversion averaged 2.93 ft³/s; returned as sewage to Brush Creek, which flows into Tiffin River about 15 mi downstream from station. Water-quality and sediment data formerly collected at this site.

EXTREMES OUTSIDE PERIOD OF RECORD.—Flood in March 1913 reached a stage of 16.0 ft, from floodmarks; discharge, 7,600 ft³/s. Flood in 1937 reached a stage of 15.0 ft, from information by local resident; discharge, 6,000 ft³/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25	39	e56	e28	e33	280	129	228	1240	1680	120	65
2	30	43	e54	e28	e33	230	121	288	1010	1140	99	52
3	56	48	e60	e50	e32	211	119	325	670	863	106	45
4	78	47	e70	e100	e32	190	116	298	398	1050	118	41
5	93	48	e80	e150	e32	174	109	257	409	1200	96	40
6	129	46	e86	e120	e32	163	105	224	769	1120	85	40
7	144	45	e82	e100	e40	154	102	201	804	722	261	37
8	135	44	e76	e80	e50	148	114	186	727	396	180	36
9	85	43	e70	e70	e70	143	136	178	505	291	113	34
10	45	45	e62	e90	e90	138	157	236	353	247	90	41
11	35	46	e60	e80	e80	115	152	303	293	227	73	126
12	36	42	e80	e70	e70	106	140	349	853	205	62	1010
13	34	41	e120	e56	e60	105	128	366	1300	180	54	965
14	34	41	e140	e50	e54	100	121	404	1260	154	46	762
15	35	43	e130	e47	e52	100	117	414	1390	137	43	550
16	38	43	e110	e46	e50	104	113	356	1370	124	39	401
17	58	42	e100	e45	e50	113	108	292	1280	111	38	284
18	64	41	e84	e44	e52	117	103	273	1260	102	42	202
19	55	42	e76	e42	e56	127	101	1370	1160	93	42	150
20	46	47	e66	e41	e60	249	315	1550	951	85	40	122
21	42	53	e56	e40	e70	525	1120	1860	932	81	37	111
22	39	53	e48	e40	e80	489	1290	2360	851	75	35	97
23	38	53	e44	e39	135	399	1450	2400	681	68	37	136
24	39	50	e40	e39	291	338	1480	1950	490	65	41	282
25	36	51	e35	e38	434	298	1310	1520	1950	60	34	304
26	28	e60	e32	e36	477	267	869	1160	2640	55	34	209
27	23	e64	e31	e36	424	244	473	786	2620	54	83	144
28	23	e66	e30	e35	442	212	337	950	2700	53	104	116
29	26	e62	e29	e34	365	182	283	1250	2530	57	131	98
30	36	e60	e29	e34	---	157	248	1300	2140	104	112	89
31	39	---	e28	e33	---	140	---	1330	---	143	84	---
TOTAL	1624	1448	2064	1741	3746	6318	11466	24964	35536	10942	2479	6589
MEAN	52.4	48.3	66.6	56.2	129	204	382	805	1185	353	80.0	220
MAX	144	66	140	150	477	525	1480	2400	2700	1680	261	1010
MIN	23	39	28	28	32	100	101	178	293	53	34	34

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1922 - 2000, BY WATER YEAR (WY)

MEAN	107	226	367	398	539	790	660	386	264	153	75.7	70.2
MAX	887	1339	1785	1687	1569	2563	1990	2112	1422	761	799	460
(WY)	1987	1993	1928	1993	1976	1982	1950	1943	1989	1943	1998	1981
MIN	10.2	14.6	18.4	20.2	21.9	135	106	74.4	24.1	13.7	9.76	7.39
(WY)	1964	1954	1964	1963	1963	1964	1946	1925	1988	1988	1941	1999

SUMMARY STATISTICS

	FOR 1999 CALENDAR YEAR		FOR 2000 WATER YEAR		WATER YEARS 1922 - 2000	
ANNUAL TOTAL	117848.8		108917			
ANNUAL MEAN	323		298		335	
HIGHEST ANNUAL MEAN					671	
LOWEST ANNUAL MEAN					59.6	
HIGHEST DAILY MEAN	4940		2700		7640	
LOWEST DAILY MEAN	4.7		23		2.5	
ANNUAL SEVEN-DAY MINIMUM	5.4		29		3.6	
INSTANTANEOUS PEAK FLOW			2740		7800	
INSTANTANEOUS PEAK STAGE			13.24		18.36	
INSTANTANEOUS LOW FLOW			23		2.5	
10 PERCENT EXCEEDS	893		1010		934	
50 PERCENT EXCEEDS	76		100		124	
90 PERCENT EXCEEDS	9.8		36		23	

a Peaks above base shown in table of peak discharges and stages at continuous-record surface-water-discharge stations.
e Estimated.

SURFACE-WATER RECORDS
Maumee River Basin

04185440 UNNAMED TRIBUTARY TO LOST CREEK NEAR FARMER, OHIO

LOCATION.—Latitude 41°21'42", longitude 84°41'28", Defiance County, Hydrologic Unit 04100006, on right bank 400 ft above bridge on Rosedale Road, 0.5 mi above mouth and 2.0 mi from Farmer, Ohio.
DRAINAGE AREA.—4.23 mi².
PERIOD OF RECORD.—October 1985 to current year.
GAGE.—Water-stage recorder. Elevation of gage is 760 ft above sea level (from topographic map).
REMARKS.—Records fair except for periods of estimated record and Oct. 1-27, which are poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.10	.03	.03	e.13	e.08	2.1	1.7	.99	2.1	.87	.08	.16
2	.03	.04	.04	.26	e.08	1.4	1.3	1.4	1.5	.54	.12	.13
3	.05	.04	.04	2.1	e.07	1.0	1.1	.84	1.0	.54	.13	.13
4	3.3	.03	.04	3.7	e.07	.86	.90	.67	.80	.48	.09	.13
5	.51	.03	.08	1.0	e.07	.71	.73	.57	25	.40	.07	.12
6	.15	.03	.21	.63	e.07	.61	.64	.50	13	.33	.16	.10
7	.07	.03	.17	.37	e.07	.56	.67	.52	3.2	.18	3.3	.09
8	.04	.03	.10	.33	e.07	.52	1.5	.50	1.7	.13	.43	.09
9	.04	.03	.08	.30	e.10	.48	1.2	2.3	.97	.19	.22	.10
10	.04	.03	.08	.92	.82	.41	.88	5.1	.67	.27	.13	.24
11	.03	.03	.07	1.2	3.0	.42	.79	1.4	.61	.13	.09	22
12	.03	.03	.07	.51	1.4	.47	.69	.97	.59	.09	.06	68
13	.04	.04	.07	.36	.72	.66	.64	.61	2.6	.13	.06	8.0
14	.08	.04	5.3	.22	.50	.86	.61	.45	2.7	.15	.07	2.6
15	.05	.04	5.2	e.17	.41	.87	.56	.39	5.7	.08	.05	1.3
16	.03	.04	2.6	e.14	.60	.83	.50	.41	1.5	.08	.03	.71
17	.05	.03	.89	e.13	.68	.75	.84	.43	.78	.05	.09	.46
18	.05	.03	.46	e.12	.54	.61	.80	39	19	.08	.12	.32
19	.04	.05	.35	e.11	.44	5.4	.69	47	3.8	.10	.07	.40
20	.03	.06	3.5	e.11	.36	40	42	8.9	4.6	.07	.05	.23
21	.04	.04	1.0	e.10	.49	16	18	4.7	20	.06	.03	.18
22	.05	.03	.40	e.10	21	6.4	6.7	2.8	3.6	.08	.03	.16
23	.05	.04	.27	e.09	22	3.6	3.6	20	1.5	.07	.13	35
24	.06	.04	.20	e.09	24	2.3	2.3	7.1	1.8	.07	.88	23
25	.06	.03	e.17	e.09	14	1.4	1.4	2.5	123	.06	.20	5.7
26	.06	.06	e.15	e.09	9.6	1.0	1.1	1.3	11	.06	.19	2.1
27	.04	.05	e.14	e.09	22	1.4	.86	.96	5.9	.05	28	1.2
28	.02	.04	e.13	e.08	6.1	27	.69	123	2.8	.05	1.5	.72
29	.03	.03	e.12	e.08	3.2	14	.57	15	1.9	.14	.53	.54
30	.02	.03	e.11	e.08	---	4.9	.50	6.7	1.3	.23	.28	.45
31	.02	---	e.11	e.08	---	2.6	---	3.3	---	.12	.20	---
TOTAL	5.21	1.10	22.18	13.78	132.54	140.12	94.46	300.31	264.62	5.88	37.39	174.36
MEAN	.17	.037	.72	.44	4.57	4.52	3.15	9.69	8.82	.19	1.21	5.81
MAX	3.3	.06	5.3	3.7	24	40	42	123	123	.87	.28	.68
MIN	.02	.03	.03	.08	.07	.41	.50	.39	.59	.05	.03	.09
CFSM	.04	.01	.17	.11	1.08	1.07	.74	2.29	2.09	.04	.29	1.37
IN.	.05	.01	.20	.12	1.17	1.23	.83	2.64	2.33	.05	.33	1.53

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1986 - 2000, BY WATER YEAR (WY)

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
MEAN	2.55	4.39	6.00	5.84	7.09	7.44	7.94	4.04	3.26	1.67	2.02	1.19			
MAX	12.6	15.6	23.9	13.9	21.2	14.5	20.6	10.9	9.09	7.75	16.4	5.81			
(WY)	1987	1993	1991	1993	1990	1998	1999	1990	1996	1986	1998	2000			
MIN	.031	.037	.11	.44	.46	3.13	1.92	.26	.046	.011	.015	.003			
(WY)	1995	2000	1990	2000	1995	1996	1987	1988	1988	1988	1989	1991			

SUMMARY STATISTICS	FOR 1999 CALENDAR YEAR	FOR 2000 WATER YEAR	WATER YEARS 1986 - 2000
ANNUAL TOTAL	1744.72	1191.95	
ANNUAL MEAN	4.78	3.26	4.44
HIGHEST ANNUAL MEAN			6.66
LOWEST ANNUAL MEAN			1.96
HIGHEST DAILY MEAN	175	Jan 23	322
LOWEST DAILY MEAN	.01	Aug 23	.00
ANNUAL SEVEN-DAY MINIMUM	.01	Sep 14	.00
INSTANTANEOUS PEAK FLOW			425
INSTANTANEOUS PEAK STAGE			4.78
INSTANTANEOUS LOW FLOW			.02
ANNUAL RUNOFF (CFSM)	1.13	.77	1.05
ANNUAL RUNOFF (INCHES)	15.34	10.48	14.25
10 PERCENT EXCEEDS	9.1	5.8	9.2
50 PERCENT EXCEEDS	.22	.40	.64
90 PERCENT EXCEEDS	.03	.04	.05

a Peaks above base shown in table of peak discharges and stages at continuous-record surface-water-discharge stations.
e Estimated.

SURFACE-WATER RECORDS
Maumee River Basin

04186500 AUGLAIZE RIVER NEAR FORT JENNINGS, OHIO

LOCATION.—Latitude 40°56'55", longitude 84°15'58", in SE 1/4 sec. 15, T.1 S., R.5. E., Putnam County, Hydrologic Unit 04100007, on left bank 200 ft upstream from bridge on U. S. Highway 224, 3.5 mi northeast of Fort Jennings, Ohio, 6 mi upstream from Ottawa River, and 7.3 mi downstream from Jennings Creek.

DRAINAGE AREA.—332 mi²

PERIOD OF RECORD.—August 1921 to December 1935. October 1940 to current year.

REVISED RECORDS.—WSP 744: 1932. WSP 974: 1930(M). WSP 1307: 1922-24(M), 1926-27(M), 1929(M). WSP 1912: Drainage area.

GAGE.—Water-stage recorder. Datum of gage is 713.6 ft above sea level. Prior to Oct. 6, 1930, nonrecording gage at same site and datum.

REMARKS.—Records fair except for periods of estimated record, which are poor. Beginning Jan. 4, 1971, water was diverted at a point 24.3 mi upstream from station into Lake Bresler. Storage in Lake Bresler is available for low-flow augmentation and water supply of city of Lima, in Ottawa River Basin. Net withdrawal totaled 4,502 million gallons, equivalent to a mean withdrawal of 15.0 ft³/s. No releases have been made for low-flow augmentation. Some diversion from Grand Lake to Auglaize River Basin through Miami and Erie Canal into Jennings Creek at a point 9.2 mi upstream from station. Annual figures of runoff are considered to be within 10 percent of natural yield. Water-quality and sediment data formerly collected at this site. National Weather Service gage height telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.8	4.7	11	e5.0	e2.2	133	43	62	105	95	31	39
2	3.4	4.5	11	e10	e2.2	85	41	92	67	62	53	29
3	10	4.9	10	e21	e2.1	59	46	110	50	315	50	23
4	7.4	5.1	9.5	e45	e2.1	42	127	122	57	1280	41	18
5	8.0	5.3	14	73	e2.1	31	72	94	111	670	32	18
6	4.5	5.2	17	121	e2.1	26	49	82	718	318	44	17
7	3.8	4.9	14	54	e2.1	21	44	60	830	192	61	13
8	3.9	4.4	11	26	e2.0	18	1380	51	394	128	55	18
9	4.3	6.1	22	13	e2.0	12	2670	56	223	92	41	15
10	5.3	11	21	7.6	e3.5	9.3	1520	100	147	56	38	15
11	10	11	22	5.6	e5.0	9.5	570	93	76	47	39	33
12	8.2	10	16	4.5	e150	11	387	76	66	50	39	73
13	11	7.9	14	4.2	651	12	268	69	171	53	31	68
14	18	6.0	17	e3.5	327	23	206	58	613	49	24	52
15	18	5.2	26	e3.3	228	49	180	60	686	45	20	47
16	13	5.3	26	e3.2	200	65	145	47	616	41	17	37
17	14	5.8	16	e3.1	285	62	121	45	426	38	16	29
18	11	6.5	9.8	e3.0	356	52	145	44	572	38	18	22
19	11	6.4	e7.0	e2.9	1040	44	150	126	1540	34	27	18
20	10	6.5	e6.0	e2.8	822	92	193	378	1280	30	31	15
21	8.6	7.2	e5.2	e2.8	317	268	405	295	562	24	31	16
22	7.1	10	e4.6	e2.7	279	379	538	152	1250	26	23	23
23	6.1	14	e4.0	e2.6	469	242	590	317	1020	24	22	21
24	5.2	18	e3.5	e2.5	422	152	365	306	425	18	59	32
25	4.4	14	e3.1	e2.4	300	104	261	e180	e1500	15	84	26
26	3.9	9.9	e2.8	e2.4	223	72	192	e150	e1400	18	37	35
27	3.7	13	e2.6	e2.3	239	61	152	e130	e1000	13	114	47
28	3.6	17	e2.4	e2.3	287	65	126	e180	e400	12	175	50
29	3.3	16	e2.2	e2.2	214	87	107	e300	218	14	88	47
30	4.4	10	e2.0	e2.2	---	82	73	e240	153	24	80	40
31	4.8	---	e3.7	e2.2	---	59	---	163	---	28	54	---
TOTAL	233.7	255.8	336.4	438.3	6836.4	2426.8	11166	4238	16676	3849	1475	936
MEAN	7.54	8.53	10.9	14.1	236	78.3	372	137	556	124	47.6	31.2
MAX	18	18	26	121	1040	379	2670	378	1540	1280	175	73
MIN	3.3	4.4	2.0	2.2	2.0	9.3	41	44	50	12	16	13
CFSM	.02	.03	.03	.04	.71	.24	1.12	.41	1.67	.37	.14	.09
IN.	.03	.03	.04	.05	.77	.27	1.25	.47	1.87	.43	.17	.10

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1921 - 2000, BY WATER YEAR (WY)

	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
MEAN	73.9	174	300	436	467	595	504	287	255	178	76.4	83.9																																																																				
MAX	782	1286	1283	2184	1555	2112	1874	1237	1142	1652	477	1090																																																																				
(WY)	1927	1973	1991	1950	1950	1978	1957	1943	1981	1992	1979	1926																																																																				
MIN	5.44	8.53	10.9	8.23	23.6	78.3	51.3	28.7	13.6	20.4	8.10	2.89																																																																				
(WY)	1989	2000	2000	1977	1964	2000	1971	1934	1988	1965	1991	1999																																																																				

SUMMARY STATISTICS

FOR 1999 CALENDAR YEAR

FOR 2000 WATER YEAR

WATER YEARS 1921 - 2000

ANNUAL TOTAL	62991.24	48867.4	
ANNUAL MEAN	173	134	285
HIGHEST ANNUAL MEAN			537
LOWEST ANNUAL MEAN			65.3
HIGHEST DAILY MEAN	6110	Jan 23	2670
LOWEST DAILY MEAN	.77	Sep 14	2.0
ANNUAL SEVEN-DAY MINIMUM	1.1	Sep 19	2.1
INSTANTANEOUS PEAK FLOW			2790
INSTANTANEOUS PEAK STAGE			11.15
INSTANTANEOUS LOW FLOW			2.0
ANNUAL RUNOFF (CFSM)	.52	.40	.71
ANNUAL RUNOFF (INCHES)	7.06	5.48	11.68
10 PERCENT EXCEEDS	388	359	685
50 PERCENT EXCEEDS	21	32	73
90 PERCENT EXCEEDS	3.8	3.5	18

a Peaks above base shown in table of peak discharges and stages at continuous-record surface-water-discharge stations.
e Estimated.

SURFACE-WATER RECORDS
Maumee River Basin

04191500 AUGLAIZE RIVER NEAR DEFIANCE, OHIO

LOCATION.—Latitude 41°14'15", longitude 84°23'57", in NE 1/4 sec. 9, T.3 N. R.4 E., Defiance County, Hydrologic Unit 04100007, on right bank 125 ft downstream from City of Bryant hydroelectric dam, 0.2 mi upstream from Jackson Ditch, and 3 mi south of Defiance, Ohio.

DRAINAGE AREA.—2,318 mi².

PERIOD OF RECORD.—May to August 1903 (gage heights only), April 1915 to current year. Monthly discharges only for some periods, published in WSP 1307.

REVISED RECORDS.—WSP 954: 1941. WSP 1912: Drainage area. WRD OH-72-1: 1966(M).

GAGE.—Water-stage recorder. Datum of gage is 659.70 ft above sea level. May 20 to Aug. 8, 1903, non-recording gage at site 1.8 mi downstream at different datum. Apr. 13, 1915, to Dec. 6, 1933, nonrecording gage near right bank on downstream side of dam at datum 6.00 ft higher, and auxiliary tailwater staff gage near right bank on downstream side of dam at present datum. Oct. 1982 to Nov. 1984 at dam 125 ft upstream, at present datum.

REMARKS.—Records fair. Flow regulated by dam at powerplant at station; reservoir capacity, 9,800 acre-ft. Plant shut down except for occasional gate operation, Jan. 10, 1963 to Sep. 7, 1985. Some diversion by Miami and Erie Canal from Grand Lake into Jennings Creek, tributary to Auglaize River 70 mi upstream from station. Water-quality data formerly collected at this site.

EXTREMES OUTSIDE PERIOD OF RECORD.—Flood of March 1913 reached a stage of 38.8 ft, from reading on powerplant tailwater gage at present datum; discharge, 120,000 ft³/s, from rating curve extended above 51,000 ft³/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30	31	89	227	26	1920	727	683	2170	723	1430	199
2	30	31	76	211	28	1870	615	1240	1210	608	1070	48
3	281	29	67	81	27	1720	628	1410	648	664	1430	82
4	349	26	61	4.8	231	1450	722	1250	607	5090	1070	92
5	102	235	71	7.8	254	175	1240	753	1010	7690	819	89
6	81	65	74	1190	47	45	530	728	9110	3750	866	100
7	79	63	86	1060	47	53	637	652	8740	2040	1290	100
8	77	59	100	840	253	360	3460	477	5240	793	1750	185
9	76	59	114	665	159	569	10300	744	3010	826	2030	47
10	76	52	132	904	232	572	11100	2410	2030	482	1450	628
11	76	44	304	439	112	550	7100	3050	916	345	325	871
12	305	41	101	29	655	512	4930	1630	513	382	560	824
13	82	39	173	30	2360	209	2660	1470	1330	213	180	437
14	67	40	525	147	2220	55	1320	705	7140	232	215	749
15	65	40	687	286	1660	60	983	409	13500	240	191	338
16	65	39	645	284	1610	730	923	401	14600	241	151	217
17	402	36	489	67	1520	1290	893	390	10600	273	159	137
18	86	36	557	51	1510	1630	2410	360	8150	284	158	341
19	76	61	363	51	2750	759	3220	1320	9980	418	164	208
20	69	68	166	51	4200	730	6690	2020	9700	251	190	87
21	68	58	140	51	3580	4600	14900	2220	10400	123	173	87
22	67	101	203	52	3490	4990	11600	1920	9480	152	321	90
23	67	135	132	51	5160	3130	7800	2370	7670	147	85	203
24	67	88	69	51	6900	2450	5480	5200	3080	136	194	537
25	65	54	81	119	8290	1720	2740	2490	7190	127	125	646
26	124	60	74	283	6910	846	1770	2010	11400	120	206	989
27	106	62	165	199	5760	1430	1300	1190	8650	116	693	911
28	87	69	236	27	5260	898	726	2390	3560	106	1220	431
29	48	82	254	27	2690	1730	647	3820	2070	117	1320	380
30	33	86	375	27	---	1100	737	3760	1150	557	643	428
31	32	---	261	26	---	946	---	3210	---	492	440	---
TOTAL	3238	1889	6870	7538.6	67941	39099	108788	52682	174854	27738	20918	10481
MEAN	104	63.0	222	243	2343	1261	3626	1699	5828	895	675	349
MAX	402	235	687	1190	8290	4990	14900	5200	14600	7690	2030	989
MIN	30	26	61	4.8	26	45	530	360	513	106	85	47

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1916 - 2000, BY WATER YEAR (WY)

MEAN	473	1007	1807	2546	2969	4140	3469	1945	1496	841	353	424
MAX	3445	7856	8510	13350	10170	13090	11210	10490	6733	5762	2526	5571
(WY)	1955	1973	1967	1950	1976	1982	1957	1943	1947	1992	1998	1992
MIN	23.6	7.28	9.34	48.5	111	382	242	69.8	101	42.0	27.1	28.9
(WY)	1953	1953	1977	1977	1964	1941	1946	1934	1988	1930	1932	1963

SUMMARY STATISTICS

FOR 1999 CALENDAR YEAR

FOR 2000 WATER YEAR

WATER YEARS 1916 - 2000

ANNUAL TOTAL	482724	522036.6	
ANNUAL MEAN	1323	1426	1774
HIGHEST ANNUAL MEAN			3337
LOWEST ANNUAL MEAN			342
HIGHEST DAILY MEAN	35300	14900	52300
LOWEST DAILY MEAN	26	4.8	.50
ANNUAL SEVEN-DAY MINIMUM	31	27	1.1
INSTANTANEOUS PEAK FLOW		15400	52500
INSTANTANEOUS PEAK STAGE		14.25	27.65
INSTANTANEOUS LOW FLOW		4.8	.50
10 PERCENT EXCEEDS	3520	4320	4940
50 PERCENT EXCEEDS	227	396	438
90 PERCENT EXCEEDS	44	51	39

**SURFACE-WATER RECORDS
Maumee River Basin**

04192500 MAUMEE RIVER NEAR DEFIANCE, OHIO—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.—January 1997 to September 2000 (discontinued).

PERIOD OF DAILY RECORD.—

SUSPENDED SEDIMENT DISCHARGE: January 1997 to September 2000 (discontinued).

INSTRUMENTATION.—Sampler located downstream from streamflow-gaging station, at Florida, Ohio.

REMARKS.—Sediment samples were collected by a local observer on an approximate once daily basis. Sediment loads were calculated using the mean-interval method (Porterfield, George, 1972, Computation of Fluvial-Sediment Discharge: U.S. Geological Survey, Techniques of Water-Resources Investigations, Book 3, Chap. C3, 66 p.). For days with unsteady concentration, discharge, or both, the day was subdivided into hourly intervals and the daily load was calculated by summation of hourly loads. This required interpolation between measured and estimated concentrations.

EXTREMES FOR PERIOD OF DAILY RECORD.—

SEDIMENT CONCENTRATIONS: Maximum daily mean, 1,340 mg/L, Feb. 28, 1997; minimum daily mean, 2 mg/L, Dec. 6 and 7, 1999.

SEDIMENT LOADS: Maximum daily, 201,000 tons, Feb. 28, 1997; minimum daily, 1.9 tons, Dec. 6, 1999.

EXTREMES FOR CURRENT YEAR.—

SEDIMENT CONCENTRATIONS: Maximum daily mean, 857 mg/L, Apr. 21; minimum daily mean, 2 mg/L, Dec. 6 and 7.

SEDIMENT LOADS: Maximum daily, 55,900 tons, Apr. 21; minimum daily, 1.9 tons, Dec. 6.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

[ft³/s, cubic feet per second; (00061), USGS National Water Information System parameter code; μS/cm, microsiemens per centimeter; deg C, degrees Celsius; mg/L, milligrams per liter; --, no data; %, percent; mm, millimeters; *, 10—Stream cross-section sample collected by equal-width-increment (EWI) sampling method]

Date	Time	Discharge, instantaneous (ft ³ /s) (00061)	Specific conductance, field (μS/cm) (00095)	Air temperature (deg C) (00020)	Water temperature (deg C) (00010)	Sediment, suspended (mg/L) (80154)	Sediment, suspended, sieve diameter % finer than .062 mm (70331)	Sampling method, codes* (82398)
June								
	6	18600	529	22.0	17.5	480	95.4	10
	13	4840	591	29.0	24.5	66	--	10

SURFACE-WATER RECORDS
Maumee River Basin

04192500 MAUMEE RIVER NEAR DEFIANCE, OHIO—Continued

WATER-QUALITY RECORDS—CONTINUED

SEDIMENT DISCHARGE, SUSPENDED, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

[cfs, cubic feet per second; mg/L, milligrams per liter; --, no data; e, estimated]

Day	Mean discharge (cfs)	Mean concentration (mg/L)	Sediment discharge (tons per day)	Mean discharge (cfs)	Mean concentration (mg/L)	Sediment discharge (tons per day)	Mean discharge (cfs)	Mean concentration (mg/L)	Sediment discharge (tons per day)
<u>OCTOBER</u>									
1	249	10	7.0	216	9	5.2	334	4	4.0
2	261	13	9.3	222	9	5.1	305	4	3.6
3	282	11	11	192	6	3.3	277	5	4.0
4	727	32	68	177	5	2.4	262	3	2.5
5	503	20	33	349	17	23	287	3	2.6
6	969	36	94	235	10	6.5	336	2	1.9
7	600	26	43	212	6	3.5	346	2	2.0
8	492	21	28	212	7	4.1	428	3	3.6
9	412	21	23	222	9	5.6	479	4	5.3
10	362	19	18	214	9	5.2	526	6	8.1
11	314	16	14	206	8	4.5	623	7	11
12	510	22	35	252	7	5.0	433	6	6.6
13	299	18	14	230	8	4.8	455	4	5.4
14	279	14	11	217	7	4.0	910	9	26
15	239	14	9.3	213	6	3.6	1410	18	71
16	243	13	8.5	206	7	3.8	1890	38	196
17	701	15	29	209	7	4.0	1710	35	160
18	325	16	14	207	7	4.1	1650	33	146
19	319	14	12	233	5	3.2	1260	28	97
20	530	15	22	252	7	4.9	938	21	54
21	415	16	18	237	7	4.3	739	17	33
22	292	15	12	319	9	8.0	687	14	26
23	232	9	5.7	414	9	10	605	14	23
24	223	8	5.0	356	8	8.2	494	14	19
25	227	10	5.8	268	5	3.6	444	14	17
26	268	9	6.4	300	5	3.7	e420	14	16
27	267	12	8.6	284	7	5.5	e400	14	15
28	276	13	9.6	290	4	3.1	e390	14	15
29	241	12	7.5	348	3	2.9	e380	14	14
30	223	8	4.5	344	3	2.9	e360	14	14
31	217	8	4.7	---	---	---	e350	13	12
TOTAL	11497	--	590.9	7636	--	158.0	20128	--	1014.6
<u>JANUARY</u>									
1	e340	9	8.1	e220	8	4.9	4910	155	2070
2	e330	7	6.2	e220	8	4.7	4090	78	862
3	e350	6	5.8	e210	7	4.2	3380	60	552
4	e450	7	8.4	e210	7	3.9	2940	47	374
5	e600	22	36	e210	7	3.7	1640	42	182
6	1510	37	176	e200	6	3.3	1200	38	123
7	1760	33	163	e200	6	3.1	1050	33	92
8	1220	28	101	e200	5	3.0	1110	36	108
9	1200	35	114	e230	5	3.2	1300	41	142
10	1230	38	125	e420	7	7.7	1210	46	150
11	1200	31	99.7	604	8	14	1180	40	126
12	536	25	36	688	12	29	1120	31	95
13	e500	22	29	2130	29	174	932	25	63
14	e450	29	35	2660	48	352	760	23	48
15	e400	36	39	e1900	33	168	808	22	49
16	e380	23	24	e1600	31	134	1130	24	83
17	e350	21	19	e1500	28	113	1760	46	224
18	e340	19	18	e1400	23	86	2080	33	186
19	e320	18	16	e1900	23	119	1590	26	116
20	e300	17	14	e3500	37	345	2120	44	347
21	e290	16	13	e3300	70	621	7760	205	4790
22	e280	15	12	e3000	70	569	9520	231	5980
23	e270	14	10	7590	112	2400	6950	114	2170
24	e260	13	9.5	11500	379	11800	5290	80	1150
25	e250	13	8.6	12500	388	13200	4140	69	763
26	e240	12	7.7	10600	361	10300	2980	64	513
27	e240	11	7.3	9480	357	9150	2830	60	459
28	e230	11	6.6	9500	338	8680	2840	57	439
29	e230	10	6.2	7210	230	4520	4800	85	1120
30	e220	9	5.6	---	---	---	3600	76	745
31	e220	9	5.3	---	---	---	3320	55	492
TOTAL	16496	--	1165.0	94882	--	62815.7	90340	--	24613
<u>FEBRUARY</u>									
<u>MARCH</u>									

**SURFACE-WATER RECORDS
Maumee River Basin**

04192500 MAUMEE RIVER NEAR DEFIANCE, OHIO—Continued

WATER-QUALITY RECORDS—CONTINUED

SEDIMENT DISCHARGE, SUSPENDED, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[cfs, cubic feet per second; mg/L, milligrams per liter; --, no data; e, estimated]

Day	Mean discharge (cfs)	Mean concentration (mg/L)	Sediment discharge (tons per day)	Mean discharge (cfs)	Mean concentration (mg/L)	Sediment discharge (tons per day)	Mean discharge (cfs)	Mean concentration (mg/L)	Sediment discharge (tons per day)
		<u>APRIL</u>			<u>MAY</u>			<u>JUNE</u>	
1	2600	45	316	2330	50	314	7720	118	2470
2	2030	41	223	2970	52	424	6270	84	1430
3	1760	44	209	3570	53	507	4650	63	783
4	1640	43	191	3230	47	407	3820	55	567
5	1890	41	208	2380	40	255	3570	62	665
6	1270	37	127	2180	37	217	14700	373	16600
7	1400	29	110	2080	31	176	14700	365	14700
8	3090	41	409	1850	25	124	9960	200	5450
9	9350	133	3550	1860	22	112	6450	127	2240
10	10900	321	9430	3420	39	404	4680	85	1070
11	8040	202	4550	5770	115	1810	3280	68	597
12	6010	109	1770	4960	99	1340	2440	61	402
13	4800	93	1200	3610	108	1060	4010	66	762
14	3770	102	1030	2680	102	745	10600	247	8460
15	2960	95	758	2010	73	397	23400	631	40200
16	2460	93	618	1870	59	297	25100	488	33000
17	2110	72	412	1730	53	248	20600	327	18300
18	3100	60	504	1570	43	184	17000	243	11200
19	3750	59	602	5190	122	2030	18100	254	12400
20	8060	177	5790	9040	400	9810	15700	198	8400
21	23900	857	55900	8470	250	5760	17100	332	15600
22	23000	574	35800	6800	165	3020	16100	341	14900
23	16600	360	16300	7310	165	3400	12400	223	7480
24	11600	235	7360	12400	312	10500	7700	149	3160
25	8140	167	3690	9440	211	5460	13200	193	7880
26	6350	108	1870	7410	125	2510	24800	401	27000
27	5040	77	1050	5850	78	1240	19300	240	12600
28	4090	68	753	10100	121	3950	12200	180	5940
29	3310	55	488	16600	503	22900	8780	138	3280
30	2830	52	396	14100	272	10400	7120	98	1890
31	---	---	---	10500	180	5100	---	---	---
TOTAL	185850	--	155614	173280	--	95101	355450	--	279426
		<u>JULY</u>			<u>AUGUST</u>			<u>SEPTEMBER</u>	
1	5780	71	1110	1900	39	202	1190	34	110
2	5070	58	799	1640	40	176	795	26	56
3	4360	51	601	1840	40	200	665	21	38
4	6480	77	1570	2100	42	232	610	17	28
5	10700	140	4040	1690	47	216	504	16	22
6	7620	113	2320	1440	58	226	472	18	23
7	5490	88	1300	2540	54	377	490	17	22
8	4060	76	828	3670	80	809	470	16	20
9	3510	69	650	3530	76	723	344	12	11
10	2470	64	426	2660	63	448	741	17	44
11	1920	58	302	1380	56	208	1380	33	131
12	1610	49	211	1300	40	139	2520	58	448
13	1350	45	164	808	33	72	3560	109	1050
14	1140	45	139	698	32	61	5200	71	995
15	1150	50	155	619	33	55	3910	66	689
16	1010	44	119	534	38	55	2750	61	450
17	914	42	102	426	33	38	2120	56	317
18	964	44	116	375	32	32	1790	51	247
19	1040	35	99.9	406	25	28	1560	47	196
20	1040	33	93	590	29	46	1140	43	131
21	752	30	62	479	30	39	899	39	95
22	689	33	61	621	30	49	898	36	88
23	722	25	49	444	20	24	903	40	107
24	677	26	47	626	22	40	3080	122	1040
25	628	25	42	701	29	55	3250	60	535
26	635	20	34	583	20	32	3400	74	679
27	560	14	21	1090	25	81	2730	57	419
28	542	13	19	1970	34	181	1610	53	231
29	525	17	24	2840	47	362	1350	49	178
30	835	23	54	2260	39	239	1250	44	149
31	1050	29	82	1560	33	138	---	---	---
TOTAL	75293	--	15639.9	43320	--	5583	51581	--	8549
YEAR	1125753	--	650270.5						

SURFACE-WATER RECORDS
Maumee River Basin

04193500 MAUMEE RIVER AT WATERVILLE, OHIO

LOCATION.—Latitude 41°30'00", longitude 83°42'46", Lucas County, Hydrologic Unit 04100009, on downstream side of first pier from left end of bridge on State Highway 64 at Waterville, Ohio, 3 mi downstream from Tontogany Creek, and 20.7 mi upstream from mouth.
DRAINAGE AREA.—6,330 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.—November 1898 to December 1901, August 1921 to December 1935, March 1939 to current year. Miami and Erie Canal flow included at Waterville prior to 1930, when the canal was abandoned.

REVISED RECORDS.—WSP 894: 1930(M). WSP 1084: 1946. WSP 1387: 1900(M), 1922-23, 1933. WDR OH-68-1: 1967. WDR OH-70-1: Drainage area. WRD-OH-82-2: 1981.

GAGE.—Water-stage recorder with auxiliary crest-stage gage. Datum of gage is 595.71 ft above sea level. Nov. 19, 1898 to Dec. 31, 1901, Aug. 26, 1921, to July 31, 1930, nonrecording gage; Aug. 1, 1930, to Dec. 31, 1935, water-stage recorder; Mar. 14, 1939, to Mar. 12, 1940, nonrecording gage at same site and datum.

REMARKS.—Records good except for periods of estimated record, which are poor. Satellite telemeter at station. Water-quality and sediment data collected at this site.

EXTREMES FOR PERIOD OF RECORD.—Practically no flow at times prior to June 30, 1929, when entire river flow was being diverted by canal.

EXTREMES OUTSIDE PERIOD OF RECORD.—Flood in March 1913 reached a stage of 19.9 ft, from information by local resident; estimated discharge, 180,000 ft³/s, from rating curve extended above 94,000 ft³/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	164	225	597	e520	e290	6470	3620	2920	9320	6810	1940	1480
2	147	307	587	e500	e280	4820	2770	3950	7410	5990	2400	1050
3	205	450	551	e700	e275	4100	2340	4860	5580	5300	2040	839
4	605	217	509	908	e270	3510	2250	4260	4540	5830	3010	692
5	659	181	553	1070	e265	2550	1860	3310	3770	11200	2180	582
6	691	418	630	1120	e260	1540	2220	2650	11000	9410	1990	529
7	804	330	570	2170	e255	1370	1260	2440	17500	6690	3660	557
8	708	291	641	1580	e250	1140	2320	2330	12600	5140	4320	522
9	602	378	753	1470	e250	1570	8350	2070	8190	4060	4470	472
10	515	331	945	1440	e500	1200	12500	5850	5530	3100	3520	707
11	428	193	758	1650	e700	1310	11100	8020	4370	2300	2300	2250
12	360	348	925	822	e900	1470	7460	7260	3330	1800	1340	3380
13	657	392	774	e700	e1500	1250	6150	5090	4750	1650	1320	4260
14	378	426	909	e620	e2900	1120	5050	3950	7180	1270	895	4920
15	326	349	2160	e580	e2300	1230	3820	2470	22300	1230	822	5430
16	335	335	2710	e540	e2000	1240	3040	2160	26400	1170	676	3510
17	426	288	2430	e510	e1800	1900	2460	2150	23200	1080	511	2800
18	835	309	2180	e490	e1600	2110	2810	1990	19100	887	508	1860
19	492	356	1880	e460	e2000	2450	3970	5750	20200	944	427	1890
20	509	470	1700	e440	e3600	2790	7450	12400	18000	1150	436	1460
21	629	386	1020	e420	e4500	9650	34200	11800	19500	894	605	1180
22	626	451	e880	e400	e4100	12400	34300	8960	20200	683	546	887
23	414	553	e820	e380	e320	9730	23400	8160	15300	633	692	1110
24	218	830	e760	e370	15000	7030	15200	14000	10800	688	462	3380
25	235	444	e720	e350	16700	5780	10800	12600	12500	683	776	4220
26	259	600	e680	e340	14400	4280	7890	8800	26000	650	750	4010
27	222	634	e640	e330	11600	3380	6070	7200	23300	650	800	3550
28	302	538	e620	e320	11600	3970	5320	10100	15500	579	1580	2130
29	328	576	e600	e310	9730	4660	3890	22200	10600	682	2480	1560
30	294	577	e580	e305	---	5280	3380	18600	8440	1460	2830	1310
31	265	---	e540	e300	---	3840	---	13200	---	2470	1890	---
TOTAL	13638	12183	30622	22115	119145	115140	237250	221500	396410	87083	52176	62527
MEAN	440	406	988	713	4108	3714	7908	7145	13210	2809	1683	2084
MAX	835	830	2710	2170	16700	12400	34300	22200	26400	11200	4470	5430
MIN	147	181	509	300	250	1120	1260	1990	3330	579	427	472
MED	414	382	753	510	1800	2790	4510	5750	11800	1270	1340	1520
CFSM	.07	.06	.16	.11	.65	.59	1.25	1.13	2.09	.44	.27	.33
IN.	.08	.07	.18	.13	.70	.68	1.39	1.30	2.33	.51	.31	.37

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930 - 2000, BY WATER YEAR (WY)

	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
MEAN	1406	3021	5320	6945	7837	10930	9750	6002	4364	2450	1219	1124																																																											
MAX	9041	19010	23830	34010	30000	38210	25890	29540	24030	11200	9665	10320																																																											
(WY)	1955	1993	1967	1950	1976	1982	1957	1943	1981	1992	1998	1992																																																											
MIN	95.5	196	177	235	424	1759	914	587	231	207	146	127																																																											
(WY)	1964	1965	1964	1945	1934	1941	1946	1934	1988	1930	1941	1963																																																											

SUMMARY STATISTICS

	FOR 1999 CALENDAR YEAR	FOR 2000 WATER YEAR	WATER YEARS 1930 - 2000
ANNUAL TOTAL	1653177	1369789	
ANNUAL MEAN	4529	3743	5013
HIGHEST ANNUAL MEAN			9370
LOWEST ANNUAL MEAN			938
HIGHEST DAILY MEAN	73700	34300	113000
LOWEST DAILY MEAN	25	147	17
ANNUAL SEVEN-DAY MINIMUM	63	261	47
INSTANTANEOUS PEAK FLOW		38600	121000
INSTANTANEOUS PEAK STAGE		9.51	17.18
INSTANTANEOUS LOW FLOW		71	17
ANNUAL RUNOFF (CFSM)	.72	.59	.79
ANNUAL RUNOFF (INCHES)	9.72	8.05	10.76
10 PERCENT EXCEEDS	12800	10900	14000
50 PERCENT EXCEEDS	830	1480	1650
90 PERCENT EXCEEDS	250	334	260

e Estimated.

**SURFACE-WATER RECORDS
Maumee River Basin**

04193500 MAUMEE RIVER AT WATERVILLE, OHIO—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.—April 1950 to current year.

PERIOD OF DAILY RECORD.—

CHLORIDE: October 1987 to September 1994.

NITROGEN, NITRITE + NITRATE: October 1987 to September 1994.

NITROGEN, AMMONIA + ORGANIC: October 1987 to September 1994.

PHOSPHORUS: October 1987 to September 1994.

SUSPENDED SEDIMENT DISCHARGE: April 1950 to September 1984. October 1987 to current year.

INSTRUMENTATION.—Refrigerated water-quality pumping sampler, operated by Heidelberg College Water Quality Laboratory, from October 1987 to September 1994. Sampler located at station 04193490.

REMARKS.—Sediment samples were collected by a local observer on an approximate once daily basis. Sediment loads were calculated using the mean-interval method (Porterfield, George, 1972, Computation of Fluvial-Sediment Discharge: U.S. Geological Survey, Techniques of Water-Resources Investigations, Book 3, Chap. C3, 66 p.). For days with unsteady concentration, discharge, or both, the day was subdivided into hourly intervals and the daily load was calculated by summation of hourly loads. This required interpolation between measured and estimated concentrations.

EXTREMES FOR PERIOD OF DAILY RECORD.—

SEDIMENT CONCENTRATIONS: Maximum daily mean, 2,240 mg/L, Mar. 26, 1954; minimum daily mean, 1 mg/L, on many days during 1953, 1955, and 1963.

SEDIMENT LOADS: Maximum daily mean, 300,000 tons, Feb. 24, 1990; minimum daily mean, 0.26 ton, Sep. 18, 1955.

EXTREMES FOR CURRENT YEAR.—

SEDIMENT CONCENTRATIONS: Maximum daily mean, 811 mg/L, Apr. 22; minimum daily mean, 4 mg/L, Oct. 19, Nov. 17, 18, Dec. 6 and 7.

SEDIMENT LOADS: Maximum daily mean, 75,300 tons, Apr. 22; minimum daily mean, 3.4 tons Nov. 17.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

[ft³/s, cubic feet per second; (00061), USGS National Water Information System parameter code; μS/cm, microsiemens per centimeter; deg C, degrees Celsius; mg/L, milligrams per liter; --, no data; μg/L, micrograms per liter; %, percent; mm, millimeters; *, 10—Stream cross-section sample collected by equal-width-increment (EWI) sampling method, 50—Point sample collected from flow tank]

Date	Time	Discharge, instantaneous (ft ³ /s) (00061)	pH, whole water, field (standard units) (00400)	Specific conductance, field (μS/cm) (00095)	Air temperature (deg C) (00020)	Water temperature (deg C) (00010)	Chloride, dissolved (mg/L as Cl) (00940)	Nitrogen, ammonia plus organic, total (mg/L as N) (00625)	Nitrogen, nitrite plus nitrate, dissolved (mg/L as N) (00631)	Phosphorus, total (mg/L as P) (00665)
May										
	26	1045	8980	7.6	506	16.0	17.5	28	1.6	10
	26	1215	8950	--	--	--	--	28	1.6	10
Aug.										
	2	1430	2470	8.7	504	26.0	25.5	--	--	--
	2	1540	2500	--	--	--	--	--	--	--

Date	Alachlor, total recoverable (μg/L) (77825)	Ametryne, total (μg/L) (82184)	Atrazine, water, unfiltered, recoverable (μg/L) (39630)	Bromacil, water, whole, recoverable (μg/L) (30234)	Butachlor, water, whole, recoverable (μg/L) (30235)	Butylate, water, whole, recoverable (μg/L) (30236)	Carboxin, water, whole, recoverable (μg/L) (30245)	Cyanazine, total (μg/L) (81757)	Cycloate, water, recoverable (μg/L) (30254)
May									
	26	--	--	--	--	--	--	--	--
	26	--	--	--	--	--	--	--	--
Aug.									
	2	<.1	<.1	.9	<.2	<.1	<.1	<.2	<.1
	2	<.1	<.1	.9	<.2	<.1	<.1	<.2	<.1

Date	Deethylatrazine, water, whole, total (μg/L) (75981)	Deisopropylatrazine, water, whole, total (μg/L) (75980)	Diphenamide, water, whole, recoverable (μg/L) (30255)	Hexazinone, water, whole, recoverable (μg/L) (30264)	Metolachlor, water, whole, total recoverable (μg/L) (82612)	Metribuzin, water, whole, total recoverable (μg/L) (82611)	Prometon, total (μg/L) (39056)	Prometryne, total (μg/L) (39057)	Propachlor, water, whole, recoverable (μg/L) (30295)
May									
	26	--	--	--	--	--	--	--	--
	26	--	--	--	--	--	--	--	--
Aug.									
	2	.26	<.2	<.1	<.2	.2	<.1	<.2	<.1
	2	.24	<.2	<.1	<.2	.2	<.1	<.2	<.1

SURFACE-WATER RECORDS
Maumee River Basin

04193500 MAUMEE RIVER AT WATERVILLE, OHIO—Continued

WATER-QUALITY RECORDS—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[µg/L, micrograms per liter; (39024), USGS National Water Information System parameter code; mg/L, milligrams per liter; %, percent; mm, millimeters; *, 10—Stream cross-section sample collected by equal-width-increment (EWI) sampling method, 50—Point sample collected from flow tank; --, no data]

Date	Propazine, total (µg/L) (39024)	Simazine, total (µg/L) (39055)	Simetryne, total (µg/L) (39054)	Terbacil, water, whole, recoverable (µg/L) (30311)	Trifluralin, total recoverable (µg/L) (39030)	Vernolate, water, whole, recoverable (µg/L) (30324)	Sediment, suspended (mg/L) (80154)	Sediment, suspended sieve diameter % finer than .062 mm (70331)	Sampling method, codes* (82398)
May									
26	--	--	--	--	--	--	133	97.1	10
26	--	--	--	--	--	--	--	--	50
Aug.									
2	<.1	<.1	<.1	<.2	<.1	<.1	29	--	10
2	<.1	<.1	<.1	<.2	<.1	<.1	--	--	50

SURFACE-WATER RECORDS
Maumee River Basin

04193500 MAUMEE RIVER AT WATERVILLE, OHIO—Continued

WATER-QUALITY RECORDS—CONTINUED

SEDIMENT DISCHARGE, SUSPENDED, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

[cfs, cubic feet per second; mg/L, milligrams per liter; --, no data; e, estimated]

Day	Mean discharge (cfs)	Mean concentration (mg/L)	Sediment discharge (tons per day)	Mean discharge (cfs)	Mean concentration (mg/L)	Sediment discharge (tons per day)	Mean discharge (cfs)	Mean concentration (mg/L)	Sediment discharge (tons per day)
<u>OCTOBER</u>									
1	164	12	5.3	225	7	4.3	597	29	47
2	147	12	4.9	307	7	6.1	587	20	31
3	205	13	7.1	450	7	9.1	551	13	20
4	605	14	23	217	8	4.3	509	9	12
5	659	14	25	181	8	4.0	553	6	8.9
6	691	15	28	418	8	9.1	630	4	7.2
7	804	16	34	330	8	6.9	570	4	6.7
8	708	16	31	291	8	6.1	641	5	8.3
9	602	17	27	378	7	7.7	753	5	11
10	515	15	21	331	7	6.5	945	6	15
11	428	13	15	193	7	3.7	758	6	13
12	360	12	11	348	7	6.6	925	7	17
13	657	10	19	392	6	6.8	774	7	15
14	378	9	9.3	426	6	6.7	909	9	25
15	326	8	7.2	349	5	5.0	2160	21	132
16	335	7	6.6	335	5	4.4	2710	44	321
17	426	7	8.7	288	4	3.4	2430	40	264
18	835	6	13	309	4	3.5	2180	32	191
19	492	4	5.7	356	5	4.9	1880	26	133
20	509	5	7.0	470	6	8.2	1700	21	97
21	629	7	12	386	8	8.7	1020	17	47
22	626	9	16	451	11	13	e880	14	33
23	414	12	13	553	14	21	e820	11	25
24	218	11	6.3	830	18	40	e760	9	18
25	235	9	5.7	444	24	28	e720	8	16
26	259	7	5.1	600	31	51	e680	26	49
27	222	6	3.6	634	40	68	e640	74	127
28	302	5	4.5	538	51	74	e620	49	82
29	328	7	6.1	576	60	92	e600	27	44
30	294	9	7.2	577	43	67	e580	16	25
31	265	8	5.4	---	---	---	e540	14	21
TOTAL	13638	--	393.7	12183	--	580.0	30622	--	1862.1
<u>JANUARY</u>									
1	e520	13	19	e290	46	36	6470	151	2640
2	e500	13	17	e280	36	27	4820	130	1680
3	e700	12	23	e275	28	21	4100	111	1230
4	908	11	28	e270	22	16	3510	96	905
5	1070	11	31	e265	17	12	2550	82	563
6	1120	10	32	e260	13	9.4	1540	70	292
7	2170	20	121	e255	10	7.2	1370	60	222
8	1580	18	78	e250	8	5.5	1140	52	159
9	1470	14	55	e250	6	4.3	1570	44	188
10	1440	11	44	e500	6	7.5	1200	38	123
11	1650	14	64	e700	9	17	1310	33	116
12	822	6	13	e900	16	39	1470	28	112
13	e700	6	11	e1500	29	117	1250	24	81
14	e620	7	11	e2900	43	339	1120	21	62
15	e580	8	12	e2300	27	169	1230	26	88
16	e540	9	13	e2000	15	80	1240	32	106
17	e510	10	13	e1800	8	41	1900	33	170
18	e490	11	15	e1600	7	30	2110	30	171
19	e460	13	16	e2000	7	37	2450	29	194
20	e440	14	17	e3600	13	124	2790	31	262
21	e420	16	19	e4500	26	316	9650	75	2050
22	e400	19	20	e4100	53	588	12400	136	4510
23	e380	21	22	9320	108	2880	9730	143	3740
24	e370	24	24	15000	222	9170	7030	105	1990
25	e350	28	26	16700	368	16700	5780	85	1320
26	e340	32	29	14400	320	12400	4280	66	766
27	e330	36	32	11600	263	8250	3380	56	506
28	e320	41	35	11600	217	6800	3970	53	570
29	e310	47	39	9730	178	4680	4660	55	706
30	e305	53	44	---	---	---	5280	48	678
31	e300	57	46	---	---	---	3840	41	424
TOTAL	22115	--	969	119145	--	62922.9	115140	--	26624
<u>FEBRUARY</u>									
<u>MARCH</u>									

**SURFACE-WATER RECORDS
Maumee River Basin**

04193500 MAUMEE RIVER AT WATERVILLE, OHIO—Continued

WATER-QUALITY RECORDS—CONTINUED

SEDIMENT DISCHARGE, SUSPENDED, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[cfs, cubic feet per second; mg/L, milligrams per liter; --, no data; e, estimated]

Day	Mean discharge (cfs)	Mean concentration (mg/L)	Sediment discharge (tons per day)	Mean discharge (cfs)	Mean concentration (mg/L)	Sediment discharge (tons per day)	Mean discharge (cfs)	Mean concentration (mg/L)	Sediment discharge (tons per day)
		<u>APRIL</u>			<u>MAY</u>			<u>JUNE</u>	
1	3620	48	465	2920	41	321	9320	125	3170
2	2770	55	409	3950	39	425	7410	92	1830
3	2340	49	309	4860	42	556	5580	70	1050
4	2250	43	261	4260	42	486	4540	56	684
5	1860	35	173	3310	34	308	3770	48	494
6	2220	36	213	2650	30	211	11000	96	3330
7	1260	38	134	2440	39	258	17500	349	16200
8	2320	45	295	2330	38	242	12600	257	8830
9	8350	69	1670	2070	23	133	8190	132	2940
10	12500	199	6790	5850	64	1090	5530	81	1210
11	11100	303	9080	8020	97	2100	4370	73	859
12	7460	220	4430	7260	68	1340	3330	62	558
13	6150	169	2820	5090	48	654	4750	58	750
14	5050	134	1820	3950	45	478	7180	72	1500
15	3820	106	1090	2470	38	253	22300	372	24200
16	3040	90	738	2160	32	184	26400	659	47100
17	2460	85	564	2150	26	153	23200	474	29800
18	2810	84	642	1990	22	117	19100	336	17300
19	3970	84	899	5750	44	889	20200	272	14800
20	7450	95	2380	12400	177	5960	18000	258	12500
21	34200	566	55300	11800	332	10600	19500	260	13800
22	34300	811	75300	8960	177	4330	20200	346	18700
23	23400	511	32600	8160	113	2520	15300	295	12200
24	15200	304	12500	14000	175	6770	10800	168	4990
25	10800	195	5760	12600	205	7020	12500	126	4620
26	7890	126	2690	8800	136	3220	26000	327	23400
27	6070	86	1420	7200	104	2020	23300	365	23200
28	5320	68	974	10100	107	3420	15500	214	9080
29	3890	55	578	22200	396	23800	10600	130	3740
30	3380	45	413	18600	333	16800	8440	99	2250
31	---	---	---	13200	204	7330	---	---	---
TOTAL	237250	--	222717	221500	--	103988	396410	--	305085
		<u>JULY</u>			<u>AUGUST</u>			<u>SEPTEMBER</u>	
1	6810	81	1480	1940	34	188	1480	39	156
2	5990	71	1140	2400	33	212	1050	30	85
3	5300	66	946	2040	25	137	839	27	60
4	5830	68	1100	3010	54	452	692	27	50
5	11200	97	2960	2180	47	277	582	28	44
6	9410	89	2260	1990	30	162	529	28	40
7	6690	87	1560	3660	45	466	557	28	42
8	5140	81	1120	4320	90	1050	522	27	38
9	4060	80	872	4470	87	1050	472	23	30
10	3100	80	663	3520	76	721	707	27	56
11	2300	77	474	2300	66	410	2250	41	258
12	1800	68	331	1340	58	210	3380	48	442
13	1650	53	237	1320	51	180	4260	56	648
14	1270	43	145	895	44	107	4920	66	884
15	1230	37	122	822	39	87	5430	75	1090
16	1170	32	100	676	37	67	3510	79	740
17	1080	44	128	511	35	48	2800	74	560
18	887	44	105	508	33	45	1860	60	299
19	944	38	96	427	31	36	1890	62	317
20	1150	34	104	436	30	35	1460	65	258
21	894	27	64	605	28	46	1180	57	182
22	683	26	48	546	27	40	887	44	105
23	633	24	41	692	25	47	1110	42	127
24	688	24	45	462	24	30	3380	68	676
25	683	21	39	776	23	48	4220	79	900
26	650	16	29	750	22	44	4010	73	794
27	650	14	24	800	21	44	3550	74	708
28	579	12	20	1580	28	127	2130	96	540
29	682	17	31	2480	54	373	1560	82	346
30	1460	42	188	2830	71	545	1310	64	225
31	2470	59	398	1890	53	272	---	---	---
TOTAL	87083	--	16870	52176	--	7556	62527	--	10700
YEAR	1369789	--	760267.7						

SURFACE-WATER RECORDS
Portage River Basin

04195500 PORTAGE RIVER AT WOODVILLE, OHIO

LOCATION.—Latitude 41°26'58", longitude 83°21'41", in sec. 28, T.6 N., R.13 E., Sandusky County, Hydrologic Unit 04100010, on left bank at upstream side of bridge on U.S. Highway 20 in Woodville, Ohio, 600 ft downstream from unnamed right bank tributary, and 10.3 mi upstream from Sugar Creek.

DRAINAGE AREA.—428 mi².

PERIOD OF RECORD.—July 1928 to December 1935, October 1939 to current year.

REVISED RECORDS.—WSP 894: 1929-30. WSP 1207: 1933. WSP 1387: 1931, 1933. WSP 1912: Drainage area.

GAGE.—Water-stage recorder. Datum of gage is 614.75 ft above sea level. Prior to Oct. 8, 1933, nonrecording gage, Oct. 9, 1933, to Dec. 30, 1935, water-stage recorder, Oct. 17 to Nov. 29, 1939, nonrecording gage, all at same site and datum.

REMARKS.—Records good except for periods of estimated record, which are poor. Flow supplemented by water imported from Maumee River Basin for municipal supply for city of Bowling Green 16 mi upstream. The importation of this water began Sept. 1, 1951. Water-quality data formerly collected at this site 800 ft downstream. Sediment data formerly collected at this site. National Weather Service gage height telemeter at station.

EXTREMES OUTSIDE PERIOD OF RECORD.—Flood in March 1913 reached a stage of 17 ft, from information by local residents; discharge, 17,000 ft³/s, from rating curve extended above 11,500 ft³/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	37	9.3	14	e17	e18	404	210	103	309	193	423	21
2	31	13	12	e20	e17	302	177	653	202	136	233	18
3	20	20	11	e45	e17	216	168	817	147	192	258	16
4	25	47	12	246	e16	176	228	448	112	559	353	14
5	33	39	13	551	e16	153	272	283	98	568	190	13
6	42	28	15	308	e16	132	190	228	449	277	218	11
7	31	20	19	170	e16	110	156	186	666	166	804	10
8	21	15	29	109	e16	97	919	156	325	113	589	10
9	15	12	24	94	e15	92	2040	138	189	84	284	10
10	13	11	22	83	e15	90	1050	209	129	67	149	42
11	12	12	29	81	e30	84	492	300	95	62	91	63
12	12	12	51	76	e100	81	356	209	159	57	64	138
13	15	11	49	64	e450	84	265	137	245	46	50	105
14	20	9.9	70	56	e300	122	220	97	191	41	40	64
15	28	10	313	e50	e240	215	194	71	624	38	33	48
16	38	11	404	e42	e200	206	169	55	848	51	27	47
17	44	9.3	268	e37	e250	164	145	51	534	53	24	43
18	59	9.0	167	e35	e400	145	134	51	621	43	23	35
19	62	8.7	107	e32	e340	130	125	758	1300	34	23	27
20	54	10	85	e30	e300	362	143	1380	776	27	21	20
21	36	12	e50	e28	e250	1630	1530	639	1320	20	18	18
22	24	12	e40	e27	e350	938	1380	335	2620	18	15	17
23	19	11	e32	e25	e800	542	792	225	1090	16	13	25
24	16	12	e28	e24	e2700	386	460	335	404	15	72	183
25	13	11	e25	e23	2970	308	310	403	3030	13	86	370
26	11	14	e22	e22	2080	247	231	233	5250	11	47	196
27	11	14	e21	e21	1110	248	178	146	2510	11	36	115
28	13	15	e19	e20	890	490	149	498	724	11	43	72
29	14	19	e18	e19	582	480	128	2010	402	16	45	51
30	12	17	e18	e19	---	382	110	1240	274	341	34	41
31	10	---	e17	e18	---	268	---	571	---	1000	25	---
TOTAL	791	454.2	2004	2392	14504	9284	12921	12965	25643	4279	4331	1843
MEAN	25.5	15.1	64.6	77.2	500	299	431	418	855	138	140	61.4
MAX	62	47	404	551	2970	1630	2040	2010	5250	1000	804	370
MIN	10	8.7	11	17	15	81	110	51	95	11	13	10
CFSM	.06	.04	.15	.18	1.17	.70	1.01	.98	2.00	.32	.33	.14
IN.	.07	.04	.17	.21	1.26	.81	1.12	1.13	2.23	.37	.38	.16

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1928 - 2000, BY WATER YEAR (WY)

MEAN	82.5	195	347	461	520	756	645	405	295	152	83.2	86.2
MAX	722	1595	1722	2129	1793	2542	1965	1685	1875	821	1601	1088
(WY)	1951	1973	1991	1952	1976	1982	1957	1943	1981	1958	1998	1981
MIN	2.96	3.61	4.37	2.24	2.00	1.18	41.7	25.4	9.29	2.81	3.09	3.67
(WY)	1935	1935	1935	1945	1934	1941	1946	1934	1988	1930	1933	1944
(+)	6.9	6.4	5.9	6.4	6.5	6.2	6.7	6.2	6.7	7.2	7.3	8.2
MEAN#	18.6	8.7	58.7	70.8	494	293	424	412	848	131	133	53.2
CFSM#	.04	.02	.14	.12	1.15	.68	.99	.96	1.98	.31	.31	.12
IN#	.05	.02	.16	.19	1.24	.79	1.11	1.11	2.21	.35	.36	.14

SUMMARY STATISTICS FOR 1999 CALENDAR YEAR FOR 2000 WATER YEAR WATER YEARS 1928 - 2000

ANNUAL TOTAL	105297.1	91411.2	
ANNUAL MEAN	288	250 (#243)	#332
HIGHEST ANNUAL MEAN			628
LOWEST ANNUAL MEAN			81.4
HIGHEST DAILY MEAN	8150	Jan 24	11100
LOWEST DAILY MEAN	8.0	Sep 17	.40
ANNUAL SEVEN-DAY MINIMUM	8.7	Sep 12	.93
INSTANTANEOUS PEAK FLOW			5560
INSTANTANEOUS PEAK STAGE			10.31
INSTANTANEOUS LOW FLOW			8.7
ANNUAL RUNOFF (CFSM)	.67		.58
ANNUAL RUNOFF (INCHES)	9.15		7.95 (#7.73)
10 PERCENT EXCEEDS	721	599	841
50 PERCENT EXCEEDS	42	70	69
90 PERCENT EXCEEDS	11	13	8.1

a Peaks above base shown in table of peak discharges and stages at continuous-record surface-water-discharge stations.

e Estimated.

Adjusted for diversion.

(+) Diversion in cubic feet per second, from Maumee River Basin for municipal supply; furnished by City of Bowling Green.

SURFACE-WATER RECORDS
Portage River Basin

04195820 PORTAGE RIVER AT ELMORE, OHIO

LOCATION.—Latitude 41°29'28", longitude 83°13'29", Ottawa County, Hydrologic Unit 04100010, on right bank 500 ft upstream from State Route 590, 0.4 mi upstream from Sugar Creek, and 4.2 mi east of Elmore.

DRAINAGE AREA.—494 mi².

PERIOD OF RECORD.—August 1998 to current year.

GAGE.—Water-stage recorder. Datum of gage is 576 ft above sea level.

REMARKS.—Records fair except for periods of estimated record, which are poor. Flow supplemented by water imported from Maumee River Basin for municipal supply for city of Bowling Green 30 mi upstream. The importation of this water began Sept. 1, 1951.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25	11	23	e17	e19	614	278	208	560	317	665	20
2	50	18	21	e17	e19	447	219	963	384	219	392	18
3	28	25	20	e30	e18	302	199	1200	268	580	354	17
4	35	36	21	272	e18	220	238	754	193	945	525	14
5	27	61	23	784	e17	174	375	511	185	902	319	13
6	44	37	25	507	e17	133	249	420	563	488	454	12
7	40	26	24	279	e17	102	187	349	953	296	1530	11
8	29	20	34	160	e16	80	950	285	550	191	1020	10
9	21	17	41	123	e16	71	2350	253	335	137	527	10
10	15	15	39	108	e16	66	1410	349	226	107	282	52
11	14	15	34	97	e40	59	741	493	156	88	159	113
12	14	15	60	90	e100	50	533	431	494	79	103	188
13	17	15	78	73	e600	48	397	281	657	67	69	173
14	21	14	106	e52	e450	92	320	177	549	55	52	96
15	20	13	393	e48	e350	214	284	119	1080	51	41	60
16	32	13	598	e42	e300	238	243	87	1270	54	33	48
17	47	13	420	e38	e450	171	207	72	991	68	30	47
18	52	12	259	e35	e600	137	188	95	1240	59	28	38
19	69	13	151	e33	e500	123	180	1210	1830	44	25	29
20	65	14	103	e31	e430	400	240	1960	1220	36	24	23
21	42	15	e60	e30	e350	1960	1920	1030	1680	29	21	19
22	26	17	e50	e28	e440	1280	1810	604	3060	23	18	17
23	19	17	e40	e26	e1000	782	1160	420	1530	21	17	23
24	16	17	e35	e25	3670	543	753	510	712	20	23	143
25	14	18	e30	e24	3450	426	526	631	3440	18	130	585
26	12	21	e24	e23	2510	324	401	410	5610	17	58	335
27	10	23	e21	e22	1480	317	312	258	3160	15	40	184
28	9.6	21	e20	e21	1220	666	261	789	1080	15	34	104
29	11	23	e19	e20	859	707	227	2620	652	63	47	63
30	12	27	e18	e20	---	574	195	1690	451	424	36	46
31	12	---	e18	e19	---	386	---	920	---	1300	26	---
TOTAL	848.6	602	2808	3094	18972	11706	17353	20099	35079	6728	7082	2511
MEAN	27.4	20.1	90.6	99.8	654	378	578	648	1169	217	228	83.7
MAX	69	61	598	784	3670	1960	2350	2620	5610	1300	1530	585
MIN	9.6	11	18	17	16	48	180	72	156	15	17	10
CFSM	.06	.04	.18	.20	1.32	.76	1.17	1.31	2.37	.44	.46	.17
IN.	.06	.05	.21	.23	1.43	.88	1.31	1.51	2.64	.51	.53	.19

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1998 - 2000, BY WATER YEAR (WY)

	1998	1999	2000	1998	1999	2000	1998	1999	2000	1998	1999	2000
MEAN	30.4	32.4	64.0	548	578	623	1046	389	718	135	645	67.8
MAX	33.4	44.8	90.6	996	654	869	1515	648	1169	217	1686	107
(WY)	1999	1999	2000	1999	2000	1999	1999	2000	2000	2000	1998	1998
MIN	27.4	20.1	37.4	99.8	499	378	578	131	266	52.2	21.1	13.1
(WY)	2000	2000	1999	2000	1999	2000	2000	1999	1999	1999	1999	1999
(+)	6.9	6.4	5.9	6.4	6.5	6.2	6.7	6.2	6.7	7.2	7.3	8.2
MEAN#	20.5	18.7	84.7	93.4	648	372	571	642	1162	210	221	75.5
CFSM#	.04	.03	.17	.19	1.31	.75	1.16	1.30	2.35	.43	.45	.15
IN#	.05	.03	.20	.22	1.42	.87	1.29	1.50	2.62	.49	.52	.17

SUMMARY STATISTICS

	FOR 1999 CALENDAR YEAR	FOR 2000 WATER YEAR	WATER YEARS 1998 - 2000
ANNUAL TOTAL	136171.5	126882.6	
ANNUAL MEAN	373	347 (#340)	#352
HIGHEST ANNUAL MEAN			371
LOWEST ANNUAL MEAN			347
HIGHEST DAILY MEAN	8410	5610	9940
LOWEST DAILY MEAN	8.3	9.6	8.3
ANNUAL SEVEN-DAY MINIMUM	8.8	11	8.8
INSTANTANEOUS PEAK FLOW		5760	10200
INSTANTANEOUS PEAK STAGE		9.79	13.92
INSTANTANEOUS LOW FLOW		9.6	6.6
ANNUAL RUNOFF (CFSM)	.76	.70	.73
ANNUAL RUNOFF (INCHES)	10.25	9.55 (#9.38)	#9.68
10 PERCENT EXCEEDS	938	956	1010
50 PERCENT EXCEEDS	41	88	60
90 PERCENT EXCEEDS	13	17	16

a Peaks above base shown in table of peak discharges and stages at continuous-record surface-water-discharge stations.

e Estimated.

Adjusted for diversion.

(+) Diversion in cubic feet per second, from Maumee River Basin for municipal supply; furnished by City of Bowling Green.

SURFACE-WATER RECORDS
Sandusky River Basin

04196000 SANDUSKY RIVER NEAR BUCYRUS, OHIO

LOCATION.—Latitude 40°48'13", longitude 83°00'21", in NE 1/4 sec. 10, T.3 S., R.16 E., Crawford County, Hydrologic Unit 04100011, on right bank at downstream side of bridge on township road, 1 mi upstream from unnamed left bank tributary, 1.5 mi west of Bucyrus, Ohio, and 12 mi downstream from Loss Creek.

DRAINAGE AREA.—88.8 mi².

PERIOD OF RECORD.—August 1925 to November 1935, July 1938 to December 1951, December 1963 to September 1981, October 1995 to current year.

REVISED RECORDS.—WSP 744: 1925-32. WSP 874: 1938. WSP 1307: 1926(M), 1928(M), 1931, 1932(M), 1934-35(M), 1939, 1940(M), 1946(M). WSP 1912: Drainage area.

GAGE.—Water-stage recorder. Datum of gage is 955.04 ft above sea level. Prior to May 11, 1940, nonrecording gage.

REMARKS.—Records fair except for periods of estimated record, which are poor. Low flow slightly affected by operation of reservoirs, 5.3 mi to 6.0 mi upstream from station, for municipal supply of Bucyrus. Water-quality and sediment data formerly collected at this site.

EXTREMES OUTSIDE PERIOD OF RECORD.—Flood of March 23, 1913 reached a stage of 14.5 ft, from floodmarks. Flood of January 22, 1959, reached a stage of 11.9 ft, from floodmarks; discharge, 13,500 ft³/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	5.2	4.6	e4.9	e3.5	72	38	37	71	18	9.5	6.2
2	8.0	37	4.2	e4.9	e3.5	62	51	68	51	15	9.8	5.7
3	5.1	73	4.1	e50	e3.4	53	144	70	39	23	11	5.2
4	10	51	4.3	1160	e3.4	48	531	48	31	79	8.4	5.4
5	4.6	30	13	503	e3.4	42	259	43	43	43	7.5	6.1
6	3.5	20	9.8	132	e3.3	36	117	45	426	24	59	7.1
7	3.4	13	10	74	e3.3	27	105	37	165	17	504	9.0
8	13	9.4	9.4	50	e3.3	18	1690	34	71	13	145	7.3
9	26	7.6	7.9	38	e3.3	17	1450	34	48	12	52	6.3
10	22	7.0	32	36	e3.2	15	314	46	36	11	31	7.2
11	19	6.1	60	41	e380	11	173	33	29	11	22	12
12	10	5.3	33	e25	e370	14	115	28	27	10	16	8.6
13	14	4.5	21	e17	e130	16	82	26	34	9.3	13	9.0
14	8.2	4.4	218	e12	e230	19	65	21	32	21	11	8.1
15	5.2	4.6	403	e10	e200	26	54	18	57	58	9.4	8.8
16	6.1	4.1	145	e7.8	e150	28	46	17	69	47	7.6	8.0
17	8.0	4.0	79	e7.0	e200	43	52	17	193	21	8.4	6.6
18	7.1	3.9	e30	e6.0	268	40	91	17	267	57	20	5.5
19	5.6	3.7	e20	e5.0	565	30	58	162	258	75	17	4.5
20	5.3	4.8	e16	e4.7	176	150	56	168	81	29	14	4.2
21	4.8	4.2	e14	e4.5	104	326	131	68	125	19	9.7	4.4
22	4.8	4.5	e12	e4.4	221	113	212	47	138	14	7.6	5.2
23	4.7	4.6	e10	e4.2	726	71	121	43	72	11	11	5.8
24	4.5	5.1	e9.0	e4.0	408	55	81	46	43	9.2	8.5	25
25	4.1	3.9	e7.6	e3.8	432	55	61	41	46	7.6	24	54
26	3.8	10	e7.0	e3.8	226	46	49	28	38	7.4	13	33
27	3.8	5.8	e6.4	e3.7	136	48	41	23	28	6.9	19	22
28	3.4	6.0	e6.0	e3.6	130	68	37	252	22	8.5	25	16
29	4.2	6.3	e5.4	e3.6	89	64	33	1210	23	7.1	15	12
30	4.4	5.2	e5.2	e3.5	---	54	29	278	21	9.8	9.9	9.6
31	4.7	---	e5.0	e3.5	---	44	---	115	---	8.7	7.8	---
TOTAL	248.3	354.2	1211.9	2230.9	5174.6	1711	6286	3120	2584	702.5	1126.1	327.8
MEAN	8.01	11.8	39.1	72.0	178	55.2	210	101	86.1	22.7	36.3	10.9
MAX	26	73	403	1160	726	326	1690	1210	426	79	504	54
MIN	3.4	3.7	4.1	3.5	3.2	11	29	17	21	6.9	7.5	4.2
CFSM	.09	.13	.44	.81	2.01	.62	2.36	1.13	.97	.26	.41	.12
IN.	.10	.15	.51	.93	2.17	.72	2.63	1.31	1.08	.29	.47	.14

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1925 - 2000, BY WATER YEAR (WY)

	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
MEAN	22.9	55.5	108	144	144	186	152	93.2	76.3	35.5	24.9	21.5																																																																
MAX	278	271	405	635	339	471	408	252	428	184	212	116																																																																
(WY)	1927	1973	1928	1950	1976	1978	1964	1969	1947	1966	1979	1926																																																																
MIN	1.28	1.34	1.39	3.93	2.29	32.9	9.64	4.44	1.93	.84	1.34	.38																																																																
(WY)	1935	1935	1935	1977	1934	1981	1935	1934	1934	1995	1995	1995																																																																

SUMMARY STATISTICS

FOR 1999 CALENDAR YEAR

FOR 2000 WATER YEAR

WATER YEARS 1925 - 2000

ANNUAL TOTAL	29857.8	25077.3	88.1
ANNUAL MEAN	81.8	68.5	145
HIGHEST ANNUAL MEAN			1973
LOWEST ANNUAL MEAN			1934
HIGHEST DAILY MEAN	1640	Jan 22	4600
LOWEST DAILY MEAN	1.8	Jan 8	20.4
ANNUAL SEVEN-DAY MINIMUM	2.9	Sep 13	.34
INSTANTANEOUS PEAK FLOW			.36
INSTANTANEOUS PEAK STAGE			5800
INSTANTANEOUS LOW FLOW			9.83
ANNUAL RUNOFF (CFSM)	.92		.60
ANNUAL RUNOFF (INCHES)	12.51		.99
10 PERCENT EXCEEDS	213		13.49
50 PERCENT EXCEEDS	12		194
90 PERCENT EXCEEDS	3.6		21
			3.0

a Peaks above base shown in table of peak discharges and stages at continuous-record surface-water-discharge stations.
e Estimated.

SURFACE-WATER RECORDS
Sandusky River Basin

04196800 TYMOCHTEE CREEK AT CRAWFORD, OHIO

LOCATION.—Latitude 40°55'22", longitude 83°20'56". in SE 1/4 sec. 27, T.1 S., R.13 E., Wyandot County, Hydrologic Unit 04100011, on right bank at downstream side of bridge on State Highway 199 (formerly U.S. Highway 23), 0.4 mi northwest of Crawford, Ohio, 1.5 mi downstream from Lick Run, 2.7 mi upstream from Little Tymochtee Creek, and 3 mi southeast of Carey, Ohio.

DRAINAGE AREA.—229 mi².

PERIOD OF RECORD.—Occasional low-flow measurements, water years 1961-63, and annual maximum, water years 1961-64, June 1964 to current year.

REVISED RECORDS.—WRD Ohio 1969: 1964(P), 1966(M), 1967(P).

GAGE.—Water-stage recorder. Datum of gage is 785.86 ft above sea level.

REMARKS.—Records fair except for periods of estimated record, which are poor. Beginning Mar. 9, 1972, water is diverted at a point 29.4 mi upstream from station into Killdeer Reservoir. Storage is available for low-flow augmentation. There were no low-flow augmentation releases during the year. During the year, withdrawals totaled 324 million gallons, equivalent to a mean annual withdrawal of 1.37 ft³/s. Return flow through Abraham Marsh totaled 142 million gallons, equivalent to a mean annual release of 0.60 ft³/s. Water-quality and sediment data formerly collected at this site.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.23	.41	2.4	e6.0	e4.5	132	69	48	207	26	37	13
2	.19	3.0	2.2	e5.8	e4.4	103	55	48	118	23	60	9.5
3	.18	3.7	2.2	e8.0	e4.3	82	53	49	77	27	52	7.9
4	.41	3.0	2.4	162	e4.2	62	68	53	56	44	28	6.4
5	.27	5.8	4.1	494	e4.1	50	196	55	49	348	17	5.0
6	.24	4.6	4.9	408	e4.0	43	205	52	389	198	17	3.9
7	.26	6.6	4.7	156	e3.9	37	129	47	490	95	141	3.0
8	.31	6.0	4.8	82	e3.9	33	860	44	243	58	122	2.5
9	.60	4.6	4.4	49	e3.8	28	1360	39	119	39	70	1.9
10	.94	3.7	11	35	e3.7	25	1870	37	75	28	44	3.5
11	.78	2.9	15	29	e15	24	1020	34	53	23	26	6.3
12	.68	2.2	22	e24	e50	23	352	29	42	19	17	14
13	1.3	2.0	13	e21	e330	21	220	27	60	17	13	19
14	1.7	1.9	45	e17	e250	20	154	22	398	17	9.5	48
15	1.1	1.7	75	e14	e180	23	118	19	641	25	7.9	37
16	1.1	1.5	83	e12	e160	26	104	18	476	20	6.7	25
17	1.8	1.5	82	e10	e180	28	87	16	378	18	5.4	20
18	1.9	1.5	63	e9.0	e250	28	109	15	879	25	5.3	17
19	1.6	1.5	50	e8.0	e500	32	203	94	1140	22	5.8	12
20	1.0	1.5	43	e7.2	e700	62	160	198	1150	17	10	10
21	.75	1.4	30	e6.6	647	210	173	245	640	14	7.5	12
22	.61	1.4	e16	e6.2	473	326	489	134	338	11	6.2	9.1
23	.55	1.5	e14	e6.0	825	185	700	88	262	9.0	6.1	24
24	.46	1.6	e12	e5.6	900	115	410	92	136	7.7	5.7	415
25	.36	1.6	e10	e5.4	796	83	221	74	88	6.7	5.4	474
26	.33	2.5	e9.0	e5.2	634	75	147	53	68	5.5	7.8	250
27	.57	2.4	e8.0	e5.0	397	69	104	39	57	4.8	7.6	130
28	.82	2.1	e7.6	e4.9	257	64	80	117	47	5.1	7.1	77
29	.87	2.0	e7.0	e4.8	188	70	66	350	38	6.2	17	46
30	.76	2.1	e6.8	e4.6	---	92	56	700	30	17	24	27
31	.51	---	e6.4	e4.5	---	89	---	517	---	18	18	---
TOTAL	23.18	78.21	660.9	1615.8	7772.8	2260	9838	3353	8744	1194.0	807.0	1729.0
MEAN	.75	2.61	21.3	52.1	268	72.9	328	108	291	38.5	26.0	57.6
MAX	1.9	6.6	83	494	900	326	1870	700	1150	348	141	474
MIN	.18	.41	2.2	4.5	3.7	20	53	15	30	4.8	5.3	1.9

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 2000, BY WATER YEAR (WY)

	30.1	138	219	237	304	408	331	204	150	110	34.4	32.3
MEAN	30.1	138	219	237	304	408	331	204	150	110	34.4	32.3
MAX	278	844	1104	777	823	1392	946	686	780	741	201	370
(WY)	1987	1993	1991	1974	1975	1978	1972	1996	1981	1992	1992	1981
MIN	.084	.86	1.78	1.66	37.2	35.1	32.8	11.7	1.78	1.04	.48	.27
(WY)	1965	1992	1992	1977	1972	1983	1971	1988	1988	1965	1965	1964

SUMMARY STATISTICS

	FOR 1999 CALENDAR YEAR		FOR 2000 WATER YEAR		WATER YEARS 1964 - 2000	
ANNUAL TOTAL	35036.03		38075.89			
ANNUAL MEAN	96.0		104		183	
HIGHEST ANNUAL MEAN					330	
LOWEST ANNUAL MEAN					72.2	
HIGHEST DAILY MEAN	3180	Jan 24	1870	Apr 10	6280	Dec 31 1990
LOWEST DAILY MEAN	.15	Sep 28	.18	Oct 3	.00	Aug 10 1964
ANNUAL SEVEN-DAY MINIMUM	.18	Sep 23	.25	Oct 1	.00	Oct 23 1964
INSTANTANEOUS PEAK FLOW			2040		6700	
INSTANTANEOUS PEAK STAGE			6.32		11.21	
INSTANTANEOUS LOW FLOW			.18		.00	
10 PERCENT EXCEEDS	284		332		495	
50 PERCENT EXCEEDS	7.7		23		33	
90 PERCENT EXCEEDS	.61		1.6		1.5	

a Peaks above base shown in table of peak discharges and stages at continuous-record surface-water-discharge stations.
e Estimated.

SURFACE-WATER RECORDS
Sandusky River Basin

04197100 HONEY CREEK AT MELMORE, OHIO

LOCATION.—Latitude 41°01'20", longitude 83°06'35", Seneca County, Hydrologic Unit 04100011, at bridge on State Highways 67 and 100 at Melmore, Ohio, 1.5 mi upstream from Buckeye Creek.

DRAINAGE AREA.—149 mi².

PERIOD OF RECORD.—Annual maximum, water years 1961-75, February 1976 to current year.

GAGE.—Water-stage recorder. Elevation of gage is 818 ft above sea level (from topographic map).

REMARKS.—Records fair except for periods of estimated record, which are poor. Water-quality data formerly collected at this site.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.7	.84	4.0	e12	e14	113	37	31	174	19	7.0	40
2	2.6	2.7	3.9	e13	e13	86	35	58	102	17	55	31
3	2.3	15	3.6	45	e13	66	43	80	71	52	49	24
4	4.2	46	3.4	462	e13	54	141	71	53	333	28	19
5	3.1	41	4.2	623	e12	47	173	57	44	238	19	15
6	3.8	29	5.7	395	e12	41	113	49	62	90	20	12
7	2.9	21	5.8	167	e12	35	127	42	131	50	58	10
8	2.5	16	8.3	101	e11	32	1420	37	83	33	103	8.5
9	2.6	12	9.6	71	e11	31	1650	32	53	26	58	8.1
10	2.9	9.5	16	59	e11	29	826	31	40	22	32	17
11	2.7	7.4	41	65	e20	28	426	98	32	19	22	85
12	2.3	5.3	54	58	e230	27	240	91	29	14	16	115
13	2.2	4.3	37	e45	e150	26	157	61	30	13	11	69
14	2.6	3.6	130	e36	e100	33	116	45	39	12	7.3	45
15	3.0	3.3	344	e33	e70	46	90	36	76	37	4.6	33
16	3.5	3.4	357	e30	e90	46	73	30	161	75	3.7	26
17	3.4	3.4	208	e28	e120	51	61	27	172	51	3.7	21
18	3.9	3.2	95	e26	e200	49	53	25	724	31	3.7	17
19	3.3	3.5	59	e24	e300	47	47	63	1140	32	3.1	14
20	3.0	3.4	e40	e23	e350	183	44	365	887	27	2.9	12
21	2.9	3.2	e35	e22	e180	437	46	249	367	20	2.7	37
22	2.6	3.0	e30	e21	347	308	77	113	165	15	2.5	36
23	2.4	2.7	e25	e20	1070	154	101	109	100	12	99	201
24	2.7	2.4	e22	e19	1290	104	83	607	63	9.5	2100	1190
25	2.1	2.4	e19	e18	1130	80	65	585	52	6.9	1940	924
26	1.7	3.5	e17	e17	772	64	54	232	45	4.8	942	420
27	1.5	3.7	e16	e16	426	58	46	110	37	4.2	488	165
28	1.3	3.4	e15	e16	261	57	40	271	30	4.3	250	92
29	1.2	3.8	e14	e15	164	63	35	760	26	4.2	127	61
30	1.0	3.9	e13	e15	---	54	31	817	22	5.7	81	46
31	.94	---	e12	e14	---	44	---	422	---	6.6	55	---
TOTAL	80.84	265.84	1647.5	2509	7392	2493	6450	5604	5010	1284.2	6594.2	3793.6
MEAN	2.61	8.86	53.1	80.9	255	80.4	215	181	167	41.4	213	126
MAX	4.2	46	357	623	1290	437	1650	817	1140	333	2100	1190
MIN	.94	.84	3.4	12	11	26	31	25	22	4.2	2.5	8.1
CFSM	.02	.06	.36	.54	1.71	.54	1.44	1.21	1.12	.28	1.43	.85
IN.	.02	.07	.41	.63	1.85	.62	1.61	1.40	1.25	.32	1.65	.95

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1976 - 2000, BY WATER YEAR (WY)

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	
MEAN	28.1	99.8	157	158	241	270	238	116	116	69.8	46.3	36.6									
MAX	186	550	518	465	601	765	540	340	740	373	233	242									
(WY)	1991	1993	1978	1993	1976	1978	1979	1997	1981	1992	1998	1981									
MIN	.71	2.51	1.99	1.31	54.2	40.4	44.4	8.69	1.05	.46	1.52	.84									
(WY)	1989	1995	1977	1977	1999	1981	1976	1988	1988	1988	1993	1995									

SUMMARY STATISTICS

FOR 1999 CALENDAR YEAR

FOR 2000 WATER YEAR

WATER YEARS 1976 - 2000

ANNUAL TOTAL	25769.99	43124.18	
ANNUAL MEAN	70.6	118	131
HIGHEST ANNUAL MEAN			189
LOWEST ANNUAL MEAN			48.1
HIGHEST DAILY MEAN	2360	Jan 23	4000
LOWEST DAILY MEAN	.73	Sep 28	.07
ANNUAL SEVEN-DAY MINIMUM	.90	Sep 22	.09
INSTANTANEOUS PEAK FLOW			2980
INSTANTANEOUS PEAK STAGE			9.36
INSTANTANEOUS LOW FLOW			.84
ANNUAL RUNOFF (CFSM)	.47		.79
ANNUAL RUNOFF (INCHES)	6.43		10.77
10 PERCENT EXCEEDS	175		302
50 PERCENT EXCEEDS	9.4		33
90 PERCENT EXCEEDS	1.5		3.3

a Peaks above base shown in table of peak discharges and stages at continuous-record surface-water-discharge stations.
e Estimated.

SURFACE-WATER RECORDS
Sandusky River Basin

04197170 ROCK CREEK AT TIFFIN, OHIO

LOCATION.—Latitude 41°06'49", longitude 83°10'06", Seneca County, Hydrologic Unit 04100011, on left bank 0.05 mi downstream from bridge on Rebecca Street, at Heidelberg College, Tiffin, Ohio.

DRAINAGE AREA.—34.6 mi².

PERIOD OF RECORD.—June 1983 to current year.

GAGE.—Water-stage recorder. Elevation of gage is 740 ft above sea level (from topographic map).

REMARKS.—Records fair except for periods of estimated record, which are poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.55	1.1	1.3	3.3	e2.3	14	8.7	8.7	8.9	4.1	20	3.4
2	.56	4.2	1.4	3.9	e2.2	11	8.4	23	6.5	3.8	15	3.0
3	.84	4.6	1.4	14	e2.1	9.8	13	24	5.4	12	9.3	2.8
4	1.2	2.5	1.4	223	e2.1	9.0	72	13	4.7	12	5.8	2.9
5	.73	2.1	1.9	92	e2.0	8.3	50	11	7.8	7.2	3.9	2.5
6	.71	2.4	1.6	22	e2.0	7.7	19	9.5	15	4.9	11	2.2
7	.71	1.9	1.4	11	e1.9	7.1	25	9.0	17	4.2	25	2.1
8	1.0	1.7	1.3	7.9	e1.9	6.9	765	7.5	9.1	3.6	12	2.1
9	1.1	1.5	1.1	6.5	e1.9	6.7	221	6.5	6.1	3.2	6.4	2.1
10	1.3	1.5	3.5	6.0	e1.8	6.4	52	6.5	5.0	3.5	4.3	4.9
11	1.0	1.3	3.1	7.6	e10	6.3	29	5.4	4.3	3.2	3.4	30
12	.87	1.4	2.5	7.2	e50	6.7	20	5.1	5.0	2.7	2.7	25
13	1.2	1.4	1.9	6.4	e23	6.7	15	4.8	5.4	2.5	2.2	28
14	.73	1.4	37	5.3	e17	13	13	4.5	6.8	2.8	2.1	9.0
15	1.1	1.4	106	4.7	e14	16	11	4.4	12	2.6	2.1	5.2
16	1.1	1.3	64	4.4	e17	14	10	4.2	49	2.4	1.9	3.9
17	1.7	1.2	26	4.1	e28	26	9.6	4.2	242	2.3	1.9	3.5
18	1.7	1.2	11	3.8	e41	18	9.0	4.4	587	2.1	1.8	3.0
19	1.4	1.3	7.3	e3.5	e60	13	8.4	7.1	393	2.1	1.7	2.7
20	1.4	1.4	5.9	e3.4	e25	115	9.2	6.7	61	2.0	1.6	4.7
21	1.5	1.4	5.1	e3.2	e16	141	14	6.6	25	2.1	1.5	7.9
22	1.7	1.4	4.5	e3.1	101	38	21	5.4	17	1.9	1.5	6.8
23	1.8	1.4	4.1	e2.9	393	21	13	7.1	10	1.7	143	126
24	1.7	1.4	3.8	e2.8	239	15	10	29	8.6	1.5	466	800
25	1.7	1.4	3.5	e2.7	295	12	9.1	16	9.7	1.4	150	193
26	1.9	2.3	3.5	e2.7	94	10	8.4	8.4	8.2	1.4	25	35
27	1.9	1.7	3.5	e2.6	47	11	8.0	6.0	6.7	1.4	12	15
28	1.9	1.4	3.3	e2.5	33	13	7.9	63	5.4	2.2	8.2	8.8
29	1.9	1.4	3.3	e2.4	20	13	7.5	154	5.0	9.6	5.8	6.5
30	1.6	1.4	3.3	e2.4	---	13	7.1	45	4.6	10	4.3	5.3
31	.94	---	3.2	e2.3	---	10	---	15	---	16	3.7	---
TOTAL	39.44	52.0	322.1	469.6	1543.2	618.6	1474.3	525.0	1551.2	132.4	955.1	1347.3
MEAN	1.27	1.73	10.4	15.1	53.2	20.0	49.1	16.9	51.7	4.27	30.8	44.9
MAX	1.9	4.6	106	223	393	141	765	154	587	16	466	800
MIN	.55	1.1	1.1	2.3	1.8	6.3	7.1	4.2	4.3	1.4	1.5	2.1
CFSM	.04	.05	.30	.44	1.54	.58	1.42	.49	1.49	.12	.89	1.30
IN.	.04	.06	.35	.50	1.66	.67	1.59	.56	1.67	.14	1.03	1.45

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 2000, BY WATER YEAR (WY)

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
MEAN	9.23	28.8	35.7	40.1	59.4	49.5	53.4	28.0	24.2	14.6	12.2	12.8					
MAX	50.3	145	172	98.5	122	138	92.7	87.6	90.8	82.0	88.8	99.5					
(WY)	1991	1993	1991	1993	1990	1984	1994	1997	1997	1992	1998	1992					
MIN	1.27	1.73	2.09	10.2	13.0	13.6	17.9	2.29	1.12	.55	1.37	.83					
(WY)	2000	2000	1992	1992	1993	1989	1988	1988	1988	1988	1991	1995					

SUMMARY STATISTICS	FOR 1999 CALENDAR YEAR	FOR 2000 WATER YEAR	WATER YEARS 1984 - 2000
ANNUAL TOTAL	5444.05	9030.24	
ANNUAL MEAN	14.9	24.7	30.5
HIGHEST ANNUAL MEAN			48.2
LOWEST ANNUAL MEAN			11.6
HIGHEST DAILY MEAN	556	Jan 22	800
LOWEST DAILY MEAN	.55	Oct 1	.55
ANNUAL SEVEN-DAY MINIMUM	.76	Oct 1	.76
INSTANTANEOUS PEAK FLOW			1220
INSTANTANEOUS PEAK STAGE			7.20
INSTANTANEOUS LOW FLOW			.49
ANNUAL RUNOFF (CFSM)	.43		.71
ANNUAL RUNOFF (INCHES)	5.85	9.71	11.97
10 PERCENT EXCEEDS	27	36	58
50 PERCENT EXCEEDS	2.0	5.1	6.2
90 PERCENT EXCEEDS	1.1	1.4	1.4

SURFACE-WATER RECORDS
Sandusky River Basin

04198000 SANDUSKY RIVER NEAR FREMONT, OHIO

LOCATION.—Latitude 41°18'28", longitude 83°09'32", in sec. 17, T.4 N., R.15 E., Sandusky County, Hydrologic Unit 04100011, on left bank at downstream side of county road bridge, 2.3 mi upstream from Ballville diversion dam, 2.5 mi downstream from Wolf Creek, and 3.5 mi southwest of Fremont, Ohio.

DRAINAGE AREA.—1,251 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.—November 1898 to March 1901 (gage height and discharge measurements only, published as "at Fremont"), October 1923 to December 1935, July 1938 to current year. Monthly discharge only for October 1923, published in WSP 1307.

REVISED RECORDS.—WSP 744: 1931-32. WSP 874: 1938. WSP 1144: 1924-30. WSP 1387: 1925, 1928-29, 1931-35. WSP 1912: Drainage area.

GAGE.—Water-stage recorder. Datum of gage is 626.3 ft above sea level. Nov. 18, 1898, to Mar. 10, 1901, nonrecording gage at site 4 mi downstream at different datum. Nov. 8, 1923, to Sep. 5, 1930, nonrecording gage at present site and datum.

REMARKS.—Records good except for periods of estimated record, which are poor. Water-quality data collected at this site.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	43	35	49	e120	e84	1190	514	407	e2200	242	691	151
2	34	46	49	e110	e78	881	447	711	e1150	205	839	120
3	33	127	46	e110	e76	696	495	817	688	214	628	98
4	45	168	46	1500	e72	580	755	740	498	434	453	83
5	58	220	53	3490	e70	498	1390	735	434	829	292	70
6	45	225	70	3280	e66	431	1710	664	1670	888	405	60
7	41	191	71	1780	e64	378	1170	593	e1800	600	858	e52
8	43	150	84	907	e62	338	8370	545	e1940	365	1640	e50
9	43	116	82	606	e60	314	10800	497	e1000	251	1510	e88
10	42	94	101	473	e90	289	8220	457	e610	199	753	e240
11	39	81	184	400	e300	265	6530	396	e440	184	431	e400
12	38	72	323	391	e1800	267	3280	626	e350	161	291	e900
13	67	65	314	374	e2800	255	1690	516	e330	138	212	e1000
14	69	57	425	319	e1500	318	1210	352	e370	131	169	e1200
15	60	51	1440	266	e1000	412	936	270	e960	163	144	e700
16	50	48	1980	216	e800	393	763	223	e1510	324	125	e430
17	56	45	1550	e190	e1000	462	651	200	2230	467	112	e200
18	64	44	964	e180	e1200	468	579	185	4660	333	106	e140
19	56	44	600	e170	e1600	429	555	606	9250	237	101	e130
20	51	44	e300	e160	e2100	840	715	1390	6270	178	97	e150
21	49	43	e240	e150	e1200	2130	1310	1820	5150	225	91	e200
22	44	43	e220	e140	e1000	2100	1040	1230	2660	178	90	e280
23	41	e43	e200	e130	e2500	1600	1550	769	1550	127	380	e450
24	39	42	e180	e120	e6600	1020	1660	1210	1100	101	2310	e800
25	38	41	e170	e120	7930	755	1140	1530	1450	82	3120	e1500
26	39	48	e160	e110	6000	606	780	996	1080	70	1970	2500
27	37	62	e150	e110	3710	562	615	570	636	63	1010	1270
28	34	51	e140	e100	2360	577	515	924	453	59	602	723
29	35	47	e130	e100	1620	653	451	5870	359	101	380	489
30	35	49	e130	e94	---	659	409	5380	294	2040	255	355
31	34	---	e120	e90	---	602	---	e4100	---	1150	184	---
TOTAL	1402	2392	10571	16306	47742	20968	60250	35329	53092	10739	20249	14829
MEAN	45.2	79.7	341	526	1646	676	2008	1140	1770	346	653	494
MAX	69	225	1980	3490	7930	2130	10800	5870	9250	2040	3120	2500
MIN	33	35	46	90	60	255	409	185	294	59	90	50
CFSM	.04	.06	.27	.42	1.32	.54	1.61	.91	1.41	.28	.52	.40
IN.	.04	.07	.31	.48	1.42	.62	1.79	1.05	1.58	.32	.60	.44

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1924 - 2000, BY WATER YEAR (WY)

	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
MEAN	219	573	1076	1566	1916	2309	1834	1062	825	458	235	256																																																																	
MAX	2521	4413	5495	7659	7504	8261	5524	3654	6091	3479	1660	3713																																																																	
(WY)	1927	1993	1991	1930	1984	1978	1957	1969	1981	1992	1958	1981																																																																	
MIN	9.94	25.4	32.6	53.5	60.3	319	144	100	43.4	30.9	22.4	13.5																																																																	
(WY)	1964	1954	1964	1961	1964	1941	1946	1941	1988	1934	1952	1953																																																																	

SUMMARY STATISTICS FOR 1999 CALENDAR YEAR FOR 2000 WATER YEAR WATER YEARS 1924 - 2000

ANNUAL TOTAL	229291	293869	1022
ANNUAL MEAN	628	803	2167
HIGHEST ANNUAL MEAN			1984
LOWEST ANNUAL MEAN			275
HIGHEST DAILY MEAN	14000	Jan 23	36000
LOWEST DAILY MEAN	20	Sep 28	5.0
ANNUAL SEVEN-DAY MINIMUM	22	Sep 22	6.3
INSTANTANEOUS PEAK FLOW			36500
INSTANTANEOUS PEAK STAGE			16.14
INSTANTANEOUS LOW FLOW			4.4
ANNUAL RUNOFF (CFSM)	.50	.64	.82
ANNUAL RUNOFF (INCHES)	6.82	8.74	11.10
10 PERCENT EXCEEDS	1720	1800	2720
50 PERCENT EXCEEDS	150	336	274
90 PERCENT EXCEEDS	37	48	39

a Peaks above base shown in table of peak discharges and stages at continuous-record surface-water-discharge stations.
 e Estimated.

SURFACE-WATER RECORDS
Sandusky River Basin

04198000 SANDUSKY RIVER NEAR FREMONT, OHIO—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.—Water years 1951-56, 1978 to current year.

PERIOD OF DAILY RECORD.—

CHLORIDE: February 1988 to September 1994.

NITROGEN, NITRITE + NITRATE: February 1988 to September 1994.

NITROGEN, AMMONIA + ORGANIC: February 1988 to September 1994.

PHOSPHORUS: February 1988 to September 1994.

SUSPENDED SEDIMENT DISCHARGE: Water years 1951-56, 1978 to current year.

INSTRUMENTATION.—Refrigerated water-quality pumping sampler, operated by Heidelberg College Water Quality Laboratory, from February 1988 to September 1994.

REMARKS.—Sediment samples were collected by a local observer on an approximate once daily basis. Sediment loads were calculated using the mean-interval method (Porterfield, George, 1972, Computation of Fluvial-Sediment Discharge: U.S. Geological Survey, Techniques of Water-Resources Investigations, Book 3, Chap. C3, 66 p.). For days with unsteady concentration, discharge, or both, the day was subdivided into half-hour intervals and the daily load was calculated by summing the loads for these half-hour intervals. This required interpolation between measured and estimated concentrations.

EXTREMES FOR PERIOD OF DAILY RECORD.—

SEDIMENT CONCENTRATIONS: Maximum daily mean, 2,420 mg/L, June 9, 1981; minimum daily mean, 1 mg/L, on many days during 1951-56, 1980, 1981, 1988, and 1992.

SEDIMENT LOADS: Maximum daily, 124,000 tons, June 14, 1981; minimum daily, less than 0.05 ton, on several days during 1952, 1954, and 1989.

EXTREMES FOR CURRENT YEAR.—

SEDIMENT CONCENTRATIONS: Maximum daily mean, 666 mg/L, June 19; minimum daily mean, 6 mg/L, Dec. 1 and 2.

SEDIMENT LOADS: Maximum daily, 18,500 tons, Apr. 9; minimum daily, 0.78 ton, Nov. 1.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

[ft³/s, cubic feet per second; (00061), USGS National Water Information System parameter code; μS/cm, microsiemens per centimeter; deg C, degrees Celsius; mg/L, milligrams per liter; --, no data; %, percent; mm, millimeters; *, 10—Stream cross-section sample collected by equal-width-increment (EWI) sampling method, 50—Point sample collected from flow tank]

Date	Time	Discharge, instantaneous (ft ³ /s) (00061)	pH, water, whole, field (standard units) (00400)	Specific conductance, field (μS/cm) (00095)	Air temperature (deg C) (00020)	Water temperature (deg C) (00010)	Chloride, dissolved (mg/L as Cl) (00940)
May							
	25	1490	7.6	560	25.0	19.0	32
	25	1470	--	--	--	--	34

Date	Nitrogen, ammonia plus organic, total (mg/L as N) (00625)	Nitrogen, nitrite plus nitrate, dissolved (mg/L as N) (00631)	Phosphorus, total (mg/L as P) (00665)	Sediment, suspended (mg/L) (80154)	Sediment, suspended sieve diameter % finer than .062 mm (70331)	Sampling method, codes* (82398)
May						
	2.0	9.4	.43	229	98.8	10
	2.0	13	.39	--	--	50

SURFACE-WATER RECORDS
Sandusky River Basin

04198000 SANDUSKY RIVER NEAR FREMONT, OHIO—Continued

WATER-QUALITY RECORDS—CONTINUED

SEDIMENT DISCHARGE, SUSPENDED, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

[cfs, cubic feet per second; mg/L, milligrams per liter; --, no data; e, estimated]

Day	Mean discharge (cfs)	Mean concentration (mg/L)	Sediment discharge (tons per day)	Mean discharge (cfs)	Mean concentration (mg/L)	Sediment discharge (tons per day)	Mean discharge (cfs)	Mean concentration (mg/L)	Sediment discharge (tons per day)	
		<u>OCTOBER</u>			<u>NOVEMBER</u>			<u>DECEMBER</u>		
1	43	12	1.4	35	8	.78	49	6	.82	
2	34	10	.88	46	9	1.2	49	6	.84	
3	33	10	.88	127	24	8.5	46	7	.87	
4	45	11	1.3	168	21	9.4	46	9	1.1	
5	58	12	1.8	220	32	19	53	11	1.6	
6	45	11	1.4	225	26	16	70	15	2.9	
7	41	10	1.1	191	24	12	71	20	3.8	
8	43	11	1.2	150	22	8.7	84	25	5.8	
9	43	12	1.3	116	19	6.0	82	27	6.0	
10	42	11	1.3	94	17	4.3	101	18	5.0	
11	39	11	1.1	81	15	3.3	184	26	14	
12	38	10	1.1	72	14	2.7	323	36	32	
13	67	10	1.8	65	18	3.2	314	27	23	
14	69	9	1.7	57	14	2.2	425	27	35	
15	60	9	1.5	51	13	1.8	1440	110	452	
16	50	9	1.2	48	13	1.7	1980	164	889	
17	56	9	1.4	45	13	1.6	1550	171	720	
18	64	9	1.5	44	13	1.6	964	126	331	
19	56	9	1.4	44	13	1.5	600	93	152	
20	51	11	1.6	44	13	1.5	e300	67	55	
21	49	11	1.5	43	12	1.4	e240	48	31	
22	44	10	1.2	43	13	1.5	e220	35	21	
23	41	10	1.1	e43	14	1.6	e200	25	14	
24	39	10	1.0	42	13	1.4	e180	19	9.0	
25	38	11	1.1	41	11	1.3	e170	17	7.6	
26	39	11	1.2	48	10	1.3	e160	15	6.6	
27	37	11	1.1	62	9	1.5	e150	14	5.7	
28	34	11	1.0	51	8	1.1	e140	13	4.9	
29	35	11	1.0	47	7	.93	e130	12	4.2	
30	35	10	.95	49	7	.89	e130	11	3.9	
31	34	9	.84	---	---	---	e120	10	3.3	
TOTAL	1402	--	38.85	2392	--	119.90	10571	--	2842.93	
		<u>JANUARY</u>			<u>FEBRUARY</u>			<u>MARCH</u>		
1	e120	10	3.1	e84	9	2.1	1190	96	310	
2	e110	9	2.6	e78	9	1.9	881	71	170	
3	e110	10	2.9	e76	9	1.8	696	53	99.8	
4	1500	118	692	e72	9	1.7	580	46	71	
5	3490	272	2560	e70	8	1.6	498	41	55	
6	3280	218	1940	e66	8	1.4	431	38	44	
7	1780	174	841	e64	8	1.3	378	36	37	
8	907	138	340	e62	7	1.3	338	38	35	
9	606	110	180	e60	7	1.2	314	34	29	
10	473	86	110	e90	8	2.0	289	29	22	
11	400	68	74	e300	25	20	265	24	17	
12	391	50	53	e1800	81	396	267	20	14	
13	374	38	38	e2800	212	1600	255	16	11	
14	319	29	25	e1500	188	762	318	19	17	
15	266	22	16	e1000	142	382	412	23	25	
16	216	17	9.8	e800	106	230	393	19	20	
17	e190	16	8.0	e1000	88	238	462	26	33	
18	e180	15	7.3	e1200	129	417	468	22	28	
19	e170	15	6.7	e1600	186	802	429	17	20	
20	e160	14	6.1	e2100	169	958	840	47	146	
21	e150	14	5.5	e1200	143	463	2130	158	914	
22	e140	13	5.0	e1000	129	347	2100	128	725	
23	e130	13	4.5	e2500	248	1670	1600	92	404	
24	e120	12	4.0	e6600	365	6510	1020	71	198	
25	e120	12	3.9	7930	296	6320	755	64	130	
26	e110	12	3.4	6000	251	4070	606	52	85	
27	e110	11	3.3	3710	204	2050	562	43	65	
28	e100	11	2.9	2360	162	1030	577	39	61	
29	e100	10	2.8	1620	128	561	653	37	66	
30	e94	10	2.6	---	---	---	659	31	55	
31	e90	10	2.4	---	---	---	602	28	46	
TOTAL	16306	--	6955.8	47742	--	28842.3	20968	--	3952.8	

SURFACE-WATER RECORDS
Sandusky River Basin

04198000 SANDUSKY RIVER NEAR FREMONT, OHIO—Continued

WATER-QUALITY RECORDS—CONTINUED

SEDIMENT DISCHARGE, SUSPENDED, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[cfs, cubic feet per second; mg/L, milligrams per liter; --, no data; e, estimated]

Day	Mean discharge (cfs)	Mean concentration (mg/L)	Sediment discharge (tons per day)	Mean discharge (cfs)	Mean concentration (mg/L)	Sediment discharge (tons per day)	Mean discharge (cfs)	Mean concentration (mg/L)	Sediment discharge (tons per day)
		<u>APRIL</u>			<u>MAY</u>			<u>JUNE</u>	
1	514	28	39	407	26	28	e2200	182	1080
2	447	27	33	711	36	72	e1150	118	367
3	495	25	34	817	40	88	688	84	158
4	755	30	63	740	34	68	498	60	81
5	1390	42	160	735	30	60	434	48	59
6	1710	50	231	664	27	48	1670	180	858
7	1170	46	146	593	22	36	e1800	133	645
8	8370	534	14900	545	18	27	e1940	114	597
9	10800	627	18500	497	15	20	e1000	114	309
10	8220	414	9220	457	16	19	e610	85	140
11	6530	273	4860	396	19	20	e440	69	82
12	3280	178	1610	626	50	87	e350	63	59
13	1690	118	545	516	46	64	e330	58	52
14	1210	82	270	352	35	33	e370	60	60
15	936	67	169	270	28	20	e960	95	248
16	763	51	105	223	25	15	e1510	160	654
17	651	40	70	200	23	12	2230	221	1330
18	579	31	49	185	21	11	4660	517	9020
19	555	27	40	606	75	144	9250	666	16700
20	715	33	65	1390	137	544	6270	395	6820
21	1310	97	352	1820	242	1200	5150	264	3700
22	1040	35	100	1230	131	446	2660	180	1310
23	1550	72	320	769	92	191	1550	128	539
24	1660	167	754	1210	92	311	1100	101	300
25	1140	114	352	1530	199	806	1450	123	493
26	780	88	186	996	158	440	1080	91	271
27	615	69	115	570	73	114	636	63	109
28	515	52	72	924	96	334	453	56	69
29	451	39	48	5870	535	8880	359	55	54
30	409	30	33	5380	437	6380	294	54	43
31	---	---	---	e4100	296	3280	---	---	---
TOTAL	60250	--	53441	35329	--	23798	53092	--	46207
		<u>JULY</u>			<u>AUGUST</u>			<u>SEPTEMBER</u>	
1	242	57	37	691	66	123	151	55	22
2	205	56	31	839	87	199	120	46	15
3	214	54	31	628	67	114	98	35	9.3
4	434	80	103	453	54	66	83	27	6.1
5	829	92	206	292	42	34	70	24	4.6
6	888	97	233	405	51	59	60	30	4.8
7	600	72	118	858	93	219	e52	31	4.3
8	365	56	56	1640	128	563	e50	28	3.8
9	251	49	33	1510	110	445	e88	30	7.2
10	199	45	24	753	94	193	e240	35	23
11	184	45	22	431	70	82	e400	53	58
12	161	39	17	291	61	48	e900	60	145
13	138	36	13	212	58	33	e1000	55	149
14	131	32	11	169	56	25	e1200	67	218
15	163	36	16	144	53	21	e700	62	116
16	324	60	60	125	51	17	e430	47	55
17	467	77	99	112	49	15	e200	36	19
18	333	54	49	106	46	13	e140	29	11
19	237	46	29	101	44	12	e130	25	8.6
20	178	38	18	97	42	11	e150	22	9.0
21	225	46	28	91	41	9.9	e200	32	17
22	178	39	19	90	38	9.3	e280	64	48
23	127	37	13	380	83	184	e450	130	158
24	101	35	9.5	2310	225	1450	e800	257	556
25	82	37	8.2	3120	283	2390	e1500	248	1010
26	70	36	6.9	1970	168	922	2500	174	1190
27	63	33	5.7	1010	105	289	1270	120	417
28	59	31	4.9	602	73	120	723	84	165
29	101	42	15	380	60	62	489	66	87
30	2040	157	876	255	53	37	355	56	54
31	1150	76	246	184	53	26	---	---	---
TOTAL	10739	--	2438.2	20249	--	7791.2	14829	--	4590.7
YEAR	293869	--	181018.88						

SURFACE-WATER RECORDS
Huron River Basin

04199000 HURON RIVER AT MILAN, OHIO

LOCATION.—Latitude 41°18'06", longitude 82°36'25", in SW 1/4 sec. 4, T.5 N., R.22 W., Erie County, Hydrologic Unit 04100012, on right bank on upstream side of bridge on U.S. Highway 250, 0.2 mi northwest of Milan, Ohio, and 2.0 mi downstream from confluence of east and west branches. DRAINAGE AREA.—371 mi².

PERIOD OF RECORD.—March 1950 to September 1980, October 1987 to current year.

REVISED RECORDS.—WSP 1912: Drainage area. WDR OH-89-2: 1988.

GAGE.—Water-stage recorder. Datum of gage is 573.26 ft above sea level. July 29, 1953, to Oct. 5, 1979, water-stage recorder at site of former highway bridge 500 ft downstream at same datum. July 29, 1953, nonrecording gage at site of former highway 450 ft downstream at same datum.

REMARKS.—Records fair except for periods of estimated record, which are poor. Water-quality and sediment data formerly collected at this site.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	69	16	30	e45	e49	283	233	80	221	26	259	56
2	44	113	24	69	e48	218	232	457	140	18	151	52
3	31	806	23	251	e47	204	355	353	106	1080	252	59
4	58	526	24	2880	e46	187	952	193	79	1660	107	67
5	37	265	36	1170	e45	183	747	193	128	447	78	66
6	31	159	60	497	e44	166	416	139	1390	190	1170	59
7	25	82	58	329	e43	154	395	106	593	93	1690	61
8	165	59	55	244	e43	145	7080	74	234	48	599	44
9	219	48	40	205	e45	143	3510	65	116	27	244	46
10	200	50	152	186	e60	129	1220	326	79	31	146	100
11	98	54	440	222	e100	120	731	404	53	44	107	233
12	47	47	230	197	e560	135	510	194	89	27	84	219
13	51	43	164	e150	e500	143	383	113	301	19	70	151
14	50	33	770	e140	e400	262	306	73	365	132	57	89
15	49	31	1490	e120	e300	290	256	50	1110	1230	51	65
16	50	29	820	e110	e270	234	215	39	963	383	46	51
17	31	27	447	e98	e260	320	182	35	1540	207	47	46
18	27	25	273	e94	e350	257	154	36	5170	125	48	39
19	22	24	198	e88	e600	207	133	1420	3970	58	42	33
20	19	26	e150	e80	e900	1120	176	1110	906	52	39	38
21	18	23	e130	e76	e600	1690	633	431	1050	55	40	52
22	19	22	e120	e72	e560	712	523	250	527	29	35	46
23	16	21	e110	e70	e3300	434	341	176	283	21	37	70
24	17	22	e100	e66	2910	330	244	997	160	14	1330	1470
25	16	21	e90	e62	2840	267	178	567	257	21	1270	703
26	18	37	e80	e60	1300	223	125	230	225	e30	323	283
27	19	42	e70	e58	677	234	94	133	145	35	180	145
28	18	34	e64	e56	501	277	76	929	86	30	129	98
29	17	33	e60	e54	370	474	69	2540	55	891	95	73
30	18	27	e54	e52	---	344	56	821	39	1620	75	61
31	16	---	e50	e50	---	287	---	400	---	458	62	---
TOTAL	1515	2745	6412	7851	17768	10172	20525	12934	20380	9101	8863	4575
MEAN	48.9	91.5	207	253	613	328	684	417	679	294	286	152
MAX	219	806	1490	2880	3300	1690	7080	2540	5170	1660	1690	1470
MIN	16	16	23	45	43	120	56	35	39	14	35	33
CFSM	.13	.25	.56	.68	1.65	.88	1.84	1.12	1.83	.79	.77	.41
IN.	.15	.28	.64	.79	1.78	1.02	2.06	1.30	2.04	.91	.89	.46

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1951 - 2000, BY WATER YEAR (WY)

	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	
MEAN	54.7	168	343	474	542	691	577	316	244	183	104	77.2																			
MAX	402	1259	1909	1302	1422	1697	1536	929	980	1821	749	573																			
(WY)	1991	1973	1991	1952	1959	1978	1957	1967	1981	1969	1998	1972																			
MIN	7.86	14.0	9.23	26.8	24.0	117	86.0	46.5	14.9	11.8	11.3	5.76																			
(WY)	1964	1964	1964	1977	1964	1981	1971	1962	1988	1963	1952	1955																			

SUMMARY STATISTICS

	FOR 1999 CALENDAR YEAR				FOR 2000 WATER YEAR				WATER YEARS 1951 - 2000			
ANNUAL TOTAL	83497.5				122841							
ANNUAL MEAN	229				336				313			
HIGHEST ANNUAL MEAN									530			
LOWEST ANNUAL MEAN									145			
HIGHEST DAILY MEAN	7600				Jan 23				7080			
LOWEST DAILY MEAN	6.6				Jun 10				14			
ANNUAL SEVEN-DAY MINIMUM	6.9				Jan 11				17			
INSTANTANEOUS PEAK FLOW									9130			
INSTANTANEOUS PEAK STAGE									18.26			
INSTANTANEOUS LOW FLOW									14			
ANNUAL RUNOFF (CFSM)	.62				.90				.84			
ANNUAL RUNOFF (INCHES)	8.37				12.32				11.48			
10 PERCENT EXCEEDS	554				894				715			
50 PERCENT EXCEEDS	47				114				85			
90 PERCENT EXCEEDS	11				27				15			

a Peaks above base shown in table of peak discharges and stages at continuous-record surface-water-discharge stations.
e Estimated.

SURFACE-WATER RECORDS
Old Woman's Creek Basin

04199155 OLD WOMAN'S CREEK AT BERLIN ROAD NEAR HURON, OHIO

LOCATION.—Latitude 41°20'54", longitude 82°30'50", Erie County, Hydrologic Unit 04100012, on left downstream side of Berlin Road Bridge, 3.8 mi southeast of Huron, Ohio.

DRAINAGE AREA.—22.1 mi².

PERIOD OF RECORD.—October 1987 to September 1994, October 1995 to current year.

REVISED RECORDS.—WSP 1912: Drainage area. WDR OH-89-2: 1988.

GAGE.—Water-stage recorder. Datum of gage is 570 ft above sea level. Erie County benchmark.

REMARKS.—Records fair except for periods of estimated record, which are poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.7	.31	.88	e.98	e1.8	14	6.1	25	9.5	3.3	1.9	.31
2	.46	14	.81	e1.5	e1.7	11	e10	99	6.9	2.7	1.7	.30
3	.19	97	.79	25	e1.7	9.1	e50	26	4.5	26	7.3	.33
4	1.5	33	.84	169	e1.6	8.4	e80	17	3.8	29	3.6	.75
5	.69	10	1.3	34	e1.6	7.5	25	16	24	10	1.6	.84
6	.72	3.6	5.5	19	e1.5	6.4	16	11	228	6.6	151	.50
7	.39	1.7	3.8	14	e1.5	6.0	29	8.4	28	3.9	238	.40
8	.29	1.3	2.5	10	e1.5	6.0	512	6.7	16	2.7	27	.30
9	.75	1.2	1.8	8.7	e1.5	6.5	86	5.4	9.2	2.2	13	.26
10	.61	1.1	35	9.5	e7.0	5.6	38	25	5.8	3.6	9.3	4.4
11	.40	1.2	25	11	e110	5.2	26	17	4.0	4.0	6.0	6.2
12	.25	1.1	7.1	7.3	e70	7.7	21	11	15	2.3	3.1	2.3
13	.69	.95	8.1	6.6	e40	9.3	17	7.6	24	1.7	2.1	1.3
14	1.2	.87	87	9.3	e26	33	15	5.0	16	1.9	1.7	.95
15	.62	.80	63	e4.5	e30	31	13	3.9	31	2.6	1.4	.95
16	.44	.71	51	e4.0	e35	25	11	3.5	119	48	1.3	.73
17	.61	.66	16	e3.7	e30	38	9.4	3.6	108	14	1.3	.58
18	.97	.76	7.2	e3.5	e23	24	9.3	4.1	500	5.1	1.5	.48
19	.75	.75	e4.5	e3.2	e18	19	8.3	191	67	3.1	1.3	.37
20	.57	.71	e3.0	e3.0	e16	57	16	39	27	2.2	1.2	.25
21	.45	.73	e2.5	e2.8	e14	55	36	20	53	1.5	.88	1.1
22	.43	.71	e2.0	e2.6	e30	27	24	13	25	1.3	.74	.60
23	.36	.74	e1.5	e2.4	295	20	19	10	14	1.0	1.0	1.0
24	.39	.78	e1.4	e2.3	126	16	14	9.4	9.4	.80	.84	2.7
25	.39	.74	e1.3	e2.2	136	13	11	6.2	22	.63	.60	2.1
26	.34	1.3	e1.2	e2.1	45	10	8.4	4.3	16	.52	.48	1.3
27	.26	1.6	e1.2	e2.1	28	13	7.3	4.1	10	.44	.71	.89
28	1.0	1.3	e1.1	e2.0	21	14	6.4	133	7.6	.38	.55	.69
29	.39	1.1	e1.1	e1.9	16	10	5.7	83	6.8	9.9	.44	.56
30	.51	.92	e1.0	e1.9	---	8.2	4.8	25	5.9	19	.33	.49
31	.42	---	e1.0	e1.8	---	6.8	---	14	---	3.4	.31	---
TOTAL	18.74	181.64	340.42	371.88	1130.4	522.7	1134.7	847.2	1416.4	213.77	482.18	33.93
MEAN	.60	6.05	11.0	12.0	39.0	16.9	37.8	27.3	47.2	6.90	15.6	1.13
MAX	1.7	97	87	169	295	57	512	191	500	48	238	6.2
MIN	.19	.31	.79	.98	1.5	5.2	4.8	3.5	3.8	.38	.31	.25
CFSM	.03	.27	.50	.54	1.76	.76	1.71	1.24	2.14	.31	.70	.05
IN.	.03	.31	.57	.63	1.90	.88	1.91	1.43	2.38	.36	.81	.06

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1988 - 2000, BY WATER YEAR (WY)

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
MEAN	3.87	12.7	22.4	33.4	33.3	33.3	42.4	18.8	17.8	6.40	6.45	6.01	
MAX	20.8	68.4	98.2	74.8	78.6	86.3	66.5	52.2	47.4	35.1	23.7	23.1	
(WY)	1997	1993	1991	1993	1990	1993	1998	1989	1997	1992	1992	1996	
MIN	.001	.31	.70	8.03	7.51	12.4	18.4	2.20	.17	.010	.000	.000	
(WY)	1995	1992	1992	1988	1999	1990	1988	1988	1988	1991	1991	1991	

SUMMARY STATISTICS

	FOR 1999 CALENDAR YEAR	FOR 2000 WATER YEAR	WATER YEARS 1988 - 2000
ANNUAL TOTAL	3537.16	6693.96	
ANNUAL MEAN	9.69	18.3	19.6
HIGHEST ANNUAL MEAN			34.1
LOWEST ANNUAL MEAN			8.57
HIGHEST DAILY MEAN	230	Jan 21	512
LOWEST DAILY MEAN	.00	Jul 4	.19
ANNUAL SEVEN-DAY MINIMUM	.00	Aug 10	.37
INSTANTANEOUS PEAK FLOW			1300
INSTANTANEOUS PEAK STAGE			10.66
INSTANTANEOUS LOW FLOW			.19
ANNUAL RUNOFF (CFSM)	.44	.83	.89
ANNUAL RUNOFF (INCHES)	5.95	11.27	12.07
10 PERCENT EXCEEDS	25	35	40
50 PERCENT EXCEEDS	1.2	4.1	4.5
90 PERCENT EXCEEDS	.00	.54	.00

a Peaks above base shown in table of peak discharges and stages at continuous-record surface-water-discharge stations.
e Estimated.

SURFACE-WATER RECORDS
Cuyahoga River Basin

04203900 CUYAHOGA RIVER AT CUYAHOGA FALLS, OHIO

LOCATION.—Latitude 41°08'13", longitude 81°28'54", Summit County, Hydrologic Unit 04110002, on right bank, concrete retaining wall adjacent to restaurant parking lot 40 ft east of River Parkway, 50 ft upstream from abandoned hydroelectric dam in Cuyahoga Falls, Ohio.

DRAINAGE AREA.—333 mi².

PERIOD OF RECORD.—July 26, 1999, to current year.

GAGE.—Reference point, twice daily observations by the City of Cuyahoga Falls during work-week to Nov. 15. Altitude of gage is 995 ft, from topographic map.

REMARKS.—Records poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	85	78	e145	e74	e94	e650	e160	e290	e670	e360	e115	e115
2	e46	e590	e120	e310	e90	e440	e210	e240	e620	e275	e98	e105
3	e48	e1000	e115	e1100	e90	e375	e300	e260	e540	e190	e92	e100
4	e96	e504	e110	e960	e88	e330	e500	e290	e640	e175	e450	e92
5	67	430	e105	e860	e86	e290	e650	e270	e780	e155	e720	e83
6	57	e555	e112	e900	e84	e270	e600	e240	e500	e130	e400	e77
7	e64	e728	e130	e950	e84	e240	e1300	e210	e450	e120	e300	e73
8	e132	523	e150	e950	e90	e230	e1800	e170	e410	e110	e245	e72
9	91	407	e200	e900	e120	e210	e1500	e150	e360	e160	e200	e150
10	e85	337	e380	e710	e180	e215	e1450	e190	e340	e110	e160	e125
11	e83	262	e320	e550	e300	e230	e1440	e220	e620	e78	e135	e100
12	e80	e216	e280	e410	e420	e240	e1440	e240	e470	e820	e130	e92
13	99	e190	e250	e340	e580	e240	e800	e160	e370	e560	e125	e84
14	162	e165	e350	e280	e790	e240	e580	e145	e330	e375	e120	e80
15	96	e145	e600	e220	e650	e240	e430	e130	e400	e210	e110	e140
16	e99	e130	e540	e180	e590	e250	e375	e120	e340	e230	e110	e120
17	e105	e120	e510	e160	e550	e290	e280	e300	e310	e250	e105	e95
18	94	e110	e500	e150	e520	e320	e250	e1300	e380	e275	e100	e86
19	85	e100	e500	e140	e480	e265	e420	e1000	e280	e245	e96	e170
20	80	e94	e425	e140	e470	e230	e500	e800	e800	e170	e93	e360
21	80	e88	e275	e130	e450	e210	e520	e640	e670	e145	e89	e140
22	80	e84	e190	e130	e440	e190	e470	e520	e630	e120	e87	e700
23	e155	e98	e160	e120	e430	e205	e480	e430	e820	e105	e180	e520
24	e240	e110	e130	e120	e560	e230	e420	e360	e520	e92	e155	e340
25	105	e120	e115	e120	e1070	e260	e335	e330	e360	e165	e135	e295
26	85	e200	e100	e110	e1150	e270	e285	e520	e245	e245	e200	e270
27	114	e165	e92	e110	e1200	e195	e260	e1150	e180	e215	e220	e235
28	139	e145	e86	e110	e800	e165	e215	e1600	e160	e190	e165	e205
29	132	e135	e79	e100	e700	e145	e190	e1100	e145	e170	e135	e185
30	e102	e130	e74	e100	---	e135	e340	e790	e130	e145	e125	e170
31	e85	---	e66	e96	---	e125	---	e720	---	e130	e120	---
TOTAL	3071	7959	7209	11530	13156	7925	18500	14885	13470	6720	5515	5379
MEAN	99.1	265	233	372	454	256	617	480	449	217	178	179
MAX	240	1000	600	1100	1200	650	1800	1600	820	820	720	700
MIN	46	78	66	74	84	125	160	120	130	78	87	72

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1999 - 2000, BY WATER YEAR (WY)

	1999	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
MEAN	99.1	265	233	372	454	256	617	480	449	217	128	130
MAX	99.1	265	233	372	454	256	617	480	449	217	178	179
(WY)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
MIN	99.1	265	233	372	454	256	617	480	449	217	77.9	80.5
(WY)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	1999	1999

SUMMARY STATISTICS

FOR 2000 WATER YEAR

WATER YEARS 1999 - 2000

ANNUAL TOTAL	115319											
ANNUAL MEAN	315									315		
HIGHEST ANNUAL MEAN										315		2000
LOWEST ANNUAL MEAN										315		2000
HIGHEST DAILY MEAN	1800					Apr	8			1800		Apr 8 2000
LOWEST DAILY MEAN	46					Oct	2			24		Jul 27 1999
ANNUAL SEVEN-DAY MINIMUM	66					Oct	1			43		Aug 18 1999
10 PERCENT EXCEEDS	700									640		
50 PERCENT EXCEEDS	210									165		
90 PERCENT EXCEEDS	89									60		

e Estimated.

SURFACE-WATER RECORDS
Cuyahoga River Basin

04206212 NORTH FORK AT BATH CENTER, OHIO

LOCATION.—Latitude 41°10'08", longitude 81°38'04", Summit County, Hydrologic Unit 04110002, on left upstream side of bridge on Bath Road, 750 ft east of Cleveland-Massillon Road at Bath Center, Ohio, 3.1 mi northwest of Akron corporate boundary.

DRAINAGE AREA.—5.58 mi².

PERIOD OF RECORD.—October 1, 1991, to current year.

GAGE.—Water-stage recorder. Datum of gage is 932.57 ft above sea level (North American Vertical Datum of 1988).

REMARKS.—Records fair except for periods of estimated record and discharges of less than 5 ft³/s, which are poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e1.8	.28	.94	1.6	2.3	4.7	2.9	8.5	4.2	1.7	1.2	.53
2	e1.1	47	.91	2.5	2.1	4.0	16	14	3.3	1.5	.80	.50
3	e.90	30	1.0	15	2.2	3.4	28	3.9	2.6	6.8	.72	.50
4	e1.2	9.2	1.1	62	2.3	3.2	52	3.3	2.5	3.5	.70	.50
5	e1.0	5.5	3.3	12	e2.3	3.0	18	5.1	6.2	2.0	.63	.52
6	e1.0	3.0	5.5	7.3	1.9	2.7	10	3.1	13	1.4	20	.50
7	e1.0	1.8	3.3	5.4	1.9	2.7	13	2.6	4.2	1.1	8.3	.50
8	e1.8	1.2	2.4	4.1	e2.1	2.5	96	4.4	3.1	1.0	2.4	.50
9	e2.1	.94	1.8	3.7	e2.1	2.5	23	2.8	2.0	1.0	13	.50
10	e2.1	.92	21	4.3	4.8	2.2	13	4.0	1.9	1.9	16	1.6
11	e1.8	.74	6.7	4.2	37	2.4	9.0	2.9	1.8	2.4	2.6	1.5
12	e1.6	.50	3.8	2.7	11	4.9	6.8	2.3	22	1.2	1.7	1.2
13	e9.2	.50	6.3	2.6	7.0	4.6	5.5	2.4	9.5	1.0	1.4	1.4
14	e4.6	.47	26	2.3	22	5.1	4.9	2.2	4.0	13	1.1	.64
15	e2.4	.33	11	2.2	10	4.1	4.5	1.7	3.5	6.6	1.1	.87
16	e1.8	.29	7.0	2.2	8.4	8.4	4.1	1.7	2.5	2.3	1.1	2.0
17	e2.2	.28	4.6	1.8	6.6	8.8	3.9	1.8	2.7	1.5	1.1	.82
18	e3.2	.28	3.5	1.6	6.0	4.5	3.5	5.9	30	1.4	1.3	.54
19	e.14	.27	2.9	2.0	5.4	4.0	3.5	88	6.1	1.1	.96	.50
20	.19	.42	2.9	e2.2	4.2	9.6	5.1	11	3.2	1.3	.72	.58
21	.20	.54	2.4	e2.3	4.3	11	8.5	6.0	2.7	1.0	.63	1.0
22	.21	.48	1.9	e2.3	13	5.8	5.2	4.3	2.4	1.3	.62	.60
23	1.9	.46	1.7	e2.3	61	4.6	4.3	8.2	1.7	1.0	.53	8.4
24	18	.58	1.8	e2.3	34	4.2	3.4	6.6	2.4	.80	.50	9.2
25	3.0	.60	1.9	e2.3	38	3.9	3.2	3.4	3.9	.84	.50	1.6
26	1.1	4.2	1.8	e2.3	13	3.5	3.0	2.6	2.9	.93	.50	.98
27	.57	3.1	1.8	e2.3	10	5.2	2.8	4.0	4.0	.81	.51	.68
28	.49	1.5	e1.9	e2.3	6.5	4.5	2.6	118	1.9	.83	.41	.59
29	.38	1.1	1.6	e2.3	4.9	3.7	2.5	34	2.1	1.2	.48	.50
30	.29	.98	1.4	2.6	---	3.3	2.0	10	2.3	1.0	.51	.50
31	.29	---	1.7	2.5	---	3.0	---	5.7	---	2.2	.67	---
TOTAL	67.56	117.46	135.85	167.5	326.3	140.0	360.2	374.4	154.6	65.61	82.69	40.25
MEAN	2.18	3.92	4.38	5.40	11.3	4.52	12.0	12.1	5.15	2.12	2.67	1.34
MAX	18	47	26	62	61	11	96	118	30	13	20	9.2
MIN	.14	.27	.91	1.6	1.9	2.2	2.0	1.7	1.7	.80	.41	.50
CFSM	.39	.70	.79	.97	2.02	.81	2.15	2.16	.92	.38	.48	.24
IN.	.45	.78	.91	1.12	2.18	.93	2.40	2.50	1.03	.44	.55	.27

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1992 - 2000, BY WATER YEAR (WY)

	1992	1993	1994	1995	1996	1997	1998	1999	2000
MEAN	3.17	6.73	6.73	10.9	8.46	10.9	12.1	6.33	4.78
MAX	7.75	15.3	18.3	17.4	12.6	22.3	17.5	12.3	11.7
(WY)	1997	1993	1997	1993	1996	1993	1998	1997	1997
MIN	.66	1.14	1.97	3.76	4.16	4.52	7.84	1.98	1.01
(WY)	1995	1995	1992	1992	1993	2000	1997	1999	1999

SUMMARY STATISTICS FOR 1999 CALENDAR YEAR FOR 2000 WATER YEAR WATER YEARS 1992 - 2000

ANNUAL TOTAL	1745.34	2032.42	
ANNUAL MEAN	4.78	5.55	6.56
HIGHEST ANNUAL MEAN			8.97
LOWEST ANNUAL MEAN			4.37
HIGHEST DAILY MEAN	113	Jan 23	190
LOWEST DAILY MEAN	.14	Oct 19	.07
ANNUAL SEVEN-DAY MINIMUM	.28	Aug 18	.10
INSTANTANEOUS PEAK FLOW			494
INSTANTANEOUS PEAK STAGE			12.71
INSTANTANEOUS LOW FLOW			.10
ANNUAL RUNOFF (CFSM)	.86	1.00	1.18
ANNUAL RUNOFF (INCHES)	11.64	13.55	15.97
10 PERCENT EXCEEDS	11	11	14
50 PERCENT EXCEEDS	1.9	2.4	2.9
90 PERCENT EXCEEDS	.41	.51	.53

a Peaks above base shown in table of peak discharges and stages at continuous-record surface-water-discharge stations.
e Estimated.

SURFACE-WATER RECORDS
Cuyahoga River Basin

04206220 YELLOW CREEK AT BOTZUM, OHIO

LOCATION.—Latitude 41°09'47", longitude 81°35'02", Summit County, Hydrologic Unit 04110002, on right downstream bank near Bath Road truss bridge over Yellow Creek, 0.5 mi upstream from confluence with Cuyahoga River, 0.7 mi west of Akron sewage treatment plant.

DRAINAGE AREA.—30.7 mi².

PERIOD OF RECORD.—October 1, 1991, to current year.

GAGE.—Water-stage recorder. Datum of gage is 739.09 ft above sea level (North American Vertical Datum of 1988).

REMARKS.—Records fair except for periods of estimated record, which are poor. (Formerly named Yellow Creek at Bath Road near Botzum, Ohio).

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e13	6.9	9.6	e4.4	e6.9	26	15	27	31	11	8.8	3.7
2	e8.1	206	9.5	e7.7	e6.7	23	66	78	24	8.8	7.1	3.4
3	e6.9	194	9.5	e59	e6.4	21	118	30	20	34	5.9	3.7
4	e8.9	55	9.1	329	e6.0	19	280	24	21	23	5.7	3.9
5	e7.8	32	15	67	e5.9	18	98	27	29	14	5.2	3.9
6	e7.8	24	30	36	e5.7	17	51	21	67	10	101	3.4
7	e7.8	20	20	28	e8.1	16	52	19	31	8.5	57	3.1
8	e13	14	15	22	e6.6	15	492	24	21	7.5	21	3.1
9	e16	13	13	20	e6.1	15	150	20	16	7.0	25	5.6
10	e16	11	92	22	e32	13	80	27	14	9.7	68	10
11	e13	9.6	42	23	e156	14	52	21	13	19	17	9.1
12	e11	8.4	24	18	e53	26	41	18	90	9.0	11	6.6
13	e61	8.1	30	18	e39	25	36	17	65	6.9	8.3	7.2
14	e31	8.2	104	e16	e133	26	32	15	30	52	7.4	5.2
15	e18	7.7	57	e15	e58	21	30	13	26	65	6.8	6.7
16	e14	7.2	37	e14	42	33	26	12	20	19	6.4	13
17	e17	7.3	27	e13	e27	47	25	14	21	12	6.5	14
18	e23	7.4	21	e12	e28	26	23	26	133	8.6	7.2	6.4
19	e7.2	7.2	18	e12	31	22	22	465	55	7.9	6.7	4.5
20	6.5	8.0	17	e11	24	44	27	78	26	7.9	6.1	4.1
21	6.2	7.7	15	e10	23	52	46	38	21	7.1	6.7	8.7
22	6.2	7.2	e12	e9.8	45	32	34	26	17	7.0	4.7	5.6
23	15	7.0	e10	e9.4	238	25	28	46	13	6.5	5.1	34
24	83	8.1	e8.8	e9.1	157	21	25	54	12	6.1	5.5	54
25	28	7.8	e8.1	e8.7	186	20	23	27	17	5.8	12	21
26	15	24	e7.6	e8.2	67	19	21	20	16	5.6	5.4	8.7
27	11	24	e6.7	e7.9	46	24	19	24	18	5.9	4.9	6.2
28	8.6	14	e6.3	e7.7	37	24	19	419	12	23	4.7	5.4
29	8.2	11	e5.9	e7.6	29	21	17	283	15	19	6.7	4.8
30	7.6	9.8	e5.5	e7.3	---	18	17	76	19	8.8	4.4	4.8
31	7.1	---	e4.4	e7.1	---	16	---	43	---	12	3.7	---
TOTAL	502.9	775.6	690.0	839.9	1509.4	739	1965	2032	913	447.6	451.9	273.8
MEAN	16.2	25.9	22.3	27.1	52.0	23.8	65.5	65.5	30.4	14.4	14.6	9.13
MAX	83	206	104	329	238	52	492	465	133	65	101	54
MIN	6.2	6.9	4.4	4.4	5.7	13	15	12	12	5.6	3.7	3.1
CFSM	.53	.84	.73	.88	1.70	.78	2.13	2.14	.99	.47	.47	.30
IN.	.61	.94	.84	1.02	1.83	.90	2.38	2.46	1.11	.54	.55	.33

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1992 - 2000, BY WATER YEAR (WY)

	1992	1993	1994	1995	1996	1997	1998	1999	2000
MEAN	16.4	34.6	35.1	58.5	44.0	52.8	62.5	37.8	29.8
MAX	40.3	76.2	94.0	98.2	66.8	108	95.4	65.5	70.5
(WY)	1997	1993	1997	1993	1997	1993	1994	2000	1997
MIN	6.31	9.23	12.1	17.8	25.4	23.8	35.0	16.3	9.11
(WY)	1995	1992	1992	1992	1995	2000	1995	1999	1993

SUMMARY STATISTICS

FOR 1999 CALENDAR YEAR

FOR 2000 WATER YEAR

WATER YEARS 1992 - 2000

ANNUAL TOTAL	10104.4	11140.1	
ANNUAL MEAN	27.7	30.4	35.2
HIGHEST ANNUAL MEAN			50.2
LOWEST ANNUAL MEAN			22.1
HIGHEST DAILY MEAN	524	Jan 23	765
LOWEST DAILY MEAN	2.9	Jul 27	2.4
ANNUAL SEVEN-DAY MINIMUM	3.8	Aug 1	2.6
INSTANTANEOUS PEAK FLOW			1180
INSTANTANEOUS PEAK STAGE			14.82
INSTANTANEOUS LOW FLOW			2.9
ANNUAL RUNOFF (CFSM)	.90		.99
ANNUAL RUNOFF (INCHES)	12.24		13.50
10 PERCENT EXCEEDS	58		57
50 PERCENT EXCEEDS	16		16
90 PERCENT EXCEEDS	5.2		6.0

a Peaks above base shown in table of peak discharges and stages at continuous-record surface-water-discharge stations.
e Estimated.

SURFACE-WATER RECORDS
Cuyahoga River Basin

04207200 TINKERS CREEK AT BEDFORD, OHIO

LOCATION.—Latitude 41°23'04", longitude 81°31'39", in T.6 N., R.11 W., Cuyahoga County, Hydrologic Unit 04110002, on left bank at downstream side of bridge on State Highway 14 in Bedford, Ohio, 5.5 mi upstream from mouth.

DRAINAGE AREA.—83.9 mi².

PERIOD OF RECORD.—November 1962 to current year.

REVISED RECORDS.—WSP 1912: Drainage area.

GAGE.—Water-stage recorder. Datum of gage is 876.18 ft above sea level.

REMARKS.—Records good except for periods of estimated record, which are poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	193	39	47	50	e29	100	45	210	120	36	80	31
2	76	1160	43	125	e28	87	144	254	78	30	75	28
3	36	1310	42	279	e27	74	393	104	53	123	70	25
4	85	758	48	847	e27	67	867	69	43	109	38	27
5	46	352	105	576	e27	62	609	75	95	57	32	29
6	35	171	143	250	e26	55	286	69	321	42	713	26
7	30	149	140	137	e26	51	203	53	392	34	1090	24
8	29	119	81	104	e33	49	1440	106	150	37	341	25
9	67	96	64	88	47	52	792	82	73	49	157	24
10	81	87	460	115	112	48	413	103	53	73	106	135
11	62	78	277	107	457	45	187	79	46	43	73	133
12	37	67	117	88	280	87	141	68	164	35	54	88
13	290	75	135	80	141	103	102	64	241	30	42	64
14	330	81	553	70	317	110	76	51	136	276	35	40
15	116	66	415	61	313	89	67	41	194	297	33	136
16	58	40	215	65	214	128	62	38	279	161	31	110
17	54	36	131	49	157	183	63	40	292	74	38	57
18	57	35	98	e44	130	115	64	120	863	47	35	37
19	43	35	82	e41	119	82	57	1200	428	39	30	33
20	38	42	78	e40	96	88	130	640	186	35	26	32
21	36	39	96	e38	102	101	185	308	106	47	28	75
22	34	37	89	e37	264	91	132	110	67	72	33	50
23	236	37	63	e36	781	75	94	99	52	34	76	378
24	404	40	46	e35	698	66	74	90	52	30	79	417
25	170	36	e42	e34	732	63	62	71	70	29	43	120
26	95	112	e40	e33	393	58	52	55	55	26	30	69
27	59	118	e39	e32	192	76	48	56	67	38	73	53
28	49	72	e38	e31	134	87	46	394	54	205	82	44
29	44	56	e37	e31	100	74	51	482	63	271	51	38
30	39	53	e36	e30	---	58	39	337	58	115	39	33
31	36	---	e41	e29	---	50	---	113	---	93	34	---
TOTAL	2965	5396	3841	3582	6002	2474	6924	5581	4851	2587	3667	2381
MEAN	95.6	180	124	116	207	79.8	231	180	162	83.5	118	79.4
MAX	404	1310	553	847	781	183	1440	1200	863	297	1090	417
MIN	29	35	36	29	26	45	39	38	43	26	26	24
CFSM	1.14	2.14	1.48	1.38	2.47	.95	2.75	2.15	1.93	.99	1.41	.95
IN.	1.31	2.39	1.70	1.59	2.66	1.10	3.07	2.47	2.15	1.15	1.63	1.06

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 2000, BY WATER YEAR (WY)

MEAN	70.3	138	171	153	196	239	194	123	89.7	79.2	64.7	73.3
MAX	261	402	506	396	463	457	323	339	257	329	255	289
(WY)	1991	1986	1991	1993	1976	1963	1998	1989	1975	1969	1992	1990
MIN	8.55	13.4	16.9	33.1	39.0	79.8	54.1	33.4	16.5	13.1	11.3	8.73
(WY)	1964	1965	1964	1977	1963	2000	1971	1965	1964	1967	1963	1964

SUMMARY STATISTICS

	FOR 1999 CALENDAR YEAR	FOR 2000 WATER YEAR	WATER YEARS 1963 - 2000
ANNUAL TOTAL	42045	50251	
ANNUAL MEAN	115	137	133
HIGHEST ANNUAL MEAN			185
LOWEST ANNUAL MEAN			81.7
HIGHEST DAILY MEAN	1310	Nov 3	2920
LOWEST DAILY MEAN	18	Sep 19	5.8
ANNUAL SEVEN-DAY MINIMUM	22	Jan 11	6.5
INSTANTANEOUS PEAK FLOW			3380
INSTANTANEOUS PEAK STAGE			7.58
INSTANTANEOUS LOW FLOW			21
ANNUAL RUNOFF (CFSM)	1.37	1.64	1.59
ANNUAL RUNOFF (INCHES)	18.64	22.28	21.60
10 PERCENT EXCEEDS	278	318	320
50 PERCENT EXCEEDS	48	70	62
90 PERCENT EXCEEDS	24	33	21

e Estimated.

SURFACE-WATER RECORDS
Cuyahoga River Basin

04208000 CUYAHOGA RIVER AT INDEPENDENCE, OHIO—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.—October 1948 to September 1949, October 1950 to current year.

PERIOD OF DAILY RECORD.—

CHLORIDE: October 1987 to September 1994.

NITROGEN, NITRITE + NITRATE: October 1987 to September 1994.

NITROGEN, AMMONIA + ORGANIC: October 1987 to September 1994.

PHOSPHORUS: October 1987 to September 1994.

SUSPENDED SEDIMENT DISCHARGE: Water years 1950-74, December 1976 to September 1984, October 1987 to current year.

INSTRUMENTATION.—Alcohol-actuated thermograph October 1956 to June 1965, water-quality monitor from July 1965 to September 1991, and a refrigerated water-quality pumping sampler, operated by Heidelberg College Water Quality Laboratory, from October 1987 to September 1994.

REMARKS.—Sediment samples were collected by a local observer on an approximate once daily basis. Sediment loads were calculated using the mean-interval method (Porterfield, George, 1972, Computation of Fluvial-Sediment Discharge: U.S. Geological Survey, Techniques of Water-Resources Investigations, Book 3, Chap. C3, 66 p.). For days with unsteady concentration, discharge, or both, the day was subdivided into half-hour intervals and the daily load was calculated by summing the loads for these half-hour intervals. This required interpolation between measured and estimated concentrations.

EXTREMES FOR PERIOD OF DAILY RECORD.—

SEDIMENT CONCENTRATIONS: Maximum daily mean, 3,400 mg/L, Dec. 31, 1992; minimum daily mean, 1 mg/L, Feb. 12 and 13, 1989.

SEDIMENT LOADS: Maximum daily, 82,900 tons, Dec. 31, 1992; minimum daily, 1.2 tons, Feb. 13, 1989.

EXTREMES FOR CURRENT YEAR.—

SEDIMENT CONCENTRATIONS: Maximum daily mean, 1,030 mg/L, Nov. 3; minimum daily mean, 5 mg/L, Oct. 8, Dec. 1, 2, Feb. 7, and 8.

SEDIMENT LOADS: Maximum daily, 18,000 tons, Apr. 8; minimum daily, 3.0 tons, Oct. 8.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

[ft³/s, cubic feet per second; (00061), USGS National Water Information System parameter code; μS/cm, microsiemens per centimeter; deg C, degrees Celsius; mg/L, milligrams per liter; %, percent; mm, millimeters; *, 10—Stream cross-section sample collected by equal-width-increment (EWI) sampling method.

Date	Time	Discharge, instantaneous (ft ³ /s) (00061)	pH, whole water, field (standard units) (00400)	Specific conductance, field (μS/cm) (00095)	Air temperature (deg C) (00020)	Water temperature (deg C) (00010)	Chloride, dissolved (mg/L as Cl) (00940)
May	19	6380	7.8	454	15.0	16.0	61

Date	Nitrogen, ammonia plus organic, total (mg/L as N) (00625)	Nitrogen, nitrite plus nitrate, dissolved (mg/L as N) (00631)	Phosphorus, total (mg/L as P) (00665)	Sediment, suspended (mg/L) (80154)	Sediment, suspended diameter % finer than .062 mm (70331)	Sampling method, codes* (82398)	
May	19	2.6	.98	.90	925	84.2	10

SURFACE-WATER RECORDS
Cuyahoga River Basin

04208000 CUYAHOGA RIVER AT INDEPENDENCE, OHIO—Continued

WATER-QUALITY RECORDS—CONTINUED

SEDIMENT DISCHARGE, SUSPENDED, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

[cfs, cubic feet per second; mg/L, milligrams per liter; --, no data; e, estimated]

Day	Mean discharge (cfs)	Mean concentration (mg/L)	Sediment discharge (tons per day)	Mean discharge (cfs)	Mean concentration (mg/L)	Sediment discharge (tons per day)	Mean discharge (cfs)	Mean concentration (mg/L)	Sediment discharge (tons per day)	
		<u>OCTOBER</u>			<u>NOVEMBER</u>			<u>DECEMBER</u>		
1	636	53	100	244	9	5.9	316	5	4.3	
2	358	17	17	2700	743	12600	295	5	4.1	
3	265	10	7.5	5330	1030	16800	288	7	5.2	
4	381	28	31	2310	219	1420	298	10	8.0	
5	283	10	7.5	1440	106	421	350	14	16	
6	238	7	4.2	1010	61	168	673	51	94	
7	218	6	3.4	983	45	118	572	20	31	
8	210	5	3.0	907	36	89	457	9	11	
9	427	36	48	755	30	61	437	8	9.2	
10	420	38	43	641	25	43	1670	221	1550	
11	335	29	26	558	20	31	1230	129	471	
12	259	20	14	478	17	22	716	30	59	
13	668	61	301	411	15	16	763	26	55	
14	1290	103	433	388	15	16	2160	454	4050	
15	504	30	42	366	12	12	1870	196	1060	
16	323	23	20	328	11	9.3	1300	66	238	
17	291	21	16	318	8	7.1	957	41	107	
18	342	18	17	302	8	6.5	855	32	75	
19	285	15	11	296	8	6.5	791	29	63	
20	258	11	7.5	268	10	6.9	723	27	53	
21	247	11	7.4	295	9	7.1	656	22	40	
22	238	15	9.8	270	8	5.9	562	18	27	
23	385	30	45	254	8	5.6	491	14	19	
24	1400	163	663	271	10	7.7	401	13	14	
25	734	52	108	287	17	13	348	11	10	
26	457	22	28	445	26	36	336	9	8.3	
27	352	14	13	656	41	78	332	8	7.3	
28	339	10	8.8	424	12	14	335	8	7.0	
29	320	11	9.2	342	6	6.0	326	6	5.7	
30	291	12	9.5	327	6	5.2	333	8	6.9	
31	260	9	6.7	---	---	---	345	8	7.3	
TOTAL	13014	--	2060.5	23604	--	32037.7	21186	--	8116.3	
		<u>JANUARY</u>			<u>FEBRUARY</u>			<u>MARCH</u>		
1	336	7	6.7	e290	8	6.3	1460	63	246	
2	416	28	38	e280	8	6.1	1170	50	158	
3	699	70	170	e280	9	6.6	897	36	88	
4	4260	768	9680	e270	8	5.8	773	28	59	
5	2320	219	1400	e270	7	5.1	675	23	43	
6	1610	105	464	e260	6	4.2	605	21	34	
7	1320	66	234	e250	5	3.4	558	20	29	
8	1240	41	137	e310	5	4.3	523	20	29	
9	1090	41	121	364	7	6.5	511	18	25	
10	986	43	115	507	15	23	468	15	19	
11	929	40	99	2160	290	1920	436	10	12	
12	746	30	60	1340	98	374	599	10	16	
13	681	22	41	907	39	95	682	13	23	
14	628	18	31	1960	174	1120	710	10	20	
15	548	19	29	1840	121	614	632	12	21	
16	517	15	21	1440	55	216	629	16	32	
17	470	14	17	1230	41	136	1210	72	250	
18	429	12	14	1080	27	80	818	20	46	
19	e400	11	12	1070	30	86	683	11	20	
20	e390	9	9.9	870	22	53	683	10	19	
21	e370	11	11	769	24	50	978	46	126	
22	e360	17	16	1050	61	212	717	23	44	
23	e350	13	12	3180	495	4510	618	15	26	
24	e340	12	11	3050	300	2580	555	11	17	
25	e330	10	8.6	3410	339	3240	513	10	14	
26	e320	10	8.3	2420	140	915	469	9	12	
27	e315	8	7.0	2170	120	702	501	12	17	
28	e310	8	6.6	2070	103	573	524	12	17	
29	e300	7	5.8	1740	81	380	491	11	14	
30	e300	7	5.7	---	---	---	434	10	12	
31	e290	8	6.2	---	---	---	391	8	8.0	
TOTAL	23600	--	12797.8	36837	--	17927.3	20913	--	1496.0	

SURFACE-WATER RECORDS
Cuyahoga River Basin

04208000 CUYAHOGA RIVER AT INDEPENDENCE, OHIO—Continued

WATER-QUALITY RECORDS—CONTINUED

SEDIMENT DISCHARGE, SUSPENDED, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[cfs, cubic feet per second; mg/L, milligrams per liter; --, no data; e, estimated]

Day	Mean discharge (cfs)	Mean concentration (mg/L)	Sediment discharge (tons per day)	Mean discharge (cfs)	Mean concentration (mg/L)	Sediment discharge (tons per day)	Mean discharge (cfs)	Mean concentration (mg/L)	Sediment discharge (tons per day)
		<u>APRIL</u>			<u>MAY</u>			<u>JUNE</u>	
1	365	6	5.9	510	43	140	1310	109	385
2	608	35	90	1610	294	1460	1120	89	269
3	1290	144	567	666	51	95	972	74	193
4	4040	514	5770	545	22	32	893	62	150
5	2560	201	1410	593	29	46	939	180	521
6	1790	108	529	569	22	33	2120	446	2600
7	1400	73	288	498	21	29	1460	120	480
8	6600	954	18000	536	35	53	962	68	178
9	3950	312	3390	470	27	35	748	52	104
10	2820	192	1470	586	44	75	677	47	86
11	2250	142	865	496	28	37	627	42	71
12	2010	113	617	467	24	30	1200	256	1470
13	1550	87	367	440	23	27	1790	293	1550
14	1140	77	235	403	21	23	932	88	226
15	879	69	163	345	17	16	1070	164	485
16	732	54	108	320	17	14	1120	239	1080
17	683	41	75	315	15	13	1410	274	1220
18	597	31	50	412	38	86	3360	818	11500
19	528	25	36	5470	996	15900	1690	283	1370
20	633	47	94	2630	333	2410	1080	132	386
21	1180	116	374	1630	162	725	1170	113	358
22	924	53	134	1070	106	306	1060	87	249
23	822	30	66	1040	105	300	959	74	191
24	778	27	57	1170	141	456	941	70	178
25	744	38	76	856	77	178	1090	75	220
26	661	23	41	693	65	121	993	63	168
27	584	21	33	652	66	121	736	60	117
28	516	22	30	2190	633	7720	525	60	85
29	452	19	23	4510	624	8310	418	53	61
30	399	17	18	2260	251	1550	515	93	134
31	---	---	---	1400	147	559	---	---	---
TOTAL	43485	--	34981.9	35352	--	40900	33887	--	26085
		<u>JULY</u>			<u>AUGUST</u>			<u>SEPTEMBER</u>	
1	405	43	47	430	59	69	312	21	17
2	353	28	26	423	62	71	309	23	19
3	731	241	780	426	66	76	294	21	17
4	747	153	349	348	42	40	297	18	14
5	466	41	52	323	27	23	315	19	16
6	403	30	32	2790	546	5620	285	17	13
7	379	23	24	3520	657	7540	280	19	15
8	354	21	20	1370	226	851	277	19	14
9	340	15	14	857	145	341	273	19	14
10	407	23	27	1330	617	2510	370	57	131
11	422	24	28	727	145	292	817	244	691
12	342	16	15	594	69	110	441	76	96
13	312	16	14	507	50	69	426	147	177
14	649	85	460	453	41	50	338	47	43
15	2280	668	4910	418	40	45	456	289	419
16	809	159	364	387	35	36	561	99	150
17	567	61	94	365	30	29	402	30	33
18	506	40	55	374	19	20	348	30	28
19	506	36	49	349	19	18	329	25	22
20	494	35	47	336	16	14	328	29	27
21	435	27	32	320	18	15	649	147	306
22	411	23	26	322	13	11	478	46	60
23	349	17	16	368	34	39	1150	333	2160
24	342	14	13	461	82	103	2280	523	3440
25	344	13	12	410	27	30	890	164	410
26	305	12	9.5	359	23	22	641	60	105
27	309	17	15	431	106	132	553	44	66
28	970	610	2810	518	64	90	495	33	44
29	1020	426	1300	426	37	42	436	23	27
30	542	114	172	365	24	24	369	21	21
31	464	66	83	336	25	23	---	---	---
TOTAL	16963	--	11895.5	20643	--	18355	15399	--	8595
YEAR	304883		215248.0						

SURFACE-WATER RECORDS
Cuyahoga River Basin

04208504 CUYAHOGA RIVER AT LTV STEEL AT CLEVELAND, OHIO

LOCATION.—Latitude 41°27'45", longitude 81°40'52", Cuyahoga County, Hydrologic Unit 04110002, on left bank, at LTV Steel Company footbridge, 1.2 mi downstream from Big Creek, 5.5 mi upstream from mouth at Cleveland, Ohio.

DRAINAGE AREA.—788 mi².

PERIOD OF RECORD.—October 1, 1991 to current year.

GAGE.—Water-stage and acoustic velocity meter recorder. Elevation of gage is 583.57 ft above sea level (from topographic map).

REMARKS.—Records poor.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 15,500 ft³/s Aug. 13, 1994; minimum daily discharge, 310 ft³/s Aug. 29, 1993.

EXTREMES FOR CURRENT YEAR.—Maximum daily discharge, 11,000 ft³/s Apr. 9; minimum daily discharge, 500 ft³/s Oct. 8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1280	e580	e720	e780	e660	e4000	e860	e1300	e3400	1650	e1100	e760
2	763	e3000	e660	e880	e640	e3000	e1400	e3200	e3000	1400	e1000	e740
3	547	e10000	e620	e1200	e640	e2400	2010	e2200	e2500	2190	e1200	e700
4	894	e6000	e720	e8800	e620	e1900	4710	e1200	e2200	2230	e960	e700
5	642	e3300	e900	e5200	e620	e1700	3010	e1400	e2600	1610	e900	e760
6	e580	e2600	e1400	e4000	e600	e1500	2410	e1300	e3000	1490	e2000	e700
7	e520	e2100	e1300	e3200	e580	e1400	2110	e1100	e4000	1500	e6400	e680
8	e500	e1800	e1100	e2700	e700	e1300	e3000	e1300	e2600	1410	e4000	e660
9	e1100	e1600	e1000	e2400	e820	e1200	e11000	e1100	e2100	1470	e2100	e660
10	e1000	e1400	e3500	e2200	e1200	e1100	e7400	e1300	e1800	1860	e3000	e900
11	e800	e1300	e2700	e1900	e4400	e1000	e5800	e1200	e1700	1640	e2000	e1600
12	e620	e1100	e1900	e1700	e3500	e1200	e4700	e1100	e2000	1430	e1700	e1300
13	e1000	e1000	e1600	e1600	e2300	e1500	e3600	e1000	e3500	1270	e1400	e1000
14	e3000	e900	e3700	e1400	e3000	e1600	e2800	e980	e2500	2080	e1300	e800
15	e1300	e820	e4400	e1300	e4200	e1500	e2400	e920	e1900	3860	e1200	e940
16	e840	e780	e3100	e1200	e3500	e1400	e2000	e880	e2300	2170	e1100	e1200
17	e680	e740	e2300	e1100	e2900	e2400	e1700	841	e3000	1720	e960	e1000
18	e840	e700	e2000	e1000	e2500	e2000	e1600	1670	e6200	e1300	e940	e840
19	e720	e660	e1700	e940	e2600	e1700	e1400	4160	e4500	e1200	e900	e800
20	e640	e620	e1500	e900	e2300	e1600	e1500	e5000	e3000	e1200	e840	e800
21	e580	e660	e1300	e860	e1900	e2200	e2500	3010	e2300	e1100	e820	e1600
22	e560	e640	e1200	e840	e2500	e1700	e2300	2520	e2500	e1000	e800	e1100
23	e900	e600	e1000	e820	e6000	e1500	e2000	2520	e2200	e940	e860	e2000
24	e2900	e580	e920	e780	e8600	e1300	e1800	2580	2290	e900	e1100	e4300
25	e2000	e660	e820	e760	e7800	e1200	e1700	2150	2560	e860	e1000	e3000
26	e1200	e955	e780	e760	e6200	e1100	e1500	1960	2220	e820	e900	e1900
27	e960	e1400	e760	e740	e5200	e1100	e1400	1960	1980	e1000	e960	e1500
28	e840	e1000	e740	e720	e4900	e1200	e1300	3840	1640	e1700	e1200	e1300
29	e760	e880	e740	e700	e4700	e1100	e1200	e6000	2000	e2500	e1000	e1100
30	e700	e780	e740	e680	---	e1000	e1100	e7000	2010	e1600	e880	e1000
31	e640	---	e740	e680	---	e940	---	e3900	---	e1200	e800	---
TOTAL	30306	49155	46560	52740	86080	49740	82210	70591	79500	48300	45320	36340
MEAN	978	1638	1502	1701	2968	1605	2740	2277	2650	1558	1462	1211
MAX	3000	10000	4400	8800	8600	4000	11000	7000	6200	3860	6400	4300
MIN	500	580	620	680	580	940	860	841	1640	820	800	660
CAL YR 1999	TOTAL 479222	MEAN 1313	MAX 10000	MIN 340								
WTR YR 2000	TOTAL 676842	MEAN 1849	MAX 11000	MIN 500								

e Estimated.

SURFACE-WATER RECORDS
Grand River Basin

04212100 GRAND RIVER NEAR PAINESVILLE, OHIO

LOCATION.—Latitude 41°43'08", longitude 81°13'41", Lake County, Hydrologic Unit 04110004, on downstream left abutment of bridge on State Highway 84 (Walnut Avenue), 0.9 mi downstream from Big Creek in Painesville, Ohio.

DRAINAGE AREA.—685 mi².

PERIOD OF RECORD.—October 1974 to current year.

GAGE.—Water-stage recorder. Datum of gage is 596.37 ft above sea level. Previously published in error as 620.37 ft above sea level.

REMARKS.—Records good except for periods of estimated record, which are poor. Water-quality data formerly collected at this site.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	434	81	337	e430	e125	949	241	249	446	162	89	21
2	189	1650	263	1510	e120	819	228	733	557	135	93	25
3	147	7350	254	3030	e120	703	442	590	493	179	337	27
4	139	5680	306	5310	e115	580	5010	573	686	217	1020	25
5	102	2770	435	4530	e110	468	5220	641	411	195	268	23
6	77	1600	946	2720	e110	378	2730	485	669	158	225	21
7	61	1150	1310	2040	e110	314	1820	350	1720	142	327	18
8	50	767	1050	1760	e140	272	7240	294	1480	116	292	16
9	58	467	758	1260	e200	252	7170	256	990	94	380	15
10	58	305	1070	912	264	238	4600	320	574	84	427	16
11	52	230	1780	996	1130	206	3240	476	321	75	216	39
12	47	186	1430	975	1470	232	2620	496	252	68	122	44
13	106	156	1120	826	1580	298	1660	395	723	68	97	35
14	443	133	2220	647	1380	624	946	299	1150	72	80	28
15	356	116	4530	526	1820	1250	647	215	1390	112	63	25
16	229	104	3330	428	2050	1100	498	166	1370	105	51	28
17	207	95	2130	334	1740	1240	428	154	2010	141	41	63
18	148	88	1680	257	1440	1270	377	736	3210	222	38	76
19	103	81	1280	e230	1150	1080	361	7510	3330	165	34	72
20	80	80	872	e220	894	886	740	6190	2420	115	30	68
21	65	81	671	e205	697	741	3310	2970	1370	99	27	71
22	55	82	533	e195	718	733	3900	1720	1030	95	25	52
23	52	84	418	e185	3580	724	2570	1480	625	75	39	57
24	293	87	e350	e175	5690	655	1780	1210	358	63	41	101
25	751	88	e300	e165	5640	549	1210	1100	330	55	33	90
26	527	102	e260	e160	4540	472	746	764	372	51	31	212
27	369	460	e240	e150	3390	403	487	446	297	47	51	299
28	234	781	e210	e145	2390	376	347	314	238	46	52	170
29	157	608	e190	e140	1450	333	272	255	210	53	37	94
30	116	453	e180	e130	---	305	221	227	176	50	29	67
31	94	---	e220	e130	---	281	---	247	---	62	25	---
TOTAL	5799	25915	30673	30721	44163	18731	61061	31861	29208	3321	4620	1898
MEAN	187	864	989	991	1523	604	2035	1028	974	107	149	63.3
MAX	751	7350	4530	5310	5690	1270	7240	7510	3330	222	1020	299
MIN	47	80	180	130	110	206	221	154	176	46	25	15
CFSM	.27	1.26	1.44	1.45	2.22	.88	2.97	1.50	1.42	.16	.22	.09
IN.	.31	1.41	1.67	1.67	2.40	1.02	3.32	1.73	1.59	.18	.25	.10

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1975 - 2000, BY WATER YEAR (WY)

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995		
MEAN	478	1187	1528	1460	1759	1935	1509	820	673	259	239	402											
MAX	1880	4026	3816	3327	4044	3753	2598	3214	2851	1106	1106	1854											
(WY)	1991	1986	1978	1993	1981	1993	1987	1989	1986	1987	1980	1990											
MIN	42.1	67.1	141	109	322	577	450	106	39.8	30.5	17.0	11.0											
(WY)	1992	1979	1999	1977	1987	1990	1975	1987	1988	1991	1991	1995											

SUMMARY STATISTICS	FOR 1999 CALENDAR YEAR	FOR 2000 WATER YEAR	WATER YEARS 1975 - 2000
ANNUAL TOTAL	245488	287971	
ANNUAL MEAN	673	787	1016
HIGHEST ANNUAL MEAN			1406
LOWEST ANNUAL MEAN			524
HIGHEST DAILY MEAN	9030	Jan 24	7510
LOWEST DAILY MEAN	12	Sep 6	15
ANNUAL SEVEN-DAY MINIMUM	16	Aug 31	19
INSTANTANEOUS PEAK FLOW			9550
INSTANTANEOUS PEAK STAGE			8.88
INSTANTANEOUS LOW FLOW			14
ANNUAL RUNOFF (CFSM)	.98	1.15	1.48
ANNUAL RUNOFF (INCHES)	13.33	15.64	20.15
10 PERCENT EXCEEDS	1890	2020	2760
50 PERCENT EXCEEDS	186	296	405
90 PERCENT EXCEEDS	25	51	38

a Peaks above base shown in table of peak discharges and stages at continuous-record surface-water-discharge stations.
e Estimated.

**PEAK DISCHARGE AND STAGE
AT CONTINUOUS-RECORD SURFACE DISCHARGE STATIONS**

For continuous-record surface-water-discharge stations meeting certain criteria, all peak discharges and stages occurring during the water year and greater than a selected base discharge are presented in this table. The peaks greater than the base discharge, excluding the highest one, are referred to as secondary peaks. The peaks are listed in chronological order. Peak discharges are not published for canals, ditches, drains, or streams for which the peaks are subject to substantial control by human intervention. The time of occurrence for peaks is expressed in 24-hour local standard time. For example, 12:30 a.m. is 0030 and 1:30 p.m. is 1330. The maximum peak discharge and gage height for the water year are flagged with an asterisk (*).

PEAK DISCHARGES EQUAL TO OR GREATER THAN BASE DISCHARGES, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

[ft³/s, cubic feet per second; --, no data; e, estimated]

Date	Time	Discharge (ft ³ /s)	Gage height (feet)	Date	Time	Discharge (ft ³ /s)	Gage height (feet)
LAKE ERIE BASIN							
Ottawa River Basin							
<u>04177000 OTTAWA RIVER AT TOLEDO UNIVERSITY, TOLEDO, OHIO</u> (Base discharge: 1,150 ft ³ /s)							
Apr. 21	2330	1450	10.01	June 13	1830	1420	9.91
May 20	1400	*1990	*11.40	June 26	0800	1330	9.65
Maumee River Basin							
<u>04185000 TIFFIN RIVER AT STRYKER, OHIO</u> (Base discharge: 1,850 ft ³ /s)							
May 23	0600	2500	12.92	June 28	1200	*2740	*13.24
<u>04185440 UNNAMED TRIBUTARY TO LOST CREEK NEAR FARMER, OHIO</u> (Base discharge: 120 ft ³ /s)							
May 18	2330	254	4.12	Sept. 12	0115	320	4.40
May 28	1000	*425	*4.78	Sept. 23	1930	158	3.61
June 25	0345	254	4.12				
<u>04186500 AUGLAIZE RIVER NEAR FORT JENNINGS, OHIO</u> (Base discharge: 2,700 ft ³ /s)							
Apr. 9	1300	*2790	*11.15	No other peaks greater than base discharge			
<u>04189000 BLANCHARD RIVER NEAR FINDLAY, OHIO</u> (Base discharge: 2,800 ft ³ /s)							
Feb. 22	--	e3500	--	June 19	1030	*4450	*10.36
Apr. 8	1930	3850	9.38				
Portage River Basin							
<u>04195500 PORTAGE RIVER AT WOODVILLE, OHIO</u> (Base discharge: 3,500 ft ³ /s)							
June 26	1800	*5660	*10.31	No other peaks greater than base discharge			
<u>04195820 PORTAGE RIVER AT ELMORE, OHIO</u> (Base discharge: 3,800 ft ³ /s)							
Feb. 24	0300	3910	8.01	June 26	1730	*5760	*9.79
Sandusky River Basin							
<u>04196000 SANDUSKY RIVER NEAR BUCYRUS, OHIO</u> (Base discharge: 1,200 ft ³ /s)							
Jan. 4	2030	1550	6.38	May 29	1400	1490	6.25
Apr. 8	2400	*2830	*8.19				
<u>04196800 TYMOCHTEE CREEK AT CRAWFORD, OHIO</u> (Base discharge: 1,800 ft ³ /s)							
Apr. 10	1200	*2040	*6.32	No other peaks greater than base discharge			
<u>04197100 HONEY CREEK AT MELMORE, OHIO</u> (Base discharge: 1,500 ft ³ /s)							
Apr. 9	0830	1830	7.63	Aug. 24	1630	*2980	*9.36
<u>04198000 SANDUSKY RIVER NEAR FREMONT, OHIO</u> (Base discharge: 10,000 ft ³ /s)							
Feb. 13	1600	ice	*6.88	Apr. 8	2330	*12600	*6.88

**PEAK DISCHARGE AND STAGE
AT CONTINUOUS-RECORD SURFACE DISCHARGE STATIONS**

PEAK DISCHARGES EQUAL TO OR GREATER THAN BASE DISCHARGES, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[ft³/s, cubic feet per second; --, no data; e, estimated]

Date	Time	Discharge (ft ³ /s)	Gage height (feet)	Date	Time	Discharge (ft ³ /s)	Gage height (feet)
Huron River Basin							
<u>04199000 HURON RIVER AT MILAN, OHIO</u> (Base discharge: 4,700 ft ³ /s)							
Feb. 23	1845	5180	14.71	June 18	1530	*9130	*18.26
Apr. 8	1315	8590	17.83	July 29	2300	6150	15.67
Old Woman's Creek Basin							
<u>04199155 OLD WOMAN'S CREEK AT BERLIN ROAD NEAR HURON, OHIO</u> (Base discharge: 400 ft ³ /s)							
Apr. 8	0500	974	9.82	June 16	2315	574	8.20
May 19	0900	438	7.39	June 18	1415	*1300	*10.66
June 6	0430	580	8.23	Aug. 7	0515	580	8.23
Black River Basin							
<u>04200500 BLACK RIVER AT ELYRIA, OHIO</u> (Base discharge: 3,200 ft ³ /s)							
Feb. 23	2300	4480	9.77	June 18	2200	4510	9.80
Apr. 9	1330	*6870	*12.18				
Rocky River Basin							
<u>04201500 ROCKY RIVER NEAR BEREA, OHIO</u> (Base discharge: 4,000 ft ³ /s)							
Nov. 3	0600	4160	4.68	May 19	1230	5580	5.35
Jan. 4	1230	4140	4.67	May 28	2400	5470	5.30
Apr. 8	0900	*7660	*6.20	June 18	1600	6600	5.77
Cuyahoga River Basin							
<u>04206212 NORTH FORK AT BATH CENTER, OHIO</u> (Base discharge: 230 ft ³ /s)							
May 28	1425	*494	*12.71	No other peaks greater than base discharge			
<u>04206220 YELLOW CREEK AT BOTZUM, OHIO</u> (Base discharge: 650 ft ³ /s)							
Apr. 8	1430	687	13.55	May 28	1445	*1180	*14.82
May 19	0615	862	13.97				
<u>04207200 TINKERS CREEK AT BEDFORD, OHIO</u> (Base discharge: 1,500 ft ³ /s)							
Oct. 13	1930	1590	6.14	May 19	0430	2600	7.00
Nov. 2	1900	2430	6.86	June 16	2000	1530	6.08
Dec. 14	1200	1630	6.18	June 18	1030	2850	7.19
Jan. 4	0100	1540	6.09	Aug. 7	0230	*3380	*7.58
Apr. 8	0430	2520	6.93	Sept. 23	2130	1600	6.15
Grand River Basin							
<u>04212100 GRAND RIVER NEAR PAINESVILLE, OHIO</u> (Base discharge: 6,500 ft ³ /s)							
Nov. 3	1000	8050	8.13	Apr. 8	0600	*9550	*8.88
Feb. 23	1730	7420	7.79	May 19	0730	9040	8.63
Conneaut River Basin							
<u>04213000 CONNEAUT CREEK AT CONNEAUT, OHIO</u> (Base discharge: 2,900 ft ³ /s)							
Nov. 4	1000	4240	6.95	May 20	0700	4890	7.41
Apr. 5	1100	3260	6.10	Aug. 4	0500	*7710	*9.05
Apr. 9	1900	3680	6.48				

GROUND-WATER RECORDS
Crawford County

404838082563100. LOCAL NUMBER, CR-1

LOCATION.—Latitude 40°48'38", longitude 82°56'31", Hydrologic Unit 04100011, Timken Roller Bearing Company, U.S. 30 in Bucyrus. Owner: Timken Roller Bearing Company.

AQUIFER.—Sand and gravel of Pleistocene Age.

WELL CHARACTERISTICS.—Drilled test water-table well, diameter 6 in., depth 54 ft, cased.

INSTRUMENTATION.—Digital recorder, 60-minute punch.

DATUM.—Elevation of land-surface datum is 1039.13 ft above sea level. Measuring point: Floor of instrument shelter 3.50 ft above land-surface datum.

REMARKS.—Station operated by Ohio Department of Natural Resources, Division of Water.

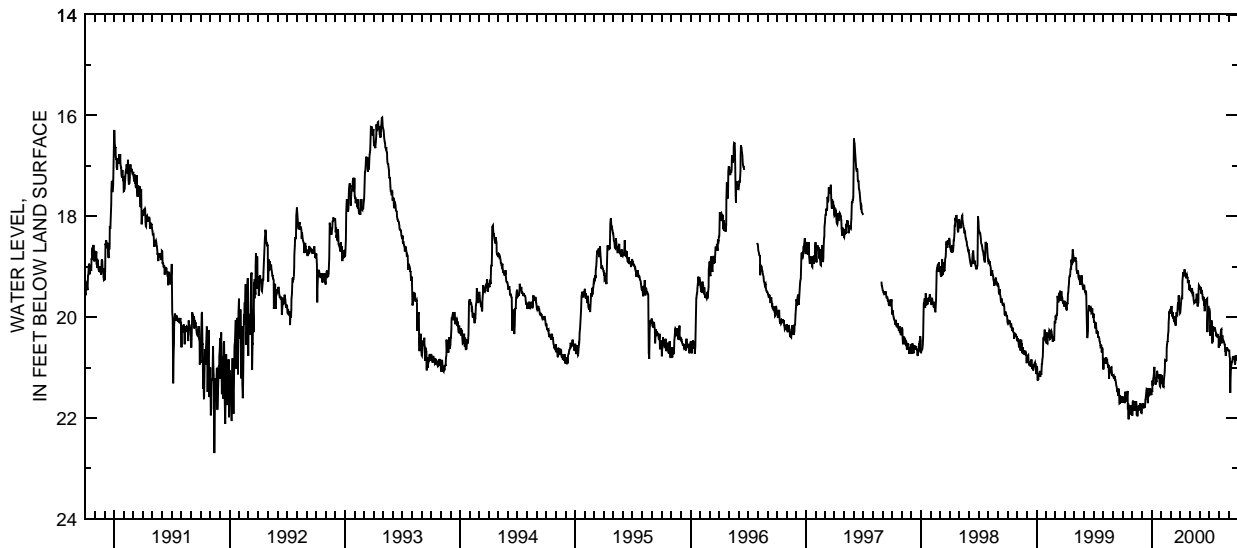
PERIOD OF RECORD.—April 1962 to current year.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily low, 37.64 ft below land-surface datum, Dec. 11, 1962; minimum daily low, 16.04 ft below land-surface datum, Apr. 29, 1993.

DEPTH BELOW LAND SURFACE (WATER LEVEL), FEET, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21.57	21.96	21.85	21.53	21.28	19.84	19.91	19.36	19.40	19.85	20.61	20.67
2	21.67	21.70	21.74	21.46	21.32	19.89	19.81	19.46	19.42	19.83	20.48	20.67
3	21.70	21.66	21.72	21.49	21.16	19.86	19.72	19.47	19.46	19.88	20.49	20.67
4	21.63	21.68	21.78	21.26	21.32	19.78	19.65	19.46	19.43	19.91	20.57	20.77
5	21.63	21.70	21.72	21.36	21.34	19.88	19.62	19.48	19.40	20.37	20.52	20.82
6	21.65	21.70	21.79	21.22	21.38	19.95	19.63	19.49	19.50	20.16	20.39	21.51
7	21.67	21.71	21.80	21.21	21.38	19.94	19.63	19.46	19.54	20.25	20.33	21.27
8	21.71	21.86	21.80	21.16	21.39	19.90	19.30	19.43	19.46	20.17	20.25	21.04
9	21.61	21.67	21.79	21.02	21.23	19.97	19.18	19.45	19.52	20.07	20.24	20.99
10	21.48	21.76	21.78	20.99	21.20	20.03	19.15	19.56	19.55	20.15	20.52	20.95
11	21.68	21.81	21.78	21.20	21.11	19.99	19.11	19.55	19.64	20.52	20.39	20.89
12	21.57	21.75	21.64	21.22	21.05	20.08	19.19	19.50	19.62	20.30	20.38	20.89
13	21.53	21.67	21.63	21.33	20.86	20.09	19.17	19.66	19.67	20.50	20.38	20.88
14	21.57	21.73	21.57	21.34	20.87	20.04	19.07	19.69	19.60	20.25	20.46	20.79
15	21.63	21.95	21.47	21.20	20.89	19.98	19.07	19.71	19.78	20.20	20.46	20.78
16	21.48	21.78	21.44	21.28	20.86	20.04	19.15	19.69	19.70	20.21	20.48	20.82
17	21.47	21.97	21.45	21.28	20.86	20.17	19.13	19.67	19.87	20.23	20.49	20.81
18	21.83	21.82	21.46	21.07	20.61	20.14	19.20	19.71	19.87	20.24	20.51	20.83
19	21.72	21.78	21.41	21.08	20.55	19.97	19.23	19.71	19.70	20.22	20.54	20.77
20	22.03	21.78	21.71	21.14	20.48	19.91	19.17	19.68	19.67	20.22	20.55	20.80
21	21.77	21.77	21.62	21.18	20.49	19.94	19.15	19.66	19.68	20.25	20.67	20.94
22	21.95	21.80	21.55	21.18	20.36	19.95	19.18	19.61	19.71	20.30	20.68	20.92
23	21.78	21.79	21.51	21.18	20.28	19.89	19.21	19.54	19.67	20.32	20.77	20.80
24	21.81	21.83	21.56	21.22	20.11	19.77	19.22	19.58	19.64	20.36	20.70	20.80
25	21.91	21.82	21.55	21.13	20.02	19.71	19.33	19.75	19.63	20.35	20.65	20.76
26	21.75	21.71	21.42	21.28	19.91	19.74	19.32	19.79	20.30	20.39	20.62	20.78
27	21.85	21.85	21.46	21.37	19.88	19.57	19.27	19.76	19.95	20.39	20.60	20.78
28	21.76	21.87	21.42	21.38	19.93	19.73	19.30	19.71	19.85	20.34	20.64	20.85
29	21.93	21.90	21.48	21.33	19.87	19.83	19.44	19.47	19.78	20.36	20.64	20.87
30	21.79	21.91	21.50	21.16	---	19.87	19.47	19.37	19.83	20.38	20.66	20.80
31	21.77	---	21.55	21.16	---	19.92	---	19.39	---	20.40	20.66	---
MAX	22.03	21.97	21.85	21.53	21.39	20.17	19.91	19.79	20.30	20.52	20.77	21.51

CAL YR 1999 LOW 22.03
WTR YR 2000 LOW 22.03



GROUND-WATER RECORDS
Geauga County

412518081221500. LOCAL NUMBER, GE-3A

LOCATION.—Latitude 41°25'18", longitude 81°22'15", Hydrologic Unit 04110003, 1.2 miles southeast of Chagrin Falls, Ohio. Owner: City of Chagrin Falls.

AQUIFER.—Sandstone of Pennsylvanian Age.

WELL CHARACTERISTICS.—Drilled unused artesian well, diameter 6 in., depth drilled 120 ft, present depth 89 ft, cased.

INSTRUMENTATION.—Digital recorder, 60-minute punch.

DATUM.—Elevation of land-surface datum is 1130 ft above sea level. Measuring point: Floor of instrument shelter 3.50 ft above sea level, from topographic map. Measuring point: Floor of instrument shelter 3.0 ft above land-surface datum.

REMARKS.—Station operated by Ohio Department of Natural Resources, Division of Water. Water level affected by pumping wells nearby for Chagrin Falls municipal supply.

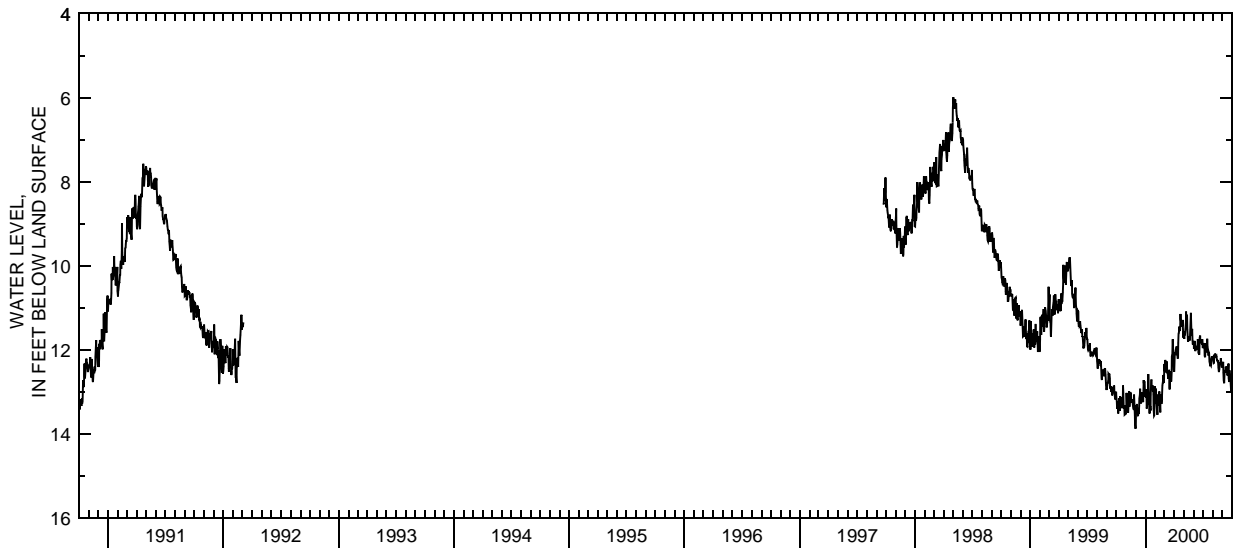
PERIOD OF RECORD.—September 1951 to September 1991 continuous. Discontinued October 1991 to March 1996. Periodic measurements April 1996 to September 1997. Continuous September 1997 to current year.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily low, 52.85 ft below land-surface datum, Oct. 2, 1965; minimum daily low, 5.99 ft below land-surface datum, May 2, 1998.

DEPTH BELOW LAND SURFACE (WATER LEVEL), FEET, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13.11	13.46	13.85	13.11	13.08	12.34	12.52	11.56	11.85	11.96	12.18	12.37
2	13.22	13.03	13.55	13.03	13.28	12.51	12.27	11.70	11.85	11.92	12.17	12.33
3	13.40	13.18	13.32	13.02	12.93	12.48	12.14	11.74	11.98	11.84	12.27	12.29
4	13.26	13.41	13.38	12.94	13.07	12.24	12.05	11.66	11.90	11.91	12.32	12.55
5	13.28	13.41	13.29	13.40	13.23	12.37	12.12	11.64	11.79	11.90	12.31	12.73
6	13.40	13.44	13.38	13.34	13.44	12.54	12.02	11.60	11.94	11.97	12.15	12.80
7	13.52	13.50	13.53	13.30	13.46	12.50	12.02	11.49	12.03	12.15	12.16	12.69
8	13.32	13.35	13.56	13.27	13.55	12.30	11.94	11.34	11.91	12.18	12.18	12.50
9	13.27	13.09	13.55	12.89	13.24	12.28	11.94	11.09	11.92	12.01	12.09	12.54
10	13.15	12.99	13.40	12.58	13.07	12.52	12.13	11.35	11.95	11.85	12.17	12.51
11	13.44	13.36	13.52	12.85	13.29	12.51	12.08	11.42	11.96	11.99	12.18	12.47
12	13.46	13.30	13.33	13.04	13.33	12.60	12.19	11.17	11.99	12.06	12.18	12.40
13	13.10	13.10	13.16	13.35	13.13	12.69	12.19	11.52	11.95	12.01	12.16	12.54
14	13.31	13.03	13.09	13.52	12.99	12.56	11.84	11.73	11.87	11.89	12.22	12.48
15	13.27	13.03	12.93	13.42	13.23	12.52	11.62	11.81	11.75	11.74	12.25	12.40
16	13.17	13.08	13.05	13.34	13.34	12.51	11.57	11.79	11.80	11.93	12.28	12.57
17	13.14	13.24	13.19	13.45	13.49	12.93	11.45	11.70	12.07	12.00	12.28	12.57
18	13.36	13.24	13.28	13.08	13.18	12.93	11.50	11.68	12.07	12.12	12.24	12.62
19	13.39	13.21	13.23	12.74	13.07	12.57	11.55	11.71	12.12	12.12	12.43	12.51
20	13.34	13.19	13.02	12.71	13.18	12.52	11.50	11.78	12.08	12.08	12.49	12.33
21	13.34	13.23	13.17	12.87	13.29	12.67	11.15	11.73	11.71	12.09	12.53	12.68
22	12.85	13.33	13.20	12.96	13.18	12.76	11.27	11.57	11.66	12.28	12.46	12.77
23	13.03	13.36	13.10	12.85	12.99	12.74	11.36	11.32	11.81	12.34	12.30	12.49
24	13.37	13.41	13.22	12.99	12.85	12.53	11.36	11.12	11.79	12.33	12.31	12.58
25	13.41	13.43	13.25	12.86	12.77	12.15	11.40	11.45	11.78	12.36	12.34	12.61
26	13.32	13.07	12.72	13.07	12.74	12.12	11.45	11.64	11.78	12.38	12.25	12.72
27	13.55	13.32	12.80	13.40	12.60	11.78	11.40	11.65	11.85	12.31	12.20	12.76
28	13.54	13.57	12.76	13.57	12.78	11.75	11.29	11.50	11.87	12.21	12.31	12.97
29	13.51	13.78	12.77	13.56	12.79	12.16	11.56	11.77	11.75	12.18	12.34	13.01
30	13.54	13.88	12.91	13.20	---	12.33	11.71	11.87	11.89	12.18	12.41	12.84
31	13.50	---	13.10	12.87	---	12.48	---	11.79	---	12.21	12.41	---
MAX	13.55	13.88	13.85	13.57	13.55	12.93	12.52	11.87	12.12	12.38	12.53	13.01

CAL YR 1999 LOW 13.88
WTR YR 2000 LOW 13.88



GROUND-WATER RECORDS
Hancock County

405940083275500. LOCAL NUMBER, HA-3

LOCATION.—Latitude 40°59'40", longitude 83°27'55", Hydrologic Unit 0410008, 2 miles north of Vanlue, Ohio. Owner: City of Findlay.

AQUIFER.—Limestone of Silurian Age.

WELL CHARACTERISTICS.—Drilled artesian well, diameter 10 in., diameter 6 in. below 55 ft., depth 240 ft, cased to 55 ft.

INSTRUMENTATION.—Type F continuous recorder.

DATUM.—Elevation of land-surface datum is 815 ft above sea level, from topographic map. Measuring point: Floor of instrument shelter 1.40 ft above land-surface datum.

REMARKS.—Station operated by Ohio Department of Natural Resources, Division of Water.

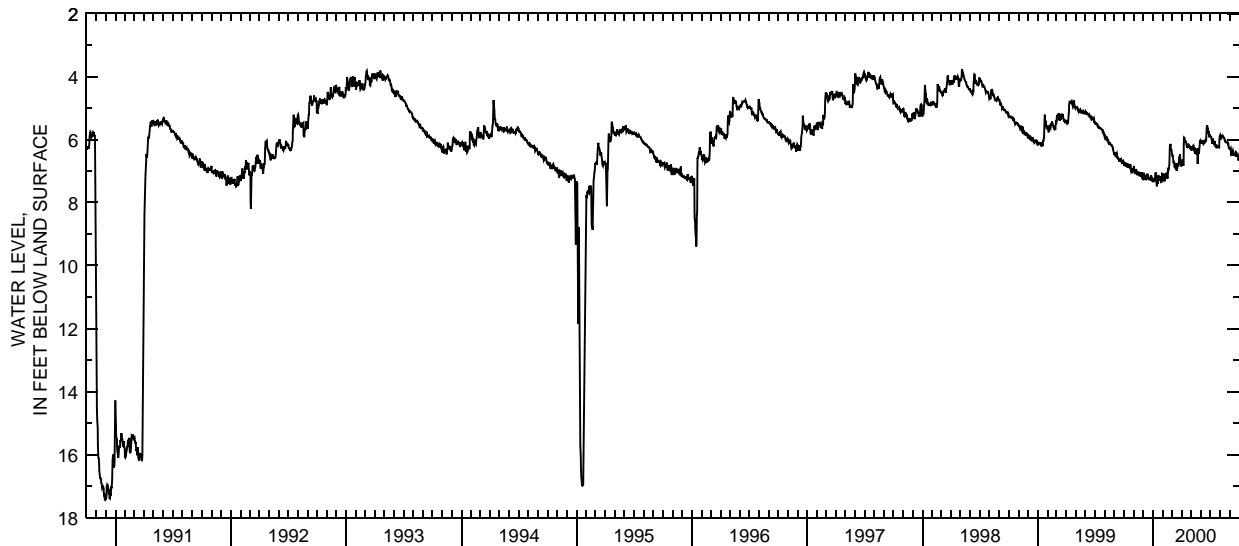
PERIOD OF RECORD.—May 1947 to October 1972 and August 1988 to current year.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily low, 20.67 ft below land-surface datum, Sept. 22, 1988; minimum daily low, 3.76 ft below land-surface datum, May 7, 1998.

DEPTH BELOW LAND SURFACE (WATER LEVEL), FEET, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.73	6.93	7.20	7.32	7.25	6.41	6.78	6.22	6.10	5.91	5.86	6.33
2	6.80	6.84	7.08	7.24	7.28	6.51	6.66	6.35	6.10	5.90	5.91	6.30
3	6.84	7.01	7.08	7.29	7.07	6.51	6.64	6.30	6.10	5.91	5.94	6.27
4	6.77	7.04	7.16	7.24	7.30	6.51	6.77	6.28	6.05	5.92	5.99	6.36
5	6.76	7.03	7.11	7.35	7.30	6.64	6.79	6.28	6.02	5.99	5.94	6.50
6	6.82	7.06	7.24	7.25	7.30	6.72	6.81	6.26	6.14	6.05	5.93	6.49
7	6.85	7.06	7.24	7.22	7.30	6.71	6.81	6.22	6.08	6.13	5.89	6.36
8	6.74	6.98	7.26	7.21	7.30	6.68	6.18	6.19	6.07	6.05	5.86	6.41
9	6.76	6.94	7.24	7.07	7.12	6.80	5.93	6.20	6.10	5.97	5.86	6.38
10	6.78	6.97	7.25	7.04	7.11	6.88	5.95	6.33	6.06	6.05	5.90	6.34
11	6.88	7.13	7.26	7.30	7.24	6.82	6.01	6.32	6.06	6.09	5.92	6.40
12	6.85	7.10	7.14	7.33	7.21	6.90	6.08	6.25	6.12	6.14	5.92	6.42
13	6.83	7.00	7.16	7.46	7.05	6.91	6.08	6.43	6.11	6.13	5.93	6.51
14	6.88	7.08	7.11	7.46	7.15	6.83	6.04	6.44	6.05	6.08	5.97	6.46
15	6.80	7.08	7.11	7.28	7.20	6.75	6.07	6.42	6.02	6.05	5.98	6.50
16	6.79	7.08	7.22	7.39	7.22	6.85	6.15	6.38	6.04	6.10	6.05	6.50
17	6.82	7.11	7.24	7.39	7.21	6.99	6.18	6.29	6.08	6.22	6.04	6.45
18	6.87	7.07	7.25	7.15	6.96	6.94	6.24	6.33	6.02	6.24	6.06	6.48
19	6.89	7.06	7.20	7.15	6.98	6.77	6.25	6.40	5.65	6.19	6.09	6.39
20	6.88	7.10	7.22	7.24	6.93	6.77	6.23	6.38	5.59	6.18	6.09	6.40
21	6.87	7.09	7.26	7.28	6.92	6.83	6.14	6.33	5.55	6.25	6.09	6.53
22	6.79	7.13	7.26	7.28	6.80	6.83	6.16	6.78	5.64	6.24	6.09	6.53
23	6.94	7.13	7.22	7.26	6.43	6.76	6.16	6.39	5.72	6.24	6.05	6.42
24	7.00	7.16	7.27	7.27	6.22	6.65	6.18	6.28	5.70	6.23	6.09	6.48
25	6.97	7.16	7.28	7.16	6.18	6.59	6.22	6.41	5.76	6.24	6.14	6.47
26	6.96	7.04	7.14	7.30	6.14	6.61	6.24	6.46	5.76	6.25	6.12	6.52
27	7.01	7.16	7.21	7.36	6.26	6.47	6.21	6.30	5.87	6.25	6.12	6.52
28	6.98	7.23	7.20	7.35	6.34	6.67	6.20	6.20	5.85	6.24	6.25	6.66
29	6.99	7.25	7.23	7.29	6.34	6.78	6.29	6.06	5.85	6.25	6.27	6.61
30	6.97	7.26	7.29	7.10	---	6.79	6.32	6.07	5.91	6.00	6.27	6.51
31	6.96	---	7.33	7.12	---	6.85	---	6.05	---	5.88	6.29	---
MAX	7.01	7.26	7.33	7.46	7.30	6.99	6.81	6.78	6.14	6.25	6.29	6.66

CAL YR 1999 LOW 7.33
WTR YR 2000 LOW 7.46



**GROUND-WATER RECORDS
Hardin County**

404648083412600. LOCAL NUMBER, HN-2A

LOCATION.—Latitude 40°46'48", longitude 83°41'26", Hydrologic Unit 04100007, at southeast edge of Dola, Ohio. Owner: Kevin Eikenbary.

AQUIFER.—Limestone of Silurian Age.

WELL CHARACTERISTICS.—Drilled unused artesian well, diameter 6 in., depth 51 ft, cased.

INSTRUMENTATION.—Electronic data logger, 60-minute log interval. Satellite telemeter at site.

DATUM.—Elevation of land-surface datum is 945 ft above sea level, from topographic map. Measuring point: Floor of instrument shelter 2.88 ft above land-surface datum.

REMARKS.—Station operated by Ohio Department of Natural Resources, Division of Water.

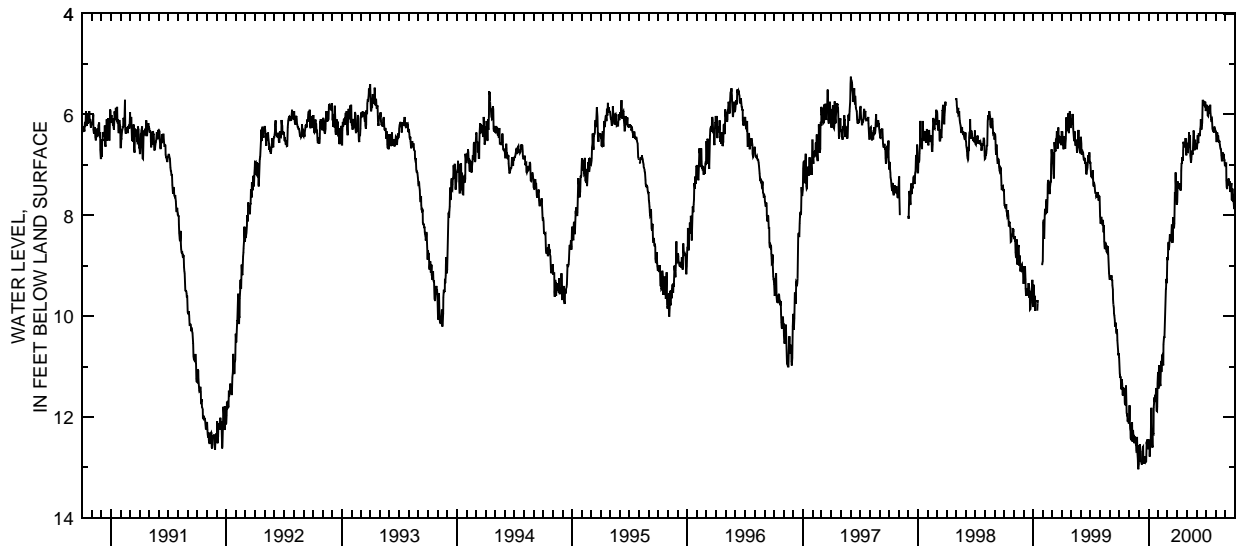
PERIOD OF RECORD.—December 1954 to current year.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily low, 15.86 ft below land-surface datum, Jan. 20, 21, 1965; minimum daily low, 5.25 ft below land-surface datum, June 2, 1997.

DEPTH BELOW LAND SURFACE (WATER LEVEL), FEET, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10.92	12.05	12.94	12.59	11.35	8.83	7.74	6.56	6.63	5.93	6.33	7.00
2	11.13	11.77	12.67	12.45	11.44	8.89	7.49	6.73	6.61	5.87	6.35	6.99
3	11.22	12.11	12.56	12.50	10.98	8.84	7.33	6.76	6.69	5.85	6.48	6.98
4	11.20	12.24	12.69	12.55	11.25	8.55	7.43	6.70	6.56	5.85	6.55	7.31
5	11.22	12.27	12.54	12.79	11.33	8.55	7.46	6.72	6.41	5.81	6.49	7.45
6	11.34	12.43	12.81	12.63	11.39	8.69	7.40	6.69	6.52	5.89	6.36	7.48
7	11.45	12.46	12.85	12.61	11.34	8.61	7.40	6.58	6.57	6.02	6.44	7.39
8	11.25	12.28	12.89	12.52	11.39	8.43	7.45	6.44	6.37	6.03	6.44	7.29
9	11.30	12.17	12.86	12.16	11.05	8.38	7.45	6.35	6.38	5.89	6.42	7.33
10	11.33	12.11	12.92	11.82	10.89	8.49	7.48	6.63	6.39	5.84	6.50	7.31
11	11.56	12.49	12.95	12.23	11.11	8.44	7.36	6.62	6.42	5.94	6.54	7.27
12	11.57	12.42	12.70	12.30	11.09	8.49	7.51	6.42	6.43	5.98	6.54	7.32
13	11.41	12.26	12.69	12.56	10.78	8.50	7.44	6.82	6.29	5.96	6.52	7.41
14	11.58	12.37	12.60	12.61	10.77	8.37	7.12	6.93	6.24	5.91	6.60	7.32
15	11.47	12.36	12.59	12.30	10.90	8.20	6.96	6.96	6.10	5.81	6.62	7.40
16	11.43	12.40	12.79	12.33	10.95	8.20	6.98	6.89	6.14	5.98	6.68	7.53
17	11.54	12.52	12.88	12.34	10.98	8.55	6.85	6.75	6.30	6.06	6.70	7.51
18	11.71	12.42	12.93	11.82	10.56	8.47	6.91	6.72	6.21	6.12	6.68	7.54
19	11.74	12.39	12.82	11.69	10.43	8.13	6.90	6.78	6.17	6.11	6.81	7.39
20	11.77	12.46	12.79	11.61	10.42	8.04	6.72	6.80	6.07	6.09	6.88	7.36
21	11.74	12.46	12.90	11.69	10.43	8.22	6.54	6.72	5.71	6.14	6.93	7.69
22	11.38	12.56	12.87	11.69	10.17	8.26	6.58	6.55	5.74	6.28	6.86	7.70
23	11.73	12.55	12.80	11.56	9.98	8.16	6.60	6.32	5.83	6.32	6.75	7.47
24	11.93	12.68	12.89	11.63	9.78	7.90	6.57	6.35	5.73	6.33	6.84	7.60
25	11.95	12.67	12.88	11.43	9.47	7.58	6.62	6.62	5.76	6.33	6.87	7.58
26	11.94	12.40	12.49	11.65	9.45	7.59	6.65	6.71	5.74	6.36	6.78	7.69
27	12.09	12.70	12.54	11.88	9.26	7.15	6.53	6.63	5.83	6.31	6.81	7.71
28	12.04	12.85	12.46	11.89	9.35	7.32	6.47	6.50	5.84	6.24	6.91	7.86
29	12.07	13.01	12.46	11.80	9.22	7.57	6.71	6.63	5.75	6.28	6.91	7.88
30	12.10	13.04	12.52	11.33	---	7.68	6.81	6.66	5.87	6.32	6.99	7.70
31	12.13	---	12.64	11.11	---	7.79	---	6.58	---	6.35	6.98	---
MAX	12.13	13.04	12.95	12.79	11.44	8.89	7.74	6.96	6.69	6.36	6.99	7.88

CAL YR 1999 LOW 13.04
WTR YR 2000 LOW 13.04



GROUND-WATER RECORDS
Henry County

412123083574000. LOCAL NUMBER, HY-2

LOCATION.—Latitude 41°21'23", longitude 83°57'40", Hydrologic Unit 04100009, 1.4 mi southwest of McClure, Ohio. Owner: State of Ohio.

AQUIFER.—Limestone of Silurian Age.

WELL CHARACTERISTICS.—Drilled unused artesian well, diameter 12 in., depth drilled 300 ft, cased to 43 ft.

INSTRUMENTATION.—Digital recorder, 60-minute punch.

DATUM.—Elevation of land-surface datum is 680 ft above sea level, from topographic map. Measuring point: Floor of instrument shelter 3.00 ft above land-surface datum.

REMARKS.—Station operated by Ohio Department of Natural Resources, Division of Water.

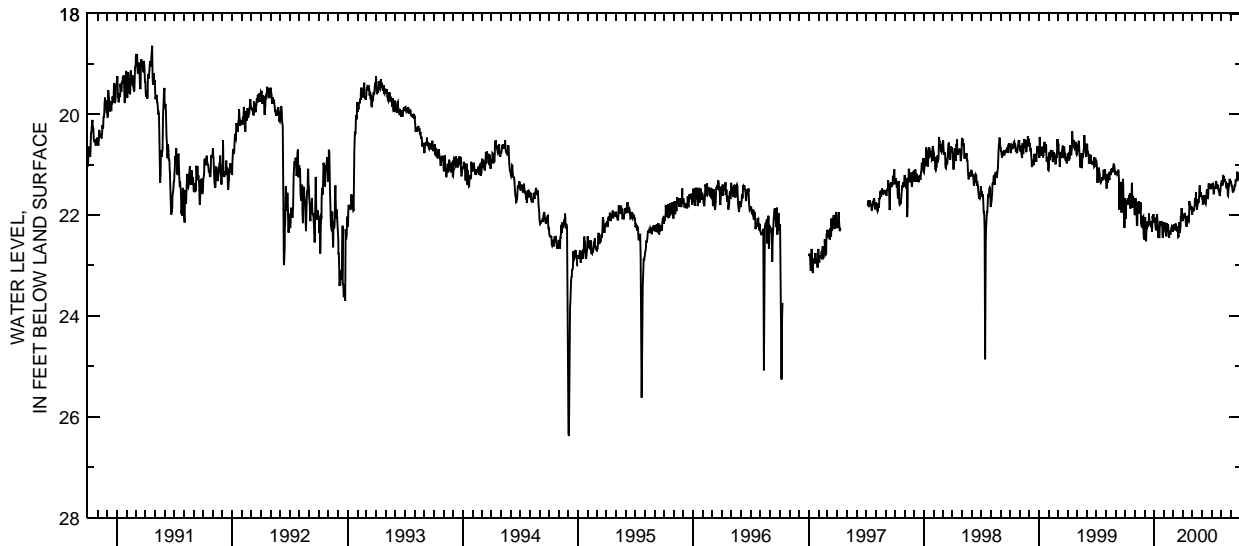
PERIOD OF RECORD.—June 1971 to current year.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily low, 26.38 ft below land-surface datum, Dec. 3, 1994; minimum daily low, 14.55 ft below land-surface datum, Mar. 22, 1978.

DEPTH BELOW LAND SURFACE (WATER LEVEL), FEET, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21.66	21.91	22.40	22.13	22.27	22.20	22.10	21.88	21.65	21.46	21.35	21.38
2	21.73	21.66	22.20	22.09	22.30	22.26	22.02	21.89	21.66	21.44	21.31	21.43
3	22.07	21.71	22.04	22.08	22.15	22.25	22.00	21.93	21.79	21.37	21.34	21.41
4	21.79	21.76	22.21	22.11	22.23	22.18	21.98	21.89	21.72	21.41	21.41	21.45
5	21.76	21.76	22.52	22.26	22.32	22.22	22.04	21.89	21.61	21.39	21.37	21.52
6	21.75	21.93	22.50	22.27	22.34	22.30	21.96	21.91	21.68	21.45	21.20	21.55
7	21.78	22.21	22.36	22.29	22.35	22.27	21.97	21.85	21.68	21.57	21.24	21.53
8	21.77	22.19	22.26	22.29	22.42	22.18	22.04	21.76	21.61	21.57	21.29	21.51
9	21.72	21.88	22.25	22.12	22.27	22.18	22.07	21.66	21.72	21.46	21.23	21.51
10	21.67	21.75	22.13	21.98	22.16	22.29	22.16	21.71	21.76	21.43	21.30	21.50
11	21.77	21.84	22.22	22.10	22.26	22.26	22.15	21.71	21.77	21.45	21.31	21.46
12	21.79	21.85	22.16	22.20	22.26	22.30	22.23	21.55	21.78	21.47	21.29	21.39
13	21.60	21.72	22.22	22.38	22.18	22.31	22.21	21.76	21.69	21.43	21.31	21.43
14	21.66	21.96	22.13	22.45	22.22	22.25	22.10	21.82	21.62	21.35	21.36	21.38
15	21.61	21.97	21.97	22.37	22.28	22.22	22.01	21.89	21.53	21.32	21.34	21.29
16	21.57	21.86	22.07	22.44	22.43	22.27	22.06	21.86	21.49	21.36	21.44	21.32
17	21.87	21.89	22.14	22.44	22.45	22.44	22.05	21.77	21.65	21.44	21.43	21.32
18	21.83	21.83	22.18	22.31	22.37	22.43	22.12	21.68	21.64	21.47	21.36	21.31
19	21.70	21.75	22.18	22.15	22.30	22.27	22.13	21.73	21.65	21.41	21.45	21.25
20	21.65	22.16	22.13	22.12	22.35	22.14	22.06	21.76	21.61	21.41	21.50	21.14
21	21.61	22.19	22.21	22.18	22.39	22.28	21.72	21.72	21.37	21.42	21.61	21.26
22	21.36	22.22	22.22	22.21	22.33	22.35	21.78	21.64	21.39	21.48	21.62	21.31
23	21.50	22.23	22.21	22.12	22.30	22.31	21.80	21.51	21.45	21.52	21.44	21.17
24	21.85	22.18	22.25	22.19	22.25	22.22	21.80	21.41	21.45	21.54	21.38	21.21
25	21.84	22.22	22.33	22.13	22.22	22.04	21.86	21.57	21.43	21.56	21.39	21.23
26	21.62	22.03	22.02	22.24	22.21	22.04	21.89	21.64	21.41	21.62	21.32	21.29
27	21.68	22.02	22.04	22.41	22.22	21.89	21.85	21.61	21.47	21.57	21.28	21.24
28	21.72	22.36	22.04	22.45	22.33	21.86	21.82	21.55	21.47	21.54	21.34	21.35
29	21.67	22.47	21.98	22.43	22.31	22.01	21.94	21.61	21.38	21.51	21.32	21.38
30	21.91	22.47	22.04	22.26	---	22.07	21.99	21.64	21.47	21.40	21.34	21.26
31	22.00	---	22.15	22.14	---	22.12	---	21.62	---	21.40	21.34	---
MAX	22.07	22.47	22.52	22.45	22.45	22.44	22.23	21.93	21.79	21.62	21.62	21.55

CAL YR 1999 LOW 22.52
WTR YR 2000 LOW 22.52



GROUND-WATER RECORDS
Lucas County

413704083362200. LOCAL NUMBER, LU-1

LOCATION.—Latitude 41°37'04", longitude 83°36'22", Hydrologic Unit 04100001, at Toledo State Hospital, Toledo, Ohio. Owner: State of Ohio.

AQUIFER.—Limestone of Silurian Age.

WELL CHARACTERISTICS.—Drilled unused artesian well, diameter 12 in., depth drilled 525 ft, present depth 523.0 ft, cased to 93 ft.

INSTRUMENTATION.—Type F continuous recorder.

DATUM.—Elevation of land-surface datum is 624 ft above sea level, from topographic map. Measuring point: Floor of instrument shelter 2.98 ft above land-surface datum (Revised from 1978 and 1979).

REMARKS.—Station operated by Ohio Department of Natural Resources, Division of Water. Prior to Aug. 23, 1978, measuring point was 3.10 ft above land-surface datum. Reported in 1979 as 3.00 ft above land-surface datum.

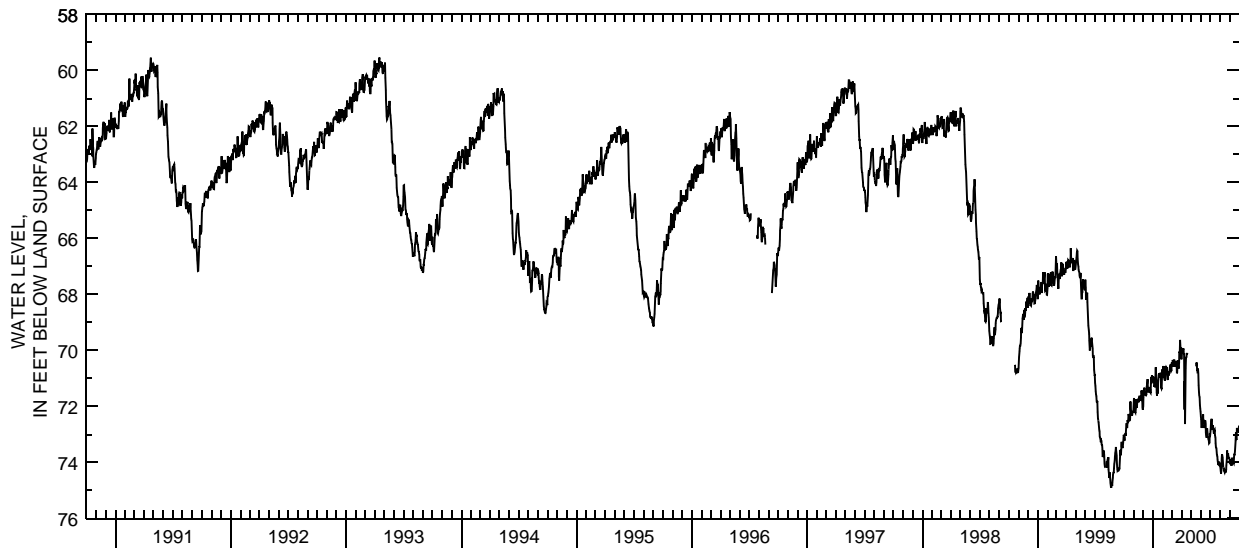
PERIOD OF RECORD.—March 1946 to September 1982 continuous, October 1983 to January 1985 periodic, continuous thereafter.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily low, 117.25 ft below land-surface datum, Sept. 18, 1957; minimum daily low, 56.87 ft below land-surface datum, Apr. 16, 1987.

DEPTH BELOW LAND SURFACE (WATER LEVEL), FEET, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	73.02	72.09	72.00	71.09	70.92	70.44	70.29	---	72.36	73.03	74.12	74.04
2	73.12	71.70	71.67	70.96	70.98	70.58	70.05	---	72.48	72.83	74.19	74.05
3	73.23	71.91	71.41	70.97	70.56	70.56	69.95	---	72.74	72.60	74.31	73.89
4	73.02	71.99	71.48	71.01	70.83	70.34	69.97	---	72.74	72.54	74.40	73.90
5	72.98	72.03	71.33	71.30	70.93	70.44	70.02	---	72.62	72.45	74.29	74.03
6	72.98	72.21	71.54	71.28	71.02	70.59	69.96	---	72.59	72.56	73.86	74.12
7	73.05	72.23	71.58	71.29	71.05	70.52	69.96	---	72.59	72.76	73.71	74.03
8	72.78	72.07	71.59	71.27	71.08	70.35	70.12	---	72.29	72.83	73.78	73.83
9	72.71	71.81	71.60	70.90	70.73	70.33	70.13	---	72.47	72.71	73.83	73.91
10	72.60	71.74	71.54	70.60	70.57	70.54	72.12	---	72.50	72.71	74.01	73.97
11	72.77	72.05	71.60	70.94	70.82	70.50	71.10	---	72.58	72.87	74.18	73.97
12	72.76	71.99	71.40	71.08	70.85	70.56	72.63	---	72.78	72.97	74.23	74.01
13	72.49	71.80	71.29	71.51	70.61	70.59	71.46	---	72.68	72.94	74.26	74.04
14	72.60	71.77	71.17	71.62	70.63	70.47	70.64	---	72.63	72.85	74.30	73.84
15	72.49	71.76	71.03	71.41	70.78	70.38	70.26	---	72.50	72.84	74.28	73.72
16	72.28	71.74	71.26	71.52	70.99	70.44	70.25	---	72.63	73.03	74.35	73.72
17	72.36	71.86	71.43	71.54	71.06	70.82	70.13	70.57	72.94	73.13	74.31	73.59
18	72.49	71.72	71.50	71.13	70.80	70.79	70.13	70.43	73.03	73.31	74.28	73.51
19	72.50	71.65	71.44	70.89	70.74	70.45	70.09	70.46	73.13	73.46	74.36	73.23
20	72.47	71.65	71.31	70.82	70.85	70.36	---	70.65	73.09	73.50	74.26	72.93
21	72.43	71.65	71.46	70.92	70.90	70.59	---	70.74	72.79	73.57	74.11	73.17
22	71.83	71.68	71.46	70.97	70.76	70.66	---	70.73	72.97	73.72	73.90	73.20
23	72.09	71.69	71.38	70.83	70.70	70.62	---	70.65	73.09	73.79	73.58	72.77
24	72.24	71.76	71.50	70.93	70.60	70.43	---	70.83	73.11	73.90	73.68	72.87
25	72.22	71.80	71.52	70.80	70.57	70.05	---	71.25	73.18	73.99	73.76	72.83
26	72.19	71.43	70.97	71.04	70.50	70.09	---	71.49	73.18	74.08	73.67	72.83
27	72.34	71.62	71.06	71.32	70.55	69.63	---	71.64	73.32	74.09	73.75	72.80
28	72.27	71.83	70.97	71.38	70.73	69.74	---	71.67	73.30	73.97	73.86	72.94
29	72.20	72.03	70.89	71.36	70.71	70.07	---	71.95	72.98	74.08	73.82	72.90
30	72.19	72.12	71.01	70.96	---	70.22	---	72.08	73.04	74.01	73.85	72.69
31	72.19	---	71.11	70.67	---	70.32	---	72.19	---	74.07	73.94	---
MAX	73.23	72.23	72.00	71.62	71.08	70.82	72.63	72.19	73.32	74.09	74.40	74.12

CAL YR 1999 LOW 74.91
WTR YR 2000 LOW 74.40



GROUND-WATER RECORDS
Medina County

410142082005900. LOCAL NUMBER, MD-1

LOCATION.—Latitude 41°01'42", longitude 82°00'59", Hydrologic Unit 04110001, at waterworks plant at Lodi, Ohio. Owner: Lodi Water Department.

AQUIFER.—Sand and gravel of Pleistocene Age.

WELL CHARACTERISTICS.—Drilled unused water-table well, diameter 6 in., depth 65 ft, cased.

INSTRUMENTATION.—Digital recorder, 60-minute punch.

DATUM.—Elevation of land-surface datum is 910 ft above sea level, from topographic map. Measuring point: Floor of instrument shelter 1.90 ft above land-surface datum.

REMARKS.—Station operated by Ohio Department of Natural Resources, Division of Water.

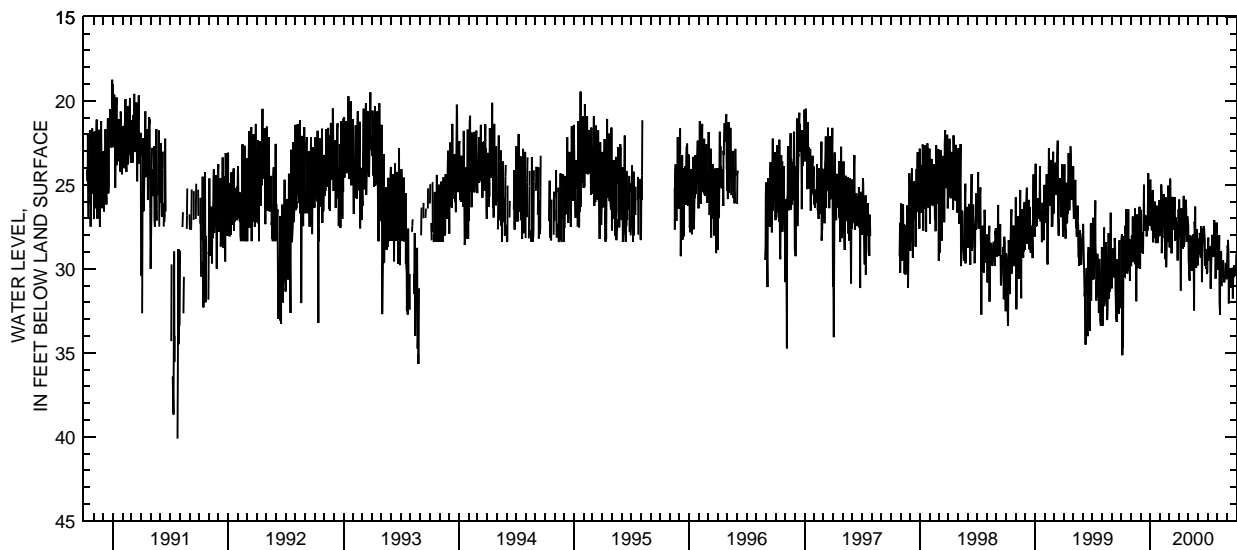
PERIOD OF RECORD.—September 1946 to current year.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily low, 45.21 ft below land-surface datum, July 8, 1988; minimum daily low, 7.60 ft below land-surface datum, July 6, 1969.

DEPTH BELOW LAND SURFACE (WATER LEVEL), FEET, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32.35	29.33	28.55	25.93	26.99	27.72	27.68	27.50	28.84	29.38	29.67	29.70
2	28.30	29.85	26.50	24.70	26.84	26.60	25.88	29.51	28.79	28.96	29.15	28.62
3	27.95	28.82	28.74	26.52	27.57	28.73	27.42	29.94	28.20	28.16	30.06	28.74
4	30.80	28.04	28.08	27.43	28.03	24.63	26.64	30.39	28.54	29.52	29.90	28.28
5	35.15	29.08	27.85	27.34	24.99	24.72	27.79	30.71	29.17	28.89	29.52	29.02
6	32.11	28.64	29.03	27.71	25.44	26.64	29.46	28.54	27.87	29.41	28.64	32.06
7	34.70	26.90	28.36	26.79	29.07	26.25	31.30	28.01	28.02	29.12	28.00	30.61
8	30.72	29.60	28.67	26.09	28.09	26.80	29.05	28.13	28.08	29.08	31.98	30.56
9	28.06	29.11	29.12	25.31	28.15	29.08	26.39	28.73	29.34	28.64	32.74	30.37
10	28.26	28.86	28.45	28.43	27.18	27.17	28.05	29.46	28.03	30.92	30.04	29.97
11	29.38	29.05	26.94	25.97	26.96	26.99	28.23	28.63	27.47	31.18	29.51	30.85
12	30.42	28.05	25.00	27.99	27.42	25.72	27.77	30.11	27.97	30.35	30.22	30.29
13	30.45	29.18	27.03	27.29	25.55	26.12	28.09	28.34	30.80	29.82	28.97	31.14
14	29.63	26.41	27.73	27.48	26.89	27.69	28.81	28.06	30.04	28.61	31.03	30.48
15	27.43	29.74	26.79	26.71	27.47	26.02	27.89	28.17	28.89	28.53	29.93	30.22
16	28.39	29.09	27.70	26.01	27.56	26.37	25.66	28.21	28.33	27.98	30.25	30.44
17	26.45	29.02	26.83	28.15	29.01	26.56	28.68	27.95	27.74	28.39	30.11	29.94
18	28.70	31.94	27.45	28.06	29.43	26.30	28.50	28.46	27.57	28.66	30.44	30.44
19	29.88	28.23	26.95	28.47	25.76	25.76	27.10	32.49	27.84	29.30	29.51	31.77
20	30.00	27.23	27.68	26.44	26.19	28.33	27.94	28.92	27.46	28.30	29.62	30.31
21	30.28	26.77	28.07	27.38	29.91	27.73	26.33	27.20	28.03	28.47	30.44	30.50
22	29.52	29.97	27.88	26.24	28.30	26.95	26.47	27.67	28.27	27.10	30.41	30.31
23	28.66	28.77	27.35	26.68	27.19	28.07	25.89	26.30	29.83	27.65	30.81	29.79
24	26.46	29.02	27.73	27.20	27.18	28.26	26.46	29.59	29.26	28.32	30.41	29.87
25	29.82	27.76	25.45	28.48	28.39	28.08	27.03	29.37	29.07	28.57	30.45	30.19
26	29.41	28.98	24.33	26.31	27.46	27.26	28.40	29.92	28.84	30.59	30.05	30.30
27	30.11	28.99	25.95	27.73	25.06	28.04	27.09	29.12	30.02	30.39	29.71	30.43
28	29.79	26.32	26.50	26.98	26.46	29.52	26.89	27.64	29.48	29.13	29.71	30.11
29	30.71	29.46	27.31	28.07	25.84	28.25	27.08	28.51	30.32	27.82	30.38	30.23
30	28.25	30.01	26.92	25.93	---	28.12	27.38	28.23	30.19	27.25	30.62	29.09
31	28.32	---	27.44	27.22	---	26.46	---	29.80	---	29.09	29.84	---
MAX	35.15	31.94	29.12	28.48	29.91	29.52	31.30	32.49	30.80	31.18	32.74	32.06

CAL YR 1999 LOW 35.15
WTR YR 2000 LOW 35.15



GROUND-WATER RECORDS
Ottawa County

413434082494000. LOCAL NUMBER, O-2

LOCATION.—Latitude 41°34'34", longitude 82°49'40", Hydrologic Unit 04100010. Catawba Island near Port Clinton, Ohio. Owner: William Williams.

AQUIFER.—Limestone of Silurian Age.

WELL CHARACTERISTICS.—Drilled water table well, diameter 6 in., depth 62 ft, cased to 26 ft.

INSTRUMENTATION.—Type F continuous recorder.

DATUM.—Elevation of land-surface datum is 591 ft above sea level, from topographic map. Measuring point: Floor of instrument shelter 1.60 ft above land-surface datum.

REMARKS.—Station operated by Ohio Department of Natural Resources, Division of Water.

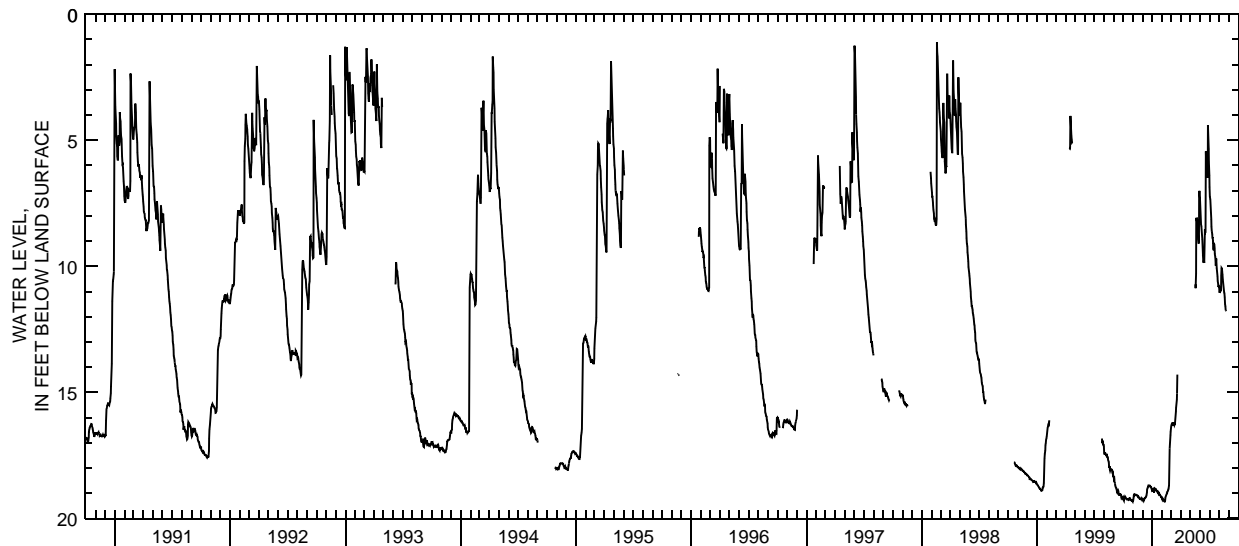
PERIOD OF RECORD.—March 1988 to current year.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily low, 19.34 ft below land-surface datum, Oct. 31, 1999, Feb. 9, and 10, 2000; minimum daily low, 1.12 ft below land-surface datum, Feb. 18, 1998.

DEPTH BELOW LAND SURFACE (WATER LEVEL), FEET, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19.22	19.31	19.25	18.91	19.21	16.38	---	---	7.49	6.86	10.90	---
2	19.26	19.29	19.27	18.90	19.26	16.32	---	---	7.87	7.24	11.05	---
3	19.30	19.17	19.28	18.91	19.23	16.27	---	---	8.13	7.35	10.89	---
4	19.23	19.07	19.28	18.85	19.25	16.22	---	---	8.34	7.54	10.90	---
5	19.17	19.05	19.31	18.83	19.26	16.22	---	---	8.41	7.81	10.98	---
6	19.15	19.06	19.25	18.81	19.28	16.32	---	---	8.58	8.13	10.95	---
7	19.13	19.08	19.22	18.98	19.30	16.23	---	---	8.77	8.43	10.37	---
8	19.15	19.06	19.21	18.86	19.33	16.22	---	---	8.93	8.60	10.07	---
9	19.18	19.06	19.21	18.85	19.34	16.20	---	---	9.24	8.73	10.10	---
10	19.22	19.06	19.20	18.80	19.34	16.27	---	---	9.58	8.86	10.20	---
11	19.24	19.07	19.17	18.84	19.28	16.23	---	---	9.80	8.87	10.33	---
12	19.22	19.07	19.15	18.84	19.19	16.29	---	---	9.86	9.10	10.52	---
13	19.23	19.07	19.12	18.88	19.13	16.24	---	---	9.74	9.30	10.64	---
14	19.24	19.09	19.09	18.90	19.08	16.17	---	---	9.87	9.36	10.74	---
15	19.24	19.11	18.98	18.92	19.06	16.00	---	---	9.24	9.10	10.87	---
16	19.26	19.11	18.85	18.92	19.03	15.76	---	---	8.53	9.13	11.02	---
17	19.27	19.15	18.82	18.94	19.00	15.61	---	10.72	8.68	9.28	11.07	---
18	19.23	19.14	18.79	18.96	18.95	15.49	---	10.87	8.65	9.51	11.22	---
19	19.22	19.17	18.74	18.94	18.93	15.29	---	10.29	5.44	9.64	11.50	---
20	19.26	19.18	18.70	18.96	18.88	15.05	---	8.08	5.70	9.83	11.59	---
21	19.21	19.20	18.70	18.99	18.87	14.30	---	8.14	5.68	9.97	11.75	---
22	19.20	19.22	18.70	19.03	18.83	---	---	8.12	5.86	9.69	11.79	---
23	19.26	19.22	18.70	19.02	18.70	---	---	8.16	6.31	9.92	---	---
24	19.28	19.23	18.70	19.05	18.23	---	---	8.34	6.49	10.07	---	---
25	19.28	19.23	18.71	19.07	17.66	---	---	8.66	6.06	10.26	---	---
26	19.27	19.24	18.73	19.08	17.23	---	---	8.93	4.40	10.41	---	---
27	19.29	19.20	18.76	19.10	16.89	---	---	9.07	4.97	10.58	---	---
28	19.29	19.22	18.76	19.13	16.70	---	---	9.07	5.35	10.70	---	---
29	19.29	19.23	18.78	19.15	16.56	---	---	7.17	5.86	10.82	---	---
30	19.31	19.28	18.83	19.15	---	---	---	7.00	6.39	10.79	---	---
31	19.34	---	18.86	19.18	---	---	---	7.27	---	10.84	---	---
MAX	19.34	19.31	19.31	19.18	19.34	16.38	---	10.87	9.87	10.84	11.79	---

CAL YR 1999 LOW 19.34
WTR YR 2000 LOW 19.34



GROUND-WATER RECORDS
Portage County

410931081192900. LOCAL NUMBER, PO-123

LOCATION.—Latitude 41°09'31", longitude 81°19'29", Hydrologic Unit 04110002, east of Kent, Ohio. Owner: City of Kent.

AQUIFER.—Sand and gravel of Pleistocene Age.

WELL CHARACTERISTICS.—Drilled unused artesian well, diameter 6 in., cased.

INSTRUMENTATION.—Digital recorder, 60-minute punch.

DATUM.—Elevation of land-surface datum is 1042 ft above sea level, from topographic map. Measuring point: Floor of instrument shelter 3.5 ft above land-surface datum.

REMARKS.—Station operated by Ohio Department of Natural Resources, Division of Water.

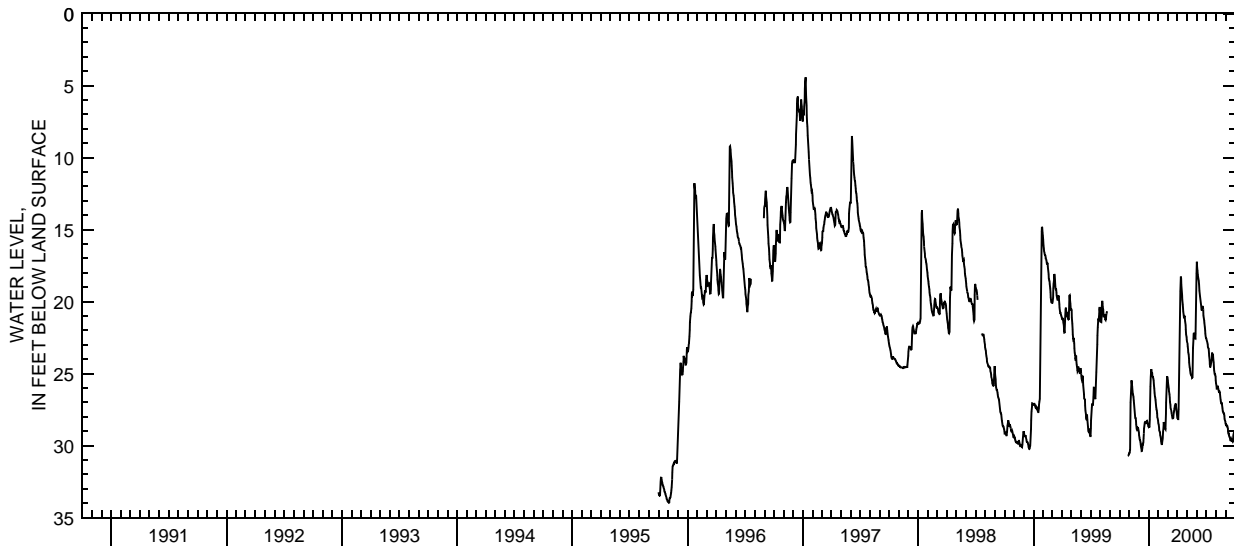
PERIOD OF RECORD.—October 1995 to current year.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily low, 33.97 ft below land-surface datum, Nov. 3, 1995; minimum daily low, 4.43 ft below land-surface datum, Jan. 9, 1997.

DEPTH BELOW LAND SURFACE (WATER LEVEL), FEET, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	30.51	29.09	28.69	28.43	25.29	28.08	22.65	18.05	22.53	25.46	28.45
2	---	30.50	29.28	28.65	28.56	25.48	28.12	22.83	17.24	22.56	25.69	28.58
3	---	30.30	29.48	28.69	28.75	25.66	28.17	22.93	17.65	22.72	25.87	28.60
4	---	28.64	29.59	28.69	28.97	25.91	28.17	23.12	17.86	22.76	26.05	28.57
5	---	27.00	29.61	28.21	29.07	26.07	27.49	23.29	18.14	22.82	26.05	28.63
6	---	26.35	29.77	26.80	29.10	26.23	25.87	23.52	18.31	22.97	26.04	28.65
7	---	25.85	29.92	25.90	29.28	26.45	24.73	23.67	18.45	23.17	25.86	28.68
8	---	25.46	30.07	25.24	29.40	26.68	23.60	23.95	18.58	23.23	25.97	28.81
9	---	25.69	30.21	24.71	29.58	26.98	22.28	24.24	18.83	23.27	26.10	29.05
10	---	25.91	30.37	24.73	29.74	27.19	20.84	24.55	19.25	23.44	26.23	29.17
11	---	26.20	30.36	24.93	29.91	27.40	19.28	24.66	19.44	23.78	26.30	29.18
12	---	26.40	30.13	24.98	29.90	27.51	18.27	24.78	19.66	24.07	26.30	29.30
13	---	26.49	29.91	25.19	29.80	27.62	18.41	25.05	19.83	24.33	26.26	29.39
14	---	26.64	29.92	25.23	29.59	27.74	18.83	25.11	20.01	24.53	26.34	29.43
15	---	26.87	29.77	25.24	29.47	27.87	19.31	25.14	20.20	24.53	26.55	29.51
16	---	27.16	29.50	25.36	29.04	28.05	19.56	25.16	20.38	24.40	26.79	29.64
17	---	27.44	29.16	25.47	28.72	28.12	19.86	25.17	20.57	24.27	26.93	29.66
18	---	27.66	28.83	25.80	28.37	28.12	20.20	25.30	20.59	24.22	27.07	29.64
19	---	27.95	28.58	26.03	28.47	28.07	20.51	25.27	20.39	24.02	27.08	29.56
20	---	28.08	28.39	26.35	28.49	27.87	20.71	24.48	20.30	23.54	27.07	29.65
21	---	28.10	28.36	26.57	28.63	27.72	20.94	23.23	20.43	23.61	27.24	29.67
22	---	28.31	28.36	26.68	28.82	27.54	21.08	22.59	20.54	23.66	27.40	29.68
23	---	28.53	28.38	26.85	28.87	27.44	21.07	22.25	20.97	23.67	27.61	29.74
24	---	28.83	28.45	27.06	28.50	27.32	20.99	22.18	21.18	23.91	27.65	29.72
25	---	28.92	28.45	27.34	27.80	27.20	21.19	22.43	21.33	24.22	27.74	29.48
26	---	28.93	28.31	27.48	27.00	27.13	21.40	22.54	21.48	24.57	27.78	29.28
27	---	28.91	28.30	27.58	26.22	27.08	21.64	22.55	21.78	24.79	27.79	29.14
28	30.66	28.77	28.39	27.78	25.55	27.29	21.94	22.57	22.01	25.00	27.95	29.05
29	30.67	28.79	28.48	28.07	25.19	27.48	22.30	22.26	22.23	25.05	28.14	29.16
30	30.64	28.97	28.50	28.16	---	27.67	22.47	20.53	22.50	25.06	28.28	29.28
31	30.59	---	28.67	28.30	---	27.87	---	19.25	---	25.21	28.34	---
MAX	30.67	30.51	30.37	28.69	29.91	28.12	28.17	25.30	22.50	25.21	28.34	29.74

CAL YR 1999 LOW 30.67
WTR YR 2000 LOW 30.67



GROUND-WATER RECORDS
Putnam County

405505084032900. LOCAL NUMBER, PU-1

LOCATION.—Latitude 40°55'05", longitude 84°03'29", Hydrologic Unit 04100007, Center and Broadway Street, Columbus Grove, Ohio. Owner: Columbus Grove Water Department.

AQUIFER.—Limestone of Silurian Age.

WELL CHARACTERISTICS.—Drilled unused artesian well, diameter 6 in., depth 110 ft, cased.

INSTRUMENTATION.—Digital recorder, 60-minute punch.

DATUM.—Elevation of land-surface datum is 770 ft above sea level, from topographic map. Measuring point: Floor of instrument shelter 3.00 ft above land-surface datum.

REMARKS.—Station operated by Ohio Department of Natural Resources, Division of Water. Water-quality data collected at this site and published in project data, Ground-Water Data for Ohio Department of Natural Resources.

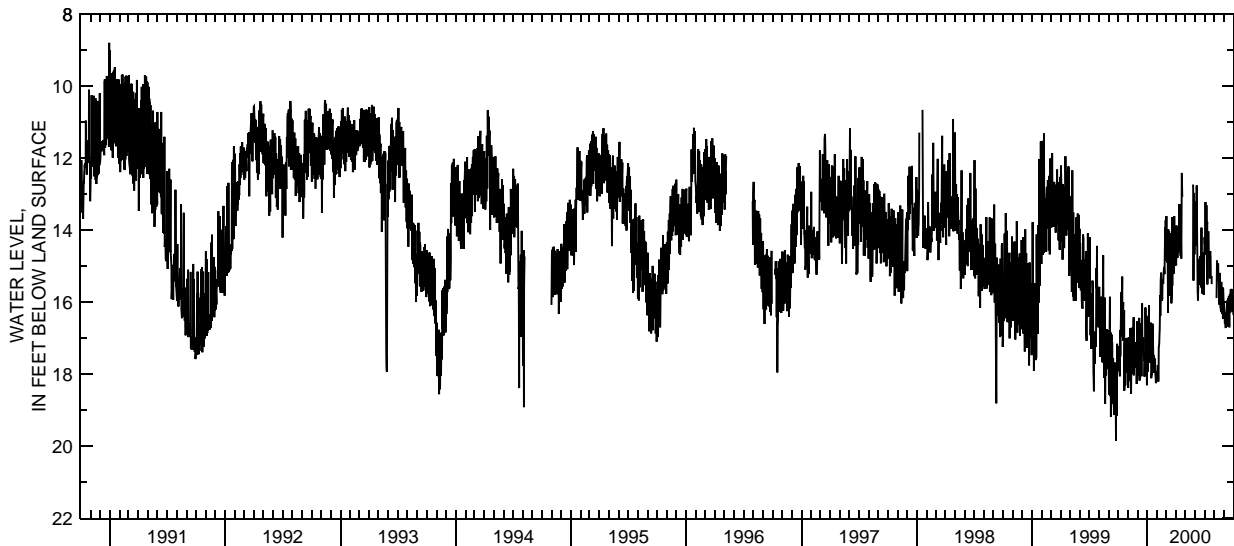
PERIOD OF RECORD.—July 1946 to current year.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily low, 24.30 ft below land-surface datum, Aug. 24, 1962; minimum daily low, 8.80 ft below land-surface datum, Dec. 30, 1990.

DEPTH BELOW LAND SURFACE (WATER LEVEL), FEET, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17.29	17.16	16.53	17.48	18.02	14.38	14.91	---	13.21	14.19	---	16.08
2	17.22	18.38	17.75	16.44	17.91	13.61	14.98	---	13.57	14.38	---	16.26
3	17.83	17.47	17.27	17.94	17.98	14.60	13.87	---	13.25	14.17	---	16.59
4	17.27	16.97	16.73	17.28	17.75	14.82	14.74	---	14.33	13.22	---	16.30
5	17.59	18.03	18.03	17.68	18.21	14.90	14.67	---	14.43	14.67	---	16.69
6	18.06	17.57	17.41	17.06	18.16	14.06	14.77	---	12.76	13.95	---	16.72
7	16.78	17.34	16.44	16.09	17.26	16.30	14.61	---	14.53	13.31	---	16.27
8	17.51	18.19	18.18	17.68	17.15	13.98	14.64	---	14.95	13.93	15.89	16.40
9	16.76	16.72	17.64	17.27	16.84	14.97	14.30	---	15.70	13.77	14.85	16.69
10	15.98	17.28	16.60	16.79	16.77	15.02	14.44	---	15.95	15.51	15.40	15.96
11	15.72	18.54	18.03	16.97	15.80	14.03	14.26	---	15.45	14.34	15.33	16.49
12	16.87	17.58	17.40	17.61	16.38	15.74	13.28	---	15.17	14.63	15.29	16.65
13	16.23	16.84	17.03	16.57	15.40	15.82	14.34	---	14.99	14.04	14.93	15.90
14	15.29	17.72	18.06	18.11	15.18	15.11	14.34	---	15.48	14.65	15.34	16.16
15	16.95	17.24	17.09	18.04	15.57	15.82	14.63	---	14.80	14.80	15.38	16.26
16	16.49	16.70	16.04	18.00	15.96	15.02	14.72	---	15.52	14.63	15.96	15.83
17	16.00	17.98	17.39	17.73	15.86	14.09	14.00	---	14.72	15.34	16.07	16.70
18	17.07	17.53	17.06	16.60	15.92	16.03	14.79	---	15.01	14.70	15.19	16.08
19	16.55	16.42	17.41	16.99	15.38	15.73	13.75	---	14.92	14.58	15.78	15.78
20	16.23	18.03	16.98	17.42	15.41	13.65	12.42	---	15.59	14.75	16.12	16.29
21	18.46	17.44	17.06	17.66	15.49	15.54	13.08	---	13.93	15.29	16.17	15.74
22	17.14	17.18	17.63	17.47	15.23	14.64	---	---	15.00	15.31	16.26	15.64
23	17.11	17.82	17.51	17.97	15.02	13.68	---	---	15.76	15.28	15.44	16.10
24	18.31	17.51	18.07	17.73	15.07	14.78	---	---	14.75	15.50	16.25	16.18
25	17.42	17.11	17.36	17.63	15.22	15.21	---	12.73	14.79	---	16.32	15.63
26	17.00	17.76	17.62	17.62	15.01	14.74	---	12.80	14.71	---	15.92	16.09
27	17.97	17.46	16.15	17.99	13.93	13.61	---	15.40	14.63	---	16.19	16.25
28	17.40	17.77	17.82	18.11	14.84	14.65	---	12.97	15.79	---	16.47	16.27
29	16.99	18.27	17.30	18.25	13.73	14.74	---	12.98	15.39	---	15.60	15.76
30	17.46	17.71	16.38	18.17	---	14.69	---	14.67	14.76	---	15.97	16.36
31	17.11	---	18.31	17.96	---	14.93	---	13.51	---	---	16.05	---
MAX	18.46	18.54	18.31	18.25	18.21	16.30	14.98	15.40	15.95	15.51	16.47	16.72

CAL YR 1999 LOW 19.85
WTR YR 2000 LOW 18.54



GROUND-WATER RECORDS
Sandusky County

411914083045300. LOCAL NUMBER, S-3

LOCATION.—Latitude 41°19'14", longitude 83°04'53", Hydrologic Unit 04100011, 2.6 mi southeast of Fremont Post Office, Fremont, Ohio.

Owner: State of Ohio.

AQUIFER.—Limestone of Silurian Age.

WELL CHARACTERISTICS.—Drilled test artesian well, diameter 12 in., depth 121 ft, cased to 93 ft.

INSTRUMENTATION.—Digital recorder, 60-minute punch.

DATUM.—Elevation of land-surface datum is 627 ft above sea level, from topographic map. Measuring point: Floor of instrument shelter 3.00 ft above land-surface datum.

REMARKS.—Station operated by Ohio Department of Natural Resources, Division of Water.

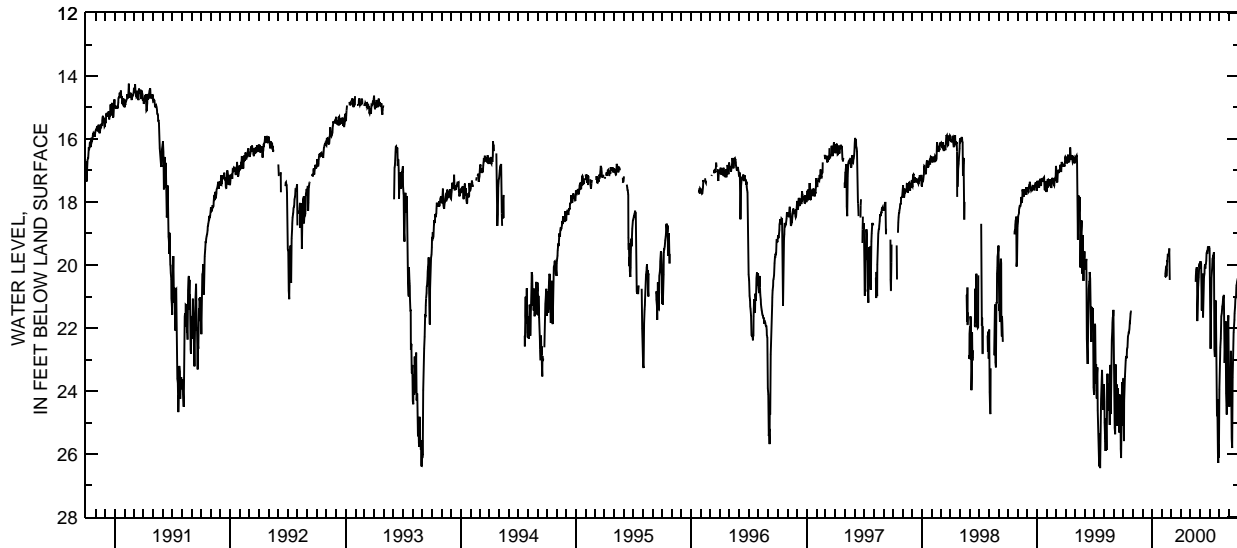
PERIOD OF RECORD.—December 1974 to current year.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily low, 26.45 ft below land-surface datum, July 20, 1999; minimum daily low, 14.02 ft below land-surface datum, Mar. 24, 1975.

DEPTH BELOW LAND SURFACE (WATER LEVEL), FEET, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23.60	---	---	---	---	---	---	---	19.93	19.53	23.95	24.50
2	25.09	---	---	---	---	---	---	---	19.88	21.09	23.36	23.36
3	25.59	---	---	---	---	---	---	---	20.02	22.42	22.90	23.79
4	24.33	---	---	---	---	---	---	---	19.95	22.66	22.61	24.39
5	23.89	---	---	---	---	---	---	---	20.95	21.43	22.33	23.43
6	23.55	---	---	---	---	---	---	---	21.45	20.73	21.99	22.73
7	23.47	---	---	---	---	---	---	---	20.69	20.38	21.63	23.42
8	23.16	---	---	---	---	---	---	---	20.28	20.17	21.54	24.68
9	23.02	---	---	---	---	---	---	---	21.10	19.97	21.39	25.51
10	22.89	---	---	---	20.38	---	---	---	21.67	19.79	21.32	25.81
11	22.94	---	---	---	20.38	---	---	---	20.91	19.75	21.24	24.92
12	22.94	---	---	---	20.27	---	---	---	20.66	19.79	21.15	23.57
13	22.67	---	---	---	20.11	---	---	---	20.39	19.69	21.02	22.97
14	22.61	---	---	---	20.13	---	---	---	20.27	19.60	21.00	22.56
15	22.47	---	---	---	20.36	---	---	---	20.08	21.20	20.95	22.15
16	22.25	---	---	---	20.06	---	---	---	19.98	22.68	22.23	21.92
17	22.20	---	---	---	19.89	---	---	20.54	20.12	22.92	23.11	21.74
18	22.14	---	---	---	19.89	---	---	20.34	20.00	21.76	22.85	21.54
19	22.14	---	---	---	19.65	---	---	20.20	19.96	21.14	22.36	21.33
20	22.04	---	---	---	19.72	---	---	20.15	19.87	21.15	21.79	21.09
21	21.95	---	---	---	19.69	---	---	20.07	19.61	22.18	22.87	21.03
22	21.77	---	---	---	19.63	---	---	20.53	19.59	23.65	24.08	21.03
23	21.78	---	---	---	19.57	---	---	21.78	19.65	24.60	24.46	20.72
24	21.56	---	---	---	19.48	---	---	21.27	19.58	24.80	24.75	20.65
25	21.49	---	---	---	20.48	---	---	20.78	19.44	24.26	23.45	20.57
26	21.45	---	---	---	---	---	---	20.64	19.45	25.32	22.58	20.53
27	---	---	---	---	---	---	---	20.39	19.53	25.98	22.04	20.48
28	---	---	---	---	---	---	---	20.14	19.53	26.29	21.79	20.49
29	---	---	---	---	---	---	---	20.02	19.41	25.70	21.60	20.46
30	---	---	---	---	---	---	---	20.04	19.48	26.11	22.74	20.29
31	---	---	---	---	---	---	---	19.93	---	24.91	24.11	---
MAX	25.59	---	---	---	20.48	---	---	21.78	21.67	26.29	24.75	25.81

CAL YR 1999 LOW 26.45
WTR YR 2000 LOW 26.29



GROUND-WATER RECORDS
Sandusky County

412703083213600. LOCAL NUMBER, S-2

LOCATION.—Latitude 41°27'03", longitude 83°21'36", Hydrologic Unit 04100010, at waterworks in Woodville, Ohio. Owner: Woodville Water Department.

AQUIFER.—Limestone of Silurian Age.

WELL CHARACTERISTICS.—Drilled unused artesian well, diameter 8 in., depth 198 ft cased.

INSTRUMENTATION.—Digital recorder, 60-minute punch.

DATUM.—Elevation of land-surface datum is 635 ft above sea level from topographic map. Measuring point: Top of casing at land-surface datum.

REMARKS.—Station operated by Ohio Department of Natural Resources, Division of Water.

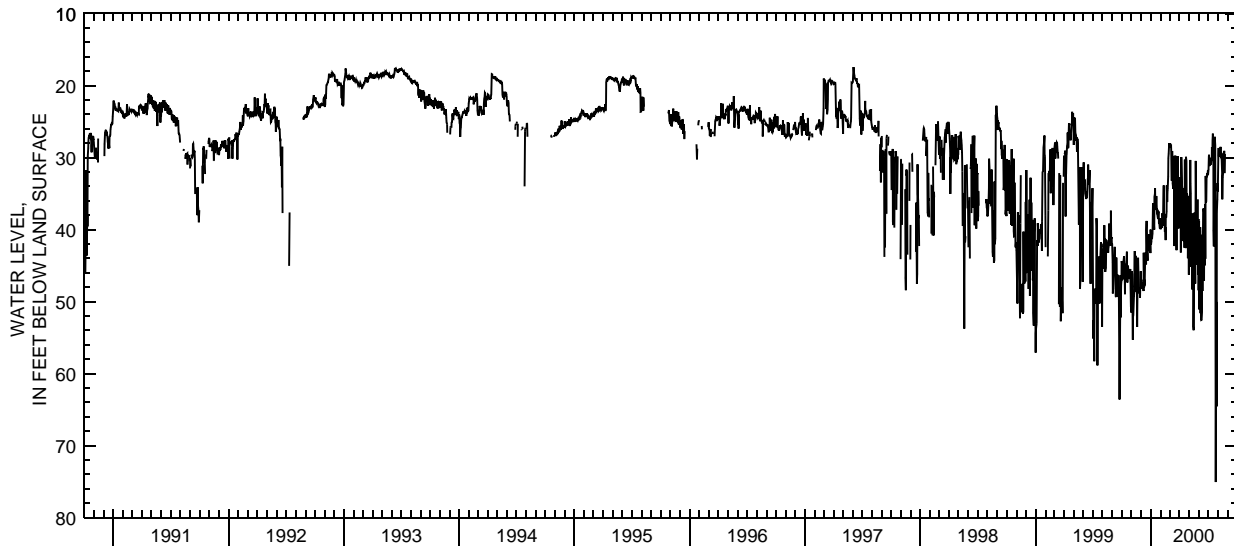
PERIOD OF RECORD.—June 1976 to current year.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily low, 100.97 ft below land-surface datum, Jan. 29, 1982; minimum daily low, 17.43 ft below land-surface datum, June 3, 1997.

DEPTH BELOW LAND SURFACE (WATER LEVEL), FEET, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	44.38	51.55	47.36	40.00	39.83	28.15	34.57	46.28	48.45	32.37	34.69	---
2	44.66	45.81	46.94	42.06	39.85	28.19	34.27	35.38	38.82	31.65	30.03	---
3	45.24	46.17	47.53	41.69	38.63	28.04	35.05	43.75	51.10	29.87	28.67	---
4	46.89	51.78	47.36	40.38	39.67	28.45	32.71	35.40	40.53	29.61	29.86	---
5	46.80	55.32	48.21	41.32	39.64	28.41	43.18	30.34	46.20	31.18	29.70	---
6	44.60	52.13	47.95	40.76	39.45	29.13	34.99	33.59	39.69	30.04	29.87	---
7	44.36	51.90	47.96	40.61	37.72	33.21	29.94	35.01	51.62	30.93	29.64	---
8	43.71	50.18	47.92	36.33	38.52	33.04	31.30	44.71	40.76	30.52	29.75	---
9	44.80	49.34	48.53	38.14	39.40	29.10	33.82	45.18	52.57	30.64	28.51	---
10	44.79	48.64	43.23	39.13	35.88	32.55	34.19	38.02	52.54	30.96	29.41	---
11	48.99	43.00	47.99	39.26	33.88	33.59	39.69	48.31	51.34	30.29	29.25	---
12	45.34	48.03	46.99	40.01	39.46	34.33	34.60	37.78	41.84	30.45	29.54	---
13	46.81	45.70	47.75	35.48	39.19	33.67	41.61	39.22	48.54	28.55	30.21	---
14	46.25	43.64	44.11	35.05	39.36	33.53	34.33	39.85	40.18	29.73	32.25	---
15	44.78	48.31	44.84	34.25	40.30	33.07	34.55	53.43	40.44	27.65	35.81	---
16	44.43	48.24	43.19	36.97	39.66	42.30	34.97	53.97	37.07	26.68	32.81	---
17	43.06	48.28	44.82	37.08	41.47	29.75	42.53	42.39	37.56	27.92	31.98	---
18	45.72	47.80	40.06	36.33	38.07	34.01	30.30	37.68	47.13	40.16	29.43	---
19	47.36	53.54	38.81	35.32	38.14	41.93	42.16	46.06	37.56	42.35	30.87	---
20	45.17	49.78	43.22	36.93	37.46	29.75	33.82	38.31	45.00	28.31	31.26	---
21	45.02	44.48	43.38	37.75	33.86	33.48	42.59	47.52	36.50	39.51	29.08	---
22	45.85	43.93	44.35	37.84	36.12	38.28	29.90	36.88	44.08	27.12	32.13	---
23	46.00	45.96	41.47	38.36	34.58	42.88	30.47	30.47	32.56	28.28	29.52	---
24	46.18	46.99	42.38	38.32	34.28	35.46	40.09	33.82	36.21	56.18	---	---
25	46.29	48.88	43.00	37.48	32.65	36.03	35.02	44.11	36.06	75.07	---	---
26	46.87	48.59	40.63	37.57	30.07	35.16	35.30	38.07	32.50	50.05	---	---
27	46.47	48.09	41.00	39.15	29.47	29.80	35.51	44.89	32.73	57.96	---	---
28	45.47	49.46	41.45	39.05	27.96	33.51	43.98	39.26	32.14	64.55	---	---
29	47.38	47.08	41.48	39.45	28.45	39.84	36.06	35.83	32.49	37.57	---	---
30	50.71	45.79	41.88	39.84	---	34.13	43.80	46.33	31.81	35.84	---	---
31	50.26	---	43.28	38.45	---	33.77	---	38.54	---	33.54	---	---
MAX	50.71	55.32	48.53	42.06	41.47	42.88	43.98	53.97	52.57	75.07	35.81	---

CAL YR 1999 LOW 63.60
WTR YR 2000 LOW 75.07



GROUND-WATER RECORDS
Seneca County

410802083093900. LOCAL NUMBER, SE-2

LOCATION.—Latitude 41°08'02", longitude 83°09'39", Hydrologic Unit 04100011, Tiffin State Hospital, Tiffin, Ohio. Owner: State of Ohio.

AQUIFER.—Limestone of Silurian Age.

WELL CHARACTERISTICS.—Drilled unused artesian well, diameter 12 in., depth 250 ft, cased.

INSTRUMENTATION.—Digital recorder, 60-minute punch.

DATUM.—Elevation of land-surface datum is 740 ft above sea level, from topographic map. Measuring point: Floor of instrument shelter 0.50 ft above land-surface datum.

REMARKS.—Station operated by Ohio Department of Natural Resources, Division of Water.

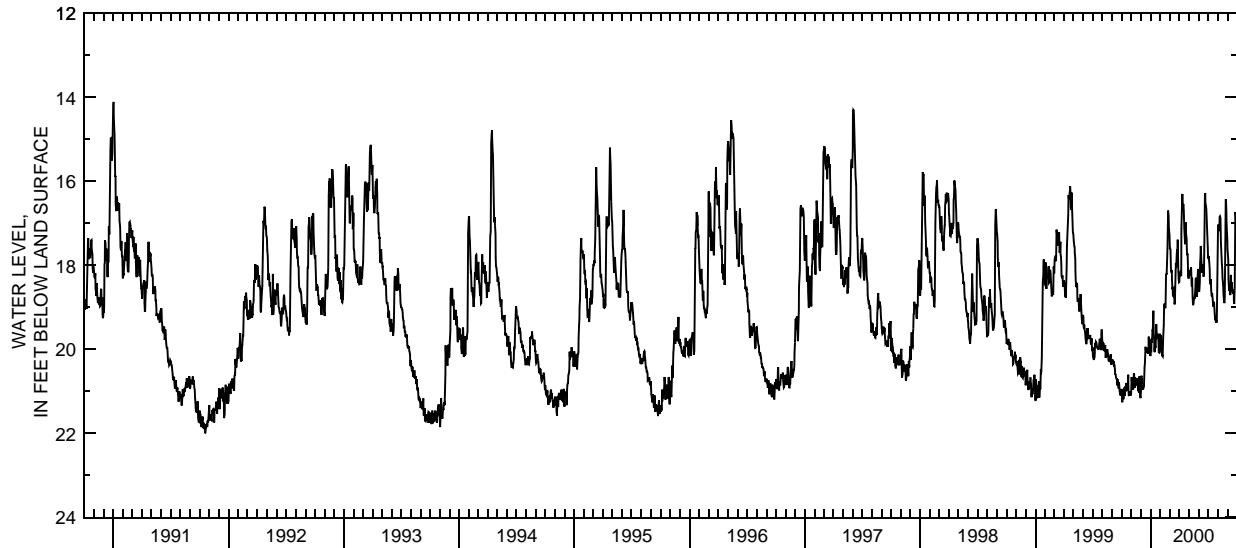
PERIOD OF RECORD.—July 1962 to current year.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily low, 23.76 ft below land-surface datum, Nov. 22, 1964; minimum daily low, 14.11 ft below land-surface datum, Jan. 2, 1991.

DEPTH BELOW LAND SURFACE (WATER LEVEL), FEET, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20.94	20.94	21.02	20.14	19.95	17.30	18.40	18.11	18.27	17.78	17.46	17.62
2	21.11	20.66	20.70	20.02	19.99	17.61	18.20	18.16	18.44	17.84	17.05	17.78
3	21.26	20.86	20.63	20.03	19.66	17.59	18.18	18.23	18.63	17.78	17.03	17.88
4	21.01	20.92	20.73	19.75	20.03	17.63	18.21	18.21	18.54	17.87	17.14	18.33
5	21.00	20.89	20.69	19.84	20.09	17.96	18.26	18.25	18.41	17.92	17.19	18.53
6	21.10	20.94	20.95	19.69	20.11	18.15	18.20	18.22	17.94	18.11	17.01	18.61
7	21.19	20.94	20.96	19.57	20.15	18.15	18.21	18.12	17.82	18.36	16.84	18.57
8	20.95	20.78	20.90	19.58	20.17	18.11	17.13	18.05	17.54	18.45	16.83	18.56
9	20.94	20.57	20.91	19.27	19.89	18.33	16.76	18.09	17.68	18.33	16.87	18.69
10	20.91	20.60	20.83	19.08	19.74	18.57	16.38	18.48	17.84	18.36	17.18	18.71
11	21.09	20.90	20.89	19.63	19.50	18.53	16.30	18.51	18.08	18.59	17.47	18.23
12	21.11	20.90	20.59	19.75	19.42	18.72	16.61	18.30	18.17	18.73	17.61	18.37
13	20.88	20.67	20.41	20.01	18.95	18.74	16.59	18.75	18.05	18.74	17.76	18.49
14	21.00	20.72	20.34	20.07	18.91	18.60	16.54	18.90	18.10	18.66	17.98	18.41
15	20.92	20.74	20.04	19.87	18.98	18.51	16.69	18.95	17.97	18.71	18.07	18.50
16	20.80	20.74	19.94	19.95	19.01	18.57	16.94	18.90	18.06	18.83	18.32	18.63
17	20.87	20.86	20.02	19.95	19.00	18.93	17.12	18.81	18.27	18.98	18.38	18.64
18	20.93	20.74	20.04	19.62	18.58	18.90	17.34	18.80	18.20	18.89	18.48	18.68
19	20.98	20.69	19.99	19.40	18.22	18.51	17.50	18.77	17.27	18.89	18.69	18.59
20	20.94	20.82	19.97	19.59	18.20	18.29	17.39	18.79	16.89	18.89	18.79	18.59
21	20.88	20.82	20.07	19.70	18.20	18.00	16.98	18.66	16.34	18.97	18.88	18.85
22	20.61	20.96	20.08	19.76	17.99	18.01	17.16	18.49	16.28	19.17	18.90	18.92
23	20.93	20.96	20.00	19.64	17.60	17.89	17.29	18.34	16.52	19.27	18.74	18.54
24	21.09	21.00	19.97	19.71	17.27	17.73	17.38	18.30	16.58	19.27	17.21	17.55
25	21.08	21.03	20.10	19.63	16.84	17.62	17.62	18.62	16.64	19.32	16.68	16.87
26	21.00	20.65	19.70	19.88	16.70	17.75	17.74	18.75	16.69	19.36	16.43	16.73
27	21.09	20.88	19.84	20.09	16.82	17.39	17.74	18.70	17.03	19.34	16.49	16.80
28	21.09	21.01	19.82	20.08	17.14	17.75	17.85	18.62	17.19	19.31	16.72	17.10
29	21.01	21.13	19.82	20.08	17.16	18.15	18.20	18.28	17.28	19.36	16.98	17.19
30	21.04	21.16	20.02	19.67	---	18.32	18.32	18.16	17.58	18.31	17.24	17.18
31	21.05	---	20.16	19.63	---	18.41	---	18.09	---	17.74	17.41	---
MAX	21.26	21.16	21.02	20.14	20.17	18.93	18.40	18.95	18.63	19.36	18.90	18.92

CAL YR 1999 LOW 21.26
WTR YR 2000 LOW 21.26



GROUND-WATER RECORDS
Summit County

410330081282000. LOCAL NUMBER, SU-6

LOCATION.—Latitude 41°03'30", longitude 81°28'20", Hydrologic Unit 04110002, Seiberling Street, Akron, Ohio. Owner: Goodyear Tire and Rubber Company.

AQUIFER.—Sand and gravel of Pleistocene Age.

WELL CHARACTERISTICS.—Drilled unused artesian well, diameter 24 in., depth 89 ft, cased.

INSTRUMENTATION.—Digital recorder, 60-minute punch.

DATUM.—Elevation of land-surface datum is 1000 ft above sea level from topographic map. Measuring point: Floor of instrument shelter 2.63 ft above land-surface datum.

REMARKS.—Station operated by Ohio Department of Natural Resources, Division of Water.

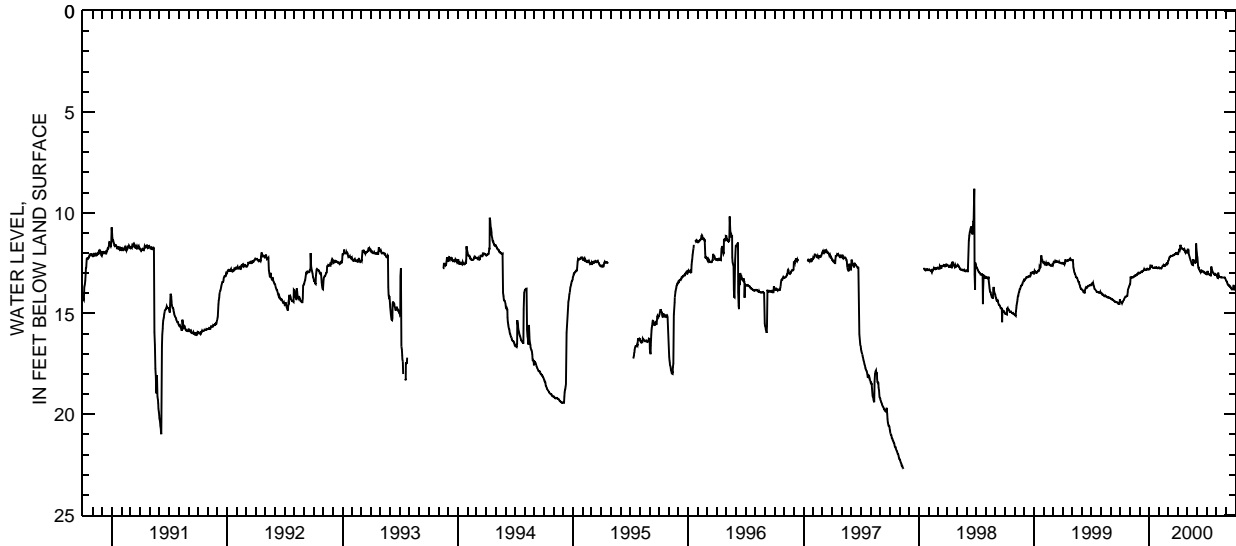
PERIOD OF RECORD.—March 1944 to current year. Records for May 14-Sept. 30, 1980, published in USGS-WDR-OH-80-1, are unreliable and should not be used.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily low, 59.47 ft below land-surface datum, Oct. 18, 1947; minimum daily low, 8.82 ft below land-surface datum, June 26, 1998.

DEPTH BELOW LAND SURFACE (WATER LEVEL), FEET, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14.37	13.56	13.01	12.83	12.74	12.41	12.07	11.91	12.14	13.06	13.09	13.38
2	14.42	13.52	12.99	12.81	12.76	12.38	12.04	11.84	12.21	13.07	13.13	13.41
3	14.44	13.18	12.98	12.80	12.74	12.35	11.96	11.84	12.45	13.06	13.16	13.42
4	14.45	13.23	12.99	12.75	12.74	12.30	11.92	11.84	12.64	12.90	13.21	13.45
5	14.47	13.23	12.97	12.62	12.75	12.22	11.80	11.89	12.73	12.97	13.24	13.53
6	14.48	13.23	12.94	12.63	12.76	12.21	11.84	12.07	12.73	13.01	13.25	13.56
7	14.50	13.23	12.95	12.67	12.76	12.19	11.86	12.15	12.81	13.05	12.98	13.58
8	14.47	13.22	12.95	12.67	12.77	12.16	11.81	12.20	12.84	13.07	13.11	13.60
9	14.45	13.21	12.95	12.64	12.74	12.15	11.60	12.24	12.88	13.07	13.17	13.62
10	14.39	13.20	12.93	12.64	12.73	12.17	11.67	12.32	12.91	13.07	13.19	13.63
11	14.37	13.22	12.90	12.71	12.70	12.16	11.70	12.37	12.93	13.07	13.19	13.62
12	14.36	13.20	12.89	12.73	12.68	12.15	11.76	12.38	12.96	13.09	13.20	13.64
13	14.33	13.17	12.89	12.74	12.66	12.15	11.78	12.47	12.91	13.11	13.20	13.67
14	14.27	13.16	12.88	12.75	12.62	12.14	11.78	12.52	12.87	13.12	13.21	13.68
15	14.25	13.16	12.81	12.74	12.61	12.13	11.80	12.55	12.87	13.08	13.21	13.71
16	14.23	13.13	12.84	12.75	12.64	12.12	11.81	12.58	12.89	12.68	13.22	13.73
17	14.21	13.14	12.84	12.75	12.65	12.11	11.81	12.59	12.92	12.80	13.22	13.76
18	14.18	13.13	12.85	12.73	12.62	12.12	11.82	12.60	12.93	12.85	13.21	13.79
19	14.18	13.12	12.84	12.71	12.63	12.11	11.85	12.61	12.91	12.89	13.22	13.81
20	14.16	13.11	12.83	12.73	12.63	12.10	11.85	12.31	12.91	12.94	13.23	13.81
21	14.15	13.11	12.84	12.74	12.64	12.08	11.81	12.38	12.91	12.96	13.23	13.79
22	14.13	13.09	12.84	12.74	12.62	12.07	11.84	12.43	12.93	13.01	13.23	13.78
23	14.13	13.09	12.82	12.72	12.59	12.07	11.92	12.43	12.97	13.02	13.23	13.80
24	14.13	13.07	12.83	12.74	12.54	12.07	11.97	12.44	12.98	13.03	13.23	13.63
25	13.93	13.06	12.83	12.72	12.52	12.03	11.92	12.50	12.98	13.07	13.23	13.63
26	13.82	13.02	12.79	12.75	12.51	12.03	11.94	12.50	13.01	13.06	13.23	13.71
27	13.77	12.99	12.80	12.76	12.51	12.01	11.94	12.49	13.01	13.09	13.22	13.76
28	13.73	13.01	12.80	12.76	12.53	12.00	11.95	12.47	13.02	13.09	13.23	13.80
29	13.68	13.02	12.82	12.76	12.51	12.06	11.99	11.53	13.03	13.05	13.26	13.82
30	13.63	13.02	12.82	12.74	---	12.06	11.99	11.82	13.04	13.07	13.31	13.83
31	13.60	---	12.83	12.72	---	12.07	---	12.03	---	13.08	13.35	---
MAX	14.50	13.56	13.01	12.83	12.77	12.41	12.07	12.61	13.04	13.12	13.35	13.83

CAL YR 1999 LOW 14.53
WTR YR 2000 LOW 14.50



GROUND-WATER RECORDS
Summit County

410846081271600. LOCAL NUMBER, SU-7

LOCATION.—Latitude 41°08'46", longitude 81°27'16", Hydrologic Unit 04110002, Monroe Falls Road, Cuyahoga Falls, Ohio. Owner: Cuyahoga Falls Water Department.

AQUIFER.—Sand and gravel of Pleistocene Age.

WELL CHARACTERISTICS.—Drilled unused water-table, diameter 6 in., depth 100 ft, cased.

INSTRUMENTATION.—Digital recorder, 60-minute punch.

DATUM.—Elevation of land-surface datum is 994 ft above sea level, from topographic map. Measuring point: Floor of instrument shelter 5.00 ft above land-surface datum.

REMARKS.—Station operated by Ohio Department of Natural Resources, Division of Water.

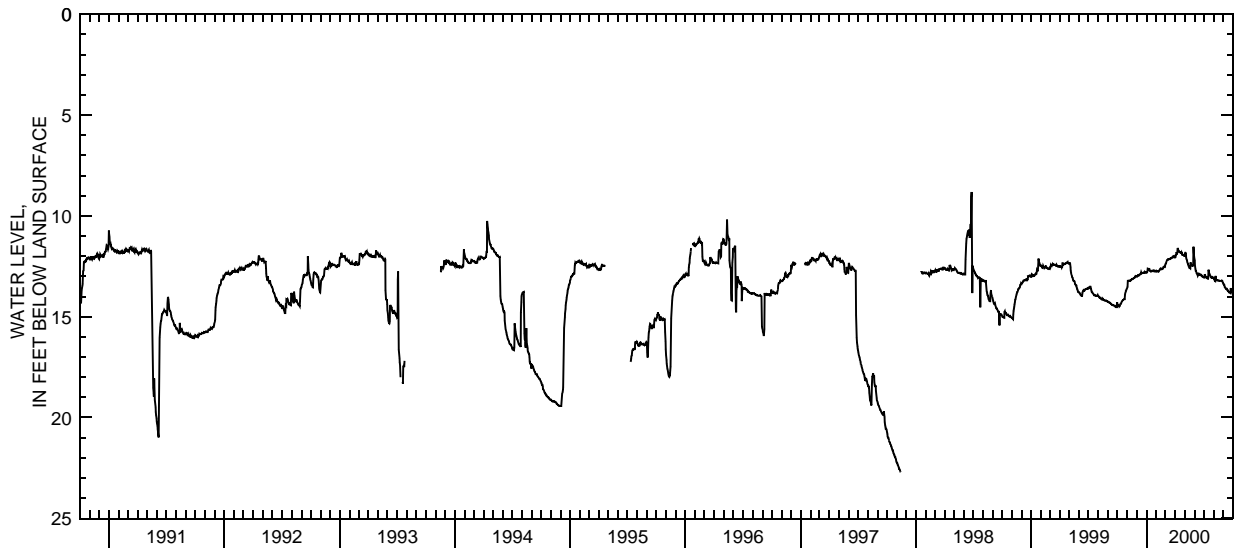
PERIOD OF RECORD.—August 1968 to current year.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily low, 46.90 ft below land-surface datum, Jan. 22, 1999; minimum daily low, 0.67 ft above land-surface datum, Apr. 15, 1994.

DEPTH BELOW LAND SURFACE (WATER LEVEL), FEET, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10.76	13.12	12.38	14.36	15.33	13.67	20.85	16.77	11.86	18.08	19.70	21.62
2	10.62	13.35	12.38	14.27	15.40	14.05	20.96	16.74	11.85	18.53	19.71	21.72
3	10.43	11.50	12.26	13.93	15.58	14.44	21.17	16.76	12.31	18.97	19.79	21.75
4	10.21	9.96	11.95	13.94	15.53	14.82	21.20	16.76	13.08	19.11	19.78	21.72
5	9.82	9.29	11.95	13.46	15.40	15.17	21.08	16.78	13.85	19.23	19.81	21.46
6	10.49	8.78	11.85	13.31	15.96	15.42	20.56	16.86	14.32	19.09	19.89	21.09
7	10.49	7.47	12.53	12.82	16.04	15.94	19.78	17.04	14.76	18.94	19.95	20.88
8	10.43	7.10	12.02	11.33	16.03	16.19	18.73	17.10	15.38	18.77	19.68	20.80
9	10.66	7.19	12.44	11.91	15.72	16.39	17.14	17.19	15.78	18.51	19.00	20.62
10	10.29	7.01	12.94	11.69	15.59	16.54	15.28	17.34	16.32	18.30	18.32	20.54
11	10.67	7.93	12.85	11.51	15.57	16.11	14.31	17.15	16.77	18.30	17.70	21.15
12	10.29	8.73	13.40	11.19	15.77	16.50	13.47	17.22	17.02	18.19	17.13	19.97
13	10.35	9.30	12.83	11.28	15.84	17.05	13.13	17.15	17.15	17.81	16.54	19.69
14	10.07	9.24	12.50	11.32	15.84	17.36	13.39	17.18	17.33	17.74	16.27	19.33
15	9.69	9.73	12.55	11.81	15.52	17.81	13.66	17.25	17.50	17.76	16.53	19.07
16	10.14	9.72	11.98	12.02	15.39	18.07	13.64	17.36	17.50	17.33	16.78	18.98
17	10.41	9.69	11.66	12.02	15.33	18.28	13.72	17.44	17.50	16.69	17.24	18.86
18	11.50	10.75	11.94	12.75	14.71	18.47	14.01	17.57	17.51	16.30	17.65	18.92
19	10.92	10.52	11.21	12.72	13.57	18.63	14.58	17.64	17.58	16.31	18.10	19.00
20	10.90	11.34	11.13	12.28	14.11	18.86	14.95	17.56	17.78	16.05	18.58	19.55
21	10.90	11.05	11.36	13.35	14.26	19.01	15.13	16.81	17.79	15.84	19.06	19.57
22	10.99	11.97	11.50	13.44	14.26	19.08	15.23	15.30	17.37	16.21	19.48	19.02
23	10.55	12.16	12.59	12.99	13.96	19.24	15.30	14.21	16.46	16.77	19.85	18.35
24	10.81	11.71	12.49	13.96	14.03	19.39	15.33	13.84	16.18	17.44	20.45	18.62
25	10.61	11.59	12.24	14.47	14.35	19.47	15.50	13.41	16.04	18.13	20.51	18.58
26	11.33	11.62	12.92	14.57	14.28	19.77	15.66	13.41	15.72	18.64	20.72	17.15
27	11.54	11.84	12.51	14.47	14.01	19.87	15.69	13.64	15.65	19.18	20.76	17.06
28	12.14	11.76	13.23	14.67	12.68	19.96	16.06	13.71	16.24	19.47	20.84	17.07
29	12.44	11.45	12.94	14.93	12.57	20.12	16.31	13.79	17.02	19.54	20.94	17.48
30	12.27	11.13	13.00	15.00	---	20.33	16.74	13.44	17.74	19.53	21.14	17.37
31	12.56	---	14.06	15.03	---	20.60	---	12.26	---	19.53	21.36	---
MAX	12.56	13.35	14.06	15.03	16.04	20.60	21.20	17.64	17.79	19.54	21.36	21.75

CAL YR 1999 LOW 46.90
WTR YR 2000 LOW 21.75



GROUND-WATER RECORDS
Van Wert County

405215084335400. LOCAL NUMBER, VW-1

LOCATION.—Latitude 40°52'15", longitude 84°33'54", Hydrologic Unit 04100007, Ridge Road near Van Wert, Ohio. Owner: Marsh Foundation.

AQUIFER.—Limestone of Silurian Age.

WELL CHARACTERISTICS.—Drilled unused artesian well, diameter 8 in., depth 340 ft, cased.

INSTRUMENTATION.—Type F continuous recorder.

DATUM.—Elevation of land-surface datum is 790.37 ft above sea level. Measuring point: Floor of instrument shelter 6.15 ft above land-surface datum.

REMARKS.—Station operated by Ohio Department of Natural Resources, Division of Water. Water-quality data collected at this site and published in project data, Ground-Water Data for Ohio Department of Natural Resources.

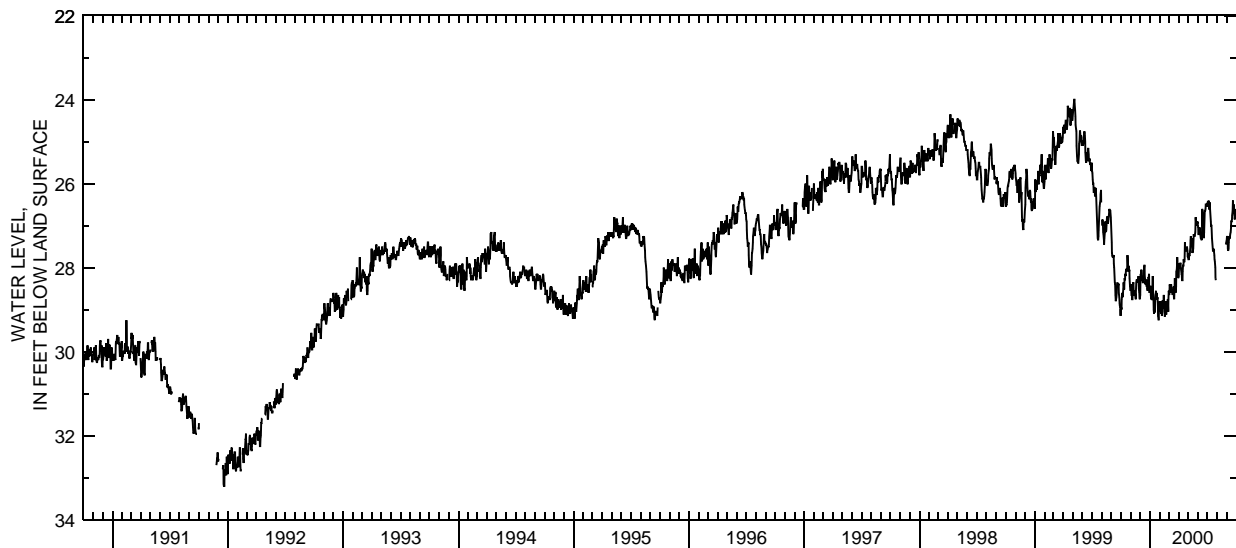
PERIOD OF RECORD.—August 1957 to current year.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily low 33.20 ft below land-surface datum, Dec. 20-21, 1991; minimum daily low, 18.85 ft below land-surface datum, Mar. 6, 1959.

DEPTH BELOW LAND SURFACE (WATER LEVEL), FEET, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29.00	28.55	28.65	28.55	29.00	28.55	28.20	27.65	27.00	26.50	---	27.30
2	28.95	28.40	28.35	28.45	29.05	28.65	28.00	27.80	27.05	26.45	---	27.25
3	29.00	28.55	28.15	28.45	28.80	28.60	27.90	27.80	27.20	26.45	---	27.30
4	28.75	28.65	28.20	28.65	28.90	28.40	27.95	27.75	27.20	26.50	---	27.55
5	28.65	28.65	28.05	28.75	28.95	28.50	28.00	27.70	27.15	26.40	---	27.60
6	28.60	28.75	28.25	28.70	29.10	28.60	27.90	27.70	27.05	26.50	---	27.55
7	28.70	28.75	28.25	28.75	29.00	28.50	27.90	27.65	27.10	26.60	---	27.40
8	28.55	28.55	28.30	28.75	29.15	28.40	28.00	27.50	27.05	26.60	---	27.25
9	28.50	28.40	28.30	28.50	29.05	28.45	28.05	27.35	27.20	26.45	---	27.30
10	28.35	28.35	28.35	28.20	28.80	28.55	28.15	27.25	27.30	26.60	---	27.30
11	28.50	28.65	28.35	28.60	28.80	28.55	28.15	27.45	27.30	26.80	---	27.25
12	28.50	28.65	28.15	28.65	28.95	28.60	28.30	27.45	27.30	26.90	---	27.20
13	28.25	28.55	28.10	29.00	28.95	28.65	28.30	27.30	27.35	27.00	---	27.15
14	28.30	28.60	27.95	29.10	28.65	28.55	28.10	27.50	27.10	27.00	---	27.05
15	28.15	28.60	27.95	29.00	28.95	28.55	27.95	27.65	26.60	27.10	---	26.90
16	28.20	28.65	28.20	29.05	28.95	28.45	27.95	27.60	26.70	27.30	---	26.90
17	28.05	28.75	28.30	29.05	29.15	28.70	27.80	27.55	27.00	27.45	---	26.85
18	28.05	28.55	28.40	28.80	29.15	28.75	27.85	27.40	27.15	27.50	---	26.75
19	28.10	28.35	28.30	28.65	28.80	28.50	27.85	27.20	27.20	27.60	---	26.65
20	28.05	28.30	28.30	28.55	29.00	28.25	27.80	27.25	27.30	27.60	---	26.40
21	28.05	28.30	28.40	28.65	29.10	28.50	27.40	27.25	27.15	27.55	---	26.65
22	27.70	28.30	28.45	28.75	29.10	28.60	27.50	27.25	26.75	27.60	---	26.70
23	27.75	28.30	28.40	28.60	28.95	28.55	27.55	27.20	26.65	27.70	---	26.50
24	28.00	28.30	28.50	28.75	28.95	28.45	27.55	27.15	26.65	27.80	---	26.70
25	28.00	28.35	28.55	28.70	28.85	28.10	27.55	26.80	26.60	27.85	---	26.75
26	27.95	28.20	28.30	28.90	28.85	28.05	27.60	26.90	26.50	28.00	---	26.85
27	28.10	28.50	28.25	29.15	28.75	27.90	27.60	26.95	26.50	28.25	---	26.75
28	28.05	28.60	28.25	29.20	29.05	27.75	27.50	27.00	26.55	28.30	---	26.80
29	28.25	28.70	28.15	29.25	28.75	28.05	27.60	26.90	26.50	---	27.45	26.75
30	28.45	28.75	28.50	29.00	---	28.15	27.75	26.95	26.55	---	27.40	26.60
31	28.50	---	28.60	28.80	---	28.25	---	26.90	---	---	27.35	---
MAX	29.00	28.75	28.65	29.25	29.15	28.75	28.30	27.80	27.35	28.30	27.45	27.60

CAL YR 1999 LOW 29.15
WTR YR 2000 LOW 29.25



GROUND-WATER RECORDS
Williams County

412821084313600. LOCAL NUMBER, WM-1

LOCATION.—Latitude 41°28'21", Longitude 84°31'36", Hydrologic Unit 04100006, Bryan Water Treatment Plant, Bryan, Ohio. Owner: City of Bryan.
AQUIFER.—Sand and gravel of Pleistocene Age.

WELL CHARACTERISTICS.—Drilled unused production well, diameter 8 in., depth 118 ft, cased.

INSTRUMENTATION.—Type F continuous recorder.

DATUM.—Elevation of land-surface datum is 747 ft above sea level, from topographic map. Measuring point: Floor of instrument shelter 3.30 ft above land-surface datum.

REMARKS.—Station operated by Ohio Department of Natural Resources, Division of Water.

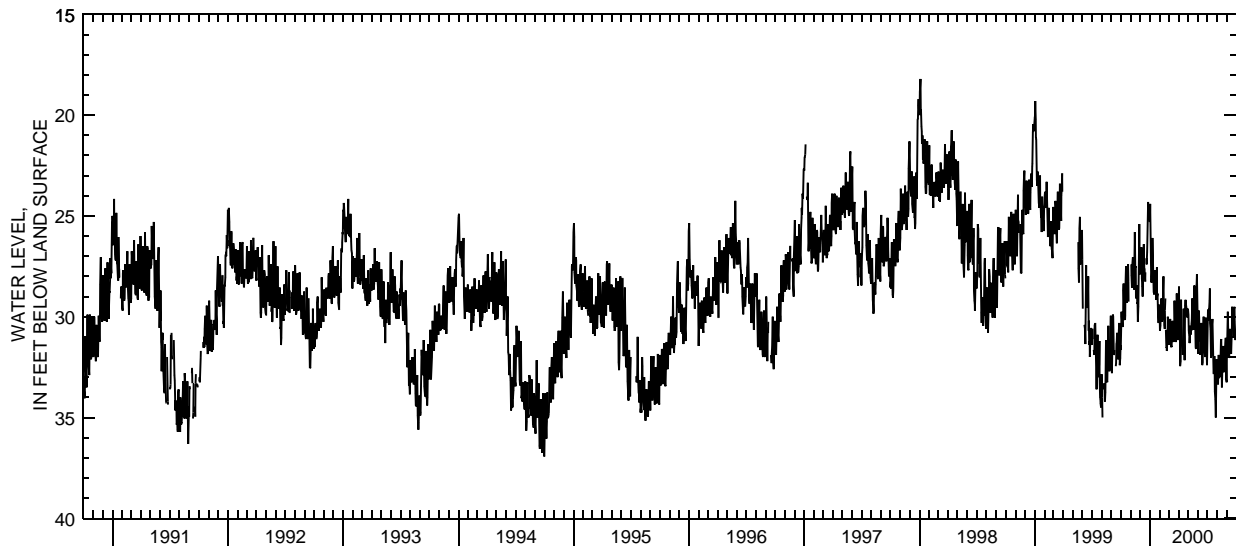
PERIOD OF RECORD.—May 1951 to May 1957, discontinued June 1957 to September 1984, reactivated October 1984 to current year.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily low, 39.35 ft below land-surface datum, July 7, 1988; minimum daily low, 1.45 ft below land-surface datum, Jan. 27, 1952.

DEPTH BELOW LAND SURFACE (WATER LEVEL), FEET, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	31.65	---	27.90	25.30	30.00	30.85	29.25	29.60	31.40	31.70	33.20	32.05
2	30.70	---	27.70	24.40	30.70	31.05	28.50	29.90	31.85	30.50	33.15	31.40
3	29.75	27.40	27.85	26.10	30.45	31.40	29.55	30.65	31.25	29.65	33.20	30.35
4	30.00	27.95	27.25	26.85	30.15	30.70	30.15	30.80	29.70	30.20	33.35	29.75
5	30.30	28.55	26.55	28.00	29.90	30.10	29.70	30.95	30.05	29.80	32.80	30.70
6	30.45	28.20	26.95	28.30	29.10	30.45	32.45	31.30	31.00	29.65	31.90	31.70
7	30.50	27.35	28.10	28.05	29.30	31.00	32.20	31.00	31.20	29.65	33.05	32.05
8	30.05	27.05	28.50	27.60	30.20	31.50	30.20	30.45	30.95	29.20	32.80	31.90
9	28.70	27.80	29.00	26.10	30.20	31.45	29.15	30.90	31.90	28.60	33.00	31.90
10	28.35	28.30	28.45	26.80	30.15	31.50	30.90	30.55	31.75	30.30	32.90	30.95
11	29.70	28.35	27.90	27.20	30.00	31.05	31.45	30.70	30.80	30.65	32.40	30.60
12	29.95	28.65	26.85	27.90	28.80	30.20	31.40	30.35	30.30	31.30	32.25	31.30
13	30.10	27.75	26.40	28.80	28.00	30.30	31.70	30.15	31.50	32.05	31.20	31.30
14	30.15	25.80	27.60	28.85	29.40	30.95	31.90	29.10	32.20	31.80	31.10	31.80
15	29.95	26.10	27.65	28.90	29.60	31.25	31.45	30.10	32.40	31.10	32.45	31.80
16	28.35	27.55	27.85	28.00	30.40	30.95	30.45	30.20	32.25	30.40	33.50	31.00
17	27.50	27.50	28.25	27.70	30.60	31.10	29.60	30.60	31.45	30.10	32.80	30.40
18	28.85	29.00	27.80	28.50	29.70	30.60	30.30	30.65	30.70	30.80	32.55	29.50
19	29.05	29.10	---	28.75	29.10	29.20	31.80	30.20	30.00	31.60	32.35	30.25
20	29.30	29.00	---	28.85	---	30.05	32.15	29.40	31.30	32.55	31.45	30.55
21	29.20	28.45	27.10	29.15	30.65	30.60	30.75	28.45	31.30	32.80	32.45	30.55
22	28.65	29.35	27.40	28.85	31.50	31.25	29.45	29.70	31.30	32.80	32.75	31.00
23	27.85	29.30	26.80	27.55	31.50	31.20	29.15	29.70	31.75	31.95	32.25	30.45
24	27.40	30.25	26.05	29.00	31.70	30.80	29.40	30.80	32.00	32.15	32.35	29.60
25	28.25	29.50	25.20	28.85	31.20	30.15	29.40	31.50	30.40	33.70	32.40	29.50
26	29.25	27.30	24.30	29.45	31.25	28.85	29.60	31.60	30.05	34.10	32.45	30.25
27	---	26.40	24.50	29.90	30.00	29.60	29.85	29.75	31.35	34.30	31.45	30.60
28	---	25.40	24.80	30.30	30.30	29.70	30.00	28.40	31.80	35.00	31.05	31.15
29	---	26.35	24.95	30.25	30.35	31.15	30.00	27.90	31.90	33.60	32.05	30.95
30	---	27.65	24.95	29.40	---	30.90	29.65	30.10	32.40	32.55	33.10	30.75
31	---	---	25.00	29.50	---	30.40	---	30.85	---	32.10	33.25	---
MAX	31.65	30.25	29.00	30.30	31.70	31.50	32.45	31.60	32.40	35.00	33.50	32.05

CAL YR 1999 LOW 35.00
WTR YR 2000 LOW 35.00



GROUND-WATER RECORDS
Williams County

412930084320900. LOCAL NUMBER, WM-3

LOCATION.—Latitude 41°29'30", longitude 84°32'09", Hydrologic Unit 04100006, Union Street, Bryan, Ohio. Owner: City of Bryan.

AQUIFER.—Sand and gravel of Pleistocene Age.

WELL CHARACTERISTICS.—Drilled unused test well, diameter 8 in., depth 174 ft, cased.

INSTRUMENTATION.—Type F continuous recorder.

DATUM.—Elevation of land-surface datum is 760 ft above sea level, from topographic map. Measuring point: Floor of instrument shelter 2.00 ft above land-surface datum.

REMARKS.—Station operated by Ohio Department of Natural Resources, Division of Water.

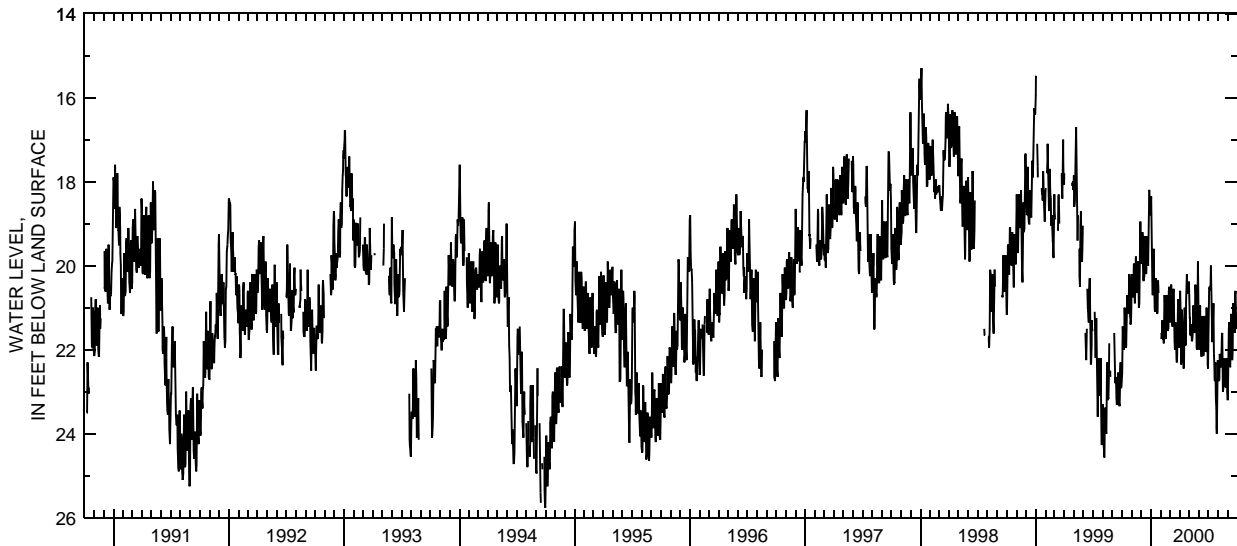
PERIOD OF RECORD.—October 1984 to current year.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily low, 27.35 ft below land-surface datum, June 30-July 1, 1988; minimum daily low, 15.15 ft below land-surface datum, Jan. 4, 1987.

DEPTH BELOW LAND SURFACE (WATER LEVEL), FEET, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22.75	20.35	19.80	18.60	---	21.00	21.50	20.40	21.75	22.20	22.55	23.15
2	22.55	20.20	19.90	18.35	---	21.25	20.70	20.90	22.00	21.40	22.70	22.90
3	21.80	20.30	19.95	18.80	21.60	21.35	20.60	21.25	21.75	20.70	22.65	22.20
4	21.45	20.65	19.80	19.60	21.75	21.10	21.10	21.25	21.10	20.55	22.75	21.50
5	21.65	20.75	19.20	20.30	21.70	20.45	21.25	21.65	20.95	20.50	22.70	21.35
6	21.90	20.70	19.30	20.65	21.30	20.70	22.35	21.65	21.50	20.55	22.10	21.75
7	22.00	20.30	19.90	20.70	21.50	20.95	22.15	21.40	21.75	20.60	22.15	22.25
8	21.95	19.95	20.35	20.55	21.70	21.25	21.65	21.60	22.00	20.45	22.25	22.40
9	21.65	20.35	20.35	19.70	21.75	21.45	21.05	21.60	22.15	20.00	22.40	22.40
10	21.00	20.60	20.25	19.60	21.75	21.40	21.35	21.80	22.15	20.15	22.40	21.80
11	21.35	20.90	20.25	20.25	21.85	21.30	21.80	21.75	21.55	20.95	22.30	21.15
12	21.60	20.75	19.60	20.50	21.50	20.65	22.25	21.70	21.20	21.25	22.20	21.65
13	21.80	20.55	19.30	21.05	20.70	20.55	22.40	21.55	21.65	21.80	21.65	21.70
14	21.95	19.80	19.60	21.10	20.75	20.95	22.45	21.00	22.05	21.80	21.60	22.00
15	21.90	19.80	19.80	21.05	21.15	21.25	22.35	20.95	22.15	21.65	22.25	22.25
16	21.60	20.20	20.10	20.40	21.60	21.80	21.40	21.20	22.10	21.30	23.00	22.05
17	20.85	20.45	20.20	20.30	21.70	22.00	21.00	21.45	22.00	20.90	22.95	21.65
18	20.70	20.60	20.10	20.65	21.75	21.95	21.10	21.60	21.25	21.50	22.85	20.90
19	20.90	20.65	19.50	20.75	21.35	21.35	21.60	21.55	21.20	22.10	22.85	21.05
20	21.10	20.45	19.30	21.05	20.85	21.50	21.90	21.20	21.45	22.40	22.20	21.35
21	21.15	19.90	19.75	21.15	20.70	21.85	21.60	20.45	21.60	22.70	22.75	21.45
22	21.10	20.10	19.95	21.10	21.30	22.20	20.85	20.55	21.90	22.75	22.65	21.60
23	20.95	20.45	20.00	20.40	21.50	22.30	20.50	20.80	22.05	22.30	22.80	21.40
24	20.40	21.00	19.65	20.35	21.55	22.20	20.20	21.40	22.00	22.45	22.85	20.70
25	20.20	20.90	19.10	20.65	21.50	21.90	20.35	21.95	21.00	23.15	22.90	20.60
26	20.65	20.00	18.45	---	21.45	21.05	20.50	22.00	21.10	23.40	22.85	20.75
27	21.20	19.40	18.20	---	20.60	20.80	20.55	21.70	21.70	23.85	22.25	21.20
28	21.25	18.95	18.40	---	20.50	21.00	20.65	20.50	22.00	24.00	22.20	21.45
29	21.40	19.00	18.60	---	20.55	21.70	20.65	19.90	22.35	23.60	22.35	21.50
30	21.30	19.50	18.80	---	---	21.95	20.40	20.50	22.45	22.95	23.00	21.30
31	21.00	---	18.70	---	---	21.90	---	21.15	---	22.25	23.20	---
MAX	22.75	21.00	20.35	21.15	21.85	22.30	22.45	22.00	22.45	24.00	23.20	23.15

CAL YR 1999 LOW 24.55
WTR YR 2000 LOW 24.00



GROUND-WATER RECORDS
Williams County

413108084415300. LOCAL NUMBER, WM-12

LOCATION.—Latitude 41°31'08", longitude 84°41'53", Hydrologic Unit 04100003, 1.7 mi east of Blakeslee, Ohio. Owner: State of Ohio.

AQUIFER.—Sand and gravel of Pleistocene Age.

WELL CHARACTERISTICS.—Drilled test artesian well, diameter 10 in., depth 115 ft, cased to 85 ft, screened 85 ft to 115 ft.

INSTRUMENTATION.—Periodic measurement with chalked tape by ODNR personnel.

DATUM.—Elevation of land-surface datum is 830 ft above sea level, from topographic map. Measuring point: Floor of instrument shelter 1.50 ft above land-surface datum.

REMARKS.—Station operated by Ohio Department of Natural Resources, Division of Water.

PERIOD OF RECORD.—1974 to September 1982 continuous, periodic October 1983 to December 1984, continuous January 1985 to November 1986, periodic thereafter.

EXTREMES FOR PERIOD OF RECORD.—Maximum measured low, 10.75 ft below land-surface datum, Nov. 29, 1999; minimum daily low, 3.83 ft below land-surface datum, Mar. 17, 1982.

WATER LEVEL
IN FEET BELOW LAND-SURFACE DATUM
INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
11/29/99	10.75
05/05/00	9.06

GROUND-WATER RECORDS
Wyandot County

405009083172600. LOCAL NUMBER, WY-1

LOCATION.—Latitude 40°50'09", longitude 83°17'26", Hydrologic Unit 04100011, State Route 199, Upper Sandusky, Ohio. Owner: Karg Supply Company.

AQUIFER.—Limestone of Silurian Age.

WELL CHARACTERISTICS.—Drilled unused artesian well, diameter 5 in, depth 90 ft, cased.

INSTRUMENTATION.—Digital recorder, 60-minute punch.

DATUM.—Elevation of land-surface datum is 850 ft above sea level, from topographic map. Measuring point: Floor of instrument shelter 3.00 ft above land-surface datum.

REMARKS.—Station operated by Ohio Department of Natural Resources, Division of Water.

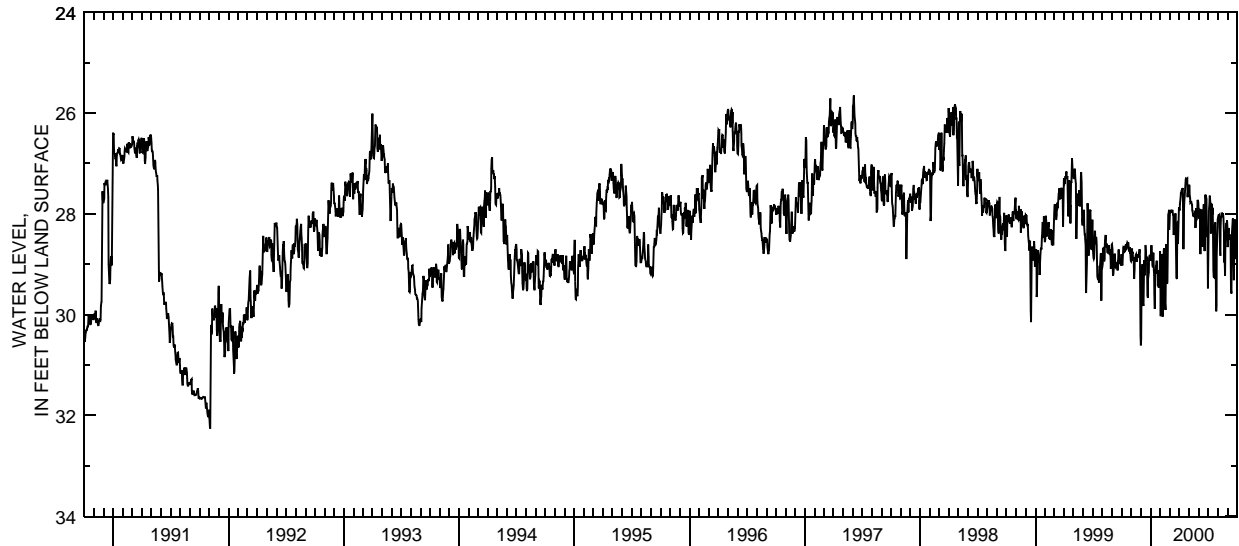
PERIOD OF RECORD.—September 1951 to current year.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily low, 40.90 ft below land-surface datum, July 12, 15, 17, 21, Aug. 26, 1961; minimum daily low, 25.65 ft below land-surface datum, June 5, 1997.

DEPTH BELOW LAND SURFACE (WATER LEVEL), FEET, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28.80	28.93	30.61	28.93	29.47	28.17	27.92	27.61	27.86	29.48	28.11	28.66
2	28.96	28.77	30.48	28.87	30.03	27.94	27.92	27.42	28.09	28.80	28.06	28.62
3	29.02	28.69	30.16	28.70	29.77	27.98	27.81	27.46	28.02	28.15	28.03	28.37
4	29.01	28.79	29.24	28.62	28.89	27.95	27.74	27.63	27.93	27.92	28.03	28.28
5	28.82	28.75	29.06	28.84	28.80	27.92	27.65	27.69	27.90	27.83	28.02	28.50
6	28.68	28.84	29.00	28.90	28.82	27.94	27.59	27.77	28.44	27.65	28.01	28.50
7	28.66	28.93	29.61	29.01	29.57	27.95	27.59	27.76	28.80	27.64	28.17	28.48
8	28.67	28.86	29.77	29.06	30.04	27.95	27.54	27.76	28.31	27.77	28.75	28.41
9	28.74	29.02	29.83	28.89	29.72	27.94	27.53	27.76	27.92	27.80	28.83	28.43
10	28.75	29.29	29.73	28.77	29.10	27.92	27.51	27.80	27.95	28.39	28.28	28.44
11	28.74	29.09	29.04	29.11	28.96	27.95	27.50	27.82	27.95	28.03	28.04	29.01
12	28.67	28.87	28.92	29.22	28.72	28.01	27.49	27.93	27.92	27.80	28.07	29.50
13	28.66	28.93	29.05	29.58	28.68	28.04	28.33	27.94	28.37	27.98	28.05	29.58
14	28.61	28.85	29.22	29.89	29.52	28.42	28.70	28.03	28.65	28.01	28.01	28.80
15	28.72	28.81	28.77	29.70	29.78	28.39	28.38	28.05	28.59	27.96	28.02	28.37
16	28.71	28.80	28.62	29.15	29.80	28.18	27.87	27.99	27.95	27.88	28.00	28.21
17	28.68	28.92	28.74	29.11	29.91	28.11	27.72	28.02	27.83	28.50	28.01	28.12
18	28.60	28.95	28.86	29.04	29.13	28.17	27.64	28.05	27.83	29.10	28.01	28.09
19	28.57	28.85	28.92	29.04	28.60	28.12	27.52	28.05	28.36	29.25	28.08	28.60
20	28.59	28.86	28.85	28.93	28.67	27.99	27.43	27.97	28.74	29.26	28.37	29.07
21	28.63	28.84	29.11	29.01	29.27	28.53	27.33	27.94	28.21	28.92	28.96	29.32
22	28.56	28.80	29.62	29.19	29.39	29.11	27.31	28.28	27.66	28.25	28.72	28.62
23	28.60	28.82	29.67	29.12	29.35	29.27	27.32	28.24	27.62	28.18	29.09	28.16
24	28.68	28.83	29.30	29.43	28.70	29.29	27.32	27.89	27.69	28.17	29.23	28.11
25	28.74	28.80	29.23	29.35	28.16	28.53	27.30	28.13	27.68	29.12	28.62	28.59
26	28.74	28.77	29.16	29.46	28.01	28.17	27.29	28.08	27.71	29.89	28.36	28.90
27	28.66	28.70	28.89	29.42	28.00	28.14	27.67	27.95	28.46	29.93	28.18	28.61
28	28.79	28.85	28.84	29.45	27.92	28.60	27.60	27.93	28.43	29.81	28.38	28.55
29	28.77	29.20	28.81	29.45	28.32	28.33	27.53	27.72	28.33	28.81	28.33	28.64
30	28.93	30.42	28.84	29.20	---	27.95	27.61	27.74	29.22	28.44	28.13	28.16
31	28.94	---	28.89	28.74	---	27.87	---	27.78	---	28.27	28.20	---
MAX	29.02	30.42	30.61	29.89	30.04	29.29	28.70	28.28	29.22	29.93	29.23	29.58

CAL YR 1999 LOW 30.61
WTR YR 2000 LOW 30.61



PROJECT DATA City of Akron Water Diversion

The Ohio and Erie Canal runs from the Little Cuyahoga River through the City of Akron, through Summit Lake, past Lake Nesmith to Wolf Creek, a tributary to the Tuscarawas River. Water is diverted from Long Lake, one of the Portage Lakes, into the canal system at the Long Lake Feeder Water Control structure near Lake Nesmith. The water can either flow north into the Little Cuyahoga River or south to the Tuscarawas River. The following three discharge gaging stations are on the Ohio and Erie Canal system in the Akron area. The Long Lake Feeder gage measures water flow into the canal, while the Ohio and Erie Canal at Lock 1 gage and the Wolf Creek Outlet gage measure water flow to the north and south, respectively. The tables contain the daily mean discharges at each gaging station.



PROJECT DATA
City of Akron Water Diversion

410121081330300 LONG LAKE FEEDER TO OHIO & ERIE CANAL AT AKRON, OHIO

LOCATION.—Latitude 41°01'21", longitude 81°33'03", Summit County, Hydrologic Unit 05040001, in canal feeder gate house control structure at north end of Long Lake Channel on west side of State Route 93 (Manchester Road), 0.1 mi south of Lake Nesmith, at Akron, Ohio.

DRAINAGE AREA.—Not determined.

PERIOD OF RECORD.—June 12, 1998 to current year.

GAGE.—Acoustic Doppler flow meter records water depth, discharge, and velocity.

REMARKS.—Records are good, except for periods of estimated daily discharges, which are fair, and December 17 to January 9, August 27 to September 20, September 23 to September 30, and daily discharges greater than 28 ft³/s, which are poor. Flow is completely regulated by operation of gates at flow-control structure upstream of gage.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e15	15	e17	e21	e20	21	e22	e21	e20	25	e20	e17
2	e15	16	e17	e21	20	23	e23	e22	e19	24	e19	e16
3	e15	18	e17	e21	20	22	e23	e23	e18	e22	e18	e16
4	e15	e19	17	e21	21	22	e23	e24	e18	e23	e17	e16
5	e15	e18	e18	e21	19	22	22	e22	e19	21	e18	e16
6	15	17	21	e28	19	21	21	e21	21	e20	e25	e15
7	15	18	e22	e23	20	e22	e22	e20	23	20	e25	e15
8	15	18	20	e23	20	22	e22	e20	22	e20	20	e15
9	14	16	18	e23	21	22	e23	e21	e22	19	19	e14
10	15	15	20	e23	21	23	e24	e19	21	e18	e20	e14
11	15	17	23	22	22	21	e24	e18	e21	e20	e20	e14
12	e15	18	24	21	23	21	e25	e18	e21	e20	20	e14
13	e15	18	e24	19	20	22	e26	e18	e20	e20	20	e13
14	e15	17	e23	20	e22	e22	24	e18	e20	14	20	e13
15	e15	18	20	21	e23	e22	e24	e18	e21	19	20	e12
16	13	e20	e21	22	22	e22	23	e18	e21	20	e19	e12
17	13	21	e21	20	22	e22	e23	e18	e22	19	e18	e12
18	13	20	e21	20	21	21	e23	e16	e22	e20	e18	e12
19	13	18	e21	20	22	20	e23	e15	e22	e19	e19	e11
20	14	18	e21	19	22	20	e22	15	e22	18	e20	e11
21	14	e20	e21	17	23	21	e22	14	e22	e17	e20	11
22	14	17	e21	16	23	e21	e22	15	e21	e16	19	11
23	14	17	e21	18	23	21	e22	16	e21	e16	e20	e10
24	14	e17	e21	e18	23	21	e22	17	e21	16	19	e10
25	15	e17	e21	18	23	20	e21	e17	e21	17	19	e10
26	15	e17	e21	e17	23	e20	e21	15	e22	16	19	e10
27	16	e17	e21	15	22	e21	e21	14	e22	e17	e18	e10
28	16	e17	e21	e18	22	e21	e21	13	e22	e18	e18	e10
29	16	e17	e21	21	21	21	e20	15	e23	e19	e18	e10
30	16	e17	e21	e22	---	e22	e21	e18	24	e20	e17	e10
31	16	---	e21	e21	---	e22	---	e20	---	e20	e17	---
TOTAL	456	528	637	630	623	664	675	559	634	593	599	380
MEAN	14.7	17.6	20.5	20.3	21.5	21.4	22.5	18.0	21.1	19.1	19.3	12.7
MAX	16	21	24	28	23	23	26	24	24	25	25	17
MIN	13	15	17	15	19	20	20	13	18	14	17	10

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1998 - 2000, BY WATER YEAR (WY)

	1998	1999	2000	1998	1999	2000	1998	1999	2000	1998	1999	2000
MEAN	20.9	19.9	21.8	22.0	22.9	22.8	21.9	19.4	20.9	20.0	19.0	17.4
MAX	27.0	22.2	23.1	23.7	24.5	24.1	22.5	20.8	21.1	20.8	19.3	22.9
(WY)	1999	1999	1999	1999	1999	1999	2000	1999	2000	1999	2000	1998
MIN	14.7	17.6	20.5	20.3	21.5	21.4	21.3	18.0	20.6	19.1	18.5	12.7
(WY)	2000	2000	2000	2000	2000	2000	1999	2000	1999	2000	1998	2000

SUMMARY STATISTICS	FOR 1999 CALENDAR YEAR	FOR 2000 WATER YEAR	WATER YEARS 1998 - 2000
ANNUAL TOTAL	7433	6978	
ANNUAL MEAN	20.4	19.1	20.5
HIGHEST ANNUAL MEAN			22.0
LOWEST ANNUAL MEAN			19.1
HIGHEST DAILY MEAN	33	Feb 25	28
LOWEST DAILY MEAN	13	Oct 16	10
ANNUAL SEVEN-DAY MINIMUM	13	Oct 16	10
INSTANTANEOUS PEAK FLOW			59
INSTANTANEOUS LOW FLOW			10
10 PERCENT EXCEEDS	24	23	24
50 PERCENT EXCEEDS	21	20	21
90 PERCENT EXCEEDS	16	15	16

e Estimated.

PROJECT DATA
City of Akron Water Diversion

410433081312500 OHIO & ERIE CANAL AT LOCK 1 AT AKRON, OHIO

LOCATION.—Latitude 41°04'33", longitude 81°31'25", Summit County, Hydrologic Unit 05040001, at lower pool level of Lock 1, at south end of culvert under West Exchange Street, 1.6 mi. northeast of Summit Lake, at Akron, Ohio.

DRAINAGE AREA.—Not determined.

PERIOD OF RECORD.—June 1, 1998 to current year.

GAGE.—Water-stage recorder. Datum of gage is 953.76 ft above sea level.

REMARKS.—Record is good, except for estimated daily discharges, flows greater than 175 ft³/s, and a period of significant in-channel weed growth (June 1 to September 30), which are poor. Flow is completely regulated by operation of gate at Lock 1.

REVISIONS.—WDR OH-99-2: 1998, 1998(M).

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	12	7.2	14	12	21	10	27	e29	18	38	30
2	14	81	7.4	15	12	12	21	45	18	17	14	25
3	14	45	10	39	12	5.9	35	17	12	37	17	24
4	13	12	14	69	16	9.4	47	17	12	44	20	25
5	13	11	14	24	17	11	20	21	33	13	20	9.9
6	12	11	14	23	16	17	7.3	26	71	13	94	13
7	12	16	13	13	13	20	11	26	21	13	72	17
8	5.8	14	13	14	9.8	20	79	17	20	13	26	18
9	58	12	13	15	11	12	6.8	11	17	13	20	18
10	22	19	31	21	12	5.3	21	11	18	26	17	55
11	2.1	23	13	16	25	6.0	10	17	21	50	18	14
12	7.8	13	12	15	16	20	31	23	43	16	22	11
13	28	8.0	13	15	13	26	4.0	14	50	16	42	14
14	40	8.1	25	15	41	13	9.5	13	18	112	28	13
15	9.7	8.0	28	14	22	7.1	18	14	19	101	22	12
16	10	6.2	11	11	12	18	22	14	19	11	22	18
17	17	2.2	13	11	10	23	23	15	39	12	21	17
18	17	16	18	16	14	14	17	17	39	15	24	13
19	16	9.0	18	18	21	14	14	95	38	15	27	11
20	17	21	19	18	17	23	24	19	13	16	26	19
21	16	20	14	17	9.8	15	38	19	13	17	26	47
22	16	6.2	14	16	11	12	17	19	19	17	26	15
23	16	e1.3	14	16	19	13	13	25	18	16	10	38
24	39	e5.3	13	11	20	14	12	27	18	84	4.2	87
25	31	e11	12	8.8	22	13	16	26	19	1.7	14	17
26	17	e31	13	9.6	16	16	21	20	19	4.7	18	17
27	8.6	e10	28	15	16	27	21	17	19	31	27	17
28	3.5	e9.0	11	18	12	5.7	18	e97	19	86	35	16
29	13	e8.0	12	14	8.2	21	13	e96	18	25	21	7.4
30	16	e7.5	16	12	---	13	14	e11	75	14	17	2.8
31	15	---	15	12	---	7.0	---	e21	---	30	15	---
TOTAL	531.5	456.8	468.6	545.4	455.8	454.4	613.6	837	787	897.4	803.2	641.1
MEAN	17.1	15.2	15.1	17.6	15.7	14.7	20.5	27.0	26.2	28.9	25.9	21.4
MAX	58	81	31	69	41	27	79	97	75	112	94	87
MIN	2.1	1.3	7.2	8.8	8.2	5.3	4.0	11	12	1.7	4.2	2.8

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1998 - 2000, BY WATER YEAR (WY)

	1998	1999	2000	1998	1999	2000	1998	1999	2000	1998	1999	2000
MEAN	18.6	13.6	13.7	18.2	15.7	16.0	19.4	21.2	19.6	21.8	22.9	20.1
MAX	20.1	15.2	15.1	18.9	15.7	17.3	20.5	27.0	26.2	28.9	25.9	22.8
(WY)	1999	2000	2000	1999	2000	1999	2000	2000	2000	2000	2000	1999
MIN	17.1	11.9	12.4	17.6	15.6	14.7	18.3	15.5	15.4	18.0	17.7	16.2
(WY)	2000	1999	1999	2000	1999	2000	1999	1999	1998	1998	1998	1998

SUMMARY STATISTICS

	FOR 1999 CALENDAR YEAR			FOR 2000 WATER YEAR			WATER YEARS 1998 - 2000		
ANNUAL TOTAL	6594.7			7491.8					
ANNUAL MEAN	18.1			20.5			19.1		
HIGHEST ANNUAL MEAN							20.5		
LOWEST ANNUAL MEAN							17.8		
HIGHEST DAILY MEAN	153	Aug 26		112	Jul 14		153	Aug 26	1999
LOWEST DAILY MEAN	1.3	Nov 23		1.3	Nov 23		1.3	Nov 23	1999
ANNUAL SEVEN-DAY MINIMUM	8.2	Nov 13		8.2	Nov 13		7.3	Jun 4	1998
INSTANTANEOUS PEAK FLOW				288			377		
INSTANTANEOUS PEAK STAGE				3.03			3.44		
INSTANTANEOUS LOW FLOW				1.0			1.0		
10 PERCENT EXCEEDS	26			37			28		
50 PERCENT EXCEEDS	16			16			16		
90 PERCENT EXCEEDS	10			9.5			9.6		

e Estimated.

PROJECT DATA
City of Akron Water Diversion

410014081362600 WOLF CREEK OUTLET OF OHIO & ERIE CANAL AT BARBERTON, OHIO

LOCATION.—Latitude 41°00'14", longitude 81°36'26", Summit County, Hydrologic Unit 05040001, at Wolf Road culvert for the Ohio and Erie Canal outlet, 0.1 mi. above confluence with Wolf Creek, 0.2 mi. from confluence of Wolf Creek and Tuscarawas River, 0.6 mi. east of Columbia Lake, at Barberton, Ohio.

DRAINAGE AREA.—Not determined.

PERIOD OF RECORD.—June 1, 1998 to current year.

GAGE.—Water-stage recorder. Datum of gage is 952.00 ft above sea level.

REMARKS.—Record is fair, except for October 1 to December 27 and July 13 to September 30, which are poor. Flow is completely regulated by operation of gate at outlet structure.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.8	3.1	3.3	3.3	3.0	3.0	2.3	3.6	1.5	.17	2.3	2.4
2	2.6	5.0	3.4	3.4	3.2	2.2	3.6	3.7	1.3	.07	2.1	1.7
3	2.4	3.1	3.4	3.7	3.3	2.8	3.1	2.9	1.8	2.6	3.4	1.5
4	2.4	3.1	3.0	5.0	3.2	2.9	3.3	3.2	2.4	2.4	3.5	1.4
5	2.1	3.0	3.0	3.0	2.8	3.4	1.7	3.6	3.0	2.0	3.4	1.4
6	2.2	3.4	3.5	2.6	2.3	3.7	2.1	2.7	3.8	2.3	7.7	1.9
7	2.2	2.7	3.2	2.6	2.5	2.8	3.6	1.6	2.1	2.4	4.6	2.1
8	2.4	2.8	3.0	3.1	2.8	2.5	5.0	1.2	2.0	2.5	2.7	2.0
9	3.9	3.1	2.8	3.4	3.0	1.9	2.9	1.6	1.9	2.6	2.3	1.8
10	1.9	2.8	3.8	3.3	3.4	2.5	2.9	2.5	2.0	3.9	3.3	2.0
11	2.1	1.8	3.0	3.2	4.4	3.6	2.6	2.9	2.0	4.2	3.9	1.1
12	2.8	1.3	2.6	3.4	3.5	4.5	3.4	2.2	2.7	e2.9	4.3	1.1
13	3.0	1.9	1.9	3.3	3.6	2.9	3.1	1.9	2.2	e2.8	3.5	1.2
14	3.0	1.9	2.6	3.3	5.1	2.2	4.1	1.8	1.2	5.0	2.1	1.1
15	2.2	1.9	1.9	3.7	3.2	2.4	4.4	1.8	1.8	4.6	2.1	1.3
16	2.8	2.4	1.6	3.8	3.3	3.9	3.5	1.9	1.9	2.6	2.3	1.5
17	3.1	3.5	2.2	4.0	3.5	3.6	3.7	2.0	2.2	3.1	2.6	1.1
18	3.1	3.3	2.3	4.0	4.1	3.2	3.4	2.3	2.0	3.6	2.9	1.0
19	3.0	3.0	2.3	3.5	3.7	3.1	3.6	5.7	1.4	3.7	2.6	1.3
20	2.9	3.5	1.9	3.4	2.7	3.5	4.3	3.2	.66	3.7	2.3	1.7
21	2.7	1.8	3.1	3.1	2.9	3.4	3.8	2.9	1.3	3.5	1.9	3.0
22	2.6	1.4	3.7	2.9	3.5	3.5	3.0	2.5	1.5	3.6	1.5	1.3
23	2.9	2.6	3.7	2.6	3.7	3.5	3.7	3.0	1.5	3.7	1.4	3.1
24	3.8	3.6	3.8	2.6	3.3	3.7	4.4	3.0	1.6	2.8	2.6	3.7
25	2.5	3.8	4.0	3.0	3.6	3.4	4.7	2.4	2.0	1.2	3.2	1.2
26	2.1	4.4	4.1	3.4	3.1	3.4	3.7	2.0	2.0	2.2	3.2	1.2
27	2.5	3.4	3.5	3.5	2.8	2.5	3.5	2.3	2.2	3.6	3.6	1.1
28	3.0	3.4	2.5	2.9	2.9	2.6	3.1	5.3	2.2	4.4	2.8	1.3
29	3.3	3.3	3.3	2.6	3.0	2.6	3.3	3.1	2.0	1.8	1.9	1.4
30	3.0	3.5	3.4	2.7	---	2.1	3.3	1.3	1.5	2.3	2.1	1.8
31	3.1	---	3.3	2.9	---	2.5	---	1.7	---	3.2	2.3	---
TOTAL	84.4	87.8	93.1	101.2	95.4	93.8	103.1	81.8	57.66	89.44	90.4	49.7
MEAN	2.72	2.93	3.00	3.26	3.29	3.03	3.44	2.64	1.92	2.89	2.92	1.66
MAX	3.9	5.0	4.1	5.0	5.1	4.5	5.0	5.7	3.8	5.0	7.7	3.7
MIN	1.9	1.3	1.6	2.6	2.3	1.9	1.7	1.2	.66	.07	1.4	1.0

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1998 - 2000, BY WATER YEAR (WY)

	1998	1999	2000	1998	1999	2000	1998	1999	2000	1998	1999	2000
MEAN	5.35	5.06	5.67	5.44	4.88	3.53	3.48	2.79	2.47	3.14	3.83	3.51
MAX	7.98	7.19	8.33	7.61	6.52	4.03	3.52	2.94	3.02	3.40	4.51	5.66
(WY)	1999	1999	1999	1999	1999	1999	1999	1999	1999	1999	1998	1998
MIN	2.72	2.93	3.00	3.26	3.29	3.03	3.44	2.64	1.92	2.89	2.92	1.66
(WY)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000

SUMMARY STATISTICS

	FOR 1999 CALENDAR YEAR		FOR 2000 WATER YEAR		WATER YEARS 1998 - 2000	
ANNUAL TOTAL	1423.6		1027.80			
ANNUAL MEAN	3.90		2.81		3.98	
HIGHEST ANNUAL MEAN					5.15	
LOWEST ANNUAL MEAN					2.81	
HIGHEST DAILY MEAN	12	Aug 26	7.7	Aug 6	13	Oct 8 1998
LOWEST DAILY MEAN	1.2	Apr 22	.07	Jul 2	.07	Jul 2 2000
ANNUAL SEVEN-DAY MINIMUM	1.8	Jun 29	1.2	Sep 12	1.2	Sep 12 2000
INSTANTANEOUS PEAK FLOW			11	Jul 14	34	Mar 17 1999
INSTANTANEOUS PEAK STAGE			4.66	May 29	5.73	Jan 23 1999
INSTANTANEOUS LOW FLOW			.01	Jul 2	.01	Jul 2 2000
10 PERCENT EXCEEDS	6.9		3.8		7.4	
50 PERCENT EXCEEDS	3.4		2.9		3.4	
90 PERCENT EXCEEDS	2.2		1.6		1.9	

e Estimated.

PROJECT DATA Monitoring of Truetown Mine Outflow

The following tables list the results of chemical analysis of surface-water samples collected from Truetown mine drain (392652082062200), Sunday Creek above mine drain (392705082061400), and Sunday Creek below mine drain (392637082062100). Samples were collected monthly beginning in May 1999 to characterize water quality at these sites before reclamation projects to reduce acid-mine drainage are conducted.



PROJECT DATA
Monitoring of Truetown Mine Outflow

392652082062200 MINE DRAIN AT TRUETOWN, OHIO

LOCATION.—Latitude 39°26'52", longitude 82°06'22", Athens County, Hydrologic Unit 05030204, left bank of impoundment pool mine drain outlet at Truetown, Ohio.

DRAINAGE AREA.—Not determined.

PERIOD OF RECORD.—June 1, 1999, to current year.

GAGE.—Water -tage recorder.

REMARKS.—Records fair except for period of estimated discharge, which are poor.

EXTREMES FOR PERIOD OF RECORD.—Maximum instantaneous discharge, 3.4 ft³/s June 2 and 3, 1999; minimum instantaneous discharge, 1.1 ft³/s Oct. 24, 25, 27-31, 1999.

EXTREMES FOR CURRENT YEAR.—Maximum discharge, 2.7 ft³/s, many days, gage height 4.31 ft, many days; minimum discharge, 1.1 ft³/s, Oct. 27, 1999.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e1.4	1.2	1.2	1.3	1.5	1.9	2.1	2.6	2.5	2.3	1.9	1.9
2	e1.4	1.3	1.3	1.4	1.5	1.9	2.2	2.5	2.6	2.3	2.0	1.9
3	e1.4	1.2	1.3	1.4	1.6	1.9	2.3	2.5	2.5	2.4	1.9	1.9
4	e1.4	1.2	1.3	1.4	1.5	1.9	2.4	2.4	2.6	2.3	1.9	1.8
5	e1.3	1.2	1.4	1.3	1.4	1.9	2.4	2.4	2.7	2.3	1.9	1.8
6	e1.3	1.2	1.3	1.3	1.5	1.9	2.4	2.5	2.5	2.4	2.0	1.8
7	e1.3	1.2	1.3	1.3	1.5	1.9	2.4	2.5	2.5	2.3	1.9	1.8
8	e1.3	1.3	1.3	1.4	1.5	2.0	2.4	2.6	2.6	2.2	1.9	1.9
9	e1.3	1.3	1.3	1.5	1.5	2.0	2.3	2.6	2.6	2.3	1.9	1.9
10	e1.3	1.3	1.3	1.5	1.6	1.9	2.3	2.5	2.6	2.3	1.9	1.9
11	e1.3	1.2	1.3	1.5	1.5	2.0	2.2	2.5	2.6	2.3	1.9	1.9
12	e1.3	1.3	1.4	1.4	1.5	1.9	2.3	2.6	2.6	2.2	1.9	1.9
13	e1.3	1.3	1.3	1.4	1.7	1.9	2.2	2.5	2.6	2.3	1.9	1.9
14	1.2	1.3	1.4	1.3	1.8	1.9	2.3	2.4	2.6	2.3	1.9	1.9
15	1.2	1.3	1.3	1.4	1.7	2.0	2.4	2.5	2.7	2.2	1.9	1.9
16	1.2	1.3	1.3	1.4	1.7	2.0	2.4	2.5	2.6	2.2	1.9	1.8
17	1.2	1.3	1.3	1.4	1.6	1.9	2.4	2.5	2.6	2.1	1.9	1.8
18	1.2	1.3	1.3	1.5	1.9	1.9	2.5	2.5	2.6	2.1	1.9	1.8
19	1.2	1.3	1.3	1.6	1.8	2.0	2.5	2.5	2.6	2.1	1.8	1.9
20	1.2	1.3	1.3	1.6	1.8	2.1	2.4	2.4	2.7	2.1	1.8	1.9
21	1.2	1.3	1.3	1.5	1.8	2.0	2.6	2.4	2.4	2.1	1.8	1.8
22	1.3	1.3	1.3	1.5	1.9	2.0	2.6	2.5	2.3	2.1	1.8	1.8
23	1.2	1.3	1.3	1.5	1.9	2.0	2.5	2.6	2.3	2.0	1.9	1.9
24	1.2	1.3	1.3	1.5	1.9	2.1	2.5	2.6	2.3	2.0	1.9	1.9
25	1.2	1.3	1.3	1.6	1.9	2.2	2.5	2.5	2.4	2.0	1.9	1.9
26	1.2	1.4	1.4	1.5	1.9	2.2	2.6	2.5	2.4	2.0	1.9	1.8
27	1.1	1.3	1.4	1.4	1.9	2.3	2.5	2.6	2.4	2.1	1.9	1.8
28	1.2	1.2	1.4	1.4	1.8	2.4	2.6	2.6	2.5	2.1	1.9	1.8
29	1.2	1.2	1.4	1.5	1.8	2.4	2.5	2.5	2.5	2.1	1.9	1.8
30	1.2	1.2	1.4	1.6	---	2.2	2.5	2.5	2.5	2.1	1.9	1.8
31	1.2	---	1.3	1.6	---	2.2	---	2.5	---	2.0	1.9	---
MEAN	1.25	1.27	1.32	1.45	1.69	2.03	2.41	2.51	2.53	2.18	1.89	1.85
MAX	1.4	1.4	1.4	1.6	1.9	2.4	2.6	2.6	2.7	2.4	2.0	1.9
MIN	1.1	1.2	1.2	1.3	1.4	1.9	2.1	2.4	2.3	2.0	1.8	1.8
WTR YR 2000	MEAN 1.86	MAX 2.7	MIN 1.1									

e Estimated.

PROJECT DATA
Monitoring of Truetown Mine Outflow

392652082062200 MINE DRAIN AT TRUETOWN, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

[ft³/s, cubic feet per second; (00061), USGS National Water Information System parameter code; mg/L, milligrams per liter; μ S/cm, microsiemens per centimeter; deg C, degrees Celsius; --, no data; e, estimated; μ g/L, micrograms per liter]

Date	Time	Discharge, instantaneous (ft ³ /s) (00061)	Dissolved oxygen (mg/L) (00300)	pH, whole water, field (standard units) (00400)	Specific conductance, field (μ S/cm) (00095)	Water temperature (deg C) (00010)	Air temperature (deg C) (00020)	Acidity, total, heated, (mg/L as CaCO ₃) (70508)	Alkalinity, water, dissolved, field (mg/L as CaCO ₃) (39086)	
Oct.	27	1220	1.1	.4	4.7	2810	13.0	16.5	712	--
Nov.	18	1140	1.3	.6	4.7	2890	13.0	10.0	632	--
Dec.	21	1250	1.2	.4	4.9	3300	13.5	.5	715	--
Jan.	19	1200	1.5	.0	4.9	3400	13.0	9.0	751	--
Feb.	25	1215	1.8	.6	4.8	3400	13.0	23.5	e747	--
Mar.	7	1310	1.9	.5	4.8	3350	13.0	20.0	750	--
Apr.	27	1130	2.6	.3	4.8	3320	13.0	12.5	751	--
May	23	1235	2.5	.4	4.8	3350	13.0	22.5	770	--
June	8	1240	2.6	.4	4.7	3300	13.0	23.0	728	--
July	6	1230	2.4	.5	4.7	2950	13.0	28.0	744	--
Aug.	8	1210	1.9	.3	4.7	3320	13.0	28.0	750	--
Sept.	11	1210	1.8	.2	4.7	3400	13.5	26.0	746	--

Date	Bicarbonate water, dissolved, field (mg/L as HCO ₃) (00453)	Sulfate, dissolved (mg/L as SO ₄) (00945)	Aluminum, dissolved (μ g/L as Al) (01106)	Aluminum, total recoverable (μ g/L as Al) (01105)	Iron, dissolved (μ g/L as Fe) (01046)	Iron, total recoverable (μ g/L as Fe) (01045)	Manganese, dissolved (μ g/L as Mn) (01056)	Manganese, total recoverable (μ g/L as Mn) (01055)	
Oct.	27	--	2010	5830	6250	367000	372000	7000	6930
Nov.	18	--	2200	5860	5650	381000	338000	7030	6280
Dec.	21	--	2080	6430	5400	397000	379000	7780	6710
Jan.	19	--	2260	5520	5430	388000	374000	7320	6930
Feb.	25	--	2220	5400	5370	395000	372000	7500	7100
Mar.	7	--	2210	5570	5620	406000	356000	7180	6790
Apr.	27	--	2130	6220	6440	375000	344000	7480	6310
May	23	--	2230	6670	7260	393000	351000	7320	7560
June	8	--	2090	7520	7300	385000	346000	7210	6930
July	6	--	2120	7130	7670	386000	360000	7200	8650
Aug.	8	--	2090	7070	7620	379000	412000	7130	7410
Sept.	11	--	2080	7330	7700	402000	394000	7700	7140

PROJECT DATA
Monitoring of Truetown Mine Outflow

392705082061400 SUNDAY CREEK ABOVE MINE DRAIN

LOCATION.—Latitude 39°27'05", longitude 82°06'14", Athens County, Hydrologic Unit 05030204, 0.4 mi upstream from mine drain outlet at Truetown, Ohio.

DRAINAGE AREA.—Not determined.

PERIOD OF RECORD.—Monthly water-quality samples and discharge measurement collected beginning May 1999.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

[ft³/s, cubic feet per second; (00061), USGS National Water Information System parameter code; mg/L, milligrams per liter; µS/cm, microsiemens per centimeter; deg C, degrees Celsius; --, no data; e, estimated; µg/L, micrograms per liter; <, concentration or value reported is less than that indicated]

Date	Time	Discharge, instantaneous (ft ³ /s) (00061)	Dissolved oxygen (mg/L) (00300)	pH, whole water, field (standard units) (00400)	Specific conductance, field (µS/cm) (00095)	Water temperature (deg C) (00010)	Air temperature (deg C) (00020)	Acidity, total, heated (mg/L as CaCO ₃) (70508)	Alkalinity, water, dissolved, field (mg/L as CaCO ₃) (39086)
Oct.									
27	1130	4.8	7.6	6.8	1060	7.5	14.0	--	35
Nov.									
18	1040	7.2	9.9	6.8	894	3.5	8.0	--	42
Dec.									
21	1115	37	11.4	7.5	534	4.0	.5	--	46
Jan.									
19	1100	24	13.9	7.4	623	1.5	8.0	--	45
Feb.									
25	1100	106	10.0	7.2	365	8.0	17.0	--	36
Mar.									
7	1115	40	10.0	7.2	561	9.0	17.5	--	39
Apr.									
27	0945	99	9.5	7.5	352	11.5	9.5	--	51
May									
23	1130	31	7.6	7.5	649	17.5	21.5	--	64
June									
8	1110	30	8.3	7.4	673	17.0	21.0	--	59
July									
6	1115	20	8.0	7.4	736	22.0	27.5	--	55
Aug.									
8	1100	11	6.7	7.5	922	23.0	26.0	--	55
Sept.									
11	1115	11	6.4	7.4	996	21.5	26.0	--	61

Date	Bicarbonate water, dissolved, field (mg/L as HCO ₃) (00453)	Sulfate, dissolved (mg/L as SO ₄) (00945)	Aluminum, dissolved (µg/L as Al) (01106)	Aluminum, total recoverable (µg/L as Al) (01105)	Iron, dissolved (µg/L as Fe) (01046)	Iron, total recoverable (µg/L as Fe) (01045)	Manganese, dissolved (µg/L as Mn) (01056)	Manganese, total recoverable (µg/L as Mn) (01055)
Oct.								
27	43	490	<15	e21	40	1130	578	613
Nov.								
18	52	326	<15	<28	1240	2620	831	1680
Dec.								
21	56	149	<15	81	390	1640	622	605
Jan.								
19	54	196	<15	42	1300	2200	852	866
Feb.								
25	44	106	<15	473	90	1650	402	418
Mar.								
7	48	178	<15	138	80	1610	684	679
Apr.								
27	62	96.4	<15	139	20	1110	292	266
May								
23	78	214	<15	269	E10	2090	323	348
June								
8	72	233	<15	109	40	1420	565	589
July								
6	67	298	<15	70	20	1490	283	316
Aug.								
8	67	337	<15	48	<10	1870	343	354
Sept.								
11	75	353	<15	80	<10	1560	530	538

PROJECT DATA
Monitoring of Truetown Mine Outflow

392637082062100 SUNDAY CREEK BELOW MINE DRAIN

LOCATION.—Latitude 39°26'37", longitude 82°06'21", Athens County, Hydrologic Unit 05030204, 0.2 mi downstream from mine drain outlet at Truetown, Ohio.

DRAINAGE AREA.—Not determined.

PERIOD OF RECORD.—Monthly water-quality samples and discharge measurement collected beginning May 1999.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

[ft³/s, cubic feet per second; (00061), USGS National Water Information System parameter code; mg/L, milligrams per liter; µS/cm, microsiemens per centimeter; deg C, degrees Celsius; --, no data; e, estimated; µg/L, micrograms per liter; <, concentration or value reported is less than that indicated]

Date	Time	Discharge, instantaneous (ft ³ /s) (00061)	Dissolved oxygen (mg/L) (00300)	pH, whole water, field (standard units) (00400)	Specific conductance, field (µS/cm) (00095)	Water temperature (deg C) (00010)	Air temperature (deg C) (00020)	Acidity, total, heated (mg/L as CaCO ₃) (70508)	Alkalinity, water, dissolved, field (mg/L as CaCO ₃) (39086)	
Oct.	27	1030	5.9	7.3	6.2	1480	8.5	13.0	124	16
Nov.	18	1000	8.5	9.8	6.5	1240	4.5	7.0	--	33
Dec.	21	1040	38	11.0	7.2	628	4.0	.0	--	44
Jan.	19	1000	25	13.4	7.1	788	.5	8.0	--	40
Feb.	25	1015	108	10.0	6.9	426	7.5	15.0	--	29
Mar.	7	1030	42	10.6	6.8	730	8.5	17.5	--	29
Apr.	27	0910	102	9.3	7.0	452	11.5	6.0	--	42
May	23	1045	34	6.3	6.8	882	17.0	20.5	--	38
June	8	1030	32	8.3	6.6	891	16.5	23.0	--	33
July	6	1040	22	6.7	6.5	974	20.5	28.0	--	30
Aug.	8	1020	13	6.4	6.4	1290	21.5	25.5	72	26
Sept.	11	1030	12	6.0	6.4	1350	20.0	26.0	63	31

Date	Bicarbonate water, dissolved, field (mg/L as HCO ₃) (00453)	Sulfate, dissolved (mg/L as SO ₄) (00945)	Aluminum, dissolved (µg/L as Al) (01106)	Aluminum, total recoverable (µg/L as Al) (01105)	Iron, dissolved (µg/L as Fe) (01046)	Iron, total recoverable (µg/L as Fe) (01045)	Manganese, dissolved (µg/L as Mn) (01056)	Manganese, total recoverable (µg/L as Mn) (01055)	
Oct.	27	20	816	56	1320	72400	76200	1990	2040
Nov.	18	41	575	33	735	48700	49400	1700	6480
Dec.	21	54	202	e10	234	10900	12300	860	796
Jan.	19	49	298	<15	322	20800	22000	1200	1190
Feb.	25	35	135	<15	603	4660	8700	523	536
Mar.	7	35	264	<15	355	14900	19000	1010	994
Apr.	27	51	144	<15	287	2230	11100	481	440
May	23	48	347	<15	711	21000	30000	884	902
June	8	41	375	41	652	21100	29600	1100	1120
July	6	36	488	<15	827	31900	44200	1030	1150
Aug.	8	32	593	e13	1070	48300	58800	1410	1440
Sept.	11	38	621	15	1170	45500	56900	1570	1590

Determination of Flow and Selected Water-Quality Characteristics of the Ottawa River

The following tables contain measurements of streamflow, dissolved oxygen concentrations, and concentrations of various chemical constituents for streamwater sites along the Ottawa River and its tributaries in Hardin, Allen, and Putnam Counties. The data were collected in cooperation with the Ottawa River Coalition during the following times: September 1999, September 2000, and July 2000. Objectives of the study are to plot the correlation of the base streamflow at each site and an index station (Auglaize River at Ft. Jennings, Ohio) and to determine the concentration of selected water-quality constituents during periods of potential stress on the aquatic communities at 19 sites.



PROJECT DATA
Determination of Flow and Selected Water-Quality Characteristics of the Ottawa River

OTTAWA RIVER AND TRIBUTARIES PARTIAL-RECORD STATIONS

[mg/L, milligrams per liter; ft³/s, cubic feet per second]

Station number	Station name	Location	Date	Time	Oxygen, dissolved (mg/L)	Discharge (ft ³ /s)
<u>OTTAWA RIVER BASIN</u>						
404728083475300	Grass Creek near Ada, Ohio	Latitude 40°47'28", longitude 83°47'53", Hardin County, Hydrologic Unit 04100007, at Airport Road bridge over Grass Creek 1.5 mi northeast of Ada, Ohio. (Ada 1:24000 quad)	09/17/99 07/11/00 09/19/00 09/19/00	0915 0950 0745 1545	7.4 4.2	.75 2.51 .99
404746083492400	Hog Creek near Ada, Ohio	Latitude 40°47'46", longitude 83°49'24", Hardin County, Hydrologic Unit 04100007, at State Route 235 bridge over Hog Creek, 1.5 mi north of Ada, Ohio. (Ada 1:24000 quad)	09/17/99 07/11/00 09/19/00 09/20/00	0915 0950 0800 0845	6.5 6.9	.97 13.8 1.64
404616083564200	Hog Creek at Lafayette, Ohio	Latitude 40°46'16", longitude 83°56'42", Allen County, Hydrologic Unit 04100007, along North side of State Route 81 between Center Road and Swaney Road, 1 mi northeast of Lafayette, Ohio. (Beaverdam 1:24000 quad)	09/17/99 07/11/00 09/19/00 09/19/00	0930 1120 0830 1410	5.8 8.5	.81 17.3 1.69
404602083571700	Little Hog Creek at Lafayette, Ohio	Latitude 40°46'02", longitude 83°57'17", Allen County, Hydrologic Unit 04100007, at State Route 81 bridge over Little Hog Creek, 0.5 mi northwest of Lafayette, Ohio. (Beaverdam 1:24000 quad)	09/17/99 07/11/00 09/19/00 09/19/00	1000 1134 0845 1230	7.2 6.2	.07 1.67 .15
404504084030300	Ottawa River at Metzger Road pump at Lima, Ohio	Latitude 40°45'04", longitude 84°03'03", Allen County, Hydrologic Unit 04100007, at the North end of Metzger Road, downstream of the pump station, 0.2 mi south of the Lima Reservoir, and 0.5 mi north of Metzger Reservoir, 2 miles east of Lima, Ohio. (Cairo 1:24000 quad)	09/17/99 07/11/00 09/19/00	1130 1245 0915	6.9 4.3	.81 20.7 no flow
404448084034000	Lost Creek near Lima, Ohio	Latitude 40°44'48", longitude 84°03'40", Allen County, Hydrologic Unit 04100007, north of High Street/Reservoir Road Bridge over Lost Creek, northeast of bait shop, 1 mi east of Lima, Ohio. (Lima 1:24000 quad)	09/17/99 07/11/00 09/19/00 09/19/00	1145 1255 0940 1010	6.5 8.2	.33 1.73 .22
04187100	Ottawa River at Lima, Ohio	Latitude 40°43'29", longitude 84°07'35", Allen County, Hydrologic Unit 04100007, at discontinued gaging station at the Lima Wastewater Treatment Plant in Lima, Ohio. (Cridersville 1:24000 quad)	09/15/99 07/11/00 09/18/00 09/19/00	1445 1610 1515 0840	6.6 9.9 10.0	1.45 29.6 2.65
404224084090500	Ottawa River at Shawnee Road near Lima, Ohio	Latitude 40°42'40", longitude 84°09'05", Allen County, Hydrologic Unit 04100007, at Shawnee Road bridge over Ottawa River near the intersection of Shawnee Road and Amanda Road, 1 mi south of Lima, Ohio. (Cridersville 1:24000 quad)	09/15/99 07/11/00 09/18/00 09/19/00	1700 1503 1300 0830	7.5 5.0 3.4	23.7 50.8 32.5
404221084091500	Little Ottawa River near Lima, Ohio	Latitude 40°42'21", longitude 84°09'15", Allen County, Hydrologic Unit 04100007, 300 yards south of the intersection of the Little Ottawa River and Amanda Road, 1 mi southwest of Lima, Ohio. (Cridersville 1:24000 quad)	09/15/99 07/11/00 09/18/00 09/19/00	1510 1000 0820	6.2 6.3	no flow 1.60 .04
404322084102600	Ottawa River at State Route 117 near Lima, Ohio	Latitude 40°43'22", longitude 84°10'26", Allen County, Hydrologic Unit 04100007, at State Route 117 bridge over Ottawa River, 1 mi south of Lima, Ohio. (Cridersville 1:24000 quad)	09/16/99 07/11/00 09/19/00 09/19/00	0915 1634 0905 0930	5.4 4.5 4.5	18.5 54.4 26.4

PROJECT DATA

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Determination of Flow and Selected Water-Quality Characteristics of the Ottawa River

OTTAWA RIVER AND TRIBUTARIES PARTIAL-RECORD STATIONS—Continued

[mg/L, milligrams per liter; ft³/s, cubic feet per second]

Station number	Station name	Location	Date	Time	Oxygen, dissolved (mg/L)	Discharge (ft ³ /s)
<u>OTTAWA RIVER BASIN—Continued</u>						
404808084121700	Ottawa River at Elida, Ohio	Latitude 40°48'08", longitude 84°12'17", Allen County, Hydrologic Unit 04100007, 300 ft North of the end of Troyer Road, 1 mi north of Elida, Ohio. (Elida 1:24000 quad)	09/16/99 07/12/00 09/19/00 09/19/00	1130 1523 0730 1100	8.1 6.9 7.9	22.2 51.9 32.8
404839084121400	Dug Run near Elida, Ohio	Latitude 40°48'39", longitude 84°12'14", Allen County, Hydrologic Unit 04100007, at Dutch Hollow Road bridge over Dug Run, 1.5 mi north of Elida, Ohio. (Elida 1:24000 quad)	09/16/99 07/12/00 09/19/00 09/19/00	1545 1419 0750 1330	11.0 6.7 12.7	.49 2.27 1.32
404826084130400	Honey Run near Elida, Ohio	Latitude 40°48'26", longitude 84°13'04", Allen County, Hydrologic Unit 04100007, at Billymack Road bridge over Honey Run, 1.5 mi northwest of Elida, Ohio. (Elida 1:24000 quad)	09/16/99 07/12/00 09/19/00 09/19/00	0915 1410 0740 1215	3.0 5.7 6.0	.01 1.32 .47
405051084114000	Ottawa River at Gomer, Ohio	Latitude 40°50'51", longitude 84°11'40", Allen County, Hydrologic Unit 04100007, at Lincoln Highway bridge over the Ottawa River, 0.5 mile west of Gomer, Ohio. (Elida 1:24000 quad)	09/16/99 07/12/00 09/19/00 09/19/00	1340 1253 0755 1600	12.1 5.8 11.9	23.1 63.0 36.5
405048084111000	Pike Run at Gomer, Ohio	Latitude 40°50'48", longitude 84°11'10", Allen County, Hydrologic Unit 04100007, at Gomer Road bridge over Pike Run, on the northside of Gomer, Ohio. (Elida 1:24000 quad)	09/16/99 07/12/00 09/19/00 09/19/00	1615 1245 0730 1445	7.4 5.7 7.0	1.16 3.60 1.72
405700084113600	Ottawa River near Kalida, Ohio	Latitude 40°57'00", longitude 84°11'36", Putnam County, Hydrologic Unit 04100007, 0.2 mi north of County Road 43 on east side of County Road 17 across from old brick house, 2 mi south of Kalida, Ohio. (Kalida 1:24000 quad)	09/16/99 07/12/00 09/18/00 09/19/00	1130 1115 1600 0845	9.5 10.3 7.6	25.6 76.8 32.2
04187995	Sugar Creek near Kalida, Ohio	Latitude 40°57'16", longitude 84°10'45", Putnam County, Hydrologic Unit 04100007, County Road 66 bridge over Sugar Creek, 2.5 mi southeast of Kalida, Ohio. (Kalida 1:24000 quad)	09/16/99 07/12/00 09/18/00 09/19/00			no flow 10.4 2.09
405901084124600	Ottawa River at Kalida, Ohio	Latitude 40°59'01", longitude 84°12'46", Putnam County, Hydrologic Unit 04100007, at end of drive into St. Michaels Cemetery accessed by State Route 114, 0.2 mi northwest of Kalida, Ohio. (Kalida 1:24000 quad)	09/16/99 07/12/00 09/18/00 09/19/00	1315 0916 1230 0920	10.9 9.8 6.6	23.4 95.0 34.7
405913084123300	Plum Creek at Kalida, Ohio	Latitude 40°59'13", longitude 84°12'33", Putnam County, Hydrologic Unit 04100007, at State Route 114 bridge over Plum Creek, 0.2 mi northwest of Kalida, Ohio. (Kalida 1:24000 quad)	09/16/99 07/12/00 09/18/00 09/19/00	1530 0920 1030 0905	8.1 7.8 6.0	.22 9.06 1.38

PROJECT DATA
Determination of Flow and Selected Water-Quality Characteristics of the Ottawa River

WATER-QUALITY RECORDS

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

[ft³/s, cubic feet per second; (00061), USGS National Water Information System parameter code; mm of Hg, millimeters of mercury; mg/L, milligrams per liter; µS/cm, microsiemens per centimeter]

Date	Time	Discharge, instantaneous (ft ³ /s) (00061)	Barometric pressure (mm of Hg) (00025)	Oxygen, dissolved (percent of saturation) (00301)	Oxygen, dissolved (mg/L) (00300)	pH, whole water, field (standard units) (00400)	pH, whole water, lab (standard units) (00403)	Specific conductance, lab (µS/cm) (90095)	Specific conductance, field (µS/cm) (00095)
Sept. 19	1545	.99	404728083475300 738	GRASS CREEK NEAR ADA, OHIO 43	4.2	7.2	9.2	1030	738
Sept. 20	0845	1.6	404746083492400 738	HOG CREEK NEAR ADA, OHIO 74	6.9	8.2	8.2	1020	1010
Sept. 19	1410	1.7	404616083564200 738	HOG CREEK AT LAFAYETTE, OHIO 88	8.5	7.8	8.1	949	920
Sept. 19	1230	.15	404602083571700 738	LITTLE HOG CREEK AT LAFAYETTE, OHIO 64	6.2	7.7	8.2	1460	1390
Sept. 19	1010	.22	404448084034000 739	LOST CREEK NEAR LIMA, OHIO 80	8.2	7.7	8.0	797	780
Sept. 18	1515	2.7	04187100 743	OTTAWA RIVER AT LIMA, OHIO 114	10.0	8.4	7.8	837	830
Sept. 18	1300	32	404224084090500 743	OTTAWA RIVER AT SHAWNEE ROAD NEAR LIMA, OHIO 55	4.9	7.5	7.3	1770	1730
Sept. 18	1000	.04	404221084091500 744	LITTLE OTTAWA RIVER NEAR LIMA, OHIO 62	6.2	7.7	7.8	815	804
Sept. 19	0930	26	404322084102600 740	OTTAWA RIVER AT STATE ROUTE 117 NEAR LIMA, OHIO 50	4.5	7.6	7.8	1700	1720
Sept. 19	1100	33	404808084121700 740	OTTAWA RIVER AT ELIDA, OHIO 87	7.9	7.8	7.9	1610	1630
Sept. 19	1330	1.3	404839084121400 740	DUG RUN NEAR ELIDA, OHIO 145	12.7	8.4	8.4	1010	1010
Sept. 19	1215	.47	404826084130400 740	HONEY RUN NEAR ELIDA, OHIO 64	6.0	7.7	7.9	965	971
Sept. 19	1600	36.5	405051084114000 740	OTTAWA RIVER AT GOMER, OHIO 139	11.9	8.3	8.2	1540	1550
Sept. 19	1445	1.7	405048084111000 740	PIKE RUN AT GOMER, OHIO 76	7.0	7.8	8.0	884	890
Sept. 18	1600	32	405700084113600 743	OTTAWA RIVER NEAR KALIDA, OHIO 116	10.3	8.3	8.3	1170	1190
Sept. 18	1500	2.1	04187995 743	SUGAR CREEK NEAR KALIDA, OHIO 125	11.1	8.1	8.2	842	844
Sept. 18	1230	35	405901084124600 743	OTTAWA RIVER (ST. MICHAELS CEMETERY) AT KALIDA, OHIO 106	9.8	8.0	8.2	1030	1040
Sept. 18	1030	1.4	405913084123300 744	PLUM CREEK AT KALIDA, OHIO 81	7.8	7.8	8.0	1500	1480

PROJECT DATA

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Determination of Flow and Selected Water-Quality Characteristics of the Ottawa River

WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[deg C, degrees Celsius; (00020), USGS National Water Information System parameter code; mg/L, milligrams per liter; --, no data]

Date	Air temperature (deg C) (00020)	Calcium, dissolved (mg/L as Ca) (00915)	Magnesium, dissolved (mg/L as Mg) (00925)	Potassium, dissolved (mg/L as K) (00935)	Sodium, dissolved (mg/L as Na) (00930)	Alkalinity, water, dissolved, field (mg/L as CaCO ₃) (39086)	Carbonate water, dissolved, field (mg/L as CO ₃) (00452)	Chloride, dissolved (mg/L as Cl) (00940)	Fluoride, dissolved (mg/L as F) (00950)
Sept. 19	16.5	83.9	32.4	9.9	71.2	83	23	90.8	.7
<u>404728083475300 GRASS CREEK NEAR ADA, OHIO</u>									
Sept. 20	16.5	92.7	34.4	7.7	58.1	133	3	81.4	.7
<u>404746083492400 HOG CREEK NEAR ADA, OHIO</u>									
Sept. 19	16.5	94.0	32.2	6.3	47.7	199	--	74.2	.6
<u>404616083564200 HOG CREEK AT LAFAYETTE, OHIO</u>									
Sept. 19	17.0	98.9	47.9	7.0	118	272	4	180	.9
<u>404602083571700 LITTLE HOG CREEK AT LAFAYETTE, OHIO</u>									
Sept. 19	17.0	71.9	21.0	6.6	46.1	135	--	84.5	.5
<u>404448084034000 LOST CREEK NEAR LIMA, OHIO</u>									
Sept. 18	26.5	80.9	33.2	5.8	36.1	172	84	55.8	.7
<u>04187100 OTTAWA RIVER AT LIMA, OHIO</u>									
Sept. 18	22.0	95.6	38.8	9.7	205	156	--	248	1.1
<u>404224084090500 OTTAWA RIVER AT SHAWNEE ROAD NEAR LIMA, OHIO</u>									
Sept. 18	17.0	67.2	23.2	6.3	55.8	175	--	85.6	.6
<u>404221084091500 LITTLE OTTAWA RIVER NEAR LIMA, OHIO</u>									
Sept. 19	17.0	97.6	38.2	10.9	182	152	--	224	1.0
<u>404322084102600 OTTAWA RIVER AT STATE ROUTE 117 NEAR LIMA, OHIO</u>									
Sept. 19	17.0	96.7	35.4	10.5	169	152	--	189	1.2
<u>404808084121700 OTTAWA RIVER AT ELIDA, OHIO</u>									
Sept. 19	17.0	94.7	27.1	8.4	72.7	142	--	111	.7
<u>404839084121400 DUG RUN NEAR ELIDA, OHIO</u>									
Sept. 19	17.0	109	30.2	6.7	44.3	240	--	82.4	.3
<u>404826084130400 HONEY RUN NEAR ELIDA, OHIO</u>									
Sept. 19	16.5	98.5	35.8	10.1	163	154	--	183	1.2
<u>405051084114000 OTTAWA RIVER AT GOMER, OHIO</u>									
Sept. 19	19.0	85.9	22.2	7.2	59.7	154	--	94.9	.6
<u>405048084111000 PIKE RUN AT GOMER, OHIO</u>									
Sept. 18	22.0	84.8	29.2	7.6	101	156	--	127	.9
<u>405700084113600 OTTAWA RIVER NEAR KALIDA, OHIO</u>									
Sept. 18	22.0	69.5	25.3	6.6	55.2	154	--	88.7	.4
<u>04187995 SUGAR CREEK NEAR KALIDA, OHIO</u>									
Sept. 18	21.0	79.9	27.6	6.7	81.3	164	--	101	.8
<u>405901084124600 OTTAWA RIVER (ST. MICHAELS CEMETERY) AT KALIDA, OHIO</u>									
Sept. 18	17.0	88.0	36.7	7.0	146	194	--	246	.7
<u>405913084123300 PLUM CREEK AT KALIDA, OHIO</u>									

PROJECT DATA
Determination of Flow and Selected Water-Quality Characteristics of the Ottawa River

WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[mg/L, milligrams per liter; (00955), USGS National Water Information System parameter code; deg C, degrees Celsius; µg/L, micrograms per liter; e, estimated data; <, concentration or value reported is less than that indicated; --, no data]

Date	Silica, dissolved (mg/L as SiO ₂) (00955)	Sulfate, dissolved (mg/L as SO ₄) (00945)	Nitrogen, ammonia plus organic, total (mg/L as N) (00625)	Nitrogen, ammonia, dissolved (mg/L as N) (00608)	Nitrogen, nitrite plus nitrate, dissolved (mg/L as N) (00631)	Phosphorus, ortho- phosphate, dissolved (mg/L as P) (00671)	Phosphorus, total (mg/L as P) (00665)	Residue, total at 105 deg C, suspended (mg/L) (00530)	Aluminum, total recoverable (µg/L as Al) (01105)
Sept. 19	3.80	260	<u>404728083475300 GRASS CREEK NEAR ADA, OHIO</u>						
			1.2	.048	10.7	.549	.762	<10	59
Sept. 20	3.20	228	<u>404746083492400 HOG CREEK NEAR ADA, OHIO</u>						
			.99	.124	5.49	.623	.924	24	410
Sept. 19	3.28	181	<u>404616083564200 HOG CREEK AT LAFAYETTE, OHIO</u>						
			.69	.066	2.35	.783	.416	<10	257
Sept. 19	7.21	192	<u>404602083571700 LITTLE HOG CREEK AT LAFAYETTE, OHIO</u>						
			.55	.038	1.31	.338	.411	<10	53
Sept. 19	5.54	110	<u>404448084034000 LOST CREEK NEAR LIMA, OHIO</u>						
			.68	.074	.641	.065	.108	<10	177
Sept. 18	2.03	180	<u>04187100 OTTAWA RIVER AT LIMA, OHIO</u>						
			1.3	e.016	e.036	.021	.175	<10	157
Sept. 18	8.41	334	<u>04224084090500 OTTAWA RIVER AT SHAWNEE ROAD NEAR LIMA, OHIO</u>						
			2.7	1.33	4.15	.552	.698	<10	81
Sept. 18	7.21	101	<u>404221084091500 LITTLE OTTAWA RIVER NEAR LIMA, OHIO</u>						
			.71	.073	.516	.493	.588	<10	166
Sept. 19	8.00	338	<u>404322084102600 OTTAWA RIVER AT STATE ROUTE 117 NEAR LIMA, OHIO</u>						
			1.7	.236	4.22	.601	.742	<10	102
Sept. 19	8.42	326	<u>404808084121700 OTTAWA RIVER AT ELIDA, OHIO</u>						
			1.2	.196	6.55	.559	.695	<10	149
Sept. 19	4.48	153	<u>404839084121400 DUG RUN NEAR ELIDA, OHIO</u>						
			.98	.144	8.52	1.34	1.53	<10	34
Sept. 19	12.8	115	<u>404826084130400 HONEY RUN NEAR ELIDA, OHIO</u>						
			.58	.110	1.42	.081	.094	<10	158
Sept. 19	7.81	309	<u>405051084114000 OTTAWA RIVER AT GOMER, OHIO</u>						
			.97	.059	6.64	.457	.562	<10	132
Sept. 19	6.52	120	<u>405048084111000 PIKE RUN AT GOMER, OHIO</u>						
			1.0	.419	3.31	.279	.333	<10	97
Sept. 18	7.03	232	<u>405700084113600 OTTAWA RIVER NEAR KALIDA, OHIO</u>						
			e.92	.077	3.09	.233	e.340	20	466
Sept. 18	5.27	121	<u>04187995 SUGAR CREEK NEAR KALIDA, OHIO</u>						
			e.73	.052	.487	.059	e.133	13	329
Sept. 18	6.86	194	<u>405901084124600 OTTAWA RIVER (ST. MICHAELS CEMETERY) AT KALIDA, OHIO</u>						
			e.76	.043	2.13	.238	e.133	16	371
Sept. 18	4.46	174	<u>405913084123300 PLUM CREEK AT KALIDA, OHIO</u>						
			e.87	.114	.391	.297	e.230	29	645

PROJECT DATA

Determination of Flow and Selected Water-Quality Characteristics of the Ottawa River

WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[µg/L, micrograms per liter; (01007), USGS National Water Information System parameter code; e, estimated data; <, concentration or value reported is less than that indicated]

Date	Barium, total recoverable (µg/L as Ba) (01007)	Beryllium, total recoverable (µg/L as Be) (01012)	Boron, total recoverable (µg/L as B) (01027)	Cadmium, water, total unfiltered (µg/L as Cd) (01027)	Cobalt, total recoverable (µg/L as Co) (01037)	Copper, total recoverable (µg/L as Cu) (01042)	Iron, total recoverable (µg/L as Fe) (01045)	Lead, total recoverable (µg/L as Pb) (01051)
	<u>404728083475300 GRASS CREEK NEAR ADA, OHIO</u>							
Sept. 19	16.4	<5	300	<8.0	<16	<20	90	<1
	<u>404746083492400 HOG CREEK NEAR ADA, OHIO</u>							
Sept. 20	41.1	<5	246	<8.0	<16	<20	710	e1
	<u>404616083564200 HOG CREEK AT LAFAYETTE, OHIO</u>							
Sept. 19	58.7	<5	153	<8.0	<16	<20	390	e1
	<u>404602083571700 LITTLE HOG CREEK AT LAFAYETTE, OHIO</u>							
Sept. 19	51.6	<5	199	<8.0	<16	<20	90	<1
	<u>404448084034000 LOST CREEK NEAR LIMA, OHIO</u>							
Sept. 19	48.4	<5	108	<8.0	<16	<20	370	e1
	<u>04187100 OTTAWA RIVER AT LIMA, OHIO</u>							
Sept. 18	42.4	<5	201	<8.0	<16	<20	430	2
	<u>404224084090500 OTTAWA RIVER AT SHAWNEE ROAD NEAR LIMA, OHIO</u>							
Sept. 18	60.3	<5	355	<8.0	<16	<20	420	2
	<u>404221084091500 LITTLE OTTAWA RIVER NEAR LIMA, OHIO</u>							
Sept. 18	29.9	<5	131	<8.0	<16	<20	340	e1
	<u>404322084102600 OTTAWA RIVER AT STATE ROUTE 117 NEAR LIMA, OHIO</u>							
Sept. 19	56.1	<5	418	<8.0	<16	<20	400	2
	<u>404808084121700 OTTAWA RIVER AT ELIDA, OHIO</u>							
Sept. 19	46.0	<5	424	<8.0	<16	<20	320	1
	<u>404839084121400 DUG RUN NEAR ELIDA, OHIO</u>							
Sept. 19	36.0	<5	211	<8.0	<16	<20	160	<1
	<u>404826084130400 HONEY RUN NEAR ELIDA, OHIO</u>							
Sept. 19	65.2	<5	102	<8.0	<16	<20	390	<1
	<u>405051084114000 OTTAWA RIVER AT GOMER, OHIO</u>							
Sept. 19	45.8	<5	402	<8.0	<16	<20	280	e1
	<u>405048084111000 PIKE RUN AT GOMER, OHIO</u>							
Sept. 19	47.6	<5	162	<8.0	<16	<20	180	<1
	<u>405700084113600 OTTAWA RIVER NEAR KALIDA, OHIO</u>							
Sept. 18	47.0	<5	304	<8.0	<16	<20	780	2
	<u>04187995 SUGAR CREEK NEAR KALIDA, OHIO</u>							
Sept. 18	48.7	<5	119	<8.0	<16	<20	600	e1
	<u>405901084124600 OTTAWA RIVER (ST. MICHAELS CEMETERY) AT KALIDA, OHIO</u>							
Sept. 18	44.4	<5	234	<8.0	<16	<20	620	1
	<u>405913084123300 PLUM CREEK AT KALIDA, OHIO</u>							
Sept. 18	68.3	<5	182	<8.0	<16	<20	1110	1

PROJECT DATA
Determination of Flow and Selected Water-Quality Characteristics of the Ottawa River

WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[µg/L, micrograms per liter; (01132), USGS National Water Information System parameter code; e, estimated data; <, concentration or value reported is less than that indicated]

Date	Lithium, total recoverable (µg/L as Li) (01132)	Manganese, total recoverable (µg/L as Mn) (01055)	Molybdenum, total recoverable (µg/L as Mo) (01062)	Nickel, total recoverable (µg/L as Ni) (01067)	Silver, total recoverable (µg/L as Ag) (01077)	Strontium, total recoverable (µg/L as Sr) (01082)	Vanadium, total (µg/L as V) (01087)	Zinc, total recoverable (µg/L as Zn) (01092)
Sept. 19	32.3	5	<70	<39	<7	4200	<10	<31
<u>404728083475300 GRASS CREEK NEAR ADA, OHIO</u>								
Sept. 20	27.4	36	<70	<39	<7	4020	<10	e20
<u>404746083492400 HOG CREEK NEAR ADA, OHIO</u>								
Sept. 19	22.0	48	<70	<39	<7	3240	<10	e16
<u>404616083564200 HOG CREEK AT LAFAYETTE, OHIO</u>								
Sept. 19	33.9	28	<70	<39	<7	5170	<10	<31
<u>404602083571700 LITTLE HOG CREEK AT LAFAYETTE, OHIO</u>								
Sept. 19	e5.1	53	<70	<39	<7	645	<10	<31
<u>404448084034000 LOST CREEK NEAR LIMA, OHIO</u>								
Sept. 18	14.5	66	<70	<39	<7	1840	<10	<31
<u>04187100 OTTAWA RIVER AT LIMA, OHIO</u>								
Sept. 18	22.5	65	<70	<39	<7	4230	<10	e21
<u>404224084090500 OTTAWA RIVER AT SHAWNEE ROAD NEAR LIMA, OHIO</u>								
Sept. 18	9.5	86	<70	<39	<7	2570	<10	<31
<u>404221084091500 LITTLE OTTAWA RIVER NEAR LIMA, OHIO</u>								
Sept. 19	21.3	49	e47	<39	<7	4110	e10	e17
<u>404322084102600 OTTAWA RIVER AT STATE ROUTE 117 NEAR LIMA, OHIO</u>								
Sept. 19	19.7	32	<70	<39	<7	3940	<10	<31
<u>404808084121700 OTTAWA RIVER AT ELIDA, OHIO</u>								
Sept. 19	12.0	21	<70	<39	<7	1330	<10	e21
<u>404839084121400 DUG RUN NEAR ELIDA, OHIO</u>								
Sept. 19	11.0	67	<70	<39	<7	801	<10	<31
<u>404826084130400 HONEY RUN NEAR ELIDA, OHIO</u>								
Sept. 19	17.8	24	e40	<39	<7	3720	<10	<31
<u>405051084114000 OTTAWA RIVER AT GOMER, OHIO</u>								
Sept. 19	9.5	38	<70	<39	<7	828	<10	<31
<u>405048084111000 PIKE RUN AT GOMER, OHIO</u>								
Sept. 18	16.3	46	<70	<39	<7	2640	<10	<31
<u>405700084113600 OTTAWA RIVER NEAR KALIDA, OHIO</u>								
Sept. 18	9.7	50	<70	<39	<7	737	<10	<31
<u>04187995 SUGAR CREEK NEAR KALIDA, OHIO</u>								
Sept. 18	13.0	36	<70	<39	<7	2210	e10	<31
<u>405901084124600 OTTAWA RIVER (ST. MICHAELS CEMETERY) AT KALIDA, OHIO</u>								
Sept. 18	18.4	63	<70	<39	<7	2020	<10	<31
<u>405913084123300 PLUM CREEK AT KALIDA, OHIO</u>								

Geochemistry and Ground-Water Flow Beneath an Abandoned Coal Mine Reclaimed with FGD By-Products

The site selected for study is in Tuscarawas County, Ohio, and is also known as the Fleming abandoned mine site. FGD by-products are produced as a result of injection of dolostone slurry through the flue gases of coal-burning utilities that use high-sulfur coals as fuel. Beneficial uses of the by-products are being developed, and their environmental effects are being assessed.

The following tables list ground-water levels and chemical analyses of interstitial-, ground-, and surface-water samples collected from an abandoned mine site that has been reclaimed in part by application of a coal-combustion by-product, also known as flue-gas desulfurization (FGD) by-product. Water levels in wells were measured periodically. Interstitial waters were sampled by use of soil-suction lysimeters. The lysimeters produced only small amounts of water; thus, chemical analyses for interstitial water are incomplete.



WELL, SOIL-SUCTION LYSIMETER, AND SURFACE-WATER SITE DESCRIPTIONS

(The following site description applies to all soil-suction lysimeters, wells, and surface-water sites used for this study.)

LOCATION.—Hydrologic Unit 05040001, approximately 1.5 mi northwest of the city of Dover, Ohio; 0.5 mi west of Interstate 77.

AQUIFER.—Sandstones and coals of Allegheny and Pottsville Groups, of middle and lower Pennsylvanian Age.

INSTRUMENTATION.—Periodic measurement of water level with steel or electric tape by USGS personnel.

DATUM.—Elevation of land-surface datum is given in feet above sea level, surveyed using Total Station with reference points established by global positioning system, accurate to 0.01 ft.

PERIOD OF RECORD.—Mar. 1995 to June 1998 for wells TU-100 through TU-114; Dec. 1995 to June 1998 for wells TU-115 through TU-119.

Measurement of water levels and water-quality sampling resumed again in May 2000.

REMARKS.—These sites are used for chemical-quality sampling only as part of a cooperative study with the Ohio Department of Natural Resources, West Virginia University, and the Ohio Minelands Partnership.

PROJECT DATA
Geochemistry and Ground-Water Flow Beneath an Abandoned Coal Mine Reclaimed with FGD By-Products

WELL, SOIL-SUCTION LYSIMETER, AND SURFACE-WATER SITE DESCRIPTIONS—CONTINUED

[--, no data]

Local number	Site identifier	Latitude	Longitude	Casing diameter (inches)	Altitude of land surface datum (feet)	Altitude of measurement point (feet)	Depth (feet) below land surface)	Screen interval	
								Top	Bottom
<u>GROUND-WATER WELLS</u>									
TU-100-W1S	403321081311901	40°33'21"	81°31'19"	6	1078.90	1081.48	68.00	1022.90	1012.90
TU-101-W1D	403321081311902	40°33'21"	81°31'19"	6	1079.05	1081.79	98.00	993.05	983.05
TU-102-W2	403319081312000	40°33'19"	81°31'20"	6	1079.99	1082.64	68.00	1023.99	1013.99
TU-103-W3S	403315081312301	40°33'15"	81°31'23"	6	1072.89	1075.38	70.00	1014.89	1004.89
TU-104-W3D	403315081312302	40°33'15"	81°31'23"	6	1072.93	1075.53	86.00	998.93	988.93
TU-105-W4S	403313081311901	40°33'13"	81°31'19"	6	1047.80	1050.49	46.00	1013.80	1003.80
TU-106-W4I	403313081311902	40°33'13"	81°31'19"	6	1047.32	1050.19	63.50	995.82	985.82
TU-107-W4D	403313081311903	40°33'13"	81°31'19"	6	1046.58	1049.19	100.00	958.58	948.58
TU-108-W5SP	403312081311401	40°33'12"	81°31'14"	6	1045.84	1048.53	16.00	1036.84	1031.84
TU-109-W5D	403312081311402	40°33'12"	81°31'14"	6	1045.90	1048.53	38.00	1019.90	1009.90
TU-110-W6S	403315081311001	40°33'15"	81°31'10"	6	1051.18	1053.81	43.00	1020.18	1010.18
TU-111-W6D	403315081311002	40°33'15"	81°31'10"	6	1051.62	1054.02	60.00	1003.62	993.62
TU-112-W7	403320081311000	40°33'20"	81°31'10"	6	1059.13	1061.75	53.00	1018.13	1008.13
TU-113-W8S	403323081311601	40°33'23"	81°31'16"	6	1076.57	1079.26	68.00	1020.57	1010.57
TU-114-W8D	403323081311602	40°33'23"	81°31'16"	6	1075.54	1078.26	92.00	995.54	985.54
TU-115-W9	403316081310600	40°33'16"	81°31'06"	2	1049.88	1051.38	49.00	1012.88	1002.88
TU-116-W10	403314081311500	40°33'14"	81°31'15"	2	1053.53	1055.33	57.00	1008.53	998.53
TU-117-W11	403316081311300	40°33'16"	81°31'13"	2	1055.69	1057.18	58.00	1009.69	999.69
TU-118-W12	403318081311200	40°33'18"	81°31'12"	2	1057.07	1059.14	57.60	1011.47	1001.47
TU-119-W13	403321081311400	40°33'21"	81°31'14"	2	1070.98	1072.71	70.00	1012.98	1002.98
<u>SOIL-SUCTION LYSIMETERS</u>									
TU-130-L1A-1.5	403316081311101	40°33'16"	81°31'11"	--	--	--	1.50	--	--
TU-131-L1A-2.5	403316081311102	40°33'16"	81°31'11"	--	--	--	2.50	--	--
TU-132-L1A-3.5	403316081311103	40°33'16"	81°31'11"	--	--	--	3.50	--	--
TU-133-L1B-1.5	403316081311104	40°33'16"	81°31'11"	--	--	--	1.50	--	--
TU-134-L1B-2.5	403316081311105	40°33'16"	81°31'11"	--	--	--	2.50	--	--
TU-135-L1B-3.5	403316081311106	40°33'16"	81°31'11"	--	--	--	3.50	--	--
TU-136-L2A-1.5	403313081311401	40°33'16"	81°31'11"	--	--	--	1.50	--	--
TU-137-L2A-2.5	403313081311402	40°33'16"	81°31'11"	--	--	--	2.50	--	--
TU-138-L2A-3.5	403313081311403	40°33'13"	81°31'14"	--	--	--	3.50	--	--
TU-139-L2B-1.5	403313081311404	40°33'13"	81°31'14"	--	--	--	1.50	--	--
TU-140-L2B-2.5	403313081311405	40°33'13"	81°31'14"	--	--	--	2.50	--	--
TU-141-L2B-3.5	403313081311406	40°33'13"	81°31'14"	--	--	--	3.50	--	--
TU-142-L3A-4.5A	403314081311801	40°33'14"	81°31'18"	--	--	--	4.50	--	--
TU-143-L3A-4.5B	403314081311802	40°33'14"	81°31'18"	--	--	--	4.50	--	--
TU-144-L3B-1.5	403314081311803	40°33'14"	81°31'18"	--	--	--	1.50	--	--
TU-146-L3B-3.5	403314081311805	40°33'14"	81°31'18"	--	--	--	3.50	--	--
TU-148-L3C-2.5	403314081311807	40°33'14"	81°31'18"	--	--	--	2.50	--	--
TU-149-L3C-3.5	403314081311808	40°33'14"	81°31'18"	--	--	--	3.50	--	--
TU-151-L4A-2.5	403315081312102	40°33'15"	81°31'21"	--	--	--	2.50	--	--
TU-152-L4A-3.5	403315081312103	40°33'15"	81°31'21"	--	--	--	3.50	--	--
TU-154-L4B-2.5	403315081312105	40°33'15"	81°31'21"	--	--	--	2.50	--	--
TU-156-L4C-1.5UP	403315081312107	40°33'15"	81°31'21"	--	--	--	1.50	--	--
TU-157-L4C-2.5UP	403315081312108	40°33'15"	81°31'21"	--	--	--	2.50	--	--
TU-158-L4C-3.5UP	403315081312109	40°33'15"	81°31'21"	--	--	--	3.50	--	--
TU-159-L5A-1.5	403316081310501	40°33'16"	81°31'05"	--	--	--	2.50	--	--
TU-160-L5A-2.5	403316081310502	40°33'16"	81°31'05"	--	--	--	2.50	--	--
TU-162-L5B-1.5	403316081310504	40°33'16"	81°31'05"	--	--	--	1.50	--	--
TU-163-L5B-2.5	403316081310505	40°33'16"	81°31'05"	--	--	--	2.50	--	--
TU-164-L5B-3.5	403316081310506	40°33'16"	81°31'05"	--	--	--	3.50	--	--
<u>SURFACE-WATER SITES</u>									
TU-120	403258081311900	40°32'58"	81°31'19"	--	--	--	--	--	--
TU-124	403311081311600	40°33'11"	81°31'16"	--	--	--	--	--	--
TU-125	403304081305700	40°33'04"	81°30'57"	--	--	--	--	--	--

Geochemistry and Ground-Water Flow Beneath an Abandoned Coal Mine Reclaimed with FGD By-Products

WATER LEVELS IN WELLS

Local number	Aquifer	Date	Water level (feet below land surface)
TU-100-W1S	Allegheny	05/18/00	43.37
		06/26/00	43.21
		07/26/00	43.40
TU-101-W1D	Pottsville	05/18/00	43.26
		06/26/00	43.06
		07/26/00	43.22
TU-102-W2	Allegheny	05/18/00	44.72
		06/26/00	44.60
		07/26/00	44.77
TU-103-W3S	Allegheny	05/18/00	40.61
		06/26/00	40.50
		07/26/00	40.47
TU-104-W3D	Pottsville	05/18/00	40.36
		06/26/00	40.30
		07/26/00	40.29
TU-105-W4S	Allegheny	05/18/00	15.90
		06/26/00	15.71
		07/26/00	15.79
TU-106-W4I	Pottsville	05/18/00	38.47
		06/26/00	38.48
		07/26/00	38.58
TU-107-W4D	Pottsville	05/18/00	62.82
		06/26/00	62.92
		07/26/00	62.98
TU-108-W5SP	Allegheny	05/18/00	10.93
		06/26/00	11.19
		07/26/00	11.61
TU-109-W5D	Allegheny	05/18/00	13.98
		06/26/00	13.67
		07/26/00	13.73
TU-110-W6S	Allegheny	05/18/00	16.09
		06/26/00	16.08
		07/26/00	16.39
TU-111-W6D	Pottsville	05/18/00	16.55
		06/26/00	16.54
		07/26/00	16.85
TU-112-W7	Allegheny	05/18/00	24.52
		06/26/00	23.88
		07/26/00	24.94
TU-113-W8S	Allegheny	05/18/00	41.04
		06/26/00	40.86
		07/26/00	41.06
TU-114-W8D	Pottsville	05/18/00	39.97
		06/26/00	39.81
		07/26/00	39.99
TU-115-W9	Allegheny	05/18/00	15.52
		06/26/00	15.60
		07/26/00	16.02
TU-116-W10	Allegheny	05/18/00	20.76
		06/26/00	20.61
		07/26/00	20.69
TU-117-W11	Allegheny	05/18/00	20.58
		06/26/00	20.51
		07/26/00	20.78
TU-118-W12	Allegheny	05/18/00	22.08
		06/26/00	21.94
		07/26/00	22.33
TU-119-W13	Allegheny	05/18/00	35.90
		06/26/00	35.82
		07/26/00	36.08

PROJECT DATA
Geochemistry and Ground-Water Flow Beneath an Abandoned Coal Mine Reclaimed with FGD By-Products

WATER-QUALITY RECORDS

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

[ft³/s, cubic foot per second; μS/cm, microsiemens per centimeter; mV, millivolts; deg C, degrees Celsius; NTU, nephelometric turbidity units; mg/L, milligrams per liter; CaCO₃, calcium carbonate; --, no data]

Local number	Date	Time	Depth to water (feet below land surface)	Dis-charge (ft ³ /s)	Specific conductance (μS/cm)	pH, water, whole, field (standard units)	Redox potential (mV)	Air temperature (deg C)	Water temperature (deg C)	Turbidity (NTU)	Oxygen dissolved (mg/L)	Hardness (mg/L as CaCO ₃)	Acidity (mg/L as CaCO ₃)
<u>INTERSTITIAL WATER</u>													
TU-130-L1A-1.5	06/28/00	0700	--	--	--	6.8	--	--	--	--	--	--	--
TU-131-L1A-2.5	06/28/00	0800	--	--	7430	3.8	--	--	--	--	--	--	--
TU-132-L1A-3.5	06/28/00	0700	--	--	6450	6.3	--	--	--	--	--	--	--
TU-133-L1B-1.5	06/28/00	0700	--	--	5580	6.6	--	--	--	--	--	--	--
TU-134-L1B-2.5	06/28/00	0810	--	--	5430	4.4	--	--	--	--	--	--	--
TU-136-L2A-1.5	06/28/00	0820	--	--	5300	7.2	--	--	--	--	--	4200	--
TU-137-L2A-2.5	06/28/00	0830	--	--	3550	6.5	--	--	--	--	--	2500	--
TU-138-L2A-3.5	06/28/00	0700	--	--	3220	7.1	--	--	--	--	--	--	--
TU-139-L2B-1.5	06/28/00	0840	--	--	4810	6.7	--	--	--	--	--	3700	--
TU-140-L2B-2.5	06/28/00	0850	--	--	3550	7.2	--	--	--	--	--	2600	--
TU-141-L2B-3.5	06/28/00	0900	--	--	2870	6.8	--	--	--	--	--	1500	--
TU-142-L3A-4.5A	06/28/00	0910	--	--	3570	6.4	--	--	--	--	--	2400	--
TU-143-L3A-4.5B	06/28/00	0905	--	--	4400	6.1	--	--	--	--	--	3300	--
TU-144-L3B-1.5	06/28/00	0700	--	--	4850	6.6	--	--	--	--	--	--	--
TU-146-L3B-3.5	06/28/00	0700	--	--	3370	6.4	--	--	--	--	--	--	--
TU-148-L3C-2.5	06/28/00	0915	--	--	3560	6.7	--	--	--	--	--	2400	--
TU-149-L3C-3.5	06/28/00	0700	--	--	3930	7.0	--	--	--	--	--	--	--
TU-151-L4A-2.5	06/28/00	0700	--	--	3430	7.1	--	--	--	--	--	--	--
TU-152-L4A-3.5	06/28/00	0700	--	--	2420	6.7	--	--	--	--	--	--	--
TU-154-L4B-2.5	06/28/00	0700	--	--	--	7.9	--	--	--	--	--	--	--
TU-156-L4C-1.5UP	06/28/00	0700	--	--	3930	6.5	--	--	--	--	--	--	--
TU-157-L4C-2.5UP	06/28/00	0700	--	--	3030	6.8	--	--	--	--	--	--	--
TU-158-L4C-3.5UP	06/28/00	0700	--	--	3420	6.4	--	--	--	--	--	--	--
TU-159-L5A-1.5	06/28/00	0920	--	--	1430	4.2	--	--	--	--	--	220	--
TU-160-L5A-2.5	06/28/00	0930	--	--	2760	5.1	--	--	--	--	--	1400	--
TU-162-L5B-1.5	06/28/00	0700	--	--	1940	3.8	--	--	--	--	--	--	--
TU-163-L5B-2.5	06/28/00	0700	--	--	2050	4.6	--	--	--	--	--	--	--
TU-164-L5B-3.5	06/28/00	0940	--	--	1980	6.6	--	--	--	--	--	620	--
<u>GROUND WATER</u>													
TU-100-W1S	06/27/00	1345	43.21	--	3430	5.3	187	26.0	12.5	0	0.1	1100	--
TU-102-W2	06/27/00	1500	44.60	--	3460	5.2	200	26.0	12.4	0	<0.1	1700	--
TU-103-W3S	06/26/00	0940	40.50	--	2150	5.8	136	23.0	12.2	34	0.1	1500	--
TU-105-W4S	06/26/00	1100	15.71	--	3140	5.4	196	23.0	12.3	2	<0.1	1800	--
TU-108-W5S	06/27/00	1545	11.19	--	2000	4.3	--	25.0	15.8	5	--	1200	--
TU-109-W5D	06/26/00	1230	13.67	--	2760	5.4	200	27.0	12.7	5	<0.1	1600	--
TU-110-W6S	06/26/00	1400	16.08	--	4130	5.1	247	28.0	12.8	45	<0.1	2200	--
TU-112-W7	06/27/00	1100	23.88	--	2740	5.7	171	24.0	12.7	2	<0.1	1600	--
TU-113-W8S	06/27/00	1230	40.86	--	2220	5.5	167	25.0	12.9	0	<0.1	1800	--
TU-115-W9	06/26/00	1500	15.60	--	2850	5.5	216	28.0	12.9	0	0.1	1700	--
TU-116-W10	06/26/00	1700	20.61	--	3550	5.4	220	30.3	13.9	0	0.1	2000	--
TU-117-W11	06/26/00	1815	20.51	--	3540	5.6	206	30.0	14.6	0	0.1	2200	--
TU-118-W12	06/27/00	0745	21.94	--	2990	5.6	177	22.0	13.3	1	0.2	1900	--
TU-119-W13	06/27/00	0915	35.82	--	2830	5.7	165	26.0	13.5	3	0.2	1600	--
<u>SURFACE WATER</u>													
TU-124	06/26/00	1230	--	0.012	1310	3.2	633	27.0	24.1	1	6.3	610	0.74
TU-125	06/26/00	1500	--	<0.001	680	5.5	493	27.0	18.2	5	8.2	240	0.11

Geochemistry and Ground-Water Flow Beneath an Abandoned Coal Mine Reclaimed with FGD By-Products

WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[mg/L, milligrams per liter; HCO₃, bicarbonate; CaCO₃, calcium carbonate; SO₄, sulfate; SiO₂, silica; --, no data]

Local number	Date	Calcium, dissolved (mg/L as Ca)	Magnesium, dissolved (mg/L as Mg)	Sodium, dissolved (mg/L as Na)	Potassium, dissolved (mg/L as K)	Bicarbonate, field (mg/L as HCO ₃)	Alkalinity, water, whole, field (mg/L as CaCO ₃)	Sulfate, dissolved (mg/L as SO ₄)	Chloride, dissolved (mg/L as Cl)	Fluoride, dissolved (mg/L as F)	Silica, dissolved (mg/L as SiO ₂)
<u>INTERSTITIAL WATER</u>											
TU-136-L2A-1.5	06/28/00	510	720	17.0	16.1	--	--	3800	<0.29	1.0	34.3
TU-137-L2A-2.5	06/28/00	440	350	7.3	8.0	--	--	2250	0.5	1.1	19.9
TU-139-L2B-1.5	06/28/00	490	610	17.6	17.7	--	--	3110	0.4	0.6	26.9
TU-140-L2B-2.5	06/28/00	430	360	6.1	12.1	--	--	2170	0.5	0.8	26.7
TU-141-L2B-3.5	06/28/00	240	210	2.2	7.7	--	--	1560	<0.29	0.5	24.6
TU-142-L3A-4.5A	06/28/00	470	300	7.5	19.8	--	--	2270	2.0	0.6	16.4
TU-143-L3A-4.5B	06/28/00	460	520	17.8	11.8	--	--	3070	5.5	0.6	27.3
TU-148-L3C-2.5	06/28/00	460	310	4.8	18.3	--	--	2190	2.2	0.7	18.5
TU-159-L5A-1.5	06/28/00	51	22	4.3	10.0	--	--	830	3.2	0.9	12.8
TU-160-L5A-2.5	06/28/00	300	170	19.7	13.8	--	--	1950	6.9	0.4	32.0
TU-164-L5B-3.5	06/28/00	180	43	34.1	21.7	--	--	860	10.9	0.7	14.7
<u>GROUND WATER</u>											
TU-100-W1S	06/27/00	180	160	19.7	7.3	115	91	1320	3.6	1.5	95.4
TU-102-W2	06/27/00	370	200	11.3	7.2	73	60	2310	2.6	<0.1	12.8
TU-103-W3S	06/26/00	360	160	9.4	6.9	117	95	1540	2.1	0.2	12.4
TU-105-W4S	06/26/00	380	200	10.6	10.6	78	56	2180	3.2	0.2	13.2
TU-108-W5S	06/27/00	270	130	8.5	6.0	--	--	1400	2.5	<0.1	13.3
TU-109-W5D	06/26/00	320	190	9.1	9.0	71	57	2110	3.3	0.2	12.9
TU-110-W6S	06/26/00	370	300	10.8	11.1	73	56	3480	5.7	0.8	9.8
TU-112-W7	06/27/00	360	170	12.1	10.9	103	84	1750	2.7	0.2	13.1
TU-113-W8S	06/27/00	380	210	12.6	15.6	129	105	2460	2.7	0.6	13.5
TU-115-W9	06/26/00	380	190	11.8	11.0	73	61	1980	1.5	0.6	12.9
TU-116-W10	06/26/00	400	230	11.3	10.3	59	48	2450	3.9	0.2	13.1
TU-117-W11	06/26/00	450	250	12.2	10.8	81	63	2700	5.4	0.3	15.3
TU-118-W12	06/27/00	410	200	14.4	10.9	66	55	2190	<0.29	0.3	13.4
TU-119-W13	06/27/00	380	230	14.4	14.2	98	79	2480	1.7	<0.1	14.3
<u>SURFACE WATER</u>											
TU-124	07/26/00	120	72	3.1	5.8	--	--	670	2.0	0.4	10.9
TU-125	07/26/00	48	29	27.0	3.6	10.5	8.6	220	53.3	0.4	15.8

Geochemistry and Ground-Water Flow Beneath an Abandoned Coal Mine Reclaimed with FGD By-Products

WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[deg C, degrees Celsius; mg/L, milligrams per liter; µg/L, micrograms per liter; --, no data]

Local number	Date	Dissolved solids, residue at 180 deg C (mg/L)	Nitrogen, nitrite, dissolved (mg/L as N)	Nitrogen, ammonia, dissolved (mg/L as N)	Nitrogen, nitrite plus nitrate, dissolved (mg/L as N)	Phosphorus, ortho-phosphate, dissolved (mg/L as P)	Aluminum, dissolved (µg/L as Al)	Aluminum, total (µg/L as Al)	Arsenic, dissolved (µg/L as As)	Bromide, dissolved (µg/L as Br)
<u>INTERSTITIAL WATER</u>										
TU-136-L2A-1.5	06/28/00	--	--	--	--	--	1140	75	<2	<0.1
TU-137-L2A-2.5	06/28/00	--	--	--	--	--	1150	48	<2	<0.1
TU-139-L2B-1.5	06/28/00	--	--	--	--	--	1220	74	1.7	<0.1
TU-140-L2B-2.5	06/28/00	--	--	--	--	--	1180	<45	<2	<0.1
TU-141-L2B-3.5	06/28/00	--	--	--	--	--	1170	<45	<2	<0.1
TU-142-L3A-4.5A	06/28/00	--	--	--	--	--	1350	60	<2	<0.1
TU-143-L3A-4.5B	06/28/00	--	--	--	--	--	1150	51	<2	<0.1
TU-148-L3C-2.5	06/28/00	--	--	--	--	--	1490	<45	<2	<0.1
TU-159-L5A-1.5	06/28/00	--	--	--	--	--	10250	3720	<2	<0.1
TU-160-L5A-2.5	06/28/00	--	--	--	--	--	8150	6890	<2	0.2
TU-164-L5B-3.5	06/28/00	--	--	--	--	--	1130	<15	<2	<0.1
<u>GROUND WATER</u>										
TU-100-W1S	06/27/00	1930	<0.01	1.8	<0.05	<0.018	13280	10760	<2	<0.1
TU-102-W2	06/27/00	3230	<0.01	1.1	<0.05	<0.018	<140	<45	<2	0.5
TU-103-W3S	06/26/00	2230	<0.01	0.4	<0.05	<0.018	180	<45	2.3	0.1
TU-105-W4S	06/26/00	3130	<0.01	1.0	<0.05	<0.018	<140	<45	3.0	0.6
TU-108-W5S	06/27/00	--	<0.01	0.1	0.34	<0.018	<140	<45	<2	0.2
TU-109-W5D	06/26/00	2960	0.027	0.6	<0.05	0.071	1700	775	2.4	4.3
TU-110-W6S	06/26/00	5530	<0.01	0.7	<0.05	0.039	3980	3690	2.8	1.7
TU-112-W7	06/27/00	2520	<0.01	0.8	<0.05	<0.018	110	<45	1.9	--
TU-113-W8S	06/27/00	3530	<0.01	0.4	<0.05	<0.018	830	676	1.5	0.9
TU-115-W9	06/26/00	2820	<0.01	1.2	<0.05	<0.018	160	106	1.7	0.3
TU-116-W10	06/26/00	3480	<0.01	1.0	<0.05	0.026	310	258	1.9	0.5
TU-117-W11	06/26/00	3850	<0.01	1.0	<0.05	<0.018	240	127	2.7	0.4
TU-118-W12	06/27/00	--	<0.01	1.1	<0.05	<0.018	<140	<15	<2	0.3
TU-119-W13	06/27/00	3510	<0.01	0.7	<0.05	<0.018	90	<45	<2	0.6
<u>SURFACE WATER</u>										
TU-124	07/26/00	--	<0.01	0.2	<0.05	<0.01	1100	1090	<2	<0.01
TU-125	07/26/00	407	<0.01	<0.02	1.04	<0.01	500	188	<2	<0.01

Geochemistry and Ground-Water Flow Beneath an Abandoned Coal Mine Reclaimed with FGD By-Products

WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[µg/L, micrograms per liter; --, no data]

Local number	Date	Boron, dissolved (µg/L as B)	Cadmium, dissolved (µg/L as Cd)	Chromium, dissolved (µg/L as Cr)	Cobalt, dissolved (µg/L as Co)	Copper, dissolved (µg/L as Cu)	Iron, dissolved (µg/L as Fe)	Iron, total (µg/L as Fe)	Lead, dissolved (µg/L as Pb)	Lithium, dissolved (µg/L as Li)	Manganese, dissolved (µg/L as Mn)
<u>INTERSTITIAL WATER</u>											
TU-136-L2A-1.5	06/28/00	1240	<40	<42	<39	<30	120900	<30	<1	204	12700
TU-137-L2A-2.5	06/28/00	1170	<24	<42	<39	<30	119100	<30	<1	81	13000
TU-139-L2B-1.5	06/28/00	1430	<40	<42	<39	<30	122500	<50	<1	89	12600
TU-140-L2B-2.5	06/28/00	1060	<40	<42	<39	<30	123200	<50	<1	77	12800
TU-141-L2B-3.5	06/28/00	689	<24	<42	<39	<30	117500	<30	<1	48	12300
TU-142-L3A-4.5A	06/28/00	679	<24	<42	<39	15	122200	<30	<1	187	13700
TU-143-L3A-4.5B	06/28/00	493	<24	<42	167	<30	127700	3601	<1	328	37700
TU-148-L3C-2.5	06/28/00	675	<24	<42	<39	20	124300	<30	<1	100	13600
TU-159-L5A-1.5	06/28/00	26	<8	<14	85	13	123800	33	58	40	37000
TU-160-L5A-2.5	06/28/00	54	<24	<42	984	<30	195800	75200	10	145	112500
TU-164-L5B-3.5	06/28/00	19	<40	<14	39	<10	173300	53000	<1	227	23600
<u>GROUND WATER</u>											
TU-100-W1S	06/27/00	676	5	15	1280	235	379800	206100	0.9	902	51100
TU-102-W2	06/27/00	286	120	<42	336	<30	278800	270900	<1	124	11400
TU-103-W3S	06/26/00	132	<24	<42	188	<30	70600	72900	<1	131	12500
TU-105-W4S	06/26/00	326	<24	<42	852	<30	258200	269600	<1	206	16600
TU-108-W5S	06/27/00	166	65	<42	112	<30	130000	126200	<1	140	7700
TU-109-W5D	06/26/00	209	<24	<42	453	15	357800	241700	<1	277	31500
TU-110-W6S	06/26/00	118	<24	<42	2520	<30	635600	659300	<1	288	64800
TU-112-W7	06/27/00	330	<24	<42	443	<30	135500	134700	<1	227	9700
TU-113-W8S	06/27/00	320	130	<42	554	<30	343800	353400	<1	251	23800
TU-115-W9	06/26/00	417	<24	<42	697	<30	163400	172000	<1	220	17300
TU-116-W10	06/26/00	398	<24	<42	909	<30	295600	303400	<1	246	21700
TU-117-W11	06/26/00	309	170	15	369	<10	302900	324400	<1	284	28400
TU-118-W12	06/27/00	399	110	7	270	<10	167900	169300	<1	164	15500
TU-119-W13	06/27/00	602	97	<42	496	<30	297500	296900	<1	165	21400
<u>SURFACE WATER</u>											
TU-124	07/26/00	184	<8	<14	71	<10	920	820	<1	107	4700
TU-125	07/26/00	61	<8	<14	<13	7	200	18	<1	46	1500

Geochemistry and Ground-Water Flow Beneath an Abandoned Coal Mine Reclaimed with FGD By-Products

WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[mg/L, milligrams per liter; µg/L, micrograms per liter; --, no data]

Local number	Date	Manganese, total (µg/L as Mn)	Nickel, dissolved (µg/L as Ni)	Selenium, dissolved (µg/L as Se)	Silver, dissolved (µg/L as Ag)	Strontium, dissolved (µg/L as Sr)	Vanadium, dissolved (µg/L as V)	Zinc, dissolved (µg/L as Zn)	Carbon, organic, dissolved (µg/L as C)	³⁴ S/ ³² S in sulfate, dissolved (per mil)
<u>INTERSTITIAL WATER</u>										
TU-131-L1A-2.5	06/28/00	--	--	--	--	--	--	--	--	-6.5
TU-134-L1B-2.5	06/28/00	--	--	--	--	--	--	--	--	-9.1
TU-136-L2A-1.5	06/28/00	246	62	3	<21	765	<30	150	--	-10.5
TU-137-L2A-2.5	06/28/00	732	74	3	<21	436	<30	156	--	-6.5
TU-139-L2B-1.5	06/28/00	10	<120	4	<21	711	<30	<60	--	-6.4
TU-140-L2B-2.5	06/28/00	36	65	3	<21	513	<30	<60	--	-7.5
TU-141-L2B-3.5	06/28/00	29	<120	1	<21	285	<30	<60	--	-6.9
TU-142-L3A-4.5A	06/28/00	840	90	2	<21	380	<30	<60	--	-12.8
TU-143-L3A-4.5B	06/28/00	28300	440	2	<21	428	<30	241	--	-15.9
TU-148-L3C-2.5	06/28/00	512	<120	1	<21	355	<30	<60	--	-14.5
TU-159-L5A-1.5	06/28/00	9002	167	<2.4	<7	117	<10	193	--	-14.9
TU-160-L5A-2.5	06/28/00	102900	1440	<2.4	63	688	<30	1060	--	-14.8
TU-164-L5B-3.5	06/28/00	4018	139	1	<7	141	<10	<20	--	-8.9
<u>GROUND WATER</u>										
TU-100-W1S	06/27/00	51900	1960	<2.4	22	1620	<10	3800	0.7	-12.7
TU-102-W2	06/27/00	10200	318	2	<21	2590	<30	64	1.2	-11.0
TU-103-W3S	06/26/00	13000	<120	3	<21	1570	<30	<60	1.1	-14.6
TU-105-W4S	06/26/00	17800	414	4	<21	3200	<30	481	0.9	-10.2
TU-108-W5S	06/27/00	7400	234	<2.4	<21	990	<30	<60	3.4	-16.1
TU-109-W5D	06/26/00	19200	451	4	<21	1780	<30	573	1.4	-11.2
TU-110-W6S	06/26/00	640000	920	6	<21	1330	<30	1720	1.5	-10.1
TU-112-W7	06/27/00	9900	255	3	<21	3090	<30	199	0.9	-9.4
TU-113-W8S	06/27/00	23100	538	2	<21	3040	<30	381	1.3	-12.6
TU-115-W9	06/26/00	17300	417	4	<21	3680	<30	657	0.7	-11.5
TU-116-W10	06/26/00	21500	597	5	<21	3400	<30	805	1.1	-10.2
TU-117-W11	06/26/00	29500	536	5	7	2830	<10	476	1.1	-11.7
TU-118-W12	06/27/00	15200	450	2	5	4350	<10	376	0.7	-11.7
TU-119-W13	06/27/00	20900	658	2	<21	6050	<30	290	0.8	-5.6
<u>SURFACE WATER</u>										
TU-124	07/26/00	4700	162	<2.4	<7	464	<10	161	0.6	-11.0
TU-125	07/26/00	1500	135	<2.4	<7	164	<10	164	2.2	-13.3

Ground-Water Records for Former Air Force Plant 36

The following tables contain daily maximum ground-water levels and temperature from three monitoring wells on former Air Force Plant 36 in Evendale, Ohio. These data were collected as part of a cooperative study with U.S. Air Force Aeronautical Systems Center headquartered at Wright-Patterson Air Force Base. The purpose of the study is to provide technical support for ongoing remedial actions at the plant.



PROJECT DATA
Ground-Water Records for Former Air Force Plant 36

391408084264100. LOCAL NUMBER, AF-5S

LOCATION.—Latitude 39°14'08", longitude 84°26'41", Hamilton County, Hydrologic Unit 05090203.

AQUIFER.—Shallow part of glacial outwash. Geologic Unit 112OTSH.

WELL CHARACTERISTICS.—Drilled observation water well, depth 51.0 ft.

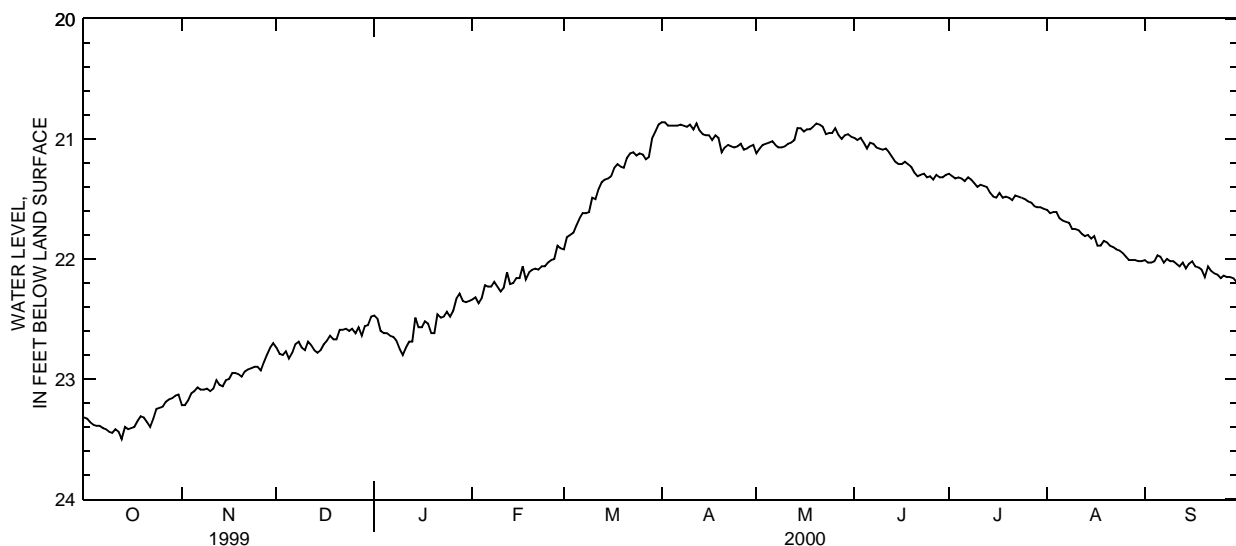
DATUM.—Altitude of land surface is 559.90 feet above National Geodetic Vertical Datum of 1929. Measuring point is top of inner casing, 2.09 ft above land-surface datum.

PERIOD OF RECORD.—Nov. 1997 to current year.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily low, 23.50 ft below land-surface datum, Oct. 13, 1999; minimum daily low, 18.69 ft below land-surface datum, July 19, 1998.

DEPTH BELOW LAND SURFACE (WATER LEVEL), FEET, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
 DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23.32	23.22	22.74	22.47	22.34	21.92	20.86	21.12	20.99	21.29	21.59	22.01
2	23.33	23.22	22.79	22.50	22.32	21.82	20.86	21.08	21.01	21.31	21.62	22.03
3	23.36	23.18	22.80	22.60	22.37	21.80	20.89	21.05	20.99	21.33	21.61	22.03
4	23.38	23.12	22.77	22.62	22.33	21.78	20.89	21.04	21.03	21.32	21.61	22.02
5	23.39	23.10	22.83	22.62	22.22	21.72	20.89	21.03	21.08	21.33	21.66	21.97
6	23.39	23.07	22.78	22.64	22.23	21.66	20.89	21.02	21.03	21.35	21.68	21.98
7	23.41	23.09	22.71	22.65	22.23	21.62	20.88	21.05	21.04	21.32	21.69	22.03
8	23.42	23.09	22.69	22.68	22.19	21.62	20.89	21.07	21.07	21.34	21.70	22.00
9	23.44	23.08	22.74	22.75	22.23	21.61	20.90	21.07	21.08	21.37	21.75	22.02
10	23.45	23.10	22.76	22.80	22.27	21.49	20.88	21.06	21.09	21.40	21.75	22.02
11	23.42	23.08	22.69	22.74	22.24	21.50	20.92	21.04	21.08	21.38	21.76	22.04
12	23.44	23.01	22.72	22.69	22.11	21.42	20.87	21.03	21.11	21.39	21.79	22.06
13	23.50	23.05	22.76	22.69	22.21	21.36	20.93	21.01	21.15	21.40	21.81	22.03
14	23.40	23.06	22.78	22.49	22.20	21.34	20.96	20.91	21.19	21.45	21.80	22.08
15	23.42	23.01	22.76	22.57	22.16	21.33	20.97	20.91	21.21	21.48	21.83	22.04
16	23.41	23.00	22.71	22.57	22.16	21.31	20.97	20.94	21.21	21.49	21.81	22.02
17	23.40	22.95	22.68	22.52	22.06	21.24	21.01	20.92	21.19	21.45	21.89	22.06
18	23.35	22.95	22.64	22.54	22.17	21.21	20.97	20.92	21.21	21.49	21.89	22.07
19	23.31	22.96	22.67	22.62	22.11	21.23	20.99	20.90	21.23	21.48	21.85	22.09
20	23.32	22.98	22.67	22.62	22.09	21.24	21.11	20.87	21.28	21.49	21.86	22.15
21	23.36	22.94	22.59	22.46	22.08	21.16	21.07	20.88	21.31	21.51	21.89	22.06
22	23.40	22.92	22.59	22.49	22.09	21.12	21.05	20.90	21.30	21.47	21.90	22.10
23	23.33	22.91	22.58	22.48	22.06	21.11	21.06	20.96	21.29	21.48	21.92	22.12
24	23.25	22.90	22.60	22.44	22.06	21.14	21.07	20.95	21.32	21.49	21.93	22.13
25	23.24	22.90	22.58	22.48	22.03	21.12	21.06	20.95	21.31	21.50	21.95	22.16
26	23.23	22.93	22.62	22.43	22.01	21.13	21.04	20.91	21.34	21.52	21.98	22.14
27	23.19	22.86	22.57	22.33	22.00	21.17	21.09	20.97	21.30	21.53	22.01	22.15
28	23.17	22.80	22.64	22.29	21.89	21.15	21.08	21.00	21.32	21.56	22.01	22.15
29	23.16	22.74	22.56	22.35	21.91	20.99	21.06	20.97	21.32	21.57	22.01	22.16
30	23.14	22.70	22.55	22.36	---	20.94	21.05	20.96	21.30	21.57	22.02	22.19
31	23.13	---	22.48	22.35	---	20.88	---	20.98	---	21.58	22.02	---
MAX	23.50	23.22	22.83	22.80	22.37	21.92	21.11	21.12	21.34	21.58	22.02	22.19

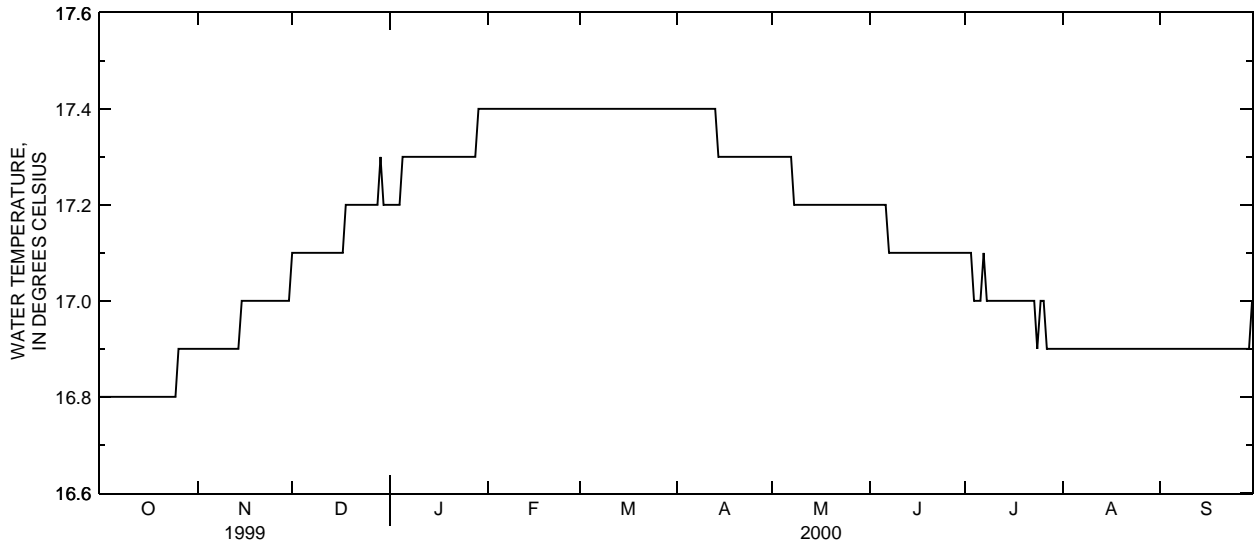


PROJECT DATA
Ground-Water Records for Former Air Force Plant 36

1391408084264100. LOCAL NUMBER, AF-5S—Continued

TEMPERATURE, WATER, DEGREES CELSIUS, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16.8	16.9	17.1	17.2	17.4	17.4	17.4	17.3	17.2	17.1	16.9	16.9
2	16.8	16.9	17.1	17.2	17.4	17.4	17.4	17.3	17.2	17.1	16.9	16.9
3	16.8	16.9	17.1	17.2	17.4	17.4	17.4	17.3	17.2	17.1	16.9	16.9
4	16.8	16.9	17.1	17.2	17.4	17.4	17.4	17.3	17.2	17.0	16.9	16.9
5	16.8	16.9	17.1	17.3	17.4	17.4	17.4	17.3	17.2	17.0	16.9	16.9
6	16.8	16.9	17.1	17.3	17.4	17.4	17.4	17.3	17.2	17.0	16.9	16.9
7	16.8	16.9	17.1	17.3	17.4	17.4	17.4	17.3	17.1	17.1	16.9	16.9
8	16.8	16.9	17.1	17.3	17.4	17.4	17.4	17.2	17.1	17.0	16.9	16.9
9	16.8	16.9	17.1	17.3	17.4	17.4	17.4	17.2	17.1	17.0	16.9	16.9
10	16.8	16.9	17.1	17.3	17.4	17.4	17.4	17.2	17.1	17.0	16.9	16.9
11	16.8	16.9	17.1	17.3	17.4	17.4	17.4	17.2	17.1	17.0	16.9	16.9
12	16.8	16.9	17.1	17.3	17.4	17.4	17.4	17.2	17.1	17.0	16.9	16.9
13	16.8	16.9	17.1	17.3	17.4	17.4	17.4	17.2	17.1	17.0	16.9	16.9
14	16.8	16.9	17.1	17.3	17.4	17.4	17.3	17.2	17.1	17.0	16.9	16.9
15	16.8	17.0	17.1	17.3	17.4	17.4	17.3	17.2	17.1	17.0	16.9	16.9
16	16.8	17.0	17.1	17.3	17.4	17.4	17.3	17.2	17.1	17.0	16.9	16.9
17	16.8	17.0	17.1	17.3	17.4	17.4	17.3	17.2	17.1	17.0	16.9	16.9
18	16.8	17.0	17.2	17.3	17.4	17.4	17.3	17.2	17.1	17.0	16.9	16.9
19	16.8	17.0	17.2	17.3	17.4	17.4	17.3	17.2	17.1	17.0	16.9	16.9
20	16.8	17.0	17.2	17.3	17.4	17.4	17.3	17.2	17.1	17.0	16.9	16.9
21	16.8	17.0	17.2	17.3	17.4	17.4	17.3	17.2	17.1	17.0	16.9	16.9
22	16.8	17.0	17.2	17.3	17.4	17.4	17.3	17.2	17.1	17.0	16.9	16.9
23	16.8	17.0	17.2	17.3	17.4	17.4	17.3	17.2	17.1	17.0	16.9	16.9
24	16.8	17.0	17.2	17.3	17.4	17.4	17.3	17.2	17.1	16.9	16.9	16.9
25	16.8	17.0	17.2	17.3	17.4	17.4	17.3	17.2	17.1	17.0	16.9	16.9
26	16.9	17.0	17.2	17.3	17.4	17.4	17.3	17.2	17.1	17.0	16.9	16.9
27	16.9	17.0	17.2	17.3	17.4	17.4	17.3	17.2	17.1	16.9	16.9	16.9
28	16.9	17.0	17.2	17.3	17.4	17.4	17.3	17.2	17.1	16.9	16.9	16.9
29	16.9	17.0	17.3	17.4	17.4	17.4	17.3	17.2	17.1	16.9	16.9	16.9
30	16.9	17.0	17.2	17.4	---	17.4	17.3	17.2	17.1	16.9	16.9	17.0
31	16.9	---	17.2	17.4	---	17.4	---	17.2	---	16.9	16.9	---
MAX	16.9	17.0	17.3	17.4	17.4	17.4	17.4	17.3	17.2	17.1	16.9	17.0



PROJECT DATA
Ground-Water Records for Former Air Force Plant 36

391408084264101. LOCAL NUMBER, AF-5P

LOCATION.—Latitude 39°14'08", longitude 84°26'41", Hamilton County, Hydrologic Unit 05090203.

AQUIFER.—Perched part of glacial outwash. Geologic Unit 112OTSH.

WELL CHARACTERISTICS.—Drilled observation water well, depth 33.0 ft.

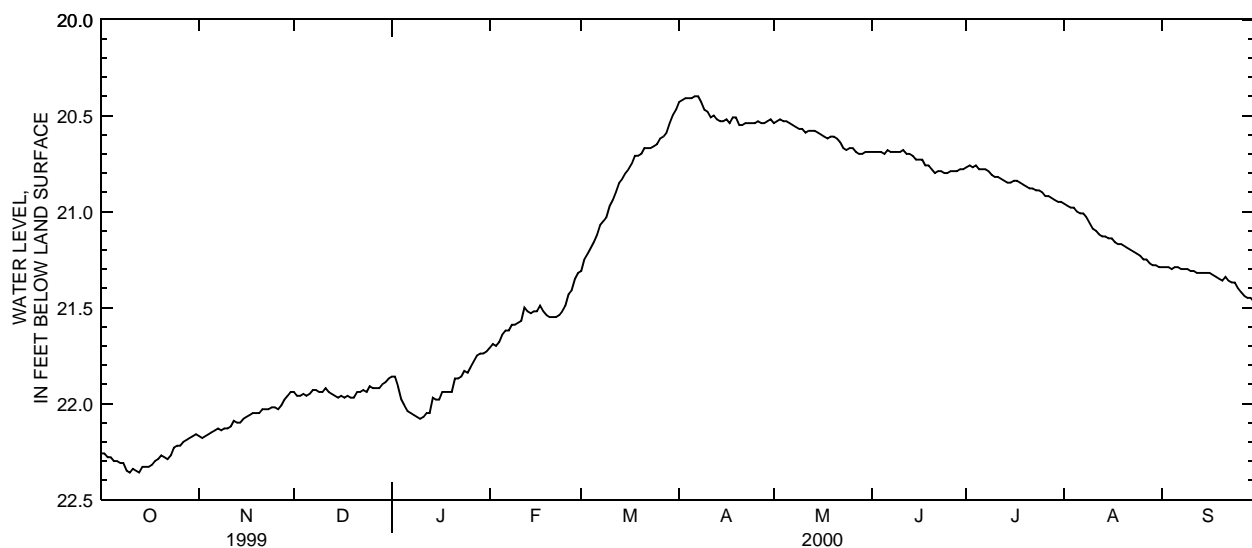
DATUM.—Altitude of land surface is 559.90 feet above National Geodetic Vertical Datum of 1929. Measuring point is top of inner casing, 1.34 ft above land-surface datum.

PERIOD OF RECORD.—Nov. 1997 to current year.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily low, 22.36 ft. below land-surface datum, Oct. 10 and 13, 1999; minimum daily low, 19.49 ft below land-surface datum, June 6-8, 1998.

DEPTH BELOW LAND SURFACE (WATER LEVEL), FEET, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
 DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22.26	22.17	21.94	21.86	21.71	21.31	20.43	20.54	20.69	20.77	20.96	21.29
2	22.26	22.18	21.96	21.86	21.69	21.25	20.42	20.53	20.69	20.76	20.97	21.29
3	22.28	22.17	21.96	21.91	21.70	21.22	20.41	20.52	20.69	20.77	20.98	21.29
4	22.28	22.16	21.95	21.98	21.68	21.19	20.41	20.53	20.69	20.76	20.98	21.30
5	22.30	22.15	21.96	22.01	21.64	21.16	20.41	20.53	20.70	20.78	21.00	21.29
6	22.30	22.14	21.95	22.04	21.62	21.12	20.40	20.54	20.68	20.78	21.01	21.29
7	22.31	22.13	21.93	22.05	21.62	21.07	20.40	20.55	20.69	20.78	21.01	21.30
8	22.31	22.14	21.93	22.06	21.59	21.05	20.43	20.56	20.69	20.79	21.03	21.30
9	22.35	22.13	21.94	22.07	21.59	21.03	20.47	20.57	20.69	20.81	21.06	21.30
10	22.36	22.13	21.94	22.08	21.58	20.97	20.48	20.57	20.69	20.82	21.09	21.31
11	22.34	22.12	21.92	22.07	21.57	20.94	20.51	20.59	20.68	20.82	21.10	21.31
12	22.35	22.09	21.94	22.05	21.50	20.90	20.50	20.58	20.70	20.83	21.12	21.32
13	22.36	22.10	21.95	22.05	21.52	20.85	20.52	20.58	20.70	20.84	21.13	21.32
14	22.33	22.10	21.96	21.97	21.53	20.83	20.53	20.58	20.71	20.85	21.13	21.32
15	22.33	22.08	21.97	21.98	21.52	20.80	20.53	20.59	20.73	20.85	21.14	21.32
16	22.33	22.07	21.96	21.98	21.52	20.78	20.52	20.60	20.73	20.84	21.14	21.32
17	22.32	22.06	21.97	21.94	21.49	20.75	20.54	20.61	20.73	20.84	21.16	21.33
18	22.30	22.05	21.96	21.94	21.52	20.71	20.51	20.62	20.76	20.85	21.17	21.34
19	22.29	22.05	21.97	21.94	21.54	20.71	20.51	20.61	20.76	20.86	21.17	21.35
20	22.27	22.05	21.97	21.94	21.55	20.70	20.55	20.61	20.78	20.87	21.18	21.36
21	22.28	22.03	21.94	21.87	21.55	20.67	20.55	20.62	20.80	20.88	21.19	21.34
22	22.29	22.03	21.94	21.87	21.55	20.67	20.54	20.64	20.79	20.88	21.20	21.36
23	22.27	22.03	21.93	21.86	21.54	20.67	20.54	20.67	20.79	20.89	21.21	21.37
24	22.23	22.02	21.94	21.83	21.52	20.66	20.54	20.68	20.80	20.89	21.22	21.37
25	22.22	22.02	21.91	21.84	21.49	20.65	20.54	20.67	20.80	20.90	21.23	21.40
26	22.22	22.03	21.92	21.81	21.43	20.62	20.53	20.67	20.79	20.92	21.25	21.42
27	22.20	22.01	21.92	21.78	21.41	20.61	20.54	20.69	20.79	20.92	21.25	21.44
28	22.19	21.98	21.92	21.75	21.35	20.59	20.54	20.70	20.79	20.93	21.27	21.45
29	22.18	21.96	21.90	21.74	21.32	20.54	20.53	20.70	20.78	20.94	21.28	21.45
30	22.17	21.94	21.89	21.74	---	20.50	20.52	20.69	20.78	20.95	21.28	21.47
31	22.16	---	21.87	21.73	---	20.47	---	20.69	---	20.95	21.29	---
MAX	22.36	22.18	21.97	22.08	21.71	21.31	20.55	20.70	20.80	20.95	21.29	21.47

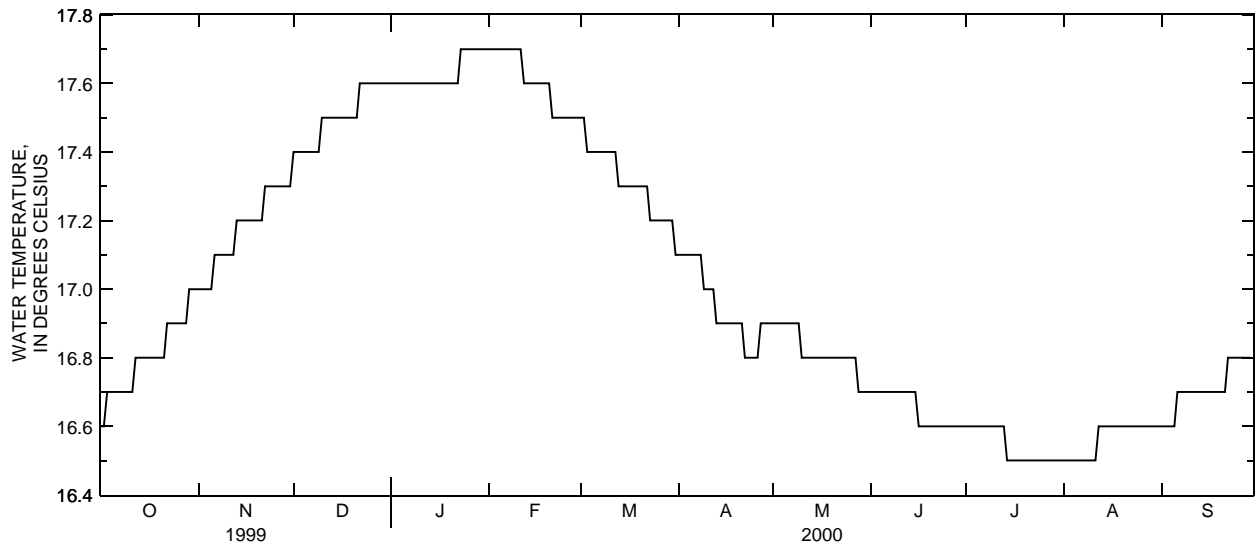


PROJECT DATA
Ground-Water Records for Former Air Force Plant 36

391408084264101. LOCAL NUMBER, AF-5P—Continued

TEMPERATURE, WATER, DEGREES CELSIUS, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16.6	17.0	17.4	17.6	17.7	17.5	17.1	16.9	16.7	16.6	16.5	16.6
2	16.6	17.0	17.4	17.6	17.7	17.5	17.1	16.9	16.7	16.6	16.5	16.6
3	16.7	17.0	17.4	17.6	17.7	17.4	17.1	16.9	16.7	16.6	16.5	16.6
4	16.7	17.0	17.4	17.6	17.7	17.4	17.1	16.9	16.7	16.6	16.5	16.6
5	16.7	17.0	17.4	17.6	17.7	17.4	17.1	16.9	16.7	16.6	16.5	16.6
6	16.7	17.1	17.4	17.6	17.7	17.4	17.1	16.9	16.7	16.6	16.5	16.7
7	16.7	17.1	17.4	17.6	17.7	17.4	17.1	16.9	16.7	16.6	16.5	16.7
8	16.7	17.1	17.4	17.6	17.7	17.4	17.1	16.9	16.7	16.6	16.5	16.7
9	16.7	17.1	17.4	17.6	17.7	17.4	17.0	16.9	16.7	16.6	16.5	16.7
10	16.7	17.1	17.5	17.6	17.7	17.4	17.0	16.8	16.7	16.6	16.5	16.7
11	16.7	17.1	17.5	17.6	17.7	17.4	17.0	16.8	16.7	16.6	16.5	16.7
12	16.8	17.1	17.5	17.6	17.6	17.4	17.0	16.8	16.7	16.6	16.6	16.7
13	16.8	17.2	17.5	17.6	17.6	17.3	16.9	16.8	16.7	16.6	16.6	16.7
14	16.8	17.2	17.5	17.6	17.6	17.3	16.9	16.8	16.7	16.5	16.6	16.7
15	16.8	17.2	17.5	17.6	17.6	17.3	16.9	16.8	16.7	16.5	16.6	16.7
16	16.8	17.2	17.5	17.6	17.6	17.3	16.9	16.8	16.6	16.5	16.6	16.7
17	16.8	17.2	17.5	17.6	17.6	17.3	16.9	16.8	16.6	16.5	16.6	16.7
18	16.8	17.2	17.5	17.6	17.6	17.3	16.9	16.8	16.6	16.5	16.6	16.7
19	16.8	17.2	17.5	17.6	17.6	17.3	16.9	16.8	16.6	16.5	16.6	16.7
20	16.8	17.2	17.5	17.6	17.6	17.3	16.9	16.8	16.6	16.5	16.6	16.7
21	16.8	17.2	17.5	17.6	17.5	17.3	16.9	16.8	16.6	16.5	16.6	16.7
22	16.9	17.3	17.6	17.6	17.5	17.3	16.8	16.8	16.6	16.5	16.6	16.8
23	16.9	17.3	17.6	17.7	17.5	17.2	16.8	16.8	16.6	16.5	16.6	16.8
24	16.9	17.3	17.6	17.7	17.5	17.2	16.8	16.8	16.6	16.5	16.6	16.8
25	16.9	17.3	17.6	17.7	17.5	17.2	16.8	16.8	16.6	16.5	16.6	16.8
26	16.9	17.3	17.6	17.7	17.5	17.2	16.8	16.8	16.6	16.5	16.6	16.8
27	16.9	17.3	17.6	17.7	17.5	17.2	16.9	16.8	16.6	16.5	16.6	16.8
28	16.9	17.3	17.6	17.7	17.5	17.2	16.9	16.7	16.6	16.5	16.6	16.8
29	17.0	17.3	17.6	17.7	17.5	17.2	16.9	16.7	16.6	16.5	16.6	16.8
30	17.0	17.3	17.6	17.7	---	17.2	16.9	16.7	16.6	16.5	16.6	16.8
31	17.0	---	17.6	17.7	---	17.1	---	16.7	---	16.5	16.6	---
MAX	17.0	17.3	17.6	17.7	17.7	17.5	17.1	16.9	16.7	16.6	16.6	16.8



PROJECT DATA
Ground-Water Records for Former Air Force Plant 36

391411084264000. LOCAL NUMBER, AF-3S

LOCATION.—Latitude 39°14'11", longitude 84°26'40", Hamilton County, Hydrologic Unit 05090203.

AQUIFER.—Shallow part of glacial outwash. Geologic Unit 112OTSH.

WELL CHARACTERISTICS.—Drilled observation water well, depth 52.0 ft.

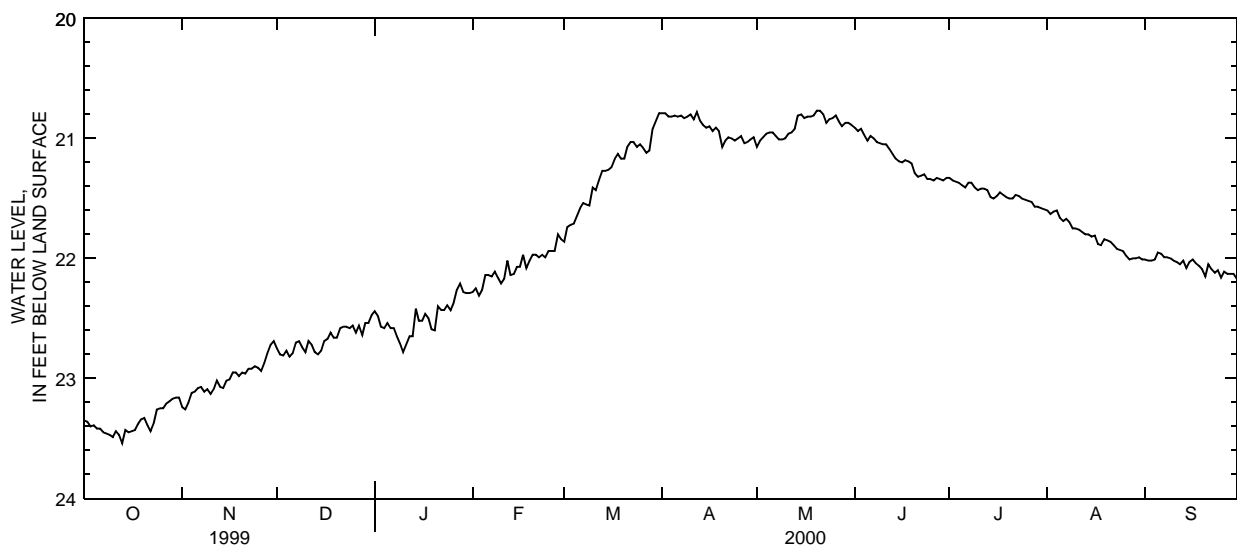
DATUM.—Altitude of land surface is 560.40 feet above National Geodetic Vertical Datum of 1929. Measuring point is top of inner casing, 1.94 ft above land-surface datum.

PERIOD OF RECORD.—Nov. 1997 to current year.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily low, 23.54 ft below land-surface datum, Oct. 13, 1999; minimum daily low, 19.25 ft below land-surface datum, June 7 and 8, 1998.

DEPTH BELOW LAND SURFACE (WATER LEVEL), FEET, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
 DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23.35	23.24	22.75	22.44	22.28	21.86	20.79	21.07	20.91	21.33	21.60	22.01
2	23.36	23.26	22.80	22.48	22.25	21.74	20.79	21.02	20.94	21.35	21.63	22.02
3	23.40	23.20	22.81	22.57	22.31	21.72	20.82	20.99	20.92	21.36	21.61	22.02
4	23.39	23.12	22.77	22.58	22.26	21.71	20.82	20.96	20.97	21.37	21.60	22.01
5	23.42	23.11	22.82	22.54	22.14	21.65	20.81	20.95	21.02	21.39	21.66	21.95
6	23.42	23.08	22.79	22.58	22.14	21.58	20.82	20.95	20.98	21.41	21.69	21.96
7	23.45	23.07	22.70	22.58	22.15	21.54	20.81	20.98	21.00	21.37	21.67	21.99
8	23.46	23.11	22.69	22.65	22.11	21.55	20.83	21.01	21.03	21.37	21.70	21.99
9	23.47	23.09	22.74	22.71	22.16	21.56	20.82	21.01	21.04	21.41	21.75	22.00
10	23.49	23.13	22.78	22.78	22.21	21.41	20.80	21.00	21.05	21.43	21.75	22.02
11	23.44	23.09	22.69	22.71	22.17	21.43	20.84	20.96	21.05	21.42	21.76	22.03
12	23.47	23.02	22.72	22.65	22.02	21.35	20.78	20.95	21.09	21.42	21.78	22.05
13	23.54	23.07	22.78	22.65	22.14	21.27	20.85	20.92	21.13	21.43	21.80	22.02
14	23.43	23.08	22.80	22.42	22.13	21.27	20.89	20.81	21.17	21.49	21.80	22.08
15	23.45	23.02	22.77	22.52	22.07	21.26	20.91	20.80	21.19	21.50	21.82	22.03
16	23.44	23.01	22.69	22.52	22.07	21.24	20.90	20.83	21.20	21.48	21.81	22.01
17	23.43	22.95	22.67	22.46	21.97	21.17	20.94	20.82	21.18	21.45	21.88	22.04
18	23.38	22.95	22.62	22.50	22.08	21.13	20.91	20.82	21.19	21.47	21.89	22.06
19	23.34	22.98	22.66	22.59	22.02	21.17	20.94	20.81	21.21	21.49	21.84	22.09
20	23.33	22.95	22.66	22.60	21.97	21.17	21.07	20.77	21.29	21.50	21.85	22.15
21	23.39	22.96	22.58	22.40	21.97	21.07	21.02	20.77	21.32	21.50	21.86	22.05
22	23.44	22.92	22.57	22.43	21.99	21.03	20.99	20.80	21.31	21.47	21.89	22.09
23	23.37	22.92	22.57	22.43	21.97	21.03	21.00	20.87	21.30	21.48	21.92	22.12
24	23.26	22.90	22.58	22.39	21.99	21.07	21.02	20.84	21.34	21.50	21.93	22.10
25	23.25	22.91	22.56	22.43	21.94	21.05	21.00	20.83	21.34	21.51	21.94	22.16
26	23.25	22.94	22.62	22.37	21.94	21.08	20.98	20.81	21.35	21.52	21.98	22.11
27	23.21	22.87	22.56	22.26	21.94	21.12	21.04	20.86	21.33	21.53	22.01	22.13
28	23.19	22.79	22.64	22.21	21.80	21.10	21.03	20.90	21.34	21.57	22.00	22.13
29	23.17	22.72	22.54	22.28	21.84	20.92	21.01	20.87	21.35	21.57	22.00	22.13
30	23.16	22.69	22.54	22.29	---	20.86	20.99	20.87	21.33	21.58	21.99	22.17
31	23.16	---	22.47	22.29	---	20.79	---	20.89	---	21.59	22.01	---
MAX	23.54	23.26	22.82	22.78	22.31	21.86	21.07	21.07	21.35	21.59	22.01	22.17

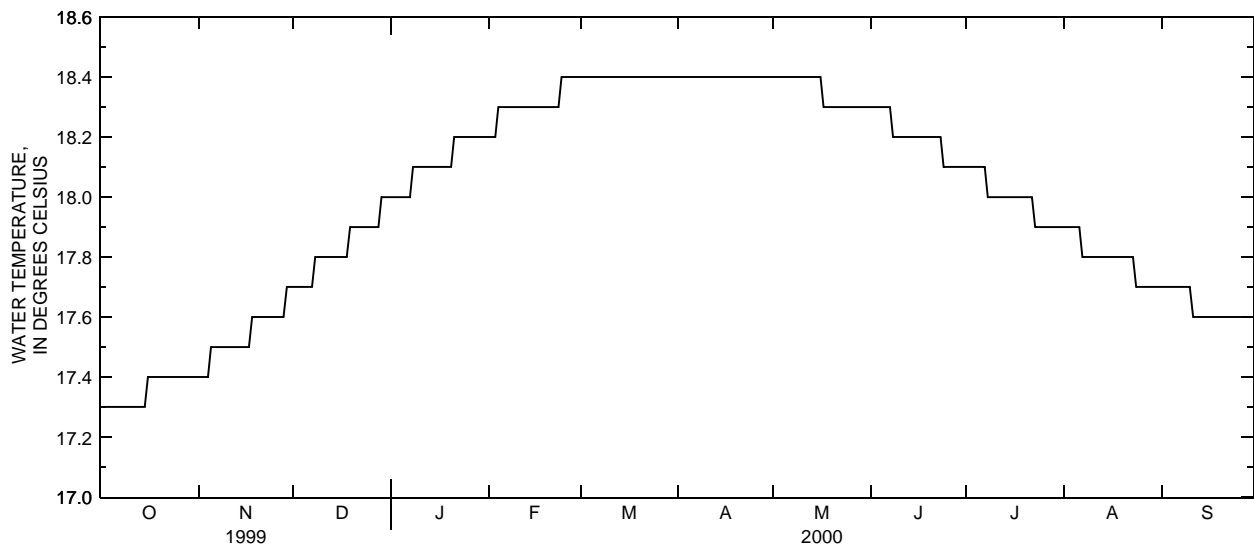


Ground-Water Records for Former Air Force Plant 36

391411084264000. LOCAL NUMBER, AF-3S—Continued

TEMPERATURE, WATER, DEGREES CELSIUS, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MAXIMUM VALUES

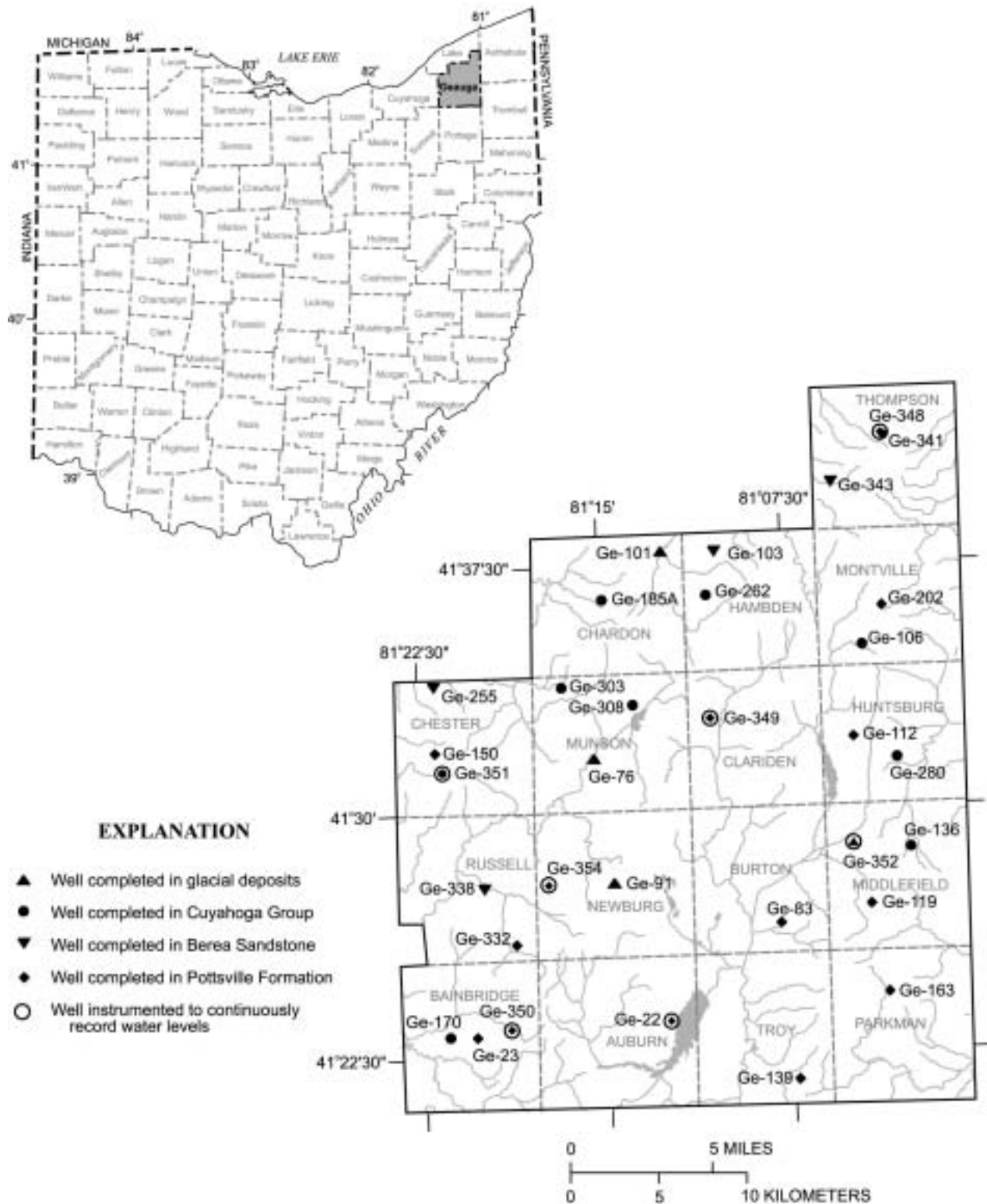
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17.3	17.4	17.7	18.0	18.2	18.4	18.4	18.4	18.3	18.1	17.9	17.7
2	17.3	17.4	17.7	18.0	18.2	18.4	18.4	18.4	18.3	18.1	17.9	17.7
3	17.3	17.4	17.7	18.0	18.2	18.4	18.4	18.4	18.3	18.1	17.9	17.7
4	17.3	17.4	17.7	18.0	18.3	18.4	18.4	18.4	18.3	18.1	17.9	17.7
5	17.3	17.5	17.7	18.0	18.3	18.4	18.4	18.4	18.3	18.1	17.9	17.7
6	17.3	17.5	17.7	18.0	18.3	18.4	18.4	18.4	18.3	18.1	17.9	17.7
7	17.3	17.5	17.7	18.0	18.3	18.4	18.4	18.4	18.3	18.1	17.8	17.7
8	17.3	17.5	17.8	18.1	18.3	18.4	18.4	18.4	18.2	18.0	17.8	17.7
9	17.3	17.5	17.8	18.1	18.3	18.4	18.4	18.4	18.2	18.0	17.8	17.7
10	17.3	17.5	17.8	18.1	18.3	18.4	18.4	18.4	18.2	18.0	17.8	17.7
11	17.3	17.5	17.8	18.1	18.3	18.4	18.4	18.4	18.2	18.0	17.8	17.6
12	17.3	17.5	17.8	18.1	18.3	18.4	18.4	18.4	18.2	18.0	17.8	17.6
13	17.3	17.5	17.8	18.1	18.3	18.4	18.4	18.4	18.2	18.0	17.8	17.6
14	17.3	17.5	17.8	18.1	18.3	18.4	18.4	18.4	18.2	18.0	17.8	17.6
15	17.3	17.5	17.8	18.1	18.3	18.4	18.4	18.4	18.2	18.0	17.8	17.6
16	17.4	17.5	17.8	18.1	18.3	18.4	18.4	18.4	18.2	18.0	17.8	17.6
17	17.4	17.5	17.8	18.1	18.3	18.4	18.4	18.3	18.2	18.0	17.8	17.6
18	17.4	17.6	17.8	18.1	18.3	18.4	18.4	18.3	18.2	18.0	17.8	17.6
19	17.4	17.6	17.9	18.1	18.3	18.4	18.4	18.3	18.2	18.0	17.8	17.6
20	17.4	17.6	17.9	18.1	18.3	18.4	18.4	18.3	18.2	18.0	17.8	17.6
21	17.4	17.6	17.9	18.2	18.3	18.4	18.4	18.3	18.2	18.0	17.8	17.6
22	17.4	17.6	17.9	18.2	18.3	18.4	18.4	18.3	18.2	18.0	17.8	17.6
23	17.4	17.6	17.9	18.2	18.3	18.4	18.4	18.3	18.2	17.9	17.8	17.6
24	17.4	17.6	17.9	18.2	18.4	18.4	18.4	18.3	18.1	17.9	17.7	17.6
25	17.4	17.6	17.9	18.2	18.4	18.4	18.4	18.3	18.1	17.9	17.7	17.6
26	17.4	17.6	17.9	18.2	18.4	18.4	18.4	18.3	18.1	17.9	17.7	17.6
27	17.4	17.6	17.9	18.2	18.4	18.4	18.4	18.3	18.1	17.9	17.7	17.6
28	17.4	17.6	17.9	18.2	18.4	18.4	18.4	18.3	18.1	17.9	17.7	17.6
29	17.4	17.7	18.0	18.2	18.4	18.4	18.4	18.3	18.1	17.9	17.7	17.6
30	17.4	17.7	18.0	18.2	---	18.4	18.4	18.3	18.1	17.9	17.7	17.6
31	17.4	---	18.0	18.2	---	18.4	---	18.3	---	17.9	17.7	---
MAX	17.4	17.7	18.0	18.2	18.4	18.4	18.4	18.4	18.3	18.1	17.9	17.7



PROJECT DATA

Ground-Water Data for Geauga County, Ohio

The following tables contain ground-water-level and ground-water-quality data collected as part of a USGS cooperative study with the Geauga County Planning Commission and the Board of County Commissioners. Data-collection sites are shown below.



PROJECT DATA
Ground-Water Data for Geauga County, Ohio

LONG-TERM GROUND-WATER MONITORING NETWORK

Ground-water-level measurements from the 32 wells that comprise the long-term ground-water monitoring network in Geauga County are shown on the following pages. The purpose of the water-level study is to determine whether fluctuations in water levels represent consistent, long-term trends caused by human activity or are predominantly the result of seasonal and annual variations in recharge. Land-surface datums are accurate within ± 5 ft. Water levels known to have been measured after a well had been recently pumped are designated with an asterisk (*).

412331081123000. LOCAL NUMBER, GE-22

LOCATION.—Latitude 41°23'31", longitude 81°12'30", Geauga County, west of Valley View Road by La Due Reservoir at old Sugar House, Auburn Township. Owner City of Akron.

AQUIFER.—Pottsville Formation (sandstone) of Pennsylvanian age.

WELL CHARACTERISTICS.—Water-supply well located in pit, not currently in use; diameter 6.25 in., depth 80 ft.

INSTRUMENTATION.—Pressure transducer and CR10 data logger (records hourly) with SM192 storage module.

DATUM.—Elevation of land-surface datum is 1,160 ft above sea level. Measuring point: mark on wooden base of instrument shelter; changed from 3.96 ft below land-surface datum to 3.20 ft above land-surface datum on May 13, 1997.

PERIOD OF RECORD.—Periodic water-level measurements from June 8, 1978 through September 8, 1994. Continuous water-level data from July 24, 1996 to current year.

EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 11.26 ft below land-surface datum, June 2, 1997; lowest measured, 14.34 ft below land-surface datum, Nov. 12, 1980.

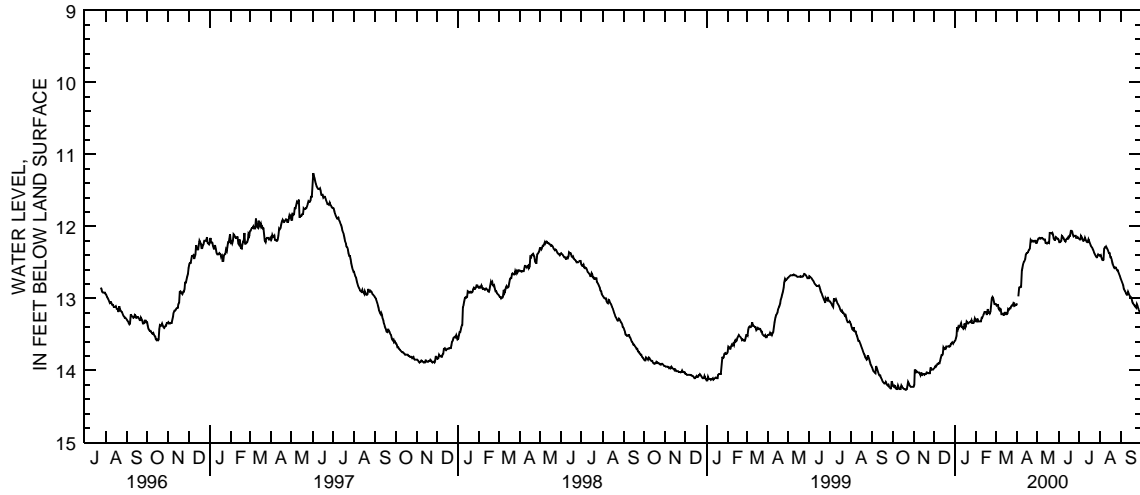
DEPTH BELOW LAND SURFACE (WATER LEVEL), FEET, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14.19	14.23	13.97	13.59	13.32	13.08	13.07	12.20	12.18	12.17	12.41	12.74
2	14.22	14.20	13.96	13.56	13.32	13.10	---	12.17	12.22	12.18	12.40	12.77
3	14.23	13.99	13.94	13.52	13.28	13.09	12.97	12.17	12.22	12.18	12.43	12.79
4	14.21	14.02	13.95	13.40	13.32	13.09	12.85	12.16	12.21	12.13	12.46	12.82
5	14.22	14.01	13.93	13.43	13.32	13.14	12.85	12.17	12.20	12.15	12.47	12.87
6	14.25	14.03	13.91	13.39	13.32	13.16	12.84	12.17	12.13	12.17	12.46	12.89
7	14.26	14.03	13.91	13.40	13.32	13.14	12.84	12.16	12.14	12.20	12.31	12.90
8	14.26	14.03	13.90	13.39	13.32	13.15	12.61	12.16	12.16	12.20	12.29	12.93
9	14.21	14.03	13.90	13.36	13.27	13.22	12.58	12.17	12.18	12.19	12.29	12.95
10	14.23	14.04	13.86	13.34	13.27	13.22	12.52	12.18	12.20	12.16	12.28	12.95
11	14.26	14.07	13.83	13.40	13.24	13.21	12.49	12.18	12.21	12.19	12.30	12.91
12	14.26	14.04	13.79	13.40	13.22	13.23	12.48	12.18	12.18	12.21	12.32	12.93
13	14.26	14.04	13.79	13.42	13.19	13.23	12.45	12.23	12.17	12.22	12.35	12.96
14	14.21	14.06	13.77	13.41	13.19	13.20	12.39	12.23	12.17	12.22	12.37	12.97
15	14.23	14.05	13.68	13.35	13.19	13.20	12.37	12.24	12.15	12.18	12.37	12.98
16	14.24	14.05	13.70	13.40	13.22	13.22	12.37	12.23	12.16	12.21	12.43	13.00
17	14.25	14.06	13.69	13.38	13.22	13.22	12.36	12.22	12.13	12.23	12.43	13.03
18	14.26	14.05	13.70	13.32	13.15	13.21	12.33	12.23	12.13	12.26	12.46	13.06
19	14.26	14.05	13.67	13.33	13.20	13.15	12.32	12.09	12.06	12.28	12.50	13.08
20	14.27	14.03	13.67	13.35	13.20	13.16	12.30	12.09	12.06	12.29	12.54	13.09
21	14.27	14.03	13.67	13.34	13.21	13.14	12.19	12.09	12.07	12.31	12.56	13.11
22	14.26	14.04	13.67	13.33	13.18	13.14	12.20	12.10	12.12	12.33	12.58	13.12
23	14.23	14.04	13.66	13.33	13.09	13.12	12.21	12.09	12.14	12.36	12.57	13.13
24	14.16	14.04	13.67	13.33	13.00	13.10	12.20	12.12	12.13	12.38	12.57	13.08
25	14.18	14.04	13.66	13.30	12.98	13.09	12.21	12.17	12.13	12.40	12.59	13.10
26	14.21	13.96	13.63	13.34	13.00	13.10	12.21	12.19	12.13	12.42	12.61	13.14
27	14.22	13.99	13.62	13.34	13.05	13.06	12.20	12.19	12.16	12.43	12.61	13.16
28	14.23	13.99	13.61	13.34	13.08	13.07	12.20	12.15	12.16	12.42	12.64	13.19
29	14.23	13.99	13.63	13.32	13.08	13.10	12.23	12.16	12.15	12.39	12.67	13.20
30	14.23	13.99	13.61	13.28	---	13.09	12.23	12.17	12.16	12.40	12.69	13.22
31	14.23	---	13.60	13.30	---	13.09	---	12.17	---	12.40	12.72	---
MEAN	14.23	14.04	13.76	13.38	13.20	13.15	12.45	12.17	12.15	12.27	12.47	13.00
MAX	14.27	14.23	13.97	13.59	13.32	13.23	13.07	12.24	12.22	12.43	12.72	13.22
MIN	14.16	13.96	13.60	13.28	12.98	13.06	12.19	12.09	12.06	12.13	12.28	12.74
CAL YR 1999	MEAN 13.56	HIGH 12.66	LOW 14.27									
WTR YR 2000	MEAN 13.02	HIGH 12.06	LOW 14.27									

PROJECT DATA
Ground-Water Data for Geauga County, Ohio

LONG-TERM GROUND-WATER MONITORING NETWORK—CONTINUED

412331081123000. LOCAL NUMBER, GE-22—Continued



412309081202400. LOCAL NUMBER, GE-23

LOCATION.—Latitude 41°23'09", longitude 81°20'24", Geauga County, Alltel building on Bainbridge Road, west of State Route 306, Bainbridge Township. Owner: Alltel Telephone Company.

AQUIFER.—Pottsville Formation (sandstone) of Pennsylvanian age.

WELL CHARACTERISTICS.—Commercial water-supply well; diameter 5.63 in., depth 40 ft.

INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.

DATUM.—Elevation of land-surface datum is 1,162 ft above sea level. Measuring point: top of casing, 1.32 ft above land-surface datum.

PERIOD OF RECORD.—April 26, 1978 to current year.

EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 10.46 ft below land-surface datum, Apr. 26, 1978; lowest measured, 19.48* ft below land-surface datum, Aug. 29, 2000.

WATER LEVEL,
IN FEET BELOW LAND-SURFACE DATUM
INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
10/26/99	19.45
01/03/00	19.17
02/28/00	18.64
05/01/00	18.11
07/17/00	18.90*
08/29/00	19.48*

413138081152000. LOCAL NUMBER, GE-76

LOCATION.—Latitude 41°31'38", longitude 81°15'20", Geauga County, 10755 Mayfield Road, Munson Township. Owner: Fowler's Mill Christian Church.

AQUIFER.—Sand and gravel of Quaternary age.

WELL CHARACTERISTICS.—Private water-supply well; diameter 6.0 in., depth 150 ft.

INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.

DATUM.—Elevation of land-surface datum is 1,170 ft above sea level. Measuring point: top of casing, 1.68 ft above land-surface datum.

PERIOD OF RECORD.—June 15, 1978 to current year.

EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 21.19 ft below land-surface datum, June 15, 1978; lowest measured, 25.02 ft below land-surface datum, Jan. 4, 2000.

WATER LEVEL,
IN FEET BELOW LAND-SURFACE DATUM
INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
10/27/99	24.82
01/04/00	25.02
02/29/00	24.92
05/02/00	24.87
07/17/00	24.60
08/30/00	24.70

PROJECT DATA
Ground-Water Data for Geauga County, Ohio

LONG-TERM GROUND-WATER MONITORING NETWORK—CONTINUED

412627081075400. LOCAL NUMBER, GE-83

LOCATION.—Latitude 41°26'27", longitude 81°07'54", Geauga County, 15776 Jug Street, Burton Township. Owner: privately owned.
 AQUIFER.—Pottsville Formation (sandstone) of Pennsylvanian age.
 WELL CHARACTERISTICS.—Domestic water-supply well; diameter 6.0 in., depth 70 ft.
 INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
 DATUM.—Elevation of land-surface datum is 1,220 ft above sea level. Measuring point: top of casing, 1.00 ft above land-surface datum.
 PERIOD OF RECORD.—June 14, 1978 to current year.
 EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 27.59 ft below land-surface datum, Aug. 14, 1985; lowest measured, 36.45 ft below land-surface datum, Feb. 28, 2000.

WATER LEVEL,
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
10/26/99	35.90
01/03/00	36.22
02/28/00	36.45
05/01/00	35.53
07/18/00	35.20
08/29/00	35.12

412748081143900. LOCAL NUMBER, GE-91

LOCATION.—Latitude 41°27'48", longitude 81°14'39", Geauga County, northeast corner of Auburn Road and State Route 87 intersection, Newbury Township. Owner: Dairy Mart.
 AQUIFER.—Pottsville Formation (sandstone) of Pennsylvanian age.
 WELL CHARACTERISTICS.—Commercial water-supply well; diameter 5.63 in., depth 85 ft.
 INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
 DATUM.—Elevation of land-surface datum is 1,250 ft above sea level. Measuring point: top of casing, 1.16 ft above land-surface datum.
 PERIOD OF RECORD.—October 19, 1978 to current year.
 EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 40.10 ft below land-surface datum, Oct. 19, 1978; lowest measured, 46.79 ft below land-surface datum, Feb. 28, 2000.

WATER LEVEL,
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
10/26/99	46.36
01/03/00	46.65*
02/28/00	46.79*
05/01/00	46.32
07/17/00	46.47
08/29/00	46.24

413757081122300. LOCAL NUMBER, GE-101

LOCATION.—Latitude 41°37'57", longitude 81°12'23", Geauga County, 12080 Clark Road, Chardon Township. Owner: privately owned.
 AQUIFER.—Sand and gravel of Quaternary age.
 WELL CHARACTERISTICS.—Domestic water-supply well; diameter 6.25 in., depth 48 ft.
 INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
 DATUM.—Elevation of land-surface datum is 990 ft above sea level. Measuring point: top of casing, 0.90 ft above land-surface datum.
 PERIOD OF RECORD.—May 7, 1980 to current year.
 EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 20.81 ft below land-surface datum, Mar. 17, 1997; lowest measured, 25.09 ft below land-surface datum, Oct. 20 and Dec. 15, 1998.

WATER LEVEL,
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
10/27/99	24.14
01/04/00	23.07
02/29/00	22.55
05/02/00	22.53
07/17/00	23.55
08/30/00	24.43

PROJECT DATA
Ground-Water Data for Geauga County, Ohio

LONG-TERM GROUND-WATER MONITORING NETWORK—CONTINUED

413755081101200. LOCAL NUMBER, GE-103

LOCATION.—Latitude 41°37'55", longitude 81°10'12", Geauga County, 8755 Old State Road (State Route 608), Hambden Township. Owner: privately owned.

AQUIFER.—Berea Sandstone of Mississippian age.

WELL CHARACTERISTICS.—Domestic water-supply well; diameter 5.63 in., depth 136 ft.

INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.

DATUM.—Elevation of land-surface datum is 1,158 ft above sea level. Measuring point: top of casing, 0.40 ft above land-surface datum.

PERIOD OF RECORD.—May 7, 1980 to current year.

EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 79.44 ft below land-surface datum, May 7, 1980; lowest measured, 92.08* ft below land-surface datum, Feb. 29, 2000.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM INSTANTANEOUS OBSERVATION	
DATE	WATER LEVEL
10/27/99	91.71
01/04/00	91.16
02/29/00	92.08*
05/02/00	91.96
07/17/00	91.82
08/30/00	92.03

413456081035600. LOCAL NUMBER, GE-106

LOCATION.—Latitude 41°34'56", longitude 81°03'56", Geauga County, 10691 Clay Street, Montville Township. Owner: privately owned.

AQUIFER.—Cuyahoga Group (interbedded shales and sandstones) of Mississippian age.

WELL CHARACTERISTICS.—Domestic water-supply well; diameter 5.63 in., depth 72 ft.

INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.

DATUM.—Elevation of land-surface datum is 1,255 ft above sea level. Measuring point: top of casing, 1.20 ft above land-surface datum.

PERIOD OF RECORD.—May 7, 1980 to current year.

EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 30.84 ft below land-surface datum, May 7, 1980; lowest measured, 37.44 ft below land-surface datum, May 29, 1996.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM INSTANTANEOUS OBSERVATION	
DATE	WATER LEVEL
02/29/00	36.72

413207081044400. LOCAL NUMBER, GE-112

LOCATION.—Latitude 41°32'07", longitude 81°04'44", Geauga County, by golf course maintenance building at 15900 Mayfield Road, Huntsburg Township. Owner: Rolling Green Golf Course.

AQUIFER.—Pottsville Formation (sandstone) of Pennsylvanian age.

WELL CHARACTERISTICS.—Commercial water-supply well for shop and house (not used for irrigation); diameter 5.63 in., depth 80 ft.

INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.

DATUM.—Elevation of land-surface datum is 1,265 ft above sea level. Measuring point: top of casing, 1.30 ft above land-surface datum.

PERIOD OF RECORD.—May 8, 1980 to current year.

EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 43.86 ft below land-surface datum, May 5, 1980; lowest measured, 49.47 ft below land-surface datum, May 2, 2000.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM INSTANTANEOUS OBSERVATION	
DATE	WATER LEVEL
10/27/00	48.95
01/04/00	48.81
02/29/00	49.28
05/02/00	49.47
07/17/00	49.32
08/30/00	49.31

PROJECT DATA
Ground-Water Data for Geauga County, Ohio

LONG-TERM GROUND-WATER MONITORING NETWORK—CONTINUED

412657081040500. LOCAL NUMBER, GE-119

LOCATION.—Latitude 41°26'58", longitude 81°04'12", Geauga County, 15400 State Route 608, Middlefield Township. Owner: Geauga County Airport.

AQUIFER.—Pottsville Formation (sandstone) of Pennsylvanian age.

WELL CHARACTERISTICS.—Commercial water-supply well; diameter 5.63 in., depth 79 ft.

INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.

DATUM.—Elevation of land-surface datum is 1,185 ft above sea level. Measuring point: top of casing, 1.50 ft above land-surface datum.

PERIOD OF RECORD.—August 20, 1980 to current year.

EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 7.96 ft below land-surface datum, Aug. 20, 1980; lowest measured, 15.31 ft below land-surface datum, Mar. 28, 1996.

WATER LEVEL,
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
10/26/99	15.21
01/03/00	15.03
02/28/00	14.94
05/01/00	14.47
07/18/00	14.59
08/29/00	15.05

412841081023200. LOCAL NUMBER, GE-136

LOCATION.—Latitude 41° 28'41", longitude 81°02'32", Geauga County, 16826 Nauvoo Road, Middlefield Township. Owner: privately owned.

AQUIFER.—Cuyahoga Group (interbedded shales and sandstones) of Mississippian age.

WELL CHARACTERISTICS.—Domestic water-supply well; diameter 5.63 in., depth 58 ft; water level not static in spring and summer months (pump removes approximately 1 gallon per minute of water from well during the growing season).

INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.

DATUM.—Elevation of land-surface datum is 1,130 ft above sea level. Measuring point: top of casing 1.20 ft above land-surface datum.

PERIOD OF RECORD.—August 8, 1985 to current year.

EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 13.31 ft below land-surface datum, May 8, 1986; lowest measured, 24.27 ft below land-surface datum, May 28, 1996.

WATER LEVEL,
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
10/26/99	19.52
01/03/00	19.47
02/28/00	18.90
05/01/00	18.93
07/18/00	19.99*
08/29/00	18.35

412138081072000. LOCAL NUMBER, GE-139

LOCATION.—Latitude 41°21'38", longitude 81°07'20", Geauga County, 14515 Hoover Road, Troy Township. Owner: privately owned.

AQUIFER.—Pottsville Formation (sandstone) of Pennsylvanian age.

WELL CHARACTERISTICS.—Domestic water-supply well; diameter 5.63 in., depth 90 ft.

INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.

DATUM.—Elevation of land-surface datum is 1,171 ft above sea level. Measuring point: top of casing, 0.37 ft above land-surface datum.

PERIOD OF RECORD.—August 15, 1985 to current year.

EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 32.85 ft below land-surface datum, May 14, 1997; lowest measured, 39.94 ft below land-surface datum, Oct. 26, 1999.

WATER LEVEL,
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
10/26/99	39.94
01/03/00	37.86
02/28/00	36.33
05/01/00	35.13
07/18/00	35.57
08/29/00	35.70

PROJECT DATA
Ground-Water Data for Geauga County, Ohio

LONG-TERM GROUND-WATER MONITORING NETWORK—CONTINUED

413155081214900. LOCAL NUMBER, GE-150

LOCATION.—Latitude 41°31'55", longitude 81°21'49", Geauga County, 12390 Caves Road, Chester Township. Owner: privately owned.

AQUIFER.—Pottsville Formation (sandstone) of Pennsylvanian age.

WELL CHARACTERISTICS.—Domestic water-supply well; diameter 6.63 in., depth 90 ft.

INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.

DATUM.—Elevation of land-surface datum is 1,220 ft above sea level. Measuring point: top of casing, 1.55 ft above land-surface datum.

PERIOD OF RECORD.—February 13, 1986 to current year.

EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 22.07 ft below land-surface datum, May 14, 1997; lowest measured, 29.91 ft below land-surface datum, Oct. 27, 1999.

WATER LEVEL
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
10/27/99	29.91
01/04/00	29.54
03/01/00	29.20
05/02/00	29.13
07/17/00	29.11
08/30/00	29.46

412415081033500. LOCAL NUMBER, GE-163

LOCATION.—Latitude 41°24'15", longitude 81°03'35", Geauga County, 17115 Madison Road, Parkman Township. Owner: privately owned.

AQUIFER.—Pottsville Formation (sandstone) of Pennsylvanian age.

WELL CHARACTERISTICS.—Domestic water-supply well; diameter 5.63 in., depth 60 ft.

INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.

DATUM.—Elevation of land-surface datum is 1,182 ft above sea level. Measuring point: top of casing, 1.10 ft above land-surface datum.

PERIOD OF RECORD.—February 5, 1986 to current year.

EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 8.17 ft below land-surface datum, Feb. 5, 1986; lowest measured, 17.02 ft below land-surface datum, Aug. 23, 1999.

WATER LEVEL
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
10/26/99	16.82
01/03/00	15.96
02/28/00	15.55
05/01/00	15.30
07/18/00	15.73
08/29/00	16.00*

412311081213000. LOCAL NUMBER, GE-170

LOCATION.—Latitude 41°23'11", longitude 81°21'30", Geauga County, 7956 Bainbridge Road, Bainbridge Township. Owner: privately owned.

AQUIFER.—Cuyahoga Group (interbedded shales and sandstones) of Mississippian age.

WELL CHARACTERISTICS.—Domestic water-supply well; diameter 5.63 in., depth 92 ft.

INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.

DATUM.—Elevation of land-surface datum is 1,110 ft above sea level. Measuring point: top of casing, 1.47 ft above land-surface datum.

PERIOD OF RECORD.—February 4, 1986 to current year.

EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 43.82 ft below land-surface datum, Nov. 19, 1996; lowest measured, 50.00 ft below land-surface datum, Aug. 18, 1986.

WATER LEVEL
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
10/26/99	49.31
01/03/00	46.88
02/28/00	44.87
05/01/00	44.61
07/17/00	46.84
08/29/00	47.06

PROJECT DATA
Ground-Water Data for Geauga County, Ohio

LONG-TERM GROUND-WATER MONITORING NETWORK—CONTINUED

413630081145001. LOCAL NUMBER, GE-185A

LOCATION.—Latitude 41°36'30", longitude 81°14'50", Geauga County, 9673 Mentor Road, Chardon Township. Owner: privately owned.
 AQUIFER.—Cuyahoga Group (interbedded shales and sandstones) of Mississippian age.
 WELL CHARACTERISTICS.—Domestic water-supply well; diameter 5.5 in., depth 90 ft.
 INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
 DATUM.—Elevation of land-surface datum is 1,260 ft above sea level. Measuring point: top of casing 0.84 ft above land-surface datum.
 PERIOD OF RECORD.—January 1, 1996 to current year.
 EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 32.39 ft below land-surface datum, Nov. 21, 1996; lowest measured, 37.19 ft below land-surface datum, Dec. 15, 1998.

WATER LEVEL,
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
10/27/99	36.06
01/04/00	35.20
02/29/00	34.14*
05/02/00	33.54
07/17/00	34.49
08/30/00	35.40*

413607081032500. LOCAL NUMBER, GE-202

LOCATION.—Latitude 41°36'07", longitude 81°03'25", Geauga County, 9999 Plank Road, Montville Township. Owner: privately owned.
 AQUIFER.—Pottsville Formation (sandstone) of Pennsylvanian age.
 WELL CHARACTERISTICS.—Domestic water-supply well; diameter 5.63 in., depth 74 ft.
 INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
 DATUM.—Elevation of land-surface datum is 1,247 ft above sea level. Measuring point: top of casing, 1.60 ft above land-surface datum.
 PERIOD OF RECORD.—February 10, 1986 to current year.
 EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 27.60 ft below land-surface datum, Feb. 10, 1986; lowest measured, 30.81 ft below land-surface datum, Oct. 27, 1999.

WATER LEVEL,
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
10/27/00	30.81
01/04/00	30.04
02/29/00	30.42
05/02/00	30.21
07/17/00	30.04
08/30/00	30.29

413357081214800. LOCAL NUMBER, GE-255

LOCATION.—Latitude 41°33'57", longitude 81°21'48", Geauga County, 11240 Caves Road, Chester Township. Owner: privately owned.
 AQUIFER.—Berea Sandstone of Mississippian age.
 WELL CHARACTERISTICS.—Domestic water-supply well; diameter 5.63 in., depth 123 ft.
 INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
 DATUM.—elevation of land-surface datum is 1,075 ft above sea level. measuring point: Top of casing, 2.08 ft above land-surface datum.
 PERIOD OF RECORD.—September 8, 1994 to current year.
 EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 51.32 ft below land surface datum, May 14, 1997; lowest measured, 54.24 ft below land-surface datum, July 17, 2000.

WATER LEVEL,
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
10/27/99	53.63
01/04/00	52.93
03/01/00	52.61
05/02/00	52.76
07/17/00	54.24
08/30/00	53.10

PROJECT DATA
Ground-Water Data for Geauga County, Ohio

LONG-TERM GROUND-WATER MONITORING NETWORK—CONTINUED

413634081103500. LOCAL NUMBER, GE-262

LOCATION.—Latitude 41°36'34", longitude 81°10'35", Geauga County, 9593 Wildwood Road, Hambden Township. Owner: privately owned.

AQUIFER.—Cuyahoga Group (interbedded shales and sandstones) of Mississippian age.

WELL CHARACTERISTICS.—Domestic water-supply well; diameter 6 in., depth 100 ft.

INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.

DATUM.—Elevation of land-surface datum is 1,200 ft above sea level. Measuring point: top of casing 1.60 ft above land-surface datum.

PERIOD OF RECORD.—September 7, 1994 to current year.

EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 34.19 ft below land-surface datum, Sept. 10, 1996; lowest measured, 40.91* ft below land-surface datum, Feb. 29, 2000.

WATER LEVEL
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
10/27/99	40.28*
01/04/00	40.55*
02/29/00	40.91*
05/02/00	38.55
07/17/00	37.01
08/30/00	38.03

413127081025900. LOCAL NUMBER, GE-280

LOCATION.—Latitude 41°31'27", longitude 81°02'59", Geauga County, 12972 Madison Road, Huntsburg Township. Owner: privately owned.

AQUIFER.—Cuyahoga Group (interbedded shales and sandstones) of Mississippian age.

WELL CHARACTERISTICS.—Domestic water-supply well; diameter 6 in., depth 162 ft.

INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.

DATUM.—Elevation of land-surface datum is 1,145 ft above sea level. Measuring point: top of casing 1.45 ft above land-surface datum.

PERIOD OF RECORD.—September 8, 1994 to current year.

EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 32.26 ft below land-surface datum, Apr. 20, 1998; lowest measured, 35.96 ft below land-surface datum, Dec. 14, 1998.

WATER LEVEL
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
10/27/99	35.52
01/04/00	34.74
02/29/00	34.63
05/02/00	33.87
07/17/00	33.78
08/30/00	34.29

413350081163500. LOCAL NUMBER, GE-303

LOCATION.—Latitude 41°33'50", longitude 81°16'35", Geauga County, 10250 Mulberry Road, Munson Township. Owner: privately owned.

AQUIFER.—Cuyahoga Group (interbedded shales and sandstones) of Mississippian age.

WELL CHARACTERISTICS.—Domestic water-supply well; diameter 6 in., depth 95 ft.

INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.

DATUM.—Elevation of land-surface datum is 1,230 ft above sea level. Measuring point: top of casing 1.60 ft above land-surface datum.

PERIOD OF RECORD.—September 7, 1994 to current year.

EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 57.23 ft below land-surface datum, May 14, 1997; lowest measured, 62.89 ft below land-surface datum, Oct. 27, 1999.

WATER LEVEL
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
10/27/99	62.89
01/04/00	62.77
02/29/00	62.53
05/02/00	62.60*
07/17/00	62.32
08/30/00	62.39

PROJECT DATA
Ground-Water Data for Geauga County, Ohio

LONG-TERM GROUND-WATER MONITORING NETWORK—CONTINUED

413315081134200. LOCAL NUMBER, GE-308

LOCATION.—Latitude 41°33'15", longitude 81°13'42", Geauga County, 11675 Chestnutdale Drive, Munson Township. Owner: privately owned.
 AQUIFER.—Cuyahoga Group (interbedded shales and sandstones) of Mississippian age.
 WELL CHARACTERISTICS.—Domestic water-supply well; diameter 6 in., depth 98 ft.
 INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
 DATUM.—Elevation of land-surface datum is 1,165 ft above sea level. Measuring point: top of casing 1.68 ft above land-surface datum.
 PERIOD OF RECORD.—September 7, 1994 to current year.
 EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 20.05 ft below land-surface datum, Apr. 20, 1999; lowest measured, 24.80 ft below land-surface datum, July 15, 1996.

WATER LEVEL,
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
10/27/99	24.25
01/04/00	23.64
02/29/00	23.65
05/02/00	22.90
07/17/00	23.73
08/30/00	23.97

412558081184200. LOCAL NUMBER, GE-332

LOCATION.—Latitude 41°25'58", longitude 81°18'42", Geauga County, 103 Silver Springs, Russell Township. Owner: privately owned.
 AQUIFER.—Pottsville Formation (sandstone) of Pennsylvanian age.
 WELL CHARACTERISTICS.—Domestic water-supply well; diameter 5.63 in., depth 104 ft.
 INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
 DATUM.—Elevation of land-surface datum is 1,180 ft above sea level. Measuring point: top of casing, 1.14 ft above land-surface datum.
 PERIOD OF RECORD.—September 8, 1994 to current year.
 EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 33.83 ft below land-surface datum, May 14, 1997; lowest measured, 35.79 ft below land-surface datum, Oct. 27, 1999.

WATER LEVEL,
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
10/27/99	35.79
01/03/00	35.73
02/29/00	35.65
05/01/00	35.33
07/17/00	35.58
08/29/00	35.57

412743081195700. LOCAL NUMBER, GE-338

LOCATION.—Latitude 41°27'43", longitude 81°19'57", Geauga County, 14940 Surrey Downs, Russell Township. Owner: privately owned.
 AQUIFER.—Berea Sandstone of Mississippian age.
 WELL CHARACTERISTICS.—Domestic water-supply well; diameter 5.56 in., depth 160 ft.
 INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
 DATUM.—Elevation of land-surface datum is 1,078 ft above sea level. Measuring point: top of casing, 1.38 ft above land-surface datum.
 PERIOD OF RECORD.—September 8, 1994 to current year.
 EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 58.84 ft below land-surface datum, Sept. 8, 1994; lowest measured, 73.29 ft below land-surface datum, Jan. 22, 1997.

WATER LEVEL,
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
10/27/99	60.68*
01/04/00	61.13
02/29/00	60.78
05/01/00	60.85
07/17/00	62.10*
08/29/00	60.68

PROJECT DATA
Ground-Water Data for Geauga County, Ohio

LONG-TERM GROUND-WATER MONITORING NETWORK—CONTINUED

414121081030800. LOCAL NUMBER, GE-341

LOCATION.—Latitude 41°41'21", longitude 81°03'08", Geauga County, 6758 Madison Road, Thompson Township. Owner: Thompson United Methodist Church.

AQUIFER.—Cuyahoga Group (interbedded shales and sandstones) of Mississippian age.

WELL CHARACTERISTICS.—Private water-supply well; diameter 6.63 in., depth 120 ft.

INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.

DATUM.—Elevation of land-surface datum is 1,267 ft above sea level. Measuring point: top of casing 2.00 ft above land-surface datum.

PERIOD OF RECORD.—September 7, 1994 to current year.

EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 4.12 ft below land-surface datum, Nov. 20, 1996; lowest measured, 10.11 ft below land-surface datum, Sept. 7, 1994.

WATER LEVEL
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
10/27/99	7.53
01/04/00	5.24
02/29/00	5.28
05/02/00	5.36*
07/18/00	6.30*
08/30/00	7.85*

413957081052100. LOCAL NUMBER, GE-343

LOCATION.—Latitude 41°39'57", longitude 81°05'21", Geauga County, 15554 Valentine Road, Thompson Township. Owner: privately owned.

AQUIFER.—Berea Sandstone of Mississippian age.

WELL CHARACTERISTICS.—Domestic water-supply well; diameter 5.63 in., depth 120 ft.

INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.

DATUM.—Elevation of land-surface datum is 1,145 ft above sea level. Measuring point: top of casing, 1.60 ft above land-surface datum.

PERIOD OF RECORD.—September 7, 1994 to current year.

EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 69.40 ft below land-surface datum, May 14, 1997; lowest measured, 72.93 ft below land-surface datum, Sept. 7, 1994.

WATER LEVEL
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
10/27/99	70.91
01/04/00	70.86
02/29/00	71.03
05/02/00	70.17
07/18/00	70.76
08/30/00	71.67

PROJECT DATA
Ground-Water Data for Geauga County, Ohio

LONG-TERM GROUND-WATER MONITORING NETWORK—CONTINUED

414125081031500. LOCAL NUMBER, GE-348

LOCATION.—Latitude 41°41'25", longitude 81°03'15", Geauga County, 66506 W. Thompson Road, Thompson Township. Owner: privately owned.
 AQUIFER.—Pottsville Formation (sandstone) of Pennsylvanian age.

WELL CHARACTERISTICS.—Domestic water-supply well, not currently in use; diameter 6.0 in., depth 53 ft.

INSTRUMENTATION.—Pressure transducer and CR10 data logger (records hourly) with SM192 storage module.

DATUM.—Elevation of land-surface datum is 1,265 ft above sea level. Measuring point: mark on wooden base of instrument shelter, 2.55 ft above land-surface datum.

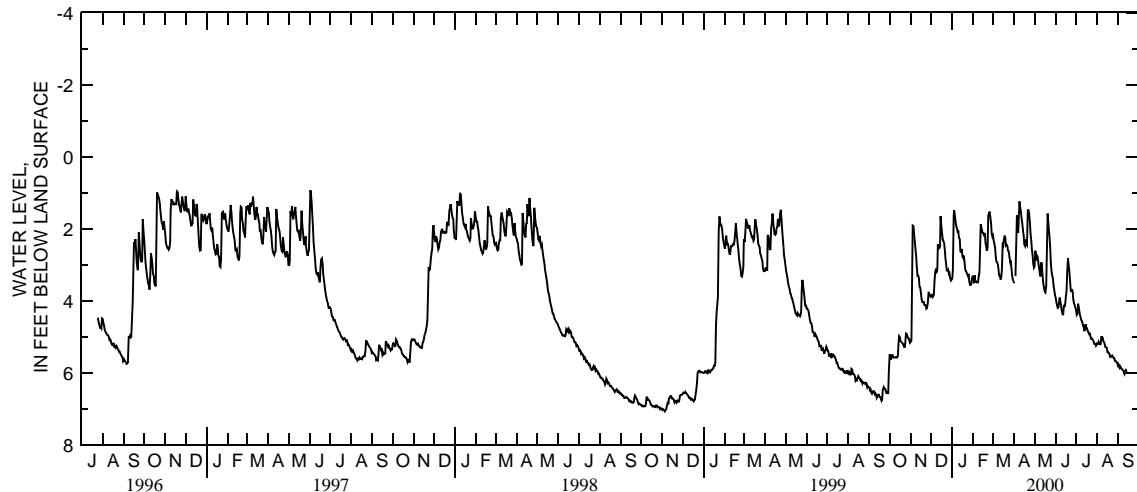
PERIOD OF RECORD.—July 23, 1996 to current year.

EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 0.93 ft below land-surface datum, June 2, 1997; lowest measured, 7.07 ft below land-surface datum, Nov. 5, 1998.

DEPTH BELOW LAND SURFACE (WATER LEVEL), FEET, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
 DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.49	5.14	3.88	3.38	3.44	2.18	3.51	3.04	3.91	4.28	5.21	5.75
2	5.55	5.09	3.88	3.14	3.51	2.36	---	2.61	4.05	4.39	5.20	5.79
3	5.63	2.88	3.81	1.64	3.29	2.41	3.31	2.68	4.10	4.35	5.14	5.86
4	5.56	1.91	3.88	1.48	3.46	2.54	2.52	2.82	4.20	4.08	5.19	5.83
5	5.49	1.93	3.83	1.65	3.46	2.78	1.63	2.78	4.18	4.20	5.21	5.88
6	5.56	2.17	3.47	1.80	3.49	2.91	2.03	2.87	4.03	4.33	5.20	5.89
7	5.58	2.36	3.18	1.96	3.49	2.94	2.10	3.01	3.91	4.44	4.98	5.91
8	5.58	2.55	3.14	1.98	3.49	3.00	1.61	3.12	4.04	4.48	5.02	5.93
9	5.58	2.78	3.19	2.08	3.30	3.17	1.24	3.30	4.17	4.56	5.03	5.99
10	5.57	3.02	3.11	2.07	3.21	3.30	1.42	3.30	4.27	4.58	5.13	6.03
11	5.56	3.31	2.43	2.25	2.40	3.30	1.52	2.93	4.38	4.67	5.15	5.96
12	5.58	3.30	2.55	2.29	1.87	3.41	1.74	3.09	4.38	4.70	5.20	5.92
13	5.54	3.37	2.54	2.63	1.98	3.35	1.87	3.39	4.11	4.84	5.29	5.96
14	5.21	3.60	2.48	2.64	2.05	3.15	2.04	3.53	4.17	4.76	5.29	5.95
15	4.98	3.64	1.65	2.56	2.12	2.45	2.22	3.66	4.08	4.65	5.30	---
16	5.02	3.81	1.93	2.78	2.12	2.47	2.44	3.75	3.88	4.77	5.43	---
17	5.11	3.94	2.11	2.81	2.21	2.30	2.48	3.77	3.74	4.77	5.43	---
18	5.14	4.03	2.28	2.74	2.12	2.19	2.30	3.59	3.23	4.83	5.45	---
19	5.16	4.02	2.34	2.89	2.40	2.26	2.44	2.85	2.81	4.87	5.47	---
20	5.18	4.03	2.38	3.12	2.52	2.47	2.46	1.58	3.04	4.92	5.56	---
21	5.22	4.11	2.60	3.17	2.61	2.45	1.49	1.77	3.15	4.91	5.56	---
22	5.23	4.13	2.79	3.21	2.51	2.49	1.48	2.05	3.47	4.98	5.54	---
23	5.30	4.13	2.98	3.26	1.62	2.60	1.57	2.23	3.69	5.05	5.52	---
24	5.20	4.22	3.16	3.31	1.55	2.63	1.81	2.53	3.75	5.04	5.55	---
25	4.91	4.20	3.15	3.25	1.54	2.77	2.12	2.95	3.68	5.06	5.59	---
26	4.92	4.08	3.13	3.45	1.67	2.91	2.34	3.21	3.77	5.11	5.59	---
27	4.98	3.78	3.25	3.56	1.88	2.88	2.55	3.28	3.96	5.15	5.67	---
28	5.03	3.79	3.23	3.56	2.11	3.09	2.73	3.40	4.08	5.20	5.67	---
29	5.05	3.84	3.38	3.54	2.22	3.29	2.96	3.61	4.12	5.20	5.69	---
30	5.09	3.89	3.44	3.39	---	3.41	3.08	3.72	4.22	5.25	5.72	---
31	5.16	---	3.41	3.30	---	3.46	---	3.84	---	5.19	5.79	---
MEAN	5.30	3.57	2.99	2.74	2.54	2.80	2.17	3.04	3.89	4.76	5.38	5.90
MAX	5.63	5.14	3.88	3.56	3.51	3.46	3.51	3.84	4.38	5.25	5.79	6.03
MIN	4.91	1.91	1.65	1.48	1.54	2.18	1.24	1.58	2.81	4.08	4.98	5.75

CAL YR 1999 MEAN 4.25 HIGH 1.47 LOW 6.77
 WTR YR 2000 MEAN 3.67 HIGH 1.24 LOW 6.03



PROJECT DATA
Ground-Water Data for Geauga County, Ohio

LONG-TERM GROUND-WATER MONITORING NETWORK—CONTINUED

413247081103300. LOCAL NUMBER, GE-349

LOCATION.—Latitude 41°32'47", longitude 81°10'33", Geauga County, 121 Berkshire Drive, Aquilla Village, Claridon Township. Owner: privately owned.

AQUIFER.—Pottsville Formation (sandstone) of Pennsylvanian age.

WELL CHARACTERISTICS.—Domestic water-supply well, not currently in use; diameter 5.63 in., depth 58.19 ft.

INSTRUMENTATION.—Pressure transducer and CR10 data logger (records hourly) with SM192 storage module.

DATUM.—Elevation of land-surface datum is 1,190 ft above sea level. Measuring point: mark on wooden base of instrument shelter, 1.05 ft above land-surface datum.

PERIOD OF RECORD.—July 24, 1996 to current year.

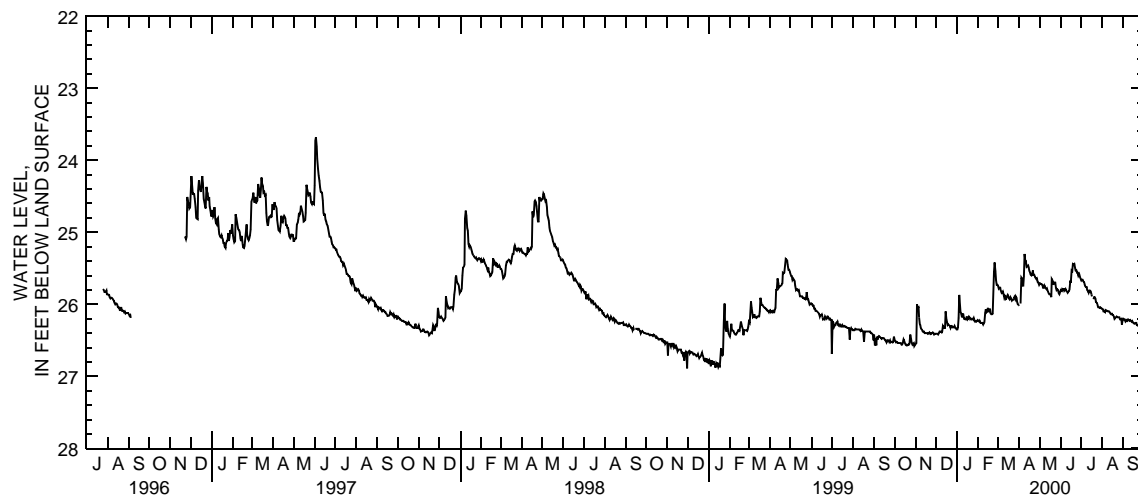
EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 23.68 ft below land-surface datum, June 3, 1997; lowest measured, 26.89 ft below land-surface datum, Nov. 30, 1998.

DEPTH BELOW LAND SURFACE (WATER LEVEL), FEET, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26.50	26.55	26.41	26.35	26.23	25.74	26.02	25.71	25.80	25.67	26.06	26.20
2	26.51	26.54	26.41	26.32	26.24	25.78	---	25.71	25.81	25.66	26.07	26.21
3	26.53	26.00	26.41	26.19	26.23	25.77	25.99	25.72	25.79	25.66	26.10	26.21
4	26.52	26.05	26.42	25.87	26.26	25.77	25.63	25.72	25.81	25.68	26.10	26.24
5	26.53	26.04	26.40	26.02	26.26	25.81	25.64	25.73	25.79	25.69	26.11	26.23
6	26.54	26.18	26.38	26.11	26.26	25.84	25.74	25.77	25.79	25.71	26.08	26.22
7	26.54	26.28	26.38	26.14	26.26	25.83	25.74	25.77	25.81	25.75	26.09	26.23
8	26.54	26.31	26.38	26.18	26.28	25.82	25.61	25.74	25.79	25.76	26.09	26.21
9	26.54	26.34	26.39	26.14	26.26	25.86	25.30	25.76	25.81	25.76	26.10	26.22
10	26.54	26.35	26.37	26.14	26.25	25.90	25.40	25.78	25.82	25.80	26.10	26.23
11	26.56	26.38	26.30	26.20	26.12	25.87	25.40	25.79	25.84	25.82	26.10	26.22
12	26.56	26.38	26.32	26.20	26.07	25.93	25.48	25.78	25.83	25.84	26.11	26.23
13	26.54	26.38	26.33	26.21	26.11	25.92	25.47	25.82	25.82	25.81	26.13	26.24
14	26.49	26.40	26.33	26.21	26.10	25.89	25.46	25.84	25.79	25.81	26.14	26.23
15	26.51	26.40	26.10	26.17	26.05	25.87	25.49	25.86	25.67	25.82	26.13	26.25
16	26.54	26.40	26.21	26.21	26.10	25.89	25.54	25.86	25.70	25.86	26.15	26.26
17	26.56	26.40	26.24	26.20	26.10	25.92	25.56	25.86	25.53	25.89	26.15	26.27
18	26.57	26.40	26.29	26.17	26.06	25.93	25.59	25.90	25.54	---	26.17	26.27
19	26.56	26.41	26.28	26.18	26.13	25.90	25.60	25.65	25.44	25.93	26.20	26.26
20	26.57	26.40	26.29	26.21	26.14	25.92	25.59	25.67	25.45	25.90	26.19	26.26
21	26.56	26.39	26.30	26.20	26.14	25.95	25.53	25.73	25.44	25.90	26.18	26.29
22	26.56	26.41	26.33	26.21	26.13	25.94	25.59	25.70	25.50	25.92	26.17	26.29
23	26.55	26.40	26.30	26.20	25.94	25.94	25.59	25.70	25.53	25.97	26.18	26.30
24	26.42	26.41	26.30	26.21	25.55	25.92	25.62	25.70	25.53	25.98	26.18	26.30
25	26.48	26.40	26.32	26.19	25.42	25.90	25.63	25.77	25.56	26.01	26.18	26.32
26	26.53	26.39	26.32	26.23	25.54	25.93	25.65	25.80	25.56	26.04	26.18	26.31
27	26.56	26.40	26.32	26.24	25.67	25.89	25.64	25.79	25.60	26.04	26.21	26.32
28	26.55	26.42	26.30	26.23	25.73	25.91	25.69	25.80	25.58	26.05	26.21	26.33
29	26.54	26.41	26.33	26.24	25.73	25.96	25.70	25.85	25.60	26.04	26.20	26.32
30	26.58	26.41	26.33	26.23	---	26.00	25.73	25.86	25.64	26.05	26.28	26.32
31	26.56	---	26.35	26.22	---	26.01	---	25.83	---	26.06	26.22	---
MEAN	26.54	26.35	26.33	26.19	26.05	25.89	25.61	25.77	25.67	25.86	26.15	26.26
MAX	26.58	26.55	26.42	26.35	26.28	26.01	26.02	25.90	25.84	26.06	26.28	26.33
MIN	26.42	26.00	26.10	25.87	25.42	25.74	25.30	25.65	25.44	25.66	26.06	26.20

CAL YR 1999 MEAN 26.27 HIGH 25.37 LOW 26.88

WTR YR 2000 MEAN 26.06 HIGH 25.30 LOW 26.58



PROJECT DATA
Ground-Water Data for Geauga County, Ohio

LONG-TERM GROUND-WATER MONITORING NETWORK—CONTINUED

412322081190000. LOCAL NUMBER, GE-350

LOCATION.—Latitude 41°23'32", longitude 81°19'00", Geauga County, 9100 Bainbridge Road, Bainbridge Township. Owner: privately owned.

AQUIFER.—Pottsville Formation (sandstone) of Pennsylvanian age.

WELL CHARACTERISTICS.—Domestic water-supply well, not currently in use; diameter 6.0 in., depth 59.87 ft.

INSTRUMENTATION.—Pressure transducer and CR10X data logger (records hourly).

DATUM.—Elevation of land-surface datum is 1,120 ft above sea level. Measuring point: mark on wooden base of instrument shelter, 0.77 ft above land-surface datum.

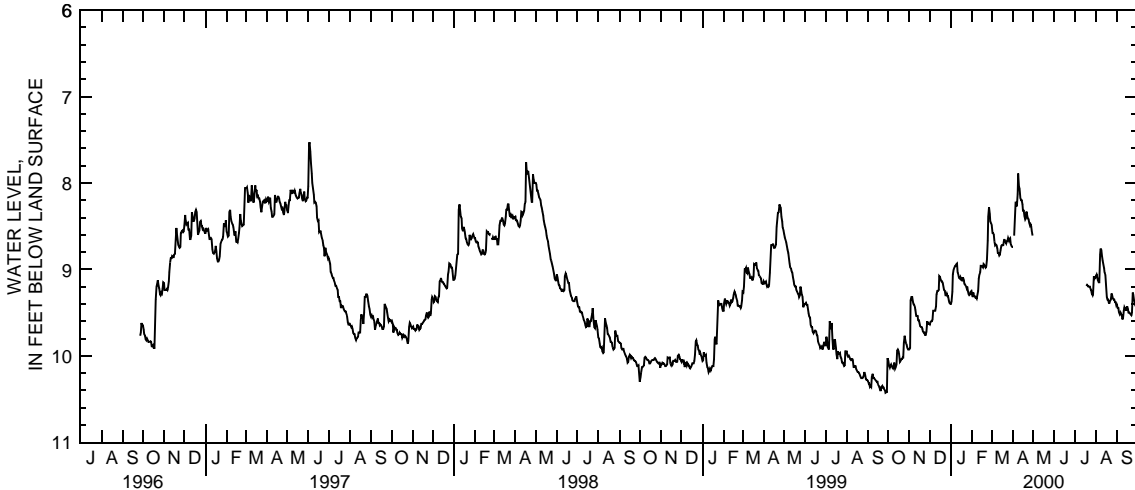
PERIOD OF RECORD.—September 26, 1996 to current year.

EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 7.53 ft below land-surface datum, June 3, 1997; lowest measured, 10.41 ft below land-surface datum, Sept. 27, 1999.

DEPTH BELOW LAND SURFACE (WATER LEVEL), FEET, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10.06	9.93	9.64	9.40	9.29	8.49	8.74	---	---	---	9.08	9.41
2	10.11	9.91	9.61	9.37	9.32	8.58	---	---	---	---	9.06	9.45
3	10.14	9.36	9.60	9.26	9.27	8.58	8.61	---	---	---	9.09	9.45
4	10.12	9.32	9.60	9.06	9.31	8.60	8.40	---	---	---	9.13	9.50
5	10.10	9.32	9.58	9.00	9.31	8.68	8.23	---	---	---	9.15	9.52
6	10.12	9.37	9.48	8.98	9.33	8.72	8.23	---	---	---	9.15	9.50
7	10.14	9.40	9.48	8.96	9.33	8.71	8.27	---	---	---	8.83	9.52
8	10.15	9.41	9.48	8.96	9.34	8.72	8.13	---	---	---	8.76	9.53
9	10.11	9.44	9.48	8.94	9.29	8.76	7.89	---	---	---	8.78	9.58
10	10.08	9.47	9.43	8.93	9.25	8.81	8.04	---	---	---	8.85	9.55
11	10.15	9.54	9.29	9.04	9.11	8.81	8.07	---	---	---	8.90	9.48
12	10.13	9.54	9.25	9.07	9.06	8.84	8.18	---	---	---	8.94	9.44
13	10.10	9.54	9.25	9.10	9.03	8.83	8.20	---	---	---	8.99	9.46
14	9.94	9.59	9.24	9.11	8.96	8.78	8.20	---	---	---	9.04	9.47
15	9.93	9.59	9.08	9.09	8.96	8.73	8.25	---	---	---	9.07	9.47
16	9.95	9.63	9.09	9.12	8.97	8.72	8.32	---	---	---	9.22	9.43
17	9.98	9.66	9.12	9.13	8.98	8.72	8.32	---	---	---	9.32	9.46
18	10.07	9.67	9.14	9.10	8.94	8.72	8.38	---	---	9.19	9.35	9.50
19	10.06	9.67	9.14	9.10	8.95	8.66	8.42	---	---	9.18	9.35	9.50
20	10.04	9.69	9.16	9.13	8.97	8.66	8.41	---	---	9.19	9.39	9.51
21	10.04	9.72	9.21	9.17	8.98	8.68	8.33	---	---	9.20	9.39	9.52
22	10.02	9.73	9.24	9.18	8.96	8.70	8.37	---	---	9.20	9.36	9.53
23	10.02	9.73	9.25	9.19	8.89	8.68	8.41	---	---	9.20	9.35	9.50
24	9.85	9.76	9.30	9.22	8.67	8.67	8.42	---	---	9.23	9.28	9.27
25	9.77	9.76	9.30	9.20	8.39	8.64	8.46	---	---	9.24	9.30	9.29
26	9.82	9.72	9.28	9.25	8.28	8.67	8.49	---	---	9.28	9.34	9.36
27	9.86	9.60	9.31	9.29	8.36	8.65	8.48	---	---	9.30	9.35	9.38
28	9.87	9.62	9.31	9.30	8.45	8.64	8.51	---	---	9.28	9.35	9.42
29	9.91	9.63	9.36	9.29	8.47	8.71	8.57	---	---	9.08	9.38	9.43
30	9.93	9.63	9.39	9.26	---	8.73	8.61	---	---	9.11	9.38	9.44
31	9.93	---	9.40	9.25	---	8.74	---	---	---	9.10	9.42	---
MEAN	10.02	9.60	9.34	9.14	8.98	8.70	8.34	---	---	9.20	9.17	9.46
MAX	10.15	9.93	9.64	9.40	9.34	8.84	8.74	---	---	9.30	9.42	9.58
MIN	9.77	9.32	9.08	8.93	8.28	8.49	7.89	---	---	9.08	8.76	9.27

CAL YR 1999 MEAN 9.60 HIGH 8.25 LOW 10.43
WTR YR 2000 MEAN 9.20 HIGH 7.89 LOW 10.15



PROJECT DATA
Ground-Water Data for Geauga County, Ohio

LONG-TERM GROUND-WATER MONITORING NETWORK—CONTINUED

413119081213200. LOCAL NUMBER, GE-351

LOCATION.—Latitude 41°31'19", longitude 81°21'32", Geauga County, south side of S.R. 322, east of intersection with Caves Road and west of Bloom Brothers Hardware, Chester Township. Owner: privately owned.

AQUIFER.—Cuyahoga Group (interbedded shales and sandstones) of Mississippian age.

WELL CHARACTERISTICS.—Domestic water-supply well, not currently in use; diameter 6 in., depth 126.5 ft.

INSTRUMENTATION.—Pressure transducer and CR10X data logger (records hourly).

DATUM.—Elevation of land-surface datum is 1,135 ft above sea level. Measuring point: mark on wooden base of instrument shelter, 1.25 ft above land-surface datum.

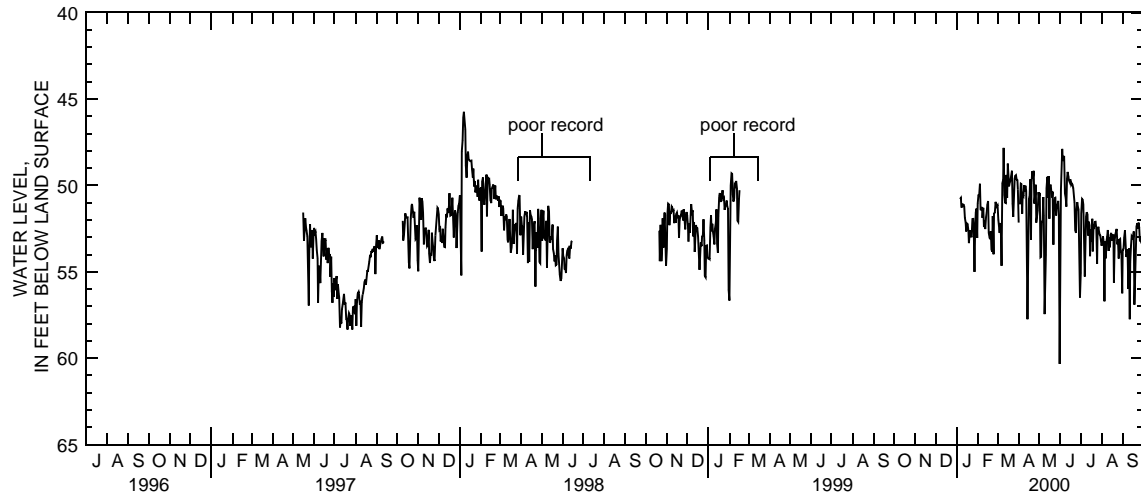
PERIOD OF RECORD.—May 15, 1997 through February 16, 1999.

EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 45.75 ft below land-surface datum, Jan. 7, 1998; lowest measured, 60.33 ft below land-surface datum, May 31, 2000.

DEPTH BELOW LAND SURFACE (WATER LEVEL), FEET, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	51.06	51.13	52.16	50.65	57.21	55.08	53.49	53.75
2	---	---	---	---	50.53	51.99	---	50.43	50.27	51.60	53.25	53.68
3	---	---	---	---	50.61	52.30	51.10	54.17	49.05	50.79	52.95	53.03
4	---	---	---	---	49.91	52.76	49.91	54.13	47.89	50.83	53.39	52.60
5	---	---	---	---	51.40	52.18	49.93	52.06	48.59	51.12	56.71	53.28
6	---	---	---	50.79	51.41	52.99	51.64	52.14	48.46	52.54	53.25	54.15
7	---	---	---	50.72	51.26	54.66	50.53	50.68	48.30	55.28	54.22	53.99
8	---	---	---	51.25	51.88	49.88	50.61	51.76	50.47	53.55	53.30	53.70
9	---	---	---	51.25	51.30	49.69	50.00	57.46	50.74	51.82	52.95	55.99
10	---	---	---	51.10	52.42	47.83	50.34	55.24	51.23	51.56	52.59	53.66
11	---	---	---	51.12	52.06	50.55	50.02	54.03	49.62	51.70	53.80	57.76
12	---	---	---	51.25	52.53	51.00	50.32	50.16	49.22	52.90	53.00	54.46
13	---	---	---	51.88	51.85	51.03	55.33	49.51	49.50	52.10	53.59	53.47
14	---	---	---	52.18	51.59	49.40	57.76	50.72	49.71	52.32	52.86	52.94
15	---	---	---	52.67	51.15	50.72	53.60	49.47	49.83	54.10	52.75	53.01
16	---	---	---	52.21	50.91	48.75	50.80	51.93	49.66	52.54	53.21	53.13
17	---	---	---	52.25	52.75	49.39	50.63	50.06	49.94	53.24	52.88	52.67
18	---	---	---	52.61	53.01	50.05	49.65	49.96	49.88	51.93	52.89	56.91
19	---	---	---	53.34	53.11	49.81	53.14	50.34	49.96	53.82	55.63	55.33
20	---	---	---	52.81	52.66	49.72	49.90	50.70	50.17	52.27	53.18	53.43
21	---	---	---	52.61	53.73	49.47	49.19	50.37	50.51	52.37	52.84	52.39
22	---	---	---	52.97	53.84	49.15	49.59	53.43	51.01	52.12	52.68	52.19
23	---	---	---	52.97	51.78	51.07	49.16	51.21	52.59	52.11	52.52	52.50
24	---	---	---	51.95	53.99	51.82	51.05	50.74	52.76	52.48	53.42	52.16
25	---	---	---	51.94	51.63	50.73	50.64	50.72	51.48	54.54	53.14	52.43
26	---	---	---	52.40	51.58	49.63	49.97	51.74	50.98	52.64	54.23	53.17
27	---	---	---	55.01	50.96	49.46	52.16	51.12	51.24	52.40	53.14	53.15
28	---	---	---	52.58	51.24	49.41	51.79	51.20	51.40	52.68	53.10	53.31
29	---	---	---	51.57	51.18	49.65	51.47	50.90	52.98	52.86	53.88	53.30
30	---	---	---	51.36	---	49.70	50.39	51.77	56.49	52.91	54.00	53.26
31	---	---	---	53.05	---	50.26	---	60.33	---	53.27	56.26	---
MEAN	---	---	---	52.15	51.84	50.52	51.13	51.91	50.70	52.63	53.52	53.63
MAX	---	---	---	55.01	53.99	54.66	57.76	60.33	57.21	55.28	56.71	57.76
MIN	---	---	---	50.72	49.91	47.83	49.16	49.47	47.89	50.79	52.52	52.16

CAL YR 1999 MEAN 51.71 HIGH 49.31 LOW 56.67
WTR YR 2000 MEAN 52.01 HIGH 47.83 LOW 60.33



PROJECT DATA
Ground-Water Data for Geauga County, Ohio

LONG-TERM GROUND-WATER MONITORING NETWORK—CONTINUED

412851081045200. LOCAL NUMBER, GE-352

LOCATION.—Latitude 41°28'51", longitude 81° 04'52", Geauga County, west side of State Route 608, north of Middlefield Village, by hunters' parking lot, Middlefield Township. Owner: City of Akron.

AQUIFER.—Glacial deposits of Quaternary age.

WELL CHARACTERISTICS.—Domestic water-supply well, not currently in use; diameter 6 in., depth 122.3 ft.

INSTRUMENTATIO.— Pressure transducer and CR10X data logger (records hourly).

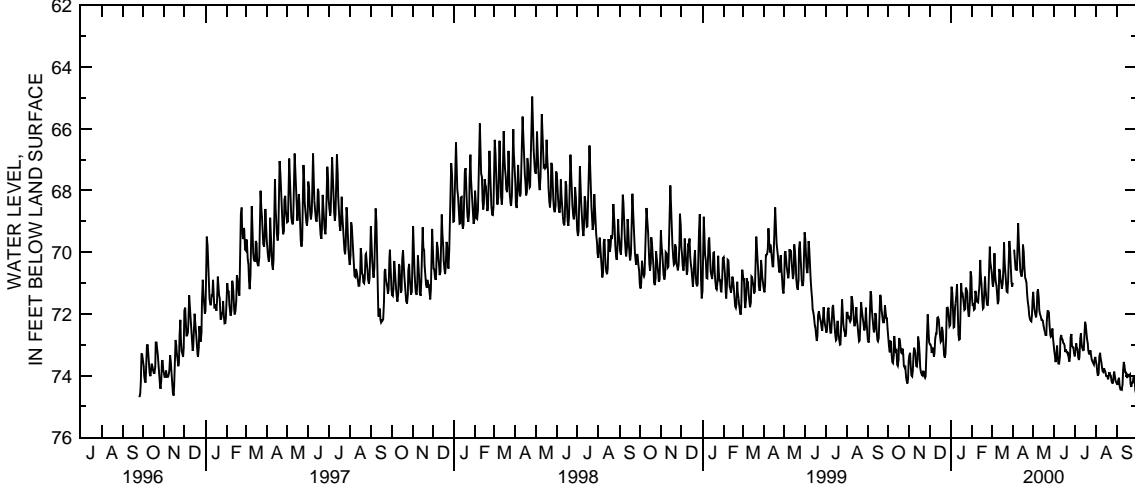
DATUM.—Elevation of land-surface datum is 1,140 ft above sea level. Measuring point: mark on wooden base of instrument shelter, 1.15 ft above land-surface datum.

PERIOD OF RECORD.—September 25, 1996 to current year.

EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 64.96 ft below land-surface datum, Apr. 26,1998; lowest measured, 74.80 ft below land-surface datum, Sept. 25, 1996.

DEPTH BELOW LAND SURFACE (WATER LEVEL), FEET, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	72.78	73.34	72.99	71.87	71.43	70.66	71.00	71.29	73.21	73.38	73.52	74.28
2	73.05	73.26	73.00	71.12	71.74	71.03	---	71.69	73.42	73.17	73.65	74.28
3	73.25	73.61	73.08	71.34	71.67	71.12	69.92	71.86	73.57	72.96	73.88	74.13
4	72.89	73.99	73.27	71.87	71.87	70.85	70.31	72.01	73.34	73.09	74.01	74.07
5	72.90	74.03	73.10	72.45	71.84	70.04	70.56	72.11	73.03	73.16	73.93	74.34
6	73.34	73.84	73.18	72.42	71.26	70.73	70.58	71.93	73.41	73.40	73.40	74.45
7	73.57	73.34	73.39	71.78	71.43	70.96	70.58	71.28	73.61	73.50	73.26	74.45
8	73.60	73.10	73.29	71.66	71.60	71.10	69.70	71.21	73.62	73.40	73.43	74.47
9	73.35	73.19	72.80	71.38	71.62	71.44	69.07	71.50	73.38	72.80	73.58	74.30
10	72.72	73.29	72.64	71.04	71.64	71.69	69.77	71.88	72.80	72.63	73.74	73.81
11	73.07	73.69	72.64	71.86	71.33	71.56	70.14	72.03	72.69	72.93	73.87	73.56
12	73.22	73.71	72.13	72.67	71.09	70.55	70.63	72.08	72.82	73.11	73.89	73.68
13	73.19	73.48	72.11	72.84	70.26	70.64	70.72	72.20	72.85	73.18	73.76	73.89
14	73.64	72.74	72.19	72.82	70.70	70.89	70.79	72.19	72.93	73.17	73.83	73.90
15	73.69	72.93	72.37	72.17	71.05	71.02	70.55	72.23	72.97	72.87	73.89	73.99
16	73.48	73.35	72.73	71.01	71.56	71.19	69.76	72.40	73.04	72.26	74.02	74.08
17	72.79	73.74	72.90	71.38	71.83	71.03	70.00	72.48	73.24	72.35	74.03	73.98
18	72.86	73.91	72.86	71.36	71.80	70.64	70.49	72.60	73.15	72.58	74.03	74.00
19	73.09	73.97	72.42	71.47	71.29	69.69	70.85	72.69	73.24	72.80	74.13	73.99
20	73.26	74.00	72.59	71.71	70.80	70.27	70.88	72.69	73.29	72.97	73.98	73.96
21	73.28	73.87	73.02	71.87	71.18	70.73	70.99	72.22	73.24	73.18	73.89	74.26
22	73.13	73.88	73.33	71.83	71.44	71.09	71.36	71.92	73.44	73.32	73.98	74.37
23	73.31	74.03	73.42	71.15	71.69	71.28	71.61	71.92	73.55	73.25	74.01	74.23
24	73.69	74.08	73.30	71.22	71.74	71.30	71.79	71.97	73.38	73.19	74.20	74.23
25	73.75	74.02	72.79	71.30	71.48	70.96	72.05	72.36	72.74	73.36	74.24	74.11
26	73.72	73.24	71.82	71.81	70.80	70.06	72.18	72.68	72.66	73.50	74.24	73.99
27	74.05	72.48	71.80	72.09	69.83	69.64	72.22	72.74	73.04	73.57	73.99	74.15
28	74.16	72.02	71.86	72.05	70.31	69.97	72.25	72.71	73.08	73.59	73.88	74.48
29	74.26	72.57	72.15	71.57	70.52	70.55	72.07	72.48	73.10	73.65	74.06	74.58
30	74.12	72.94	72.39	70.63	---	70.95	71.57	72.80	73.30	73.49	74.19	74.53
31	73.53	---	72.34	70.81	---	71.13	---	73.01	---	73.40	74.24	---
MEAN	73.38	73.45	72.71	71.70	71.27	70.80	70.84	72.17	73.17	73.14	73.90	74.15
MAX	74.26	74.08	73.42	72.84	71.87	71.69	72.25	73.01	73.62	73.65	74.24	74.58
MIN	72.72	72.02	71.80	70.63	69.83	69.64	69.07	71.21	72.66	72.26	73.26	73.56
CAL YR 1999	MEAN 71.77	HIGH 68.56	LOW 74.26									
WTR YR 2000	MEAN 72.56	HIGH 69.07	LOW 74.58									



PROJECT DATA
Ground-Water Data for Geauga County, Ohio

LONG-TERM GROUND-WATER MONITORING NETWORK—CONTINUED

412748081172000. LOCAL NUMBER, GE-354

LOCATION.—Latitude 41°27'48", longitude 81°17'20", Geauga County, northwest corner of intersection of Sperry Road and State Route 87, Newbury Township. Owner: privately owned.

AQUIFER.—Pottsville Formation (sandstone) of Pennsylvanian age.

WELL CHARACTERISTICS.—Domestic water-supply well, not currently in use; diameter 6.0 in., depth 113.9 ft.

INSTRUMENTATION.—Pressure transducer and CR10X data logger (records hourly).

DATUM.—Elevation of land-surface datum is 1,275 ft above sea level. Measuring point: mark on wooden base of instrument shelter, 4.15 ft above land-surface datum.

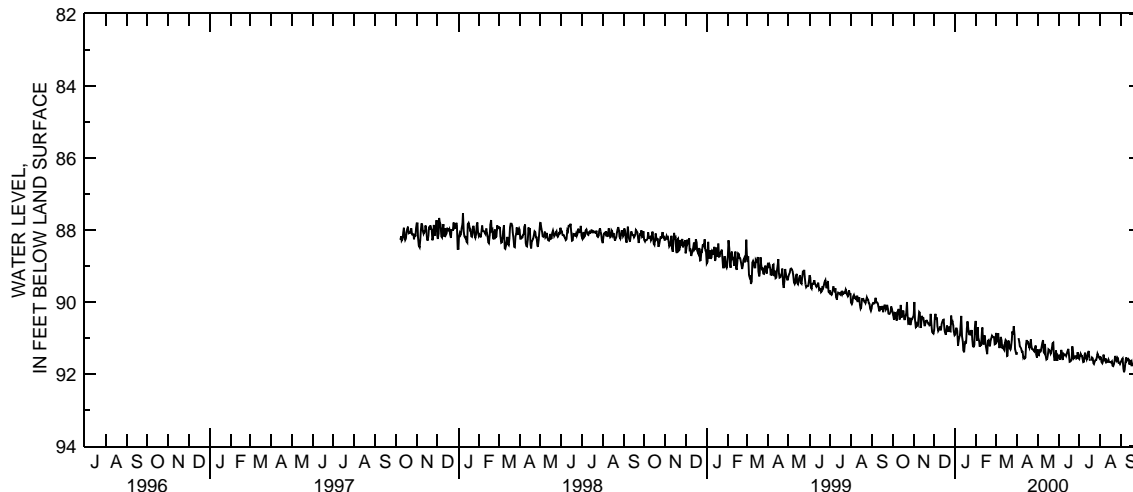
PERIOD OF RECORD.—October 7, 1997 to current year.

EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 87.53 ft below land-surface datum, Jan. 8, 1998; lowest measured, 91.95 ft below land-surface datum, Sept. 5, 2000.

DEPTH BELOW LAND SURFACE (WATER LEVEL), FEET, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	90.31	90.36	90.78	90.89	90.91	90.86	91.39	91.32	91.52	91.59	91.53	91.63
2	90.37	90.00	90.43	90.74	91.07	91.10	---	91.47	91.50	91.50	91.54	91.59
3	90.50	90.49	90.33	90.74	90.70	91.07	91.01	91.48	91.60	91.44	91.67	91.57
4	90.30	90.70	90.49	90.80	91.02	90.87	91.12	91.35	91.47	91.50	91.70	91.85
5	90.31	90.67	90.43	91.21	91.09	91.12	91.23	91.37	91.33	91.50	91.64	91.95
6	90.43	90.61	90.67	91.10	91.24	91.28	91.27	91.34	91.53	91.56	91.46	91.88
7	90.52	90.64	90.80	90.97	91.18	91.18	91.31	91.22	91.61	91.67	91.60	91.70
8	90.27	90.46	90.77	90.92	91.22	90.97	91.38	91.13	91.44	91.66	91.63	91.54
9	90.26	90.28	90.73	90.56	90.83	91.07	91.38	91.06	91.46	91.45	91.57	91.63
10	90.19	90.30	90.68	90.39	90.71	91.29	91.55	91.39	91.48	91.41	91.68	91.61
11	90.47	90.72	90.79	90.96	91.16	91.24	91.53	91.43	91.46	91.55	91.67	91.58
12	90.47	90.64	90.59	91.11	91.16	91.30	91.57	91.17	91.50	91.60	91.65	91.60
13	90.08	90.39	90.55	91.35	90.93	91.34	91.54	91.51	91.43	91.53	91.60	91.74
14	90.43	90.45	90.50	91.40	91.04	91.14	91.18	91.60	91.36	91.41	91.67	91.65
15	90.37	90.45	90.49	91.18	91.24	91.06	91.06	91.58	91.30	91.36	91.67	91.63
16	90.26	90.55	90.75	91.09	91.36	91.09	91.14	91.47	91.42	91.57	91.68	91.76
17	90.26	90.67	90.85	91.15	91.45	91.50	91.12	91.32	91.66	91.63	91.68	91.76
18	90.48	90.60	90.91	90.74	91.08	91.49	91.21	91.34	91.65	---	91.65	91.76
19	90.48	90.53	90.81	90.54	91.06	91.07	91.28	91.37	91.64	91.63	91.77	91.62
20	90.38	90.52	90.65	90.70	91.15	91.12	91.21	91.44	91.57	91.54	91.78	91.50
21	90.34	90.55	90.81	90.86	91.23	91.28	91.04	91.39	91.23	91.56	91.74	91.89
22	90.00	90.61	90.81	90.92	91.06	91.32	91.22	91.27	91.41	91.70	91.64	91.93
23	90.34	90.61	90.69	90.80	91.02	91.25	91.31	91.15	91.57	91.72	91.50	91.60
24	90.61	90.65	90.81	90.93	90.94	91.05	91.32	91.13	91.54	91.65	91.61	91.73
25	90.59	90.64	90.82	90.78	90.97	90.82	91.34	91.50	91.51	91.61	91.64	91.73
26	90.44	90.33	90.38	91.04	90.97	90.90	91.37	91.63	91.51	91.61	91.54	91.81
27	90.64	90.65	90.56	91.23	90.98	90.67	91.30	91.57	91.57	91.54	91.57	91.81
28	90.56	90.83	90.54	91.24	91.18	90.91	91.21	91.35	91.55	91.44	91.69	91.91
29	90.47	90.87	90.65	91.19	91.17	91.30	91.45	91.57	91.40	91.50	91.69	91.89
30	90.47	90.88	90.81	90.72	---	91.40	91.54	91.64	91.56	91.53	91.72	91.69
31	90.41	---	90.92	90.53	---	91.46	---	91.49	---	91.57	91.67	---
MEAN	90.39	90.56	90.67	90.93	91.07	91.15	91.30	91.39	91.49	91.55	91.64	91.72
MAX	90.64	90.88	90.92	91.40	91.45	91.50	91.57	91.64	91.66	91.72	91.78	91.95
MIN	90.00	90.00	90.33	90.39	90.70	90.67	91.01	91.06	91.23	91.36	91.46	91.50

CAL YR 1999 MEAN 89.68 HIGH 88.27 LOW 90.92
WTR YR 2000 MEAN 91.15 HIGH 90.00 LOW 91.95



Low-Flow Magnitude and Frequency of Ohio Streams

The low-flow network is part of a cooperative study with the Ohio Department of Natural Resources to define the low-flow characteristics of 180 sites that have essentially unregulated streamflow and drainage areas less than 150 square miles. The following table lists the sites of the low-flow partial record network including discharge measurements made in the 2000 water year. The second table lists the discontinued streamflow-gaging stations for which a discharge measurement was performed in 2000 that were used for index stations for this project. The discontinued stations are not shown.



PROJECT DATA
Low-Flow Magnitude and Frequency of Ohio Streams

LOW-FLOW PARTIAL-RECORD STATIONS

[mi², square miles; ft³/s, cubic feet per second; --, no data]

Station number	Station name	Location	Drainage area (mi ²)	Period of record	Measurements	
					Date	Discharge (ft ³ /s)
<u>BEAVER RIVER BASIN</u>						
03098390	Mill Creek near Youngstown, Ohio	Latitude 41°02'00", longitude 80°41'37", Mahoning County, Hydrologic Unit 05030103, at pedestrian bridge over Mill Creek at end of extra parking lot next to Mill Creek Park Golf Course, 0.75 northeast of park entrance at State Route 224, 0.75 mi downstream of Indian Run, 3.1 mi upstream of Newport Lake Dam, 3 mi southwest of South Side Youngstown, Ohio. (Youngstown 1:24000 quad)	51.5	1995-99	--	--
<u>SUNFISH CREEK BASIN</u>						
03114241	Sunfish Creek at Coats, Ohio	Latitude 39°46'14", longitude 81°02'34", Monroe County, Hydrologic Unit 05030201, at riffle beside Sunfish Creek Road, 800 ft downstream from confluence of unnamed tributary, 0.7 mi downstream from confluence of Standingstone Run, 1.0 mi southeast of Coats, 4.0 mi east of Woodsfield, Ohio. (Woodsfield 1:24000 quad)	51.3	1995 1997-99	--	--
<u>LITTLE MUSKINGUM RIVER BASIN</u>						
03115385	Clear Fork near Rinard Mills, Ohio	Latitude 39°36'08", longitude 81°09'17", Monroe County, Hydrologic Unit 05030201, at State Route 26 bridge over Clear Fork, 0.3 mi above confluence with Little Muskingum River, 1.2 mi north of Rinard Mills, Ohio. (Rinard Mills 1:24000 quad)	48.8	1997-99	--	--
<u>MUSKINGUM RIVER BASIN</u>						
03123166	South Fork Sugar Creek near Sugarcreek, Ohio	Latitude 40°31'25", longitude 81°36'52", Tuscarawas County, Hydrologic Unit 05040001, at Tuscarawas County Road 75, 0.2 mi downstream from confluence with East Branch, 0.2 mi northeast of Sugarcreek, Ohio. (Strasburg 1:24000 quad)	63.3	1997-00	09/20/00	6.39
03123299	Walnut Creek at Dundee, Ohio	Latitude 40°35'12", longitude 81°37'16", Tuscarawas County, Hydrologic Unit 05040001, at private road bridge, 0.5 mi upstream from mouth, 0.7 mi west of Dundee, Ohio. (Strasburg 1:24000 quad)	48.0	1997-00	09/20/00	4.30
03129205	Black Fork Mohican River near Shelby, Ohio	Latitude 40°54'57", longitude 82°38'02", Richland County, Hydrologic Unit 05040002, at bridge on Plymouth-Spring Road, 0.3 mi downstream from Bear Run, 2.8 mi northeast of Shelby, 2000 ft north of London, Ohio. (Shelby 1:24000 quad)	60.4	2000	09/20/00	5.46
03133950	Jerome Fork near Ashland, Ohio	Latitude 40°53'02", longitude 82°17'03", Ashland County, Hydrologic Unit 05040002, at bridge on U.S. Highway 42, 0.7 mi upstream from Lang Creek, 2.0 mi northeast of Ashland, 1,000 ft north of Cleveland Avenue, concrete block building on downstream, left of bridge (gray-no paint), at entrance to well-field. (Ashland North 1:24000 quad)	38.6	2000	09/20/00	0.79

Low-Flow Magnitude and Frequency of Ohio Streams

LOW-FLOW PARTIAL-RECORD STATIONS—Continued

[mi², square miles; ft³/s, cubic feet per second; --, no data]

Station number	Station name	Location	Drainage area (mi ²)	Period of record	Measurements	
					Date	Discharge (ft ³ /s)
<u>MUSKINGUM RIVER BASIN- Continued</u>						
03136142	Kokosing River at Chesterville, Ohio	Latitude 40°28'28", longitude 82°41'02", Morrow County, Hydrologic Unit 05040003, at State Route 314 bridge, 0.5 mi downstream from confluence with South Branch, 0.4 mi south of Chesterville, Ohio. (Chesterville 1:24000 quad)	38.7	1996 1998-00	09/21/00	2.36
03145329	Raccoon Creek at Alexandria, Ohio	Latitude 40°05'05", longitude 82°36'18", Licking County, Hydrologic Unit 05040006, at State Route 37 bridge over Raccoon Creek, 0.8 mi above confluence with Lobdell Creek, 0.9 mi below confluence with Simpson Run, 0.7 mi north of intersection of State Route 37 and State Route 161, 0.2 mi southeast of Alexandria, Ohio. (Granville 1:24000 quad)	40.6	1997-99	--	--
03145533	Raccoon Creek at Newark, Ohio	Latitude 40°02'34", longitude 82°24'44", Licking County, Hydrologic Unit 05040006, at West Main Street bridge over Raccoon Creek, 0.7 mi above confluence with South Fork Licking River, in Newark, Ohio. (Newark 1:24000 quad)	101	1997-99	--	--
03150200	Meigs Creek near Reinersville, Ohio	Latitude 39°37'43", longitude 81°43'12", Morgan County, Hydrologic Unit 05040004, at county road bridge at Unionville, 0.1 mi upstream from Dyes Fork, 5.1 mi southwest of Reinersville, Ohio. (Reinersville 1:24000 quad)	73.0	1981-82 1996 1998-99	--	--
<u>HOCKING RIVER BASIN</u>						
03158165	Monday Creek near Greendale, Ohio	Latitude 39°31'24", longitude 82°16'17", Hocking County, Hydrologic Unit 05030204, at Dawley Road over Monday Creek, 0.7 mi above confluence with Sand Run, 0.9 mi above proposed reservoir site, 1.3 mi southeast of Greendale, 4 mi northeast of Haydenville, Ohio. (Gore 1:24000 quad)	67.2	1995-96 1998-99	--	--
<u>SYMMES CREEK BASIN</u>						
03205260	Symmes Creek near Centerpoint, Ohio	Latitude 38°52'12", longitude 82°28'44", Jackson County, Hydrologic Unit 05090101, at Jenkins Alban Road bridge over Symmes Creek, 2.5 mi above confluence with Black Fork, 1.9 mi northwest of Centerpoint, Ohio. (Patriot 1:24000 quad)	45.9	1997-99	--	--
<u>PINE CREEK BASIN</u>						
03216620	Pine Creek near South Webster, Ohio	Latitude 38°46'12", longitude 82°42'25", Scioto County, Hydrologic Unit 05090103, at Lick Run Lyra Road bridge over Pine Creek, 3.0 mi southeast of South Webster, Ohio. (South Webster 1:24000 quad)	33.2	1998-99	--	--

PROJECT DATA
Low-Flow Magnitude and Frequency of Ohio Streams

LOW-FLOW PARTIAL-RECORD STATIONS—Continued

[mi², square miles; ft³/s, cubic feet per second; --, no data]

Station number	Station name	Location	Drainage area (mi ²)	Period of record	Measurements	
					Date	Discharge (ft ³ /s)
<u>LITTLE SCIOTO RIVER BASIN</u>						
03216662	Little Scioto River near Mabee Corner, Ohio	Latitude 38°54'18", longitude 82°46'46", Scioto County, Hydrologic Unit 05090103, at Sulphur Spring Road bridge, just west of White Gravel Road, 0.6 mi downstream from Buckhorn Creek, 0.9 mi from intersection of State Route 139 and White Gravel Road, 3.1 mi west of Mabee Corner, Ohio. (Stockdale 1:24000 quad)	60.5	2000	--	--
03216673	Little Scioto River at Wallace Mills, Ohio	Latitude 38°51'06", longitude 82°47'36", Scioto County, Hydrologic Unit 05090103, 1000 ft upstream of the confluence with Rocky Fork, near Kentucky Trail Road, 0.5 mi north of Wallace Mills, Ohio. Site can be reached 2.1 mi from State Route 139 on Stockham Road and right 0.3 mi on Kentucky Trail Road. (Minford 1:24000 quad)	108	2000	--	--
03216689	Rocky Fork at Wallace Mills, Ohio	Latitude 38°51'27", longitude 82°47'47", Scioto County, Hydrologic Unit 05090103, from State Route 139, heading southeast on Stockham Road about 0.4 mi to Glades Road, head south on Glades Road about 1.3 mi to bridge, at Glades Road bridge, 0.6 mi above mouth in Wallace Mills, Ohio. (Minford 1:24000 quad)	68.8	2000	--	--
<u>SCIOTO RIVER BASIN</u>						
03232170	West Branch Rattlesnake Creek at Glendon, Ohio	Latitude 39°30'40", longitude 83°33'54", Fayette County, Hydrologic Unit 05060003, at West Fork Road bridge, 0.2 mi upstream from mouth, 0.8 m. west of Glendon, 4.0 mi east of Sabina, 6.6 mi west of Washington Court House, Ohio. (Milledgeville 1:24000 quad)	59.8	2000	09/20/00	0.22
03232171	Rattlesnake Creek at Glendon, Ohio	Latitude 39°30'20", longitude 83°33'18", Fayette County, Hydrologic Unit 05060003, at State Route 3 bridge in Glendon, 4.4 mi east of Sabina, 6.2 mi west of Washington Court House, Ohio. (Milledgeville 1:24000 quad)	106	2000	09/20/000	0.27
03232295	Lees Creek near Leesburg, Ohio	Latitude 39°20'39", longitude 83°30'33", Highland County, Hydrologic Unit 05060003, at bridge on Monroe Road, 1.2 mi upstream from mouth, 2.4 mi east of Leesburg, Ohio. (Leesburg 1:24000 quad)	74.3	1981-82 2000	09/21/00	2.77
03234050	North Fork Paint Creek near Plano, Ohio	Latitude 39°30'19", longitude 83°16'22", Ross County, Hydrologic Unit 05060003, at Dogtown Road bridge, 0.6 mi above confluence with Compton Creek, 1.2 mi northeast of Plano, Ohio. (New Holland 1:24000 quad)	60.4	2000	09/20/00	1.38
03234066	Compton Creek near Plano, Ohio	Latitude 39°30'54", longitude 83°17'47", Fayette County, Hydrologic Unit 05060003, at Good Hope-New Holland Road bridge, 3.4 mi above mouth, 1.7 mi north of Plano, Ohio. (New Holland 1:24000 quad)	49.8	2000	09/20/00	1.38

Low-Flow Magnitude and Frequency of Ohio Streams

LOW-FLOW PARTIAL-RECORD STATIONS—Continued

[mi², square miles; ft³/s, cubic feet per second; --, no data]

Station number	Station name	Location	Drainage area (mi ²)	Period of record	Measurements	
					Date	Discharge (ft ³ /s)
<u>OHIO BRUSH CREEK BASIN</u>						
03237288	Ohio Brush Creek at Louden, Ohio	Latitude 39°01'48", longitude 83°27'19", Adams County, Hydrologic Unit 05090201, at Ford on Heron Road, 0.3 mi north-northwest of Louden, 4.8 mi southwest of Sinking Springs, Ohio. (Sinking Spring 1:24000 quad)	64.9	2000	09/21/00	0.83
03237289	Baker Fork near Louden, Ohio	Latitude 39°02'29", longitude 83°25'21", Adams County, Hydrologic Unit 05090201, at Horner Chapel Road bridge, 1.3 mi north of Serpent Mound State Memorial, 2.0 mi northeast of Louden, 3.0 mi southwest of Sinking Springs, Ohio. (Sinking Spring 1:24000 quad)	43.1	2000	09/21/00	1.18
03237400	West Fork Ohio Brush Creek at Lawshe, Ohio	Latitude 38°56'22", longitude 83°28'28", Adams County, Hydrologic Unit 05090201, at Township Road C-13 bridge in Lawshe, 0.4 mi upstream from mouth, 1.1 mi southwest from Peebles on State Highway 41 to Township Road C-13, turn right, 3.6 mi to bridge and station. (Peebles 1:24000 quad)	134	1959-60 1972-77 2000	09/21/00	15.8
<u>LITTLE MIAMI RIVER BASIN</u>						
03243150	Todd Fork near Clarksville, Ohio	Latitude 39°26'10", longitude 83°56'41", Clinton County, Hydrologic Unit 05090202, at U.S. Highway 22 bridge, 1.0 mi upstream from Lytle Creek, 2.7 mi northeast of Clarksville, Ohio. (Clarksville 1:24000 quad)	56.6	1981-82 1995-96 1998-00	09/20/00	0.51
03244950	O'Bannon Creek at Loveland, Ohio	Latitude 39°16'08", longitude 84°15'21", Clermont County, Hydrologic Unit 05090202, at State Route 48 bridge, in Loveland, Ohio. (Mason 1:24000 quad)	59.0	1956 1980-83 1996 1998-00	09/20/00	1.42
03247300	Stonelick Creek near Perintown, Ohio	Latitude 39°07'20", longitude 84°11'56", Clermont County, Hydrologic Unit 05090202, at U.S. Highway 50 bridge, 1.9 mi east of Perintown, Ohio. (Batavia 1:24000 quad)	76.0	1981-82 1996 1998-00	09/20/00	0.50
<u>GREAT MIAMI RIVER BASIN</u>						
03263168	Stillwater River near Ansonia, Ohio	Latitude 40°13'01", longitude 84°36'44", Darke County, Hydrologic Unit 05080001, at Beisner Road over Stillwater River, 0.1 mi north of State Route 47, 1.2 m. east of Ansonia, 1.8 mi west of Dawn, Ohio. (Dawn 1:24000 quad)	74.3	1995-99	--	--
03272429	Four Mile Creek near College Corner, Ohio	Latitude 39°35'31", longitude 84°46'14", Preble County, Hydrologic Unit 05080002, at bridge over Four Mile Creek, 0.1 mi below confluence with East Fork Four Mile Creek, 0.8 mi above confluence with Little Four Mile Creek, 0.8 mi northwest from Acton Lake, in Hueston Woods State Park, 3 mi northeast of College Corner, Ohio & Indiana. (College Corner 1:24000 quad)	50.1	1996 1998-99	--	--

PROJECT DATA
Low-Flow Magnitude and Frequency of Ohio Streams

LOW-FLOW PARTIAL-RECORD STATIONS—Continued

[mi², square miles; ft³/s, cubic feet per second; --, no data]

Station number	Station name	Location	Drainage area (mi ²)	Period of record	Measurements	
					Date	Discharge (ft ³ /s)
<u>GREAT MIAMI RIVER BASIN—Continued</u>						
03276588	Dry Fork Whitewater River at New Haven, Ohio	Latitude 39°15'57", longitude 84°44'54", Hamilton County, Hydrologic Unit 05080003, at Mt. Hope Road bridge, 0.9 mi below confluence with Howard Creek, 1.2 mi above confluence with Lee Creek, next to Miami Whitewater Forest, 0.8 mi southwest of New Haven, Ohio. (Shandon 1:24000 quad)	59.8	1996 1998-00	09/21/00	0.40
<u>MAUMEE RIVER BASIN</u>						
04185299	Brush Creek at Evansport, Ohio	Latitude 41°26'00", longitude 84°23'24", Williams County, Hydrologic Unit 04100006, at county road over Brush Creek, 1.0 mi above mouth, 0.4 mi north of Williams/Defiance county line, 0.6 mi northeast of Evansport, Ohio. (Evansport 1:24000 quad)	64.8	1994-96 1998-99	--	--
04180911	St. Marys River above Kopp Creek at St. Marys, Ohio	Latitude 40°32'07", longitude 84°22'38", Auglaize County, Hydrologic Unit 04100004, at Aqueduct Road over St. Marys River, 150 ft upstream of Miami and Erie Canal aqueduct, 0.3 mi above confluence of Kopp Creek, 2.1 mi east of Grand Lake, 0.5 mi southeast of St. Marys, Ohio. (St. Marys 1:24000 quad)	67.0	1994-99	--	--
04185410	Lick Creek near Brunersburg, Ohio	Latitude 41°22'08", longitude 84°26'17", Defiance County, Hydrologic Unit 04100006, at bridge on Trinity Road, 1.2 mi upstream from mouth, 5.0 mi northwest of Brunersburg, Ohio. (Defiance West 1:24000 quad)	105	1980-82	--	--
04185498	Mud Creek near Brunersburg, Ohio	Latitude 41°20'34", longitude 84°26'51", Defiance County, Hydrologic Unit 04100006, at bridge on State Route 15, 2.4 mi upstream from mouth, 4.0 mi northwest of Brunersburg, Ohio. (Defiance West 1:24000 quad)	58.0	1980-82	--	--
04187995	Sugar Creek near Kalida, Ohio	Latitude 40°57'16", longitude 84°10'45", Putnam County, Hydrologic Unit 04100007, at bridge on County Road 16P, 0.6 mi upstream from mouth, 2.2 mi southeast from Kalida, Ohio. (Kalida 1:24000 quad)	64.2	1981-82 2000	07/12/00 09/18/00	10.4 2.09
04188097	Plum Creek at Kalida, Ohio	Latitude 40°59'12", longitude 84°12'33", Putnam County, Hydrologic Unit 04100007, at State Route 114, 0.3 mi northwest of Kalida, Ohio. (Kalida 1:24000 quad)	39.8	1999-00	07/12/00 09/18/00	9.28 1.38
04189172	Riley Creek near Bluffton, Ohio	Latitude 40°54'12", longitude 83°56'19", Allen County, Hydrologic Unit 04100007, at Phillips Road bridge over Riley Creek, 3.7 mi downstream from confluence of Little Riley Creek, 2.5 mi northwest of Bluffton, Ohio. (Bluffton 1:24000 quad)	64.4	1994-96 1999-00	09/20/00	3.07

Low-Flow Magnitude and Frequency of Ohio Streams

LOW-FLOW PARTIAL-RECORD STATIONS—Continued

[mi², square miles; ft³/s, cubic feet per second; --, no data]

Station number	Station name	Location	Drainage area (mi ²)	Period of record	Measurements	
					Date	Discharge (ft ³ /s)
<u>MAUMEE RIVER BASIN—Continued</u>						
04191007	Town Creek near Hoaglin, Ohio	Latitude 40°58'36", longitude 84°28'36", Van Wert County, Hydrologic Unit 04100007, at State Route 637 bridge over Town Creek, 2.1 mi above confluence with Maddox Creek, 0.9 mi south of Paulding/Van Wert County line, 2.3 mi northeast of Hoaglin, 3.1 mi north of State Route 224, 10 mi northeast of Van Wert, Ohio. (Wetsel 1:24000 quad)	51.7	1995-96 1998-99	--	--
04191100	Flatrock Creek near Payne, Ohio	Latitude 41°05'57", longitude 84°40'06", Paulding County, Hydrologic Unit 04100007, at Township Road 71 bridge, 2.0 mi downstream from Wildcat Creek, 3.5 mi northeast of Payne, Ohio. Proceed 3.4 mi northeast from Payne on State Highway 500 to Township Road 71, turn right and go 0.1 mi to bridge and station. (Payne 1:24000 quad)	147	1972-77 1995-96 1998-99	--	--
04192600	South Turkeyfoot Creek near Malinta, Ohio	Latitude 41°22'15", longitude 84°01'22", Henry County, Hydrologic Unit 04100009, at U.S. Highway 6 bridge, 1.8 mi upstream from Little Turkeyfoot Creek, 3.5 mi north of Malinta. Proceed north from Malinta on State Highway 109 for 3.4 mi to U.S. Highway 6, turn right and go 0.8 mi to bridge and station. (Malinta 1:24000 quad)	121	1955-56 1972-77	--	--
04192710	Bad Creek at Colton, Ohio	Latitude 41°27'29", longitude 83°57'34", Henry County, Hydrologic Unit 04100009, at County road U bridge, 0.5 mi southwest of Colton, Ohio, 2.0 mi south of Fulton/Henry county line, and 3.9 mi upstream from confluence with Maumee River. (Colton 1:24000 quad)	56.5	1999	--	--
04192782	Yellow Creek near Deshler, Ohio	Latitude 41°12'16", longitude 83°51'39", Wood County, Hydrologic Unit 04100009, at State Route 18 bridge, 1.9 mi east of Deshler, 4.1 mi west of Hoytville. (Hoytville 1:24000 quad)	53.3	2000	09/20/00 09/20/00	0.54 0.66
<u>PORTAGE RIVER BASIN</u>						
04194362	South Branch Portage River near Jerry City, Ohio	Latitude 41°16'22", longitude 83°30'56", Wood County, Hydrologic Unit 04100010, at Portage View Road over South Branch Portage River, 0.6 mi above confluence with East Branch, 2.1 mi southeast of Six Points, 4.5 mi northeast of Jerry City, Ohio. (Jerry City 1:24000 quad)	54.0	1995-96 1999-00	09/20/00	1.21
<u>SANDUSKY RIVER BASIN</u>						
04196580	Little Tymochtee Creek near Marseilles, Ohio	Latitude 40°41'13", longitude 83°24'44", Marion County, Hydrologic Unit 04100011, at County Road 22 bridge, 1.3 mi above mouth, 1.4 mi southwest of Marseilles, Ohio. (Marseilles 1:24000 quad)	43.7	1978 1980-82 1997-00	09/21/00	0.35

PROJECT DATA
Low-Flow Magnitude and Frequency of Ohio Streams

LOW-FLOW PARTIAL-RECORD STATIONS—Continued

[mi², square miles; ft³/s, cubic feet per second; --, no data]

Station number	Station name	Location	Drainage area (mi ²)	Period of record	Measurements	
					Date	Discharge (ft ³ /s)
<u>HURON RIVER BASIN</u>						
04198017	West Branch Huron River near New Haven, Ohio	Latitude 41°03'08", longitude 82°39'37", Huron County, Hydrologic Unit 04100012, at Boughtonville Road bridge, 0.5 mi below confluence with Marsh Run, 3.3 mi east of Willard, Ohio. (Willard 1:24000 quad)	69.4	1981-82 1997-00	09/20/00	8.45
<u>VERMILION RIVER BASIN</u>						
04199251	Vermilion River near New London, Ohio	Latitude 41°03'51", longitude 82°27'10", Huron County, Hydrologic Unit 04100012, at U.S. Route 250 bridge, 0.8 mi west of New London Reservoir, 0.2 mi north of Akron Canton Youngstown Penn Central Railroad, 3.0 mi southwest of New London, Ohio. (New London 1:24000 quad)	68.9	1997-00	09/20/00	0.49
<u>BLACK RIVER BASIN</u>						
04199617	West Fork East Branch Black River at Lodi, Ohio	Latitude 41°01'36", longitude 82°02'29", Medina County, Hydrologic Unit 04110001, at bridge of State Route 421, 0.6 mi east of intersection of SR 42 and SR 224, 1.6 mi west of Lodi, Ohio. (Lodi 1:24000 quad)	40.6	2000	09/20/00	0.62
04199706	East Branch Black River near Penfield, Ohio	Latitude 41°08'12", longitude 82°07'00", Medina/Lorain County, Hydrologic Unit 04110001, at Smith Road bridge over East Branch Black River, on Medina/Lorain County Line, 0.3 mi east of State Route 301, 2.2 mi south of Penfield, 3.2 mi north of Spencer, Ohio. (Lagrange 1:24000 quad)	105	1995-96 1998-00	09/20/00	3.38
<u>ROCKY RIVER BASIN</u>						
04201079	West Branch Rocky River near Medina, Ohio	Latitude 41°09'09", longitude 81°50'02", Medina County, Hydrologic Unit 04110001, at Weymouth Road bridge over West Branch Rocky River, 0.3 mi below confluence with North Branch, 1.9 mi northeast of Medina, Ohio. (Medina 1:24000 quad)	61.2	1995-96 1998-99	--	--
<u>CUYAHOGA RIVER BASIN</u>						
04205645	Little Cuyahoga River above Ohio & Erie Canal at Akron, Ohio	Latitude 41°05'27", longitude 81°30'40", Summit County, Hydrologic Unit 04110002, in Akron. Station is reached by driving east on State Route 18 (West Market Street). Turn right (north) onto North Main Street. Travel for 0.4 mi. Turn right (east) onto East North Street. Travel for 0.2 mi to station at Stuber Street bridge on left (north). (Akron West 1:24000 quad)	55.1	1998-99	--	--

PROJECT DATA
Low-Flow Magnitude and Frequency of Ohio Streams

LOW-FLOW PARTIAL-RECORD STATIONS—Continued

[mi², square miles; ft³/s, cubic feet per second; --, no data]

Station number	Station name	Location	Drainage area (mi ²)	Period of record	Measurements	
					Date	Discharge (ft ³ /s)
<u>ASHTABULA RIVER BASIN</u>						
04212453	Ashtabula River near Kelloggsville, Ohio	Latitude 41°50'00", longitude 80°37'13", Ashtabula County, Hydrologic Unit 04110003, at Root Road Covered Bridge over Ashtabula River, 1.7 mi downstream of confluence of East and West Branches of Ashtabula River, 1.6 mi south of Kelloggsville, 2.4 mi east of Sheffield Center, 7.5 mi southeast of Ashtabula, Ohio. (Pierpont 1:24000 quad)	66.5	1995-99	--	--

PROJECT DATA
Low-Flow Magnitude and Frequency of Ohio Streams

DISCONTINUED STREAMFLOW-GAGING STATIONS

[mi², square miles; ft³/s, cubic feet per second; --, no data]

Station number	Station name	Location	Drainage area (mi ²)	Period of record	Measurements	
					Date	Discharge (ft ³ /s)
<u>MUSKINGUM RIVER BASIN</u>						
03123000	Sugar Creek above Beach City Dam at Beach City, Ohio	Latitude 40°39'24", longitude 81°34'37", in NE 1/4 sec. 35, T. 11 N., R. 10 W., Stark County, on right bank at downstream side of 3rd Avenue bridge at Beach City, 2.3 mi upstream from Beach City Dam.	160	1945-75	09/20/00	10.7
03149500	Salt Creek near Chandlersville, Ohio	Latitude 40°35'12", longitude 81°37'16", In SW 1/4 sec. 10, T. 13 N., R. 12 W., 300 ft above highway bridge on Route 146, 8 mi on map), 11 mi by road southeast of Zanesville, and 2 mi northwest of Chandlersville, Ohio	75.6	1936-47	--	--
<u>SCIOTO RIVER BASIN</u>						
03223000	Olentangy River at Claridon, Ohio	Latitude 40°34'58", longitude 82°59'20", in NW 1/4 sec. 26, T. 5 S., R. 16 E., Marion County, Hydrologic Unit 05060001, on left bank 900 ft downstream from bridge on State Highway 95, 0.5 mi east of Claridon, 0.8 mi downstream from Otter Creek, and 1.4 mi upstream from Beaver Run.	157	1947-98	09/21/00	9.70
<u>LITTLE MIAMI RIVER BASIN</u>						
03242050	Little Miami River near Spring Valley, Ohio	Latitude 39°35'00", longitude 84°01'49", (SE 1/4 sec Waynesville Quadrangle) in Greene County on right bank at downstream side of bridge on New Burlington Road, 3/4 mi west of Roxanna, and 2.2 mi southwest of Spring Valley, Ohio.	366	1968-85	09/20/00	67.4
<u>GREAT MIAMI RIVER BASIN</u>						
03267000	Mad River near Urbana, Ohio	Latitude 40°06'27", longitude 83°47'57", on west line of sec. 35, T. 5 E., R. 11 N., Champaign County, Hydrologic Unit 05080001, on left bank at downstream side of bridge on U.S. Highway 36, 1.8 mi upstream from Dugan Run, 1.8 mi downstream from Muddy Creek, 2.5 mi west of Urbana, and at mile 39.7.	162	1926-31 1940-98	--	--
03271800	Twin Creek near Ingomar, Ohio	Latitude 39°42'28", longitude 84°31'30", in sec. 15, T. 5 N., R. 3 E., Preble County, Hydrologic Unit 05080002, on left bank at downstream side of bridge on Halderman Road, 0.5 mi downstream from Bantas Fork, 1.4 mi west of Ingomar, and 4.8 mi upstream from Aukerman Creek.	197	1963-98	09/21/00	9.38
<u>MAUMEE RIVER BASIN</u>						
04184500	Bean Creek at Powers, Ohio	Latitude 41°39'34", longitude 84°14'55", NE 1/4, SE 1/4 sec. 26, T. 9 S., R. 1 E., at left downstream abutment of highway bridge on County Road 20, 1 mi south of Powers, Fulton County, 1.7 mi upstream from Iron Creek, 3.5 mi downstream from Silver Creek.	206	1941-81	--	--

PROJECT DATA
Low-Flow Magnitude and Frequency of Ohio Streams

DISCONTINUED STREAMFLOW-GAGING STATIONS—Continued

[mi², square miles; ft³/s, cubic feet per second; --, no data]

Station number	Station name	Location	Drainage area (mi ²)	Period of record	Measurements	
					Date	Discharge (ft ³ /s)
<u>VERMILION RIVER BASIN</u>						
04199500	Vermilion River near Vermilion, Ohio	Latitude 41°22'55", longitude 82°19'01", T.6N., R.19W., on right bank 40 ft downstream from bridge on North Ridge Road, 3.5 mi southeast of Vermilion, Lorain County, and 4.5 mi upstream from mouth.	262	1950-81	09/21/00	9.30
<u>CHAGRIN RIVER BASIN</u>						
04209000	Chagrin River at Willoughby, Ohio	Latitude 41°37'51", longitude 81°24'13", in T.9 N., R.10 W., Lake County, Hydrologic Unit 04110003, on left bank, 150 ft downstream from city waterworks dam, 800 ft downstream from East Branch, 1.0 mi southeast of Willoughby, and 5.0 mi upstream from mouth.	246	1925-35 1940-84 1988-94 1996-98	--	--

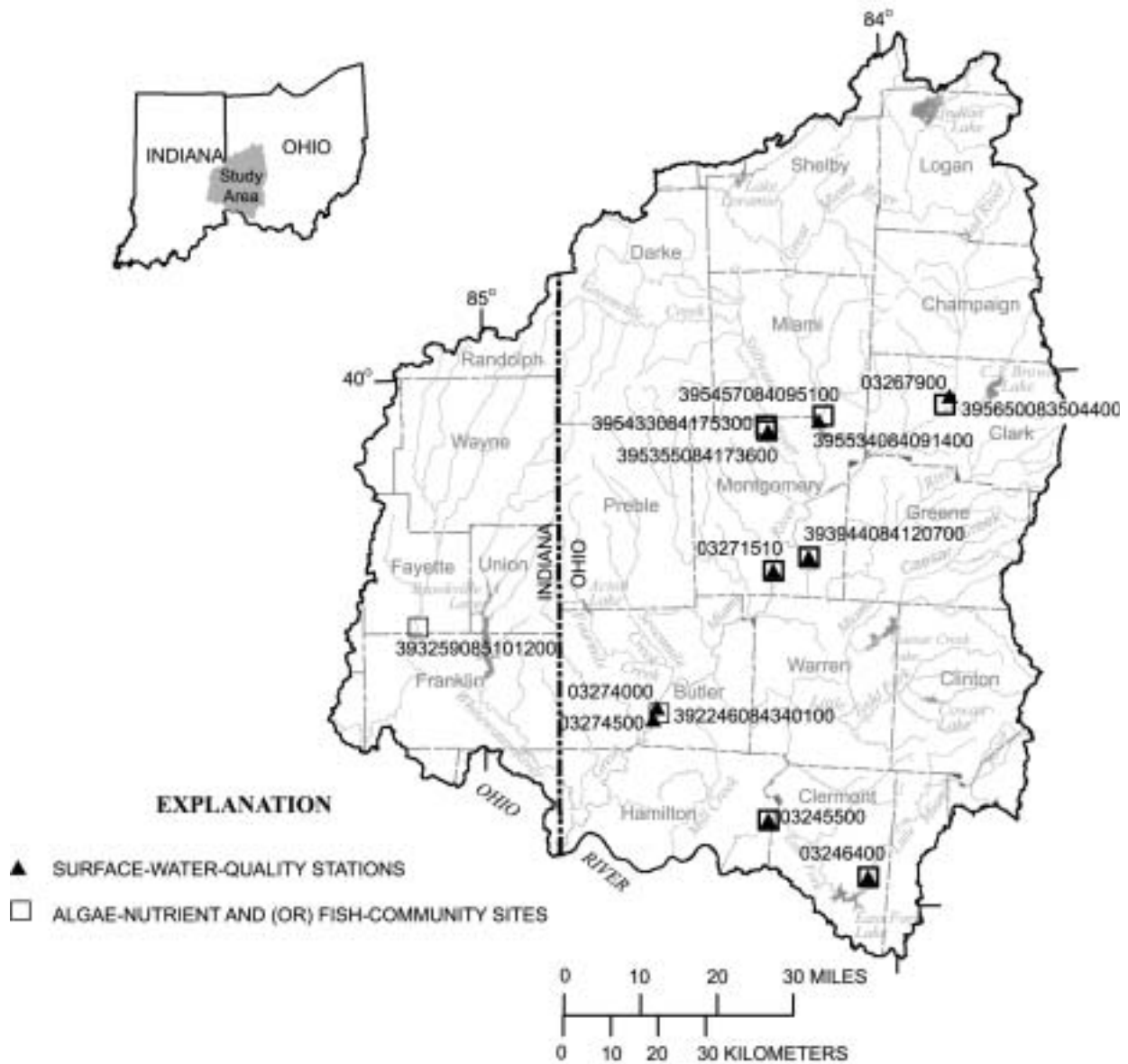
PROJECT DATA

**Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)**

The data described in the following table were collected and analyzed as part of the NAWQA (National Water-Quality Assessment Program) project in the Great Miami and Little Miami River Basins. The objectives of the NAWQA program are to broadly characterize the water quality of the Nation's streams and aquifers in relation to human and natural factors. The period of high-intensity data collection for the Great Miami and Little Miami River Basins project is in water years 1999-2001.

Data for eight stream sites in Ohio are being reported in this publication as part of the NAWQA study: Little Miami River at Milford, Ohio (03245500), East Fork Little Miami River near Williamsburg, Ohio (03246400), Mad River at St. Paris Pike near Springfield, Ohio (03267900), Great Miami River at Hamilton, Ohio (03274000), Great Miami River at Venice, Ohio (03274500), Holes Creek at Huffman Park near Kettering, Ohio (393944084120700), Stillwater River at Martindale Road near Union, Ohio (395355084173600), and Great Miami River near Vandalia, Ohio (395457084095100). One site is reported in the 2000 Indiana annual data report: Whitewater River near Alpine, Indiana (03275000).

These data also can be obtained electronically at: <http://oh.water.usgs.gov/miam.html>.



PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
WATER-QUALITY RECORDS

03245500 LITTLE MIAMI RIVER AT MILFORD, OHIO

LOCATION.—Latitude 39°10'17", longitude 84°17'53", Hamilton County, Hydrologic Unit 05090202, at mile 12.9.

DRAINAGE AREA.—1,203 mi².

REMARKS.—Discharge is measured at this site and published in volume 1, surface-water records.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

[μ S/cm, microsiemens per centimeter; (00095), USGS National Water Information System parameter code; deg C, degrees Celsius; mm of Hg, millimeters of mercury; mg/L, milligrams per liter; --, no data; col/100 mL, colonies per 100 milliliters; IT, incremental titration; <, concentration or value reported is less than that indicated; k, value is estimated from a non-ideal colony count]

Date	Time	Specific conductance, field (μ S/cm) (00095)	Specific conductance, lab (μ S/cm) (90095)	pH, water, field (standard units) (00400)	pH, water, lab (standard units) (00403)	Water temperature (deg C) (00010)	Air temperature (deg C) (00020)	Barometric pressure (mm of Hg) (00025)	Dissolved oxygen (mg/L) (00300)
Oct.	18	1240	992	8.2	8.2	14.5	12.0	752	10.0
Nov.	16	1030	722	8.6	8.0	8.5	3.5	752	11.2
Dec.	7	1045	875	8.4	8.3	6.0	3.0	756	11.8
Jan.	4	1100	242	8.3	7.6	10.0	3.0	745	8.6
Feb.	7	1030	1360	8.6	8.1	0.5	3.0	756	13.0
	14	1510	339	7.9	7.5	4.0	2.0	748	13.2
Mar.	22	1110	588	8.0	8.0	8.5	13.0	760	11.4
May	3	1250	730	8.4	8.2	18.0	26.0	752	10.6
June	20	1330	498	8.4	7.9	17.0	31.0	748	9.3
July	13	1430	623	8.4	8.3	25.5	29.5	745	8.0
Aug.	15	1050	867	8.1	8.3	24.5	25.0	760	8.2
Sept.	13	1530	713	7.6	7.6	22.0	26.0	752	--

Date	Oxygen, dissolved (percent of saturation) (00301)	<i>E. coli</i> , water, whole, total (col/100 mL) (31633)	Magnesium, dissolved (mg/L as Mg) (00925)	Sodium, dissolved (mg/L as Na) (00930)	Potassium, dissolved (mg/L as K) (00935)	Carbonate, water, dissolved, IT, field (mg/L as CO ₃) (00452)	Bicarbonate, water, dissolved, IT, field (mg/L as HCO ₃) (00453)	Alkalinity, water, dissolved, IT, field (mg/L as CaCO ₃) (39086)	Hardness, total (mg/L as CaCO ₃) (00900)	
Oct.	18	100	k40	26	81	8.5	<1	243	202	280
Nov.	16	96	330	24	50	5.7	<1	234	192	240
Dec.	7	95	580	24	70	6.4	12	228	207	270
Jan.	4	78	--	5.8	10	4.5	<1	68	56	88
Feb.	7	100	200	27	139	5.9	<1	249	207	320
	14	103	2300	8.3	22	3.9	<1	46	38	110
Mar.	22	100	--	19	31	3.2	<1	184	153	210
May	3	110	k60	29	32	3.1	7	254	223	300
June	20	99	330	20	14	3.5	<1	181	150	210
July	13	100	k90	24	31	3.8	10	217	194	250
Aug.	15	100	270	27	11	5.6	5	264	227	290
Sept.	13	--	100	24	49	4.9	<1	212	176	250

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
WATER-QUALITY RECORDS—CONTINUED

03245500 LITTLE MIAMI RIVER AT MILFORD, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[(00301), USGS National Water Information System parameter code; col/100 mL, colonies per 100 milliliters; mg/L, milligrams per liter; µg/L, micrograms per liter; deg C, degrees Celsius; k, value is estimated from a non-ideal colony count; IT, incremental titration; --, no data; <, concentration or value reported is less than that indicated; e, estimated value]

Date	Sulfate, dissolved (mg/L as SO ₄) (00945)	Chloride, dissolved (mg/L as Cl) (00940)	Calcium, dissolved (mg/L as Ca) (00915)	Iron, dissolved (µg/L as Fe) (01046)	Manganese, dissolved (µg/L as Mn) (01056)	Fluoride, dissolved (mg/L as F) (00950)	Silica, dissolved (mg/L as SiO ₂) (00955)	Dissolved solids, residue at 180 deg C (mg/L) (70300)	Nitrogen, nitrite, dissolved (mg/L as N) (00613)	Nitrogen, nitrite, plus nitrate, dissolved (mg/L as N) (00631)
Oct. 18	60	132	71	<10	9	0.6	3.9	552	0.01	3.6
Nov. 16	--	--	56	e5	8	0.5	0.5	399	<0.01	1.5
Dec. 7	56	120	70	e9	9	0.5	1.2	510	0.01	2.7
Jan. 4	18	20	26	55	<2	0.2	3.6	140	0.01	1.2
Feb. 7	62	251	84	26	32	0.5	4.3	756	0.08	3.3
Feb. 14	20	45	29	49	4	0.2	4.3	208	0.02	2.2
Mar. 22	39	60	55	15	5	0.2	5.1	339	0.02	5.0
May 3	55	60	72	e8	4	0.2	1.0	429	0.02	3.9
June 20	31	32	52	e5	4	0.2	5.3	300	0.03	6.0
July 13	39	59	60	<10	3	0.3	4.7	385	0.02	3.5
Aug. 15	52	101	71	<10	14	0.4	5.6	488	0.01	2.7
Sept. 13	44	82	60	<10	6	0.4	5.1	429	0.01	3.3

Date	Nitrogen, ammonia, dissolved (mg/L as N) (00608)	Nitrogen, ammonia, plus organic, total (mg/L as N) (00625)	Nitrogen, ammonia, plus organic, dissolved (mg/L as N) (00623)	Phosphorus, total (mg/L as P) (00665)	Phosphorus, dissolved (mg/L as P) (00666)	Phosphorus, ortho-phosphate dissolved (mg/L as P) (00671)	Carbon, organic, dissolved (mg/L as C) (00681)	Carbon, organic, particulate (mg/L as C) (00689)	Sediment, suspended (mg/L) (80154)
Oct. 18	0.03	0.56	0.35	0.76	0.66	0.67	3.7	0.4	15
Nov. 16	<0.02	0.56	0.42	0.23	0.34	0.26	4.1	0.6	7
Dec. 7	<0.02	0.48	0.37	0.56	0.53	0.48	4.2	0.4	7
Jan. 4	0.08	3.8	0.47	1.7	0.15	0.13	6.8	6.5	1140
Feb. 7	0.11	0.61	0.50	0.50	0.46	0.42	3.4	0.3	2
Feb. 14	0.11	2.5	0.52	1.1	0.15	0.13	6.4	10	737
Mar. 22	0.04	0.81	0.54	0.22	0.10	0.084	4.5	2.3	50
May 3	<0.02	0.43	0.28	0.12	0.11	0.084	3.2	0.5	6
June 20	0.02	0.86	0.44	0.22	0.08	0.063	4.7	2.4	70
July 13	<0.02	0.69	0.35	0.30	0.20	0.18	3.7	1.1	31
Aug. 15	<0.02	0.61	0.30	0.46	0.37	0.34	--	--	41
Sept. 13	<0.02	0.52	0.38	0.39	0.32	0.28	3.4	0.8	33

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
WATER-QUALITY RECORDS—CONTINUED

03246400 EAST FORK LITTLE MIAMI RIVER NEAR WILLIAMSBURG, OHIO

LOCATION.—Latitude 39°03'32", longitude 84°03'05", Clermont County, Hydrologic Unit 05090202, and at mile 36.0.

DRAINAGE AREA.—234.2 mi².

REMARKS.—Discharge is not measured at this site. Discharge is measured 1 mi downstream at East Fork Little Miami River at Williamsburg, Ohio (03246500), and published in volume 1, surface-water records.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

[μ S/cm, microsiemens per centimeter; (00095), USGS National Water Information System parameter code; deg C, degrees Celsius; mm of Hg, millimeters of mercury; mg/L, milligrams per liter; col/100mL; colonies per 100 milliliters; μ g/L, micrograms per liter; IT, incremental titration; --, no data; <, concentration or value reported is less than that indicated; k, value is estimated from a non-ideal colony count; e, estimated value]

Date	Time	Specific conductance, field (μ S/cm) (00095)	Specific conductance, lab (μ S/cm) (90095)	pH, whole water field (standard units) (00400)	pH, whole water lab (standard units) (00403)	Water temperature, (deg C) (00010)	Air temperature, (deg C) (00020)	Barometric pressure, (mm of Hg) (00025)	Oxygen, dissolved (mg/L) (00300)	
Mar.										
	28	1030	492	521	8.3	8.1	7.0	11.5	726	10.3
May										
	11	1140	552	577	8.4	8.2	25.5	22.5	739	8.7
	24	1110	524	547	7.9	8.0	27.5	20.5	729	7.6
June										
	7	1220	470	480	8.4	8.2	22.0	21.0	748	9.6
	21	0910	313	315	7.7	7.7	24.0	22.5	737	6.8
July										
	6	1030	232	229	7.6	7.8	25.0	23.0	738	--
	18	1040	491	548	8.8	8.5	27.0	--	739	--
Aug.										
	2	1100	450	468	8.6	8.1	29.0	--	--	--
	15	1300	385	383	8.7	8.3	32.5	25.5	755	12.4
	28	1150	459	464	8.0	8.2	28.0	23.5	745	7.9

Date	Oxygen, dissolved (percent of saturation) (00301)	<i>E. coli</i> , water, whole, total (col/100 mL) (31633)	Magnesium, dissolved (mg/L as Mg) (00925)	Sodium, dissolved (mg/L as Na) (00930)	Potassium, dissolved (mg/L as K) (00935)	Carbonate, water, dissolved, IT, field (mg/L as CO ₃) (00452)	Bicarbonate, water, dissolved, IT, field (mg/L as HCO ₃) (00453)	Alkalinity, water, dissolved, IT, field (as CaCO ₃) (39086)	Hardness, total (mg/L as CaCO ₃) (00900)	
Mar.										
	28	100	--	19	12	3.1	2	195	166	230
May										
	11	104	--	24	14	3.4	10	212	192	260
	24	89	300	22	15	4.2	<1	114	94	240
June										
	7	108	k110	17	8.7	6.8	7	164	147	210
	21	82	k350	10	4.8	7.1	<1	115	95	130
July										
	6	--	3600	6.2	3.5	6.3	<1	91	75	85
	18	--	120	20	17	5.4	17	181	178	240
Aug.										
	2	--	k80	17	12	5.8	7	176	158	200
	15	132	200	13	9.2	2.3	12	145	141	180
	28	95	110	16	12	6.1	4	193	166	200

Date	Sulfate, dissolved (mg/L as SO ₄) (00945)	Chloride, dissolved (mg/L as Cl) (00940)	Calcium, dissolved (mg/L as Ca) (00915)	Iron, dissolved (μ g/L as Fe) (01046)	Manganese, dissolved (μ g/L as Mn) (01056)	Fluoride, dissolved (mg/L as F) (00950)	Silica, dissolved (mg/L as SiO ₂) (00955)	Dissolved solids, residue at 180 deg C (mg/L) (70300)	Nitrogen, nitrite, dissolved (mg/L as N) (00613)	
Mar.										
	28	45	26	60	e6	10	0.2	2.6	279	0.01
May										
	11	56	31	64	e8	5	0.2	0.5	331	<0.01
	24	54	32	59	e6	6	0.2	1.5	321	0.04
June										
	7	36	26	56	<10	e2	0.2	4.7	305	0.03
	21	19	13	37	32	4	0.2	7.0	208	0.07
July										
	6	13	9.6	24	51	<2	0.2	5.7	149	0.02
	18	55	31	63	<10	<2	0.3	4.5	332	<0.01
Aug.										
	2	35	24	51	<10	<2	0.2	2.5	274	<0.01
	15	28	20	50	e8	e2	0.2	2.9	234	<0.01
	28	34	24	56	e5	<2	0.2	2.0	269	<0.01

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
WATER-QUALITY RECORDS—CONTINUED

03246400 EAST FORK LITTLE MIAMI RIVER NEAR WILLIAMSBURG, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[mg/L, milligrams per liter; (00631), USGS National Water Information System parameter code; µg/L, micrograms per liter; --, no data; <, concentration or value reported is less than that indicated; e, estimated value]

Date	Nitrogen, nitrite plus nitrate, dissolved (mg/L as N) (00631)	Nitrogen, ammonia, dissolved (mg/L as N) (00608)	Nitrogen, ammonia plus organic, total (mg/L as N) (00625)	Nitrogen, ammonia plus organic, dissolved (mg/L as N) (00623)	Phosphorus, total (mg/L as P) (00665)	Phosphorus, dissolved (mg/L as P) (00666)	Phosphorus, ortho-phosphate, dissolved (mg/L as P) (00671)	Sediment, suspended (mg/L) (80154)
Mar. 28	2.1	<0.02	0.74	0.40	0.11	0.04	0.02	24
May 11	<0.05	<0.02	0.71	0.44	--	--	--	--
May 24	1.2	0.07	0.81	0.52	0.15	0.11	0.08	28
June 7	5.5	<0.02	1.0	0.62	0.16	0.09	0.06	24
June 21	4.5	0.04	0.96	0.73	0.30	0.22	0.19	42
July 6	1.2	0.04	1.2	0.72	0.44	0.27	0.24	126
July 18	0.50	<0.02	0.95	0.41	0.18	0.05	0.03	50
Aug. 2	<0.05	<0.02	0.91	0.40	0.12	0.06	0.04	18
Aug. 15	<0.05	<0.02	0.97	0.47	0.15	0.06	0.04	21
Aug. 28	<0.05	<0.02	0.77	0.43	0.10	0.07	0.05	16

Date	Acetochlor, water, filtered (µg/L) (49260)	Alachlor, water, filtered (µg/L) (46342)	Atrazine, water, filtered (µg/L) (39632)	Deethyl-atrazine, water, filtered (µg/L) (04040)	Methyl-azinphos, water, filtered (µg/L) (82686)	Benfluralin, water, filtered (µg/L) (82673)	Butylate, water, filtered (µg/L) (04028)	Carbaryl, water, filtered (µg/L) (82680)
Mar. 28	--	--	--	--	--	--	--	--
May 11	0.027	<0.002	0.16	e0.033	<0.001	<0.002	<0.002	<0.002
May 24	3.8	0.41	14.6	e0.78	<0.001	<0.002	<0.002	<0.002
June 7	0.49	0.098	18.8	e2.6	<0.001	<0.002	<0.002	<0.002
June 21	0.28	0.041	4.7	e0.70	<0.001	<0.002	<0.002	<0.002
July 6	0.10	0.038	0.91	e0.33	<0.001	<0.002	<0.002	<0.002
July 18	0.022	0.006	0.58	e0.18	<0.001	<0.002	<0.002	<0.002
Aug. 2	0.020	0.005	0.46	e0.14	<0.001	<0.002	<0.002	<0.002
Aug. 15	0.026	0.009	0.54	e0.17	<0.001	<0.002	<0.002	<0.002
Aug. 28	<0.01	<0.002	0.32	e0.087	<0.001	<0.002	<0.002	<0.002

Date	Carbofuran, water, filtered (µg/L) (82674)	Chlorpyrifos, water, filtered (µg/L) (38933)	Cyanazine, water, filtered (µg/L) (04041)	DCPA, water, filtered (µg/L) (82682)	p,p'-DDE, water, filtered (µg/L) (34653)	Diazinon, water, filtered (µg/L) (39572)	Dieldrin, water, filtered (µg/L) (39381)	2,6-diethyl-aniline, water, filtered (µg/L) (82660)
Mar. 28	--	--	--	--	--	--	--	--
May 11	<0.003	<0.004	<0.01	<0.002	<0.006	<0.002	<0.001	<0.003
May 24	<0.003	<0.004	0.059	<0.002	<0.006	0.022	<0.001	<0.003
June 7	<0.003	<0.004	0.038	<0.002	<0.006	<0.002	<0.001	<0.003
June 21	<0.003	0.004	0.021	<0.002	<0.006	e0.003	<0.001	<0.003
July 6	e.018	e0.004	<0.012	<0.002	<0.006	<0.002	<0.001	<0.003
July 18	<0.003	<0.004	0.008	<0.002	<0.006	<0.002	<0.001	<0.003
Aug. 2	<0.003	<0.004	0.014	<0.002	<0.006	<0.002	<0.001	<0.003
Aug. 15	<0.003	<0.004	0.017	<0.002	<0.006	0.004	<0.001	<0.003
Aug. 28	<0.003	<0.004	0.009	<0.002	<0.006	<0.002	<0.001	<0.003

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
WATER-QUALITY RECORDS—CONTINUED

03246400 EAST FORK LITTLE MIAMI RIVER NEAR WILLIAMSBURG, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[µg/L, micrograms per liter; (82677), USGS National Water Information System parameter code; --, no data; <, concentration or value reported is less than that indicated; e, estimated value]

Date	Disulfoton, water, filtered (µg/L) (82677)	Methyl parathion, water, filtered (µg/L) (82667)	EPTC, water, filtered (µg/L) (82668)	Ethalfuralin, water, filtered (µg/L) (82663)	Ethoprop, water, filtered (µg/L) (82672)	Fonofos, water, filtered (µg/L) (04095)	Alpha BHC, water, filtered (µg/L) (34253)	Lindane, water, filtered (µg/L) (39341)
Mar. 28	--	--	--	--	--	--	--	--
May 11	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004
24	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004
June 7	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004
21	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004
July 6	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004
18	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004
Aug. 2	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004
15	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004
28	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004
Date	Linuron, water, filtered (µg/L) (82666)	Malathion, water, filtered (µg/L) (39532)	Metolachlor, water, filtered (µg/L) (39415)	Metribuzin, water, filtered (µg/L) (82630)	Molinate, water, filtered (µg/L) (82671)	Napropamide, water, filtered (µg/L) (82684)	Parathion, water, filtered (µg/L) (39542)	Pebulate, water, filtered (µg/L) (82669)
Mar. 28	--	--	--	--	--	--	--	--
May 11	<0.002	<0.005	0.077	<0.004	<0.004	<0.003	<0.004	<0.004
24	<0.002	<0.005	1.1	0.23	<0.004	<0.003	<0.004	<0.004
June 7	<0.002	<0.005	3.7	0.15	<0.004	<0.003	<0.004	<0.004
21	<0.002	<0.005	2.3	0.10	<0.004	<0.003	<0.004	<0.004
July 6	<0.002	<0.005	0.62	0.043	<0.004	<0.003	<0.004	<0.004
18	<0.002	<0.005	0.23	0.008	<0.004	<0.003	<0.004	<0.004
Aug. 2	<0.002	<0.005	0.23	0.006	<0.004	<0.003	<0.004	<0.004
15	<0.002	<0.005	0.20	<0.004	<0.004	<0.003	<0.004	<0.004
28	<0.002	<0.005	0.076	e0.004	<0.004	<0.003	<0.004	<0.004
Date	Pendimethalin, water, filtered (µg/L) (82683)	Permethrin, cis, water, filtered (µg/L) (82687)	Phorate, water, filtered (µg/L) (82664)	Prometon, water, filtered (µg/L) (04037)	Pronamide, water, filtered (µg/L) (82676)	Propachlor, water, filtered (µg/L) (04024)	Propanil, water, filtered (µg/L) (82679)	Propargite, water, filtered (µg/L) (82685)
Mar. 28	--	--	--	--	--	--	--	--
May 11	<0.004	<0.005	<0.002	<0.018	<0.003	<0.007	<0.004	<0.013
24	<0.01	<0.005	<0.002	<0.018	<0.003	<0.007	<0.004	<0.013
June 7	<0.004	<0.005	<0.002	e0.009	<0.003	<0.007	<0.004	<0.013
21	<0.004	<0.005	<0.002	e0.007	<0.003	<0.007	<0.004	<0.013
July 6	<0.02	<0.005	<0.002	e0.011	<0.003	<0.007	<0.004	<0.013
18	<0.004	<0.005	<0.002	e0.014	<0.003	<0.007	<0.004	<0.013
Aug. 2	<0.004	<0.005	<0.002	e0.013	<0.003	<0.007	<0.004	<0.013
15	<0.004	<0.005	<0.002	e0.007	<0.003	<0.007	<0.004	<0.013
28	<0.004	<0.005	<0.002	e0.008	<0.003	<0.007	<0.004	<0.013

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
WATER-QUALITY RECORDS—CONTINUED

03246400 EAST FORK LITTLE MIAMI RIVER NEAR WILLIAMSBURG, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[µg/L, micrograms per liter; (04035), USGS National Water Information System parameter code; --, no data; <, concentration or value reported is less than that indicated; e, estimated value]

Date	Simazine, water, filtered (µg/L) (04035)	Tebuthiuron, water, filtered (µg/L) (82670)	Terbacil, water, filtered (µg/L) (82665)	Terbufos, water, filtered (µg/L) (82675)	Thiobencarb, water, filtered (µg/L) (82681)	Triallate, water, filtered (µg/L) (82678)	Trifluralin, water, filtered (µg/L) (82661)
Mar. 28	--	--	--	--	--	--	--
May 11	0.018	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
24	0.64	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
June 7	2.8	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
21	1.0	0.016	<0.007	<0.013	<0.002	<0.001	<0.002
July 6	0.18	e0.033	<0.007	<0.013	<0.002	<0.001	<0.002
18	0.092	0.013	<0.007	<0.013	<0.002	<0.001	<0.002
Aug. 2	0.065	e0.01	<0.007	<0.013	<0.002	<0.001	<0.002
15	0.055	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
28	0.038	e0.009	<0.007	<0.013	<0.002	<0.001	<0.002

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
WATER-QUALITY RECORDS—CONTINUED

03267900 MAD RIVER AT ST. PARIS PIKE NEAR EAGLE CITY, OHIO

LOCATION.—Latitude 39°57'51", longitude 83°49'54", Clark County, Hydrologic Unit 05080001, and at mile 28.8 .

DRAINAGE AREA.—310 mi².

REMARKS.—This station is maintained by the Miami Conservancy District. Discharge is measured at this site and published in volume 1, surface-water records.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

[μ S/cm, microsiemens per centimeter; (00095), USGS National Water Information System parameter code; deg C, degrees Celsius; mm of Hg, millimeters of mercury; mg/L, milligrams per liter; col/100mL; colonies per 100 milliliters; μ g/L, micrograms per liter; --, no data]

Date	Time	Specific conductance, field (μ S/cm) (00095)	Specific conductance, lab (μ S/cm) (90095)	pH, whole water field (standard units) (00400)	pH, whole water lab (standard units) (00403)	Air temperature, (deg C) (00020)	Water temperature, (deg C) (00010)	Barometric pressure, (mm of Hg) (00025)	Oxygen, dissolved (mg/L) (00300)	
Oct.	21	1330	728	738	8.2	8.2	15.0	10.0	739	11.2
Nov.	17	1400	719	722	8.2	8.3	3.5	6.5	746	13.3
Dec.	9	0945	742	749	8.3	8.1	3.0	5.5	743	8.7
Jan.	4	1010	443	467	7.8	7.6	3.0	7.5	733	10.3
Feb.	11	1130	699	721	7.8	8.0	0.0	4.5	741	11.6
Mar.	7	0930	731	749	8.2	8.2	15.0	9.5	743	13.1
	21	1020	594	613	7.9	8.2	6.0	8.5	745	11.3
Apr.	5	0830	667	692	8.0	7.9	2.0	6.0	740	11.8
	8	1220	282	307	7.6	7.7	3.0	9.5	736	10.8
	25	1350	708	716	7.4	8.1	20.0	13.0	736	11.9
May	2	1000	653	681	7.7	8.1	17.5	12.0	740	10.0
	10	0920	692	724	7.7	8.0	13.5	15.5	732	8.1
	16	1000	721	771	8.1	8.1	21.0	12.0	741	10.4
June	13	1040	741	725	8.2	7.8	28.0	17.5	737	9.4
	22	1000	668	671	8.3	7.9	27.5	17.5	734	8.6
	28	1020	723	734	8.1	8.0	21.0	16.5	738	9.0
July	11	1400	710	707	8.3	8.3	26.0	19.0	739	--
	19	1410	670	668	8.2	8.2	18.0	--	--	--
Aug.	16	1540	708	698	8.3	8.3	22.0	21.5	755	13.7
Sept.	14	1000	741	738	7.3	8.3	20.0	15.0	739	--
	26	1430	605	621	7.9	8.0	17.0	13.5	743	7.2

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
WATER-QUALITY RECORDS—CONTINUED

03267900 MAD RIVER AT ST. PARIS PIKE NEAR EAGLE CITY, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[(00301), USGS National Water Information System parameter code; col/100 mL, colonies per 100 milliliters; mg/L, milligrams per liter; <, concentration or value reported is less than that indicated; k, value is estimated from a non-ideal colony count; IT, incremental titration; --, no data]

Date	Oxygen, dissolved (percent of saturation) (00301)	<i>E. coli</i> , water whole total (col/100 mL) (31633)	Magnesium, dissolved (mg/L as Mg) (00925)	Sodium, dissolved (mg/L as Na) (00930)	Potassium, dissolved (mg/L as K) (00935)	Carbonate, water, dissolved, IT, field (mg/L as CO ₃) (00452)	Bicarbonate, water, dissolved, IT, field (mg/L as HCO ₃) (00453)	Alkalinity, water, dissolved, IT, field (mg/L as CaCO ₃) (39086)	Hardness, total (mg/L as CaCO ₃) (00900)
Oct. 21	102	20	35	12	2.8	<1	351	292	370
Nov. 17	110	k20	35	12	2.0	<1	343	282	370
Dec. 9	70	--	35	13	2.5	<1	348	286	380
Jan. 4	102	5300	17	5.6	5.7	<1	148	122	210
Feb. 11	92	2300	32	14	2.4	<1	283	235	340
Mar. 7	118	55	36	10	2.2	<1	343	282	380
21	98	420	26	8.3	2.5	<1	249	207	280
Apr. 5	98	870	31	9.7	2.2	<1	301	250	340
8	99	3800	12	3.3	4.2	<1	122	101	130
25	117	--	34	8.8	1.9	30	266	271	360
May 2	96	1200	31	8.6	1.9	<1	301	250	330
10	85	1300	32	9.7	1.9	<1	322	267	350
16	100	--	33	9.2	4.4	30	274	275	360
June 13	102	190	33	8.6	2.0	<1	329	274	360
22	94	760	31	9.1	2.5	<1	312	259	330
28	96	280	36	11	2.0	<1	338	281	370
July 11	--	k44	34	9.9	2.2	24	283	276	360
19	--	2800	31	10	2.1	<1	304	252	330
Aug. 16	151	90	34	10	2.2	7	315	274	350
Sept. 14	--	<1	--	--	2.6	--	340	283	--
26	71	k11000	28	6.4	3.7	<1	281	233	320

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
WATER-QUALITY RECORDS—CONTINUED

03267900 MAD RIVER AT ST. PARIS PIKE NEAR EAGLE CITY, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[mg/L, milligrams per liter; (00945), USGS National Water Information System parameter code; µg/L, micrograms per liter; deg C, degrees Celsius; <, concentration or value reported is less than that indicated; --, no data; e, estimated value]

Date	Sulfate, dissolved (mg/L as SO ₄) (00945)	Chloride, dissolved (mg/L as Cl) (00940)	Calcium, dissolved (mg/L as Ca) (00915)	Iron, dissolved (µg/L as Fe) (01046)	Manganese, dissolved (µg/L as Mn) (01056)	Fluoride, dissolved (mg/L as F) (00950)	Silica, dissolved (mg/L as SiO ₂) (00955)	Dissolved solids, residue at 180 deg C (mg/L) (70300)	Nitrogen, nitrite, dissolved (mg/L as N) (00613)
Oct. 21	65	29	89	10	4	0.3	8.0	417	<0.01
Nov. 17	26	9.7	91	11	5	0.3	7.4	428	0.02
Dec. 9	68	28	95	e7	4	0.3	8.7	453	0.01
Jan. 4	53	20	55	37	2	0.2	6.3	282	0.03
Feb. 11	69	30	84	15	27	0.2	6.2	433	0.02
Mar. 7	71	23	92	21	15	0.3	5.4	450	0.02
21	52	24	70	15	8	0.3	6.9	367	0.03
Apr. 5	60	23	84	13	14	0.3	6.9	408	0.02
8	19	7.8	34	53	e2	0.3	5.9	183	0.03
25	69	20	89	16	19	0.3	6.0	427	0.01
May 2	60	20	82	16	15	0.2	5.2	402	0.02
10	64	22	87	e7	12	0.2	6.1	416	0.02
16	68	21	90	12	9	0.3	5.7	429	0.01
June 13	67	21	88	e8	5	0.3	7.0	411	<0.01
22	58	20	83	e6	5	0.3	7.5	410	0.01
28	65	22	90	e6	4	0.3	6.6	435	0.01
July 11	67	22	88	e6	3	0.7	6.3	437	0.01
19	62	21	79	<10	3	0.3	5.7	408	0.02
Aug. 16	67	22	84	e10	5	0.3	5.1	409	0.01
Sept. 14	69	24	--	--	--	0.3	--	458	0.01
26	56	16	84	22	10	0.3	9.1	384	0.02

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
WATER-QUALITY RECORDS—CONTINUED

03267900 MAD RIVER AT ST. PARIS PIKE NEAR EAGLE CITY, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[mg/L, milligrams per liter; (00631), USGS National Water Information System parameter code; <, concentration or value reported is less than that indicated; > concentration or value reported is greater than that indicated; --, no data]

Date	Nitrogen, nitrite plus nitrate, dissolved (mg/L as N) (00631)	Nitrogen, ammonia, dissolved (mg/L as N) (00608)	Nitrogen, ammonia plus organic total (mg/L as N) (00625)	Nitrogen, ammonia plus organic dissolved (mg/L as N) (00623)	Phosphorus, total (mg/L as P) (00665)	Phosphorus, dissolved (mg/L as P) (00666)	Phosphorus, ortho-phosphate dissolved (mg/L as P) (00671)	Carbon, organic dissolved (mg/L as C) (00681)	Carbon, organic particulate (mg/L as C) (00689)
Oct. 21	3.9	<0.02	0.2	0.2	0.07	0.07	0.05	2.1	0.2
Nov. 17	1.4	<0.02	0.5	0.4	0.23	0.36	0.21	1.7	0.2
Dec. 9	3.9	<0.02	0.2	0.2	0.07	0.07	0.06	1.6	0.2
Jan. 4	5.5	0.15	4.2	0.8	1.0	0.11	0.05	8.3	>10
Feb. 11	3.9	0.14	1.5	0.4	0.35	0.07	0.06	2.9	>5.0
Mar. 7	3.6	<0.02	0.2	0.2	0.04	0.02	0.02	2.0	0.3
Mar. 21	6.5	0.05	1.0	0.5	0.12	0.04	0.02	4.7	1.9
Apr. 5	5.5	<0.02	0.5	0.3	0.05	0.02	0.02	3.2	0.3
Apr. 8	3.6	0.09	3.2	0.7	0.88	0.12	0.09	8.0	>10
Apr. 25	4.2	<0.02	0.6	0.2	0.02	0.02	0.02	2.2	<0.2
May 2	4.0	<0.02	0.5	0.2	0.04	0.01	<0.01	3.0	0.6
May 10	3.8	<0.02	0.9	0.2	0.08	0.03	0.02	2.3	0.7
May 16	4.2	<0.02	0.3	0.1	0.03	0.02	0.01	1.9	<0.2
June 13	4.0	<0.02	0.2	0.2	0.04	0.03	0.03	1.7	0.2
June 22	3.9	<0.02	0.4	0.2	0.07	0.04	0.03	2.6	0.4
June 28	4.0	<0.02	0.2	0.2	0.05	0.04	0.03	1.7	<0.2
July 11	3.6	0.02	0.2	0.2	0.06	0.05	0.05	1.7	0.3
July 19	3.5	<0.02	0.4	0.2	0.07	0.03	0.03	1.8	1.1
Aug. 16	3.7	<0.02	0.2	0.2	0.05	0.04	0.04	--	--
Sept. 14	3.7	<0.02	0.3	0.2	0.08	0.07	0.06	2.2	0.4
Sept. 26	4.4	0.03	0.8	0.6	0.17	0.09	0.07	6.4	1.2

PROJECT DATA

Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)

WATER-QUALITY RECORDS—CONTINUED

03267900 MAD RIVER AT ST. PARIS PIKE NEAR EAGLE CITY, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[mg/L, milligrams per liter; (80154), USGS National Water Information System parameter code; µg/L, micrograms per liter; <, concentration or value reported is less than that indicated; --, no data; e, estimated value]

Date	Sediment, suspended (mg/L) (80154)	Acetochlor, water, filtered (µg/L) (49260)	Alachlor, water, filtered (µg/L) (46342)	Atrazine, water, filtered (µg/L) (39632)	Deethyl-atrazine, water, filtered (µg/L) (04040)	Methyl-azinphos, water, filtered (µg/L) (82686)	Benfluralin, water, filtered (µg/L) (82673)	Butylate, water, filtered (µg/L) (04028)
Oct. 21	3	<0.002	<0.002	0.006	e0.006	<0.001	<0.002	<0.002
Nov. 17	4	<0.002	<0.002	0.006	e0.005	<0.001	<0.002	<0.002
Dec. 9	13	<0.002	<0.002	<0.001	e0.006	<0.001	<0.002	<0.002
Jan. 4	790	<0.010	<0.002	0.067	e0.061	<0.001	<0.002	<0.002
Feb. 11	182	<0.002	<0.002	0.016	e0.013	<0.001	<0.002	<0.002
Mar. 7	18	<0.002	<0.002	0.008	e0.009	<0.001	<0.002	<0.002
Mar. 21	28	<0.010	<0.002	0.053	e0.055	<0.001	<0.002	<0.002
Apr. 5	30	0.008	<0.002	0.039	e0.033	<0.001	<0.002	<0.002
Apr. 8	773	0.088	0.007	2.05	e0.075	<0.001	<0.002	<0.002
Apr. 25	6	<0.002	<0.002	0.034	e0.018	<0.001	<0.002	<0.002
May 2	44	0.064	0.005	0.42	e0.021	<0.001	<0.002	<0.002
May 10	--	0.073	<0.010	0.16	e0.020	<0.001	<0.002	<0.002
May 16	--	0.021	<0.002	0.14	e0.018	<0.001	<0.002	<0.002
June 13	6	0.006	<0.002	0.082	e0.011	<0.001	<0.002	<0.002
June 22	43	0.012	<0.002	0.20	e0.066	<0.001	<0.002	<0.002
June 28	30	<0.002	<0.002	0.054	e0.013	<0.001	<0.002	<0.002
July 11	22	<0.002	<0.002	0.024	e0.007	<0.001	<0.002	<0.002
July 19	94	<0.002	<0.002	0.042	e0.009	<0.001	<0.002	<0.002
Aug. 16	26	<0.002	<0.002	0.017	e0.009	<0.001	<0.002	<0.002
Sept. 14	24	<0.002	<0.002	0.025	e0.015	<0.001	<0.002	<0.002
Sept. 26	38	<0.002	<0.002	0.094	e0.10	<0.001	<0.002	<0.002

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
WATER-QUALITY RECORDS—CONTINUED

03267900 MAD RIVER AT ST. PARIS PIKE NEAR EAGLE CITY, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[µg/L, micrograms per liter; (82680), USGS National Water Information System parameter code; <, concentration or value reported is less than that indicated; e, estimated value]

Date	Carbaryl, water, filtered (µg/L) (82680)	Carbofuran, water, filtered (µg/L) (82674)	Chlorpyrifos, water, filtered (µg/L) (38933)	Cyanazine, water, filtered (µg/L) (04041)	DCPA, water, filtered (µg/L) (82682)	p,p'-DDE, water, filtered (µg/L) (34653)	Diazinon, water, filtered (µg/L) (39572)	Dieldrin, water, filtered (µg/L) (39381)
Oct. 21	<0.003	<0.003	<0.004	<0.004	<0.002	<0.006	<0.002	<0.001
Nov. 17	<0.003	<0.003	<0.004	<0.004	<0.002	<0.006	<0.002	<0.001
Dec. 9	<0.003	<0.003	<0.004	<0.004	<0.002	<0.006	<0.002	<0.001
Jan. 4	<0.003	<0.003	<0.004	<0.004	<0.002	<0.006	<0.002	<0.001
Feb. 11	<0.003	<0.003	<0.004	<0.004	<0.002	<0.006	<0.002	<0.001
Mar. 7	<0.003	<0.003	<0.004	<0.004	<0.002	<0.006	<0.002	<0.001
21	<0.003	<0.003	<0.004	0.011	<0.002	<0.006	e0.002	<0.001
Apr. 5	<0.003	<0.003	<0.004	0.008	<0.002	<0.006	e0.003	<0.001
8	<0.003	<0.003	<0.004	0.019	<0.002	<0.006	0.011	<0.001
25	<0.003	<0.003	<0.004	<0.004	<0.002	<0.006	<0.002	<0.001
May 2	<0.003	<0.003	<0.004	<0.010	<0.002	<0.006	<0.002	<0.001
10	<0.003	<0.003	<0.004	<0.004	<0.002	<0.006	0.007	<0.001
16	e0.003	<0.003	<0.004	<0.004	<0.002	<0.006	<0.002	<0.001
June 13	<0.003	<0.003	0.006	<0.004	<0.002	<0.006	<0.002	<0.001
22	<0.003	<0.003	<0.004	<0.004	<0.002	<0.006	e0.003	<0.001
28	<0.003	<0.003	<0.004	<0.004	<0.002	<0.006	<0.002	<0.001
July 11	<0.003	<0.003	<0.004	<0.004	<0.002	<0.006	<0.002	<0.001
19	e0.008	<0.003	<0.004	0.006	<0.002	<0.006	0.14	<0.001
Aug. 16	<0.003	<0.003	<0.004	<0.004	<0.002	<0.006	<0.002	<0.001
Sept. 14	e0.023	<0.003	<0.004	<0.004	<0.002	<0.006	<0.002	<0.001
26	<0.003	<0.003	<0.004	<0.004	<0.002	<0.006	<0.002	<0.001

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
WATER-QUALITY RECORDS—CONTINUED

03267900 MAD RIVER AT ST. PARIS PIKE NEAR EAGLE CITY, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[µg/L, micrograms per liter; (82660), USGS National Water Information System parameter code; <, concentration or value reported is less than that indicated]

Date	2,6-diethyl- aniline, water, filtered (µg/L) (82660)	Disulfoton, water, filtered (µg/L) (82677)	Methyl- parathion, water, filtered (µg/L) (82667)	EPTC, water, filtered (µg/L) (82668)	Ethalfuralin, water, filtered (µg/L) (82663)	Ethoprop, water, filtered (µg/L) (82672)	Fonofos, water, filtered (µg/L) (04095)	Alpha BHC, water, filtered (µg/L) (34253)
Oct. 21	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002
Nov. 17	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002
Dec. 9	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002
Jan. 4	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002
Feb. 11	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002
Mar. 7	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002
Mar. 21	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002
Apr. 5	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002
Apr. 8	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002
Apr. 25	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002
May 2	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002
May 10	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002
May 16	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002
June 13	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002
June 22	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002
June 28	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002
July 11	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002
July 19	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002
Aug. 16	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002
Sept. 14	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002
Sept. 26	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
WATER-QUALITY RECORDS—CONTINUED

03267900 MAD RIVER AT ST. PARIS PIKE NEAR EAGLE CITY, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[µg/L, micrograms per liter; (39341), USGS National Water Information System parameter code; <, concentration or value reported is less than that indicated; e, estimated value]

Date	Lindane, water, filtered (µg/L) (39341)	Linuron, water, filtered (µg/L) (82666)	Malathion, water, filtered (µg/L) (39532)	Metolachlor, water, filtered (µg/L) (39415)	Metribuzin, water, filtered (µg/L) (82630)	Molinate, water, filtered (µg/L) (82671)	Napropamide, water, filtered (µg/L) (82684)	Parathion, water, filtered (µg/L) (39542)
Oct.								
21	<0.004	<0.002	<0.005	e0.003	<0.004	<0.004	<0.003	<0.004
Nov.								
17	<0.004	<0.002	<0.005	<0.002	<0.004	<0.004	<0.003	<0.004
Dec.								
9	<0.004	<0.002	<0.005	0.005	<0.004	<0.004	<0.003	<0.004
Jan.								
4	<0.004	<0.002	<0.005	0.15	<0.004	<0.004	<0.003	<0.004
Feb.								
11	<0.004	<0.002	<0.005	0.014	<0.004	<0.004	<0.003	<0.004
Mar.								
7	<0.004	<0.002	<0.005	0.005	<0.004	<0.004	<0.003	<0.004
21	<0.004	<0.002	<0.005	0.047	0.017	<0.004	<0.003	<0.004
Apr.								
5	<0.004	<0.002	<0.005	0.024	0.014	<0.004	<0.003	<0.004
8	<0.004	<0.002	<0.005	0.94	0.087	<0.004	<0.003	<0.004
25	<0.004	<0.002	<0.005	0.017	<0.004	<0.004	<0.003	<0.004
May								
2	<0.004	<0.002	<0.005	0.36	0.026	<0.004	<0.003	<0.004
10	<0.004	<0.002	<0.005	0.092	<0.004	<0.004	<0.003	<0.004
16	<0.004	<0.002	<0.005	0.038	<0.004	<0.004	<0.003	<0.004
June								
13	<0.004	<0.002	<0.005	0.027	<0.004	<0.004	<0.003	<0.004
22	<0.004	<0.002	<0.005	0.097	<0.004	<0.004	<0.003	<0.004
28	<0.004	<0.002	<0.005	0.016	<0.004	<0.004	<0.003	<0.004
July								
11	<0.004	<0.002	<0.005	0.01	<0.004	<0.004	<0.003	<0.004
19	<0.004	<0.002	<0.005	0.018	<0.004	<0.004	<0.003	<0.004
Aug.								
16	<0.004	<0.002	<0.005	0.007	<0.004	<0.004	<0.003	<0.004
Sept.								
14	<0.004	<0.002	<0.005	0.007	<0.004	<0.004	<0.003	<0.004
26	<0.004	<0.002	<0.012	0.051	<0.004	<0.004	<0.003	<0.004

PROJECT DATA

Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)

WATER-QUALITY RECORDS—CONTINUED

03267900 MAD RIVER AT ST. PARIS PIKE NEAR EAGLE CITY, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[µg/L, micrograms per liter; (82669), USGS National Water Information System parameter code; <, concentration or value reported is less than that indicated; e, estimated value]

Date	Pebulate, water, filtered (µg/L) (82669)	Pendimethalin, water, filtered (µg/L) (82683)	Permethrin, cis, water, filtered (µg/L) (82687)	Phorate, water, filtered (µg/L) (82664)	Prometon, water, filtered (µg/L) (04037)	Pronamide, water, filtered (µg/L) (82676)	Propachlor, water, filtered (µg/L) (04024)	Propanil, water, filtered (µg/L) (82679)
Oct. 21	<0.004	<0.004	<0.005	<0.002	<0.018	<0.003	<0.007	<0.004
Nov. 17	<0.004	<0.004	<0.005	<0.002	<0.018	<0.003	<0.007	<0.004
Dec. 9	<0.004	<0.004	<0.005	<0.002	<0.018	<0.003	<0.007	<0.004
Jan. 4	<0.004	<0.004	<0.005	<0.002	e0.005	<0.003	<0.007	<0.004
Feb. 11	<0.004	<0.004	<0.005	<0.002	<0.018	<0.003	<0.007	<0.004
Mar. 7	<0.004	<0.004	<0.005	<0.002	<0.018	<0.003	<0.007	<0.004
21	<0.004	<0.004	<0.005	<0.002	e0.002	<0.003	<0.007	<0.004
Apr. 5	<0.004	<0.004	<0.005	<0.002	e0.003	<0.003	<0.007	<0.004
8	<0.004	<0.004	<0.005	<0.002	e0.006	<0.003	<0.007	<0.004
25	<0.004	<0.004	<0.005	<0.002	<0.018	<0.003	<0.007	<0.004
May 2	<0.004	<0.004	<0.005	<0.002	e0.008	<0.003	<0.007	<0.004
10	<0.004	<0.004	<0.005	<0.002	e0.008	<0.003	<0.007	<0.004
16	<0.004	<0.004	<0.005	<0.002	e0.003	<0.003	<0.007	<0.004
June 13	<0.004	<0.004	<0.005	<0.002	e0.002	<0.003	<0.007	<0.004
22	<0.004	<0.004	<0.005	<0.002	e0.005	<0.003	<0.007	<0.004
28	<0.004	<0.004	<0.005	<0.002	e0.004	<0.003	<0.007	<0.004
July 11	<0.004	<0.004	<0.005	<0.002	e0.004	<0.003	<0.007	<0.004
19	<0.004	<0.004	<0.005	<0.002	e0.009	<0.003	<0.007	<0.004
Aug. 16	<0.004	<0.004	<0.005	<0.002	<0.018	<0.003	<0.007	<0.004
Sept. 14	<0.004	<0.004	<0.005	<0.002	e0.002	<0.003	<0.007	<0.004
26	<0.004	<0.004	<0.005	<0.002	<0.018	<0.003	<0.007	<0.004

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
WATER-QUALITY RECORDS—CONTINUED

03267900 MAD RIVER AT ST. PARIS PIKE NEAR EAGLE CITY, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[µg/L, micrograms per liter; (82685), USGS National Water Information System parameter code; <, concentration or value reported is less than that indicated; e, estimated value]

Date	Propargite, water, filtered (µg/L) (82685)	Simazine, water, filtered (µg/L) (04035)	Tebuthiuron, water, filtered (µg/L) (82670)	Terbacil, water, filtered (µg/L) (82665)	Terbufos, water, filtered (µg/L) (82675)	Thiobencarb, water, filtered (µg/L) (82681)	Triallate, water, filtered (µg/L) (82678)	Trifluralin, water, filtered (µg/L) (82661)
Oct. 21	<0.013	<0.005	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
Nov. 17	<0.013	<0.005	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
Dec. 9	<0.013	<0.005	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
Jan. 4	<0.013	0.022	0.018	<0.007	<0.013	<0.002	<0.001	<0.002
Feb. 11	<0.013	<0.005	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
Mar. 7	<0.013	<0.005	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
21	<0.013	0.01	e0.005	<0.007	<0.013	<0.002	<0.001	<0.002
Apr. 5	<0.013	0.007	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
8	<0.013	0.27	<0.02	<0.007	<0.013	<0.002	<0.001	<0.002
25	<0.013	0.009	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
May 2	<0.013	0.028	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
10	<0.013	0.018	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
16	<0.013	0.009	e0.004	<0.007	<0.013	<0.002	<0.001	<0.002
June 13	<0.013	0.006	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
22	<0.013	0.032	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
28	<0.013	0.008	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
July 11	<0.013	<0.005	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
19	<0.013	<0.005	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
Aug. 16	<0.013	e0.004	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
Sept. 14	<0.013	e0.004	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
26	<0.013	0.009	<0.01	e0.054	<0.013	<0.002	<0.001	<0.002

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
WATER-QUALITY RECORDS—CONTINUED

03274000 GREAT MIAMI RIVER AT HAMILTON, OHIO

LOCATION.—Latitude 39°23'28", longitude 84°34'20", Butler County, Hydrologic Unit 05080002, at mile 34.8 .

DRAINAGE AREA.—3,630 mi².

REMARKS.—Sampling was temporarily moved downstream to Great Miami River at Venice, Ohio (03274500) during bridge construction at this site. Discharge is measured at this site and published in volume 1, surface-water records.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

[μ S/cm, microsiemens per centimeter; (00095), USGS National Water Information System parameter code; deg C, degrees Celsius; mm of Hg, millimeters of mercury; mg/L, milligrams per liter; --, no data; col/100mL; colonies per 100 milliliters; <, concentration or value reported is less than that indicated; k, value is estimated from a non-ideal colony count; IT, incremental titration]

Date	Time	Specific conductance, field (μ S/cm) (00095)	Specific conductance, lab (μ S/cm) (90095)	pH, whole water field (standard units) (00400)	pH, whole water lab (standard units) (00403)	Water temperature, (deg C) (00010)	Air temperature, (deg C) (00020)	Barometric pressure, (mm of Hg) (00025)	Dissolved oxygen (mg/L) (00300)	
Oct.										
	12	1100	1040	967	7.7	8.1	18.0	17.0	752	8.9
	18	1530	1040	1050	8.2	8.1	17.0	12.0	749	11.2
Nov.										
	2	1000	1040	1050	8.7	8.3	14.5	6.0	740	11.1
	16	1330	1090	1130	8.3	8.2	11.0	5.0	748	8.3
Dec.										
	2	0930	1080	1110	8.9	8.1	6.0	9.0	753	9.6
	7	1300	1060	1110	8.4	8.1	8.5	7.0	752	11.5
Jan.										
	4	1400	428	451	7.8	7.5	9.0	0.0	747	11.3
Feb.										
	10	1040	1190	1240	8.8	8.4	8.0	10.0	742	14.2
	14	1130	513	554	8.0	7.6	2.5	0.0	744	13.9
Mar.										
	8	1120	878	875	8.0	8.1	13.0	25.0	745	12.0
	21	1430	633	647	8.0	8.0	9.0	14.0	754	12.1
Apr.										
	8	1720	367	380	7.7	7.7	10.5	7.5	749	12.0
July										
	13	1130	771	790	8.6	8.4	27.5	31.0	744	10.0
	19	1050	722	714	7.8	7.9	--	18.0	--	--

Date	Oxygen, dissolved (percent of saturation) (00301)	<i>E. coli</i> , water, total (col/100 mL) (31633)	Magnesium, dissolved (mg/L as Mg) (00925)	Sodium, dissolved (mg/L as Na) (00930)	Potassium, dissolved (mg/L as K) (00935)	Carbonate, water, dissolved, IT, field (mg/L as CO ₃) (00452)	Bicarbonate, water, dissolved, IT, field (mg/L as HCO ₃) (00453)	Alkalinity, water, dissolved, IT, field (mg/L as CaCO ₃) (39086)	Hardness, total (mg/L as CaCO ₃) (00900)	
Oct.										
	12	95	1700	30	84	6.1	12	242	221	300
	18	117	180	32	86	7.1	<1	239	196	330
Nov.										
	2	112	k200	31	87	5.9	10	270	240	320
	16	76	k100	34	92	6.9	<1	298	245	350
Dec.										
	2	79	340	35	94	6.8	<1	301	247	370
	7	100	100	32	92	6.6	<1	299	246	340
Jan.										
	4	102	5100	12	26	4.2	<1	120	98	150
Feb.										
	10	120	60	34	109	5.6	17	246	233	370
	14	104	2500	16	31	4.2	<1	67	56	180
Mar.										
	8	116	62	33	48	4.0	<1	288	236	350
	21	106	310	22	28	3.2	<1	204	169	240
Apr.										
	8	110	5900	13	12	3.4	<1	118	98	150
July										
	13	130	420	28	40	4.1	14	246	229	300
	19	--	k780	22	47	4.1	<1	187	155	240

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
WATER-QUALITY RECORDS—CONTINUED

03274000 GREAT MIAMI RIVER AT HAMILTON, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[mg/L, milligrams per liter; (00945), USGS National Water Information System parameter code; µg/L, micrograms per liter; deg C, degrees Celsius; <, concentration or value reported is less than that indicated; --, no data; >, concentration or value reported is greater than that indicated; e, estimated value]

Date	Sulfate, dissolved (mg/L as SO ₄) (00945)	Chloride, dissolved (mg/L as Cl) (00940)	Calcium, dissolved (mg/L as Ca) (00915)	Iron, dissolved (µg/L as Fe) (01046)	Manganese, dissolved (µg/L as Mn) (01056)	Fluoride, dissolved (mg/L as F) (00950)	Silica, dissolved (mg/L as SiO ₂) (00955)	Dissolved solids, residue at 180 deg C (mg/L) (70300)	Nitrogen, nitrite, dissolved (mg/L as N) (00613)
Oct.									
12	85	128	72	e6	e2	0.6	5.4	583	0.03
18	97	136	82	<10	e2	0.7	4.8	602	0.03
Nov.									
2	99	134	77	13	10	0.7	2.1	612	0.03
16	102	134	85	e10	3	0.7	4.2	652	0.04
Dec.									
2	102	146	91	16	5	0.7	4.0	656	0.03
7	107	139	84	23	9	0.6	4.0	658	0.04
Jan.									
4	35	48	39	29	e2	0.2	4.1	251	0.02
Feb.									
10	100	178	90	24	17	0.6	1.2	726	0.04
14	34	63	44	29	3	0.3	5.1	306	0.02
Mar.									
8	77	82	85	e10	e2	0.4	2.3	519	0.02
21	45	58	59	12	4	0.3	4.6	373	0.02
Apr.									
8	23	23	38	31	e1	0.3	4.6	220	0.03
July									
13	61	70	73	<10	<2	0.4	4.9	474	0.02
19	70	79	46	<10	<2	0.5	0.1	404	0.03
Date	Nitrogen, nitrite plus nitrate, dissolved (mg/L as N) (00631)	Nitrogen, ammonia, dissolved (mg/L as N) (00608)	Nitrogen, ammonia plus organic, total (mg/L as N) (00625)	Nitrogen, ammonia plus organic, dissolved (mg/L as N) (00623)	Phosphorus, total (mg/L as P) (00665)	Phosphorus, dissolved (mg/L as P) (00666)	Phosphorus, ortho-phosphate, dissolved (mg/L as P) (00671)	Carbon, organic, dissolved (mg/L as C) (00681)	Carbon, organic, particulate (mg/L as C) (00689)
Oct.									
12	2.8	0.02	0.51	0.4	0.27	0.18	0.21	4.8	3.4
18	2.8	0.05	1.4	0.5	0.37	0.22	0.21	4.9	2.4
Nov.									
2	2.3	0.03	1.3	0.5	0.41	0.23	0.20	--	--
16	3.0	0.08	1.2	0.7	0.45	0.32	0.24	4.7	1.7
Dec.									
2	4.3	0.03	0.93	0.6	0.46	0.37	0.32	4.9	0.6
7	3.4	0.10	1.1	0.8	0.48	0.39	0.33	5.6	1.0
Jan.									
4	2.5	0.10	2.6	0.5	0.90	0.18	0.16	6.5	9.7
Feb.									
10	3.6	<0.02	0.69	0.5	0.31	0.24	0.20	4.6	0.4
14	5.5	0.16	2.2	0.8	0.71	0.17	0.15	6.3	1.9
Mar.									
8	4.8	<0.02	0.89	0.6	0.19	0.11	0.08	3.9	2.2
21	5.8	0.05	1.2	0.7	0.31	0.12	0.08	5.3	3.8
Apr.									
8	3.2	0.09	2.6	0.5	0.86	0.09	0.07	6.0	>10
July									
13	3.7	<0.02	1.0	0.4	0.29	0.14	0.12	4.5	2.9
19	1.6	0.02	1.6	0.4	0.23	0.03	0.01	3.6	4.5

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
WATER-QUALITY RECORDS—CONTINUED

03274000 GREAT MIAMI RIVER AT HAMILTON, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[mg/L, milligrams per liter; (80154), USGS National Water Information System parameter code; µg/L, micrograms per liter; <, concentration or value reported is less than that indicated; --, no data; e, estimated value]

Date	Sediment, suspended (mg/L) (80154)	Acetochlor, water, filtered (µg/L) (49260)	Alachlor, water, filtered (µg/L) (46342)	Atrazine, water, filtered (µg/L) (39632)	Deethyl-atrazine, water, filtered (µg/L) (04040)	Methyl-azinphos, water, filtered (µg/L) (82686)	Benfluralin, water, filtered (µg/L) (82673)	Butylate, water, filtered (µg/L) (04028)
Oct. 12	72	<0.002	<0.002	0.035	e0.011	<0.001	<0.002	<0.002
Oct. 18	87	<0.002	<0.002	0.039	e0.013	<0.001	<0.002	<0.002
Nov. 2	74	--	--	--	--	--	--	--
Nov. 16	28	<0.002	<0.002	0.036	e0.014	<0.001	<0.002	<0.002
Dec. 2	8	<0.002	<0.002	0.035	e0.010	<0.001	<0.002	<0.002
Dec. 7	21	<0.002	<0.002	0.042	e0.013	<0.001	<0.002	<0.002
Jan. 4	471	<0.002	<0.002	0.071	e0.032	<0.001	<0.002	<0.002
Feb. 10	15	<0.002	<0.002	0.035	e0.014	<0.001	<0.002	<0.002
Feb. 14	415	<0.01	0.004	0.13	e0.036	<0.001	<0.002	<0.002
Mar. 8	25	<0.002	<0.002	0.061	e0.044	<0.001	<0.002	<0.002
Mar. 21	85	<0.01	0.011	0.21	e0.065	<0.001	<0.002	<0.002
Apr. 8	627	0.042	0.013	0.69	e0.072	<0.001	<0.002	<0.002
July 13	38	0.018	<0.002	0.53	e0.15	<0.001	<0.002	<0.002
July 19	39	<0.002	<0.002	0.30	e0.089	<0.001	<0.002	<0.002

Date	Carbaryl, water, filtered (µg/L) (82680)	Carbofuran, water, filtered (µg/L) (82674)	Chlorpyrifos, water, filtered (µg/L) (38933)	Cyanazine, water, filtered (µg/L) (04041)	DCPA, water, filtered (µg/L) (82682)	p,p'-DDE, water, filtered (µg/L) (34653)	Diazinon, water, filtered (µg/L) (39572)	Dieldrin, water, filtered (µg/L) (39381)
Oct. 12	<0.003	<0.003	<0.004	<0.004	<0.002	<0.006	0.020	<0.001
Oct. 18	<0.003	<0.003	<0.004	<0.004	<0.002	<0.006	0.010	<0.001
Nov. 2	--	--	--	--	--	--	--	--
Nov. 16	<0.003	<0.003	<0.004	<0.004	<0.002	<0.006	0.014	<0.001
Dec. 2	<0.003	<0.003	<0.004	<0.004	<0.002	<0.006	0.012	<0.001
Dec. 7	<0.03	<0.01	<0.004	<0.004	<0.002	<0.006	0.12	<0.001
Jan. 4	<0.02	<0.003	<0.004	0.009	<0.002	<0.006	0.026	<0.001
Feb. 10	<0.003	<0.003	<0.004	<0.004	<0.002	<0.006	0.013	<0.001
Feb. 14	<0.003	<0.003	<0.004	0.014	<0.002	<0.006	0.008	<0.001
Mar. 8	<0.003	<0.003	<0.004	<0.01	<0.002	<0.006	0.010	<0.001
Mar. 21	<0.003	<0.003	<0.004	0.014	<0.002	<0.006	0.008	<0.001
Apr. 8	e0.007	<0.003	e0.003	0.043	<0.002	<0.006	0.057	<0.001
July 13	<0.003	<0.003	<0.004	0.013	<0.002	<0.006	0.016	<0.001
July 19	<0.003	<0.003	<0.004	0.009	<0.002	<0.006	0.014	<0.001

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
WATER-QUALITY RECORDS—CONTINUED

03274000 GREAT MIAMI RIVER AT HAMILTON, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[µg/L, micrograms per liter; (82660), USGS National Water Information System parameter code; <, concentration or value reported is less than that indicated; --, no data]

Date	2,6-diethyl-aniline, water, filtered (µg/L) (82660)	Disulfoton, water, filtered (µg/L) (82677)	Methyl-parathion, water, filtered (µg/L) (82667)	EPTC, water, filtered (µg/L) (82668)	Ethalfuralin, water, filtered (µg/L) (82663)	Ethoprop, water, filtered (µg/L) (82672)	Fonofos, water, filtered (µg/L) (04095)	Alpha BHC, water, filtered (µg/L) (34253)
Oct.								
12	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002
18	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002
Nov.								
2	--	--	--	--	--	--	--	--
16	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002
Dec.								
2	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002
7	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002
Jan.								
4	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002
Feb.								
10	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002
14	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002
Mar.								
8	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002
21	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002
Apr.								
8	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002
July								
13	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002
19	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002
Date	Lindane, water, filtered (µg/L) (39341)	Linuron, water, filtered (µg/L) (82666)	Malathion, water, filtered (µg/L) (39532)	Metolachlor, water, filtered (µg/L) (39415)	Metribuzin, water, filtered (µg/L) (82630)	Molinate, water, filtered (µg/L) (82671)	Napropamide, water, filtered (µg/L) (82684)	Parathion, water, filtered (µg/L) (39542)
Oct.								
12	<0.004	<0.002	<0.005	0.011	<0.004	<0.004	<0.003	<0.004
18	<0.004	<0.002	<0.005	0.011	<0.004	<0.004	<0.003	<0.004
Nov.								
2	--	--	--	--	--	--	--	--
16	<0.004	<0.002	<0.005	0.012	<0.004	<0.004	<0.003	<0.004
Dec.								
2	<0.004	<0.002	<0.005	0.013	<0.004	<0.004	<0.003	<0.004
7	<0.004	<0.002	<0.005	0.011	<0.004	<0.004	<0.003	<0.004
Jan.								
4	<0.004	<0.002	<0.005	0.14	0.21	<0.004	<0.01	<0.004
Feb.								
10	<0.004	<0.002	<0.005	0.013	<0.004	<0.004	<0.003	<0.004
14	<0.004	<0.002	<0.005	0.13	0.054	<0.004	<0.003	<0.004
Mar.								
8	<0.004	<0.002	<0.005	0.033	<0.004	<0.004	<0.003	<0.004
21	<0.004	<0.002	<0.005	0.18	0.063	<0.004	<0.003	<0.004
Apr.								
8	<0.004	<0.002	<0.005	0.54	0.068	<0.004	<0.003	<0.004
July								
13	<0.004	<0.02	<0.005	0.17	0.007	<0.004	<0.003	<0.004
19	<0.004	<0.002	<0.005	0.080	<0.004	<0.004	<0.003	<0.004

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
WATER-QUALITY RECORDS—CONTINUED

03274000 GREAT MIAMI RIVER AT HAMILTON, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[µg/L, micrograms per liter; (82669), USGS National Water Information System parameter code; <, concentration or value reported is less than that indicated; --, no data; e, estimated value]

Date	Pebulate, water, filtered (µg/L) (82669)	Pendimethalin, water, filtered (µg/L) (82683)	Permethrin, cis, water, filtered (µg/L) (82687)	Phorate, water, filtered (µg/L) (82664)	Prometon, water, filtered (µg/L) (04037)	Pronamide, water, filtered (µg/L) (82676)	Propachlor, water, filtered (µg/L) (04024)	Propanil, water, filtered (µg/L) (82679)
Oct.								
12	<0.004	<0.004	<0.005	<0.002	0.047	<0.003	<0.007	<0.004
18	<0.004	<0.004	<0.005	<0.002	0.032	<0.003	<0.007	<0.004
Nov.								
2	--	--	--	--	--	--	--	--
16	<0.004	<0.004	<0.005	<0.002	0.033	<0.003	<0.007	<0.004
Dec.								
2	<0.004	<0.004	<0.005	<0.002	e0.015	<0.003	<0.007	<0.004
7	<0.004	<0.004	<0.005	<0.002	e0.016	<0.003	<0.007	<0.004
Jan.								
4	<0.004	<0.004	<0.005	<0.002	0.038	<0.003	<0.007	<0.004
Feb.								
10	<0.004	<0.004	<0.005	<0.002	e0.011	<0.003	<0.007	<0.004
14	<0.004	<0.004	<0.005	<0.002	e0.016	<0.003	<0.007	<0.004
Mar.								
8	<0.004	<0.004	<0.005	<0.002	e0.007	<0.003	<0.007	<0.004
21	<0.004	<0.004	<0.005	<0.002	e0.011	<0.003	<0.007	<0.004
Apr.								
8	<0.004	e0.016	<0.005	<0.002	0.035	<0.003	<0.007	<0.004
July								
13	<0.004	<0.004	<0.005	<0.002	0.26	<0.003	<0.007	<0.004
19	<0.004	<0.004	<0.005	<0.002	0.059	<0.003	<0.007	<0.004
Date	Propargite, water, filtered (µg/L) (82685)	Simazine, water, filtered (µg/L) (04035)	Tebuthiuron, water, filtered (µg/L) (82670)	Terbacil, water, filtered (µg/L) (82665)	Terbufos, water, filtered (µg/L) (82675)	Thiobencarb, water, filtered (µg/L) (82681)	Triallate, water, filtered (µg/L) (82678)	Trifluralin, water, filtered (µg/L) (82661)
Oct.								
12	<0.013	<0.01	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
18	<0.013	0.013	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
Nov.								
2	--	--	--	--	--	--	--	--
16	<0.013	<0.005	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
Dec.								
2	<0.013	0.01	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
7	<0.013	0.02	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
Jan.								
4	<0.013	0.02	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
Feb.								
10	<0.013	<0.005	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
14	<0.013	0.023	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
Mar.								
8	<0.013	0.009	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
21	<0.013	0.071	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
Apr.								
8	<0.013	0.21	<0.01	<0.007	<0.013	<0.002	<0.001	e0.001
July								
13	<0.013	0.038	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
19	<0.013	0.025	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
WATER-QUALITY RECORDS—CONTINUED

03274500 GREAT MIAMI RIVER AT VENICE, OHIO

LOCATION.—Latitude 39°18'15", longitude 84°38'35", Butler County, Hydrologic Unit 05080002, at mile 25.6.
DRAINAGE AREA.—3,789 mi².

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

[μ S/cm, microsiemens per centimeter; (00095), USGS National Water Information System parameter code; deg C, degrees Celsius; mm of Hg, millimeters of mercury; mg/L, milligrams per liter; --, no data; col/100mL; colonies per 100 milliliters; <, concentration or value reported is less than that indicated; k, value is estimated from a non-ideal colony count; IT, incremental titration; e, estimated value]

Date	Time	Specific conductance, field (μ S/cm) (00095)	Specific conductance, lab (μ S/cm) (90095)	pH, water, field (standard units) (00400)	pH, water, lab (standard units) (00403)	Water temperature (deg C) (00010)	Air temperature (deg C) (00020)	Barometric pressure (mm of Hg) (00025)	Dissolved oxygen (mg/L) (00300)	
Apr.	26	1140	699	725	8.4	7.9	16.0	14.0	749	10.1
May	3	1040	747	778	8.4	7.9	18.0	18.0	750	9.8
June	1	1130	689	751	8.2	8.2	29.0	23.0	749	10.0
	14	1110	819	814	8.7	8.1	28.0	26.5	745	8.2
	29	1100	686	670	8.1	8.0	26.0	24.0	736	8.1
Aug.	16	1100	752	745	8.1	8.2	26.0	26.5	755	7.7
Sept.	13	1200	929	955	7.3	8.1	24.0	23.0	748	--
	25	1310	811	781	8.3	7.8	14.0	19.5	745	8.2

Date	Oxygen, dissolved (percent of saturation) (00301)	<i>E. coli</i> , water, whole, total (col/100 mL) (31633)	Magnesium, dissolved (mg/L as Mg) (00925)	Sodium, dissolved (mg/L as Na) (00930)	Potassium, dissolved (mg/L as K) (00935)	Carbonate, water, dissolved, IT, field (mg/L as CO ₃) (00452)	Bicarbonate, water, dissolved, IT, field (mg/L as HCO ₃) (00453)	Alkalinity, water, dissolved, IT, field (mg/L as CaCO ₃) (39086)	Hardness, total (mg/L as CaCO ₃) (00900)	
Apr.	26	100	410	27	27	2.9	30	192	210	300
May	3	104	1500	29	36	3.0	12	231	212	300
June	1	118	k90	27	25	3.1	24	228	227	290
	14	103	6300	31	47	4.1	14	225	211	310
	29	98	k520	27	28	3.8	<1	244	203	290
Aug.	16	97	2100	25	43	5.1	5	246	213	270
Sept.	13	--	120	29	70	5.6	<1	281	233	300
	25	88	2900	26	51	5.6	<1	242	201	280

Date	Sulfate, dissolved (mg/L as SO ₄) (00945)	Chloride, dissolved (mg/L as Cl) (00940)	Calcium, dissolved (mg/L as Ca) (00915)	Iron, dissolved (μ g/L as Fe) (01046)	Manganese, dissolved (μ g/L as Mn) (01056)	Fluoride, dissolved (mg/L as F) (00950)	Silica, dissolved (mg/L as SiO ₂) (00955)	Dissolved solids, residue at 180 deg C (mg/L) (70300)	Nitrogen, nitrite, dissolved (mg/L as N) (00613)	
Apr.	26	59	51	74	e7	e2	1.7	5.3	420	0.02
May	3	67	65	74	e6	e2	0.4	1.3	441	0.02
June	1	59	54	74	<10	e1	0.3	4.9	444	0.02
	14	72	77	73	e6	<2	0.4	2.5	476	0.11
	29	54	49	72	<10	e2	0.3	7.8	406	0.02
Aug.	16	61	70	67	<10	e2	0.4	7.9	445	0.02
Sept.	13	87	107	74	<10	3	0.6	5.9	559	0.02
	25	64	83	69	e6	<2	0.5	4.9	453	0.02

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
WATER-QUALITY RECORDS—CONTINUED

03274500 GREAT MIAMI RIVER AT VENICE, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[mg/L, milligrams per liter; (00631), USGS National Water Information System parameter code; µg/L, micrograms per liter; <, concentration or value reported is less than that indicated; >, concentration or value reported is greater than that indicated; --, no data; e, estimated value]

Date	Nitrogen, nitrite plus nitrate, dissolved (mg/L as N) (00631)	Nitrogen, ammonia, dissolved (mg/L as N) (00608)	Nitrogen, ammonia plus organic, total (mg/L as N) (00625)	Nitrogen, ammonia plus organic, dissolved (mg/L as N) (00623)	Phosphorus, total (mg/L as P) (00665)	Phosphorus, dissolved (mg/L as P) (00666)	Phosphorus, ortho-phosphate, dissolved (mg/L as P) (00671)	Carbon, organic, dissolved (mg/L as C) (00681)	Carbon, organic, particulate (mg/L as C) (00689)
Apr. 26	6.6	<0.02	0.85	0.43	0.22	0.09	0.07	4.5	1.1
May 3	3.8	<0.02	1.0	0.36	0.19	0.04	0.02	4.0	>2.5
June 1	6.5	<0.02	1.0	0.36	0.21	0.14	0.12	3.8	1.7
14	4.3	0.04	1.4	0.48	0.16	0.07	0.04	4.4	1.6
29	6.4	<0.02	0.76	0.51	0.26	0.18	0.14	4.5	1.0
Aug. 16	2.6	<0.02	0.97	0.51	0.19	0.21	0.16	--	--
Sept. 13	2.4	0.06	1.0	0.55	0.42	0.32	0.28	4.2	1.8
25	2.7	0.09	1.3	0.65	0.67	<0.05	0.29	5.7	5.4

Date	Sediment, suspended (mg/L) (80154)	Acetochlor, water, filtered (µg/L) (49260)	Alachlor, water, filtered (µg/L) (46342)	Atrazine, water, filtered (µg/L) (39632)	Deethyl-atrazine, water, filtered (µg/L) (04040)	Methyl-azinphos, water, filtered (µg/L) (82686)	Benfluralin, water, filtered (µg/L) (82673)	Butylate, water, filtered (µg/L) (04028)	Carbaryl, water, filtered (µg/L) (82680)
Apr. 26	47	0.014	0.025	0.20	e0.055	<0.001	<0.002	<0.002	<0.003
May 3	38	0.075	0.011	0.19	e0.045	<0.001	<0.002	<0.002	e0.018
June 1	35	0.34	0.031	3.4	e0.24	<0.001	<0.002	<0.002	<0.003
14	18	0.081	0.009	1.2	e0.17	<0.001	<0.002	<0.002	<0.003
29	39	0.077	0.014	1.6	e0.38	<0.001	<0.002	<0.002	<0.003
Aug. 16	33	<0.002	<0.002	0.29	e0.18	<0.001	<0.002	<0.002	<0.003
Sept. 13	45	<0.002	<0.002	0.13	e0.035	<0.001	<0.002	<0.002	<0.003
25	189	<0.002	<0.002	0.13	e0.048	<0.001	<0.002	<0.002	<0.003

Date	Carbofuran, water, filtered (µg/L) (82674)	Chlorpyrifos, water, filtered (µg/L) (38933)	Cyanazine, water, filtered (µg/L) (04041)	DCPA, water, filtered (µg/L) (82682)	p,p'-DDE, water, filtered (µg/L) (34653)	Diazinon, water, filtered (µg/L) (39572)	Dieldrin, water, filtered (µg/L) (39381)	2,6-diethyl--aniline, water, filtered (µg/L) (82660)	Disulfoton, water, filtered (µg/L) (82677)
Apr. 26	<0.003	<0.004	0.015	<0.002	<0.006	0.005	<0.001	<0.003	<0.017
May 3	<0.003	<0.004	<0.01	<0.002	<0.006	0.017	<0.001	<0.003	<0.017
June 1	<0.003	<0.004	0.035	<0.002	<0.006	0.009	<0.001	<0.003	<0.017
14	<0.003	<0.004	0.019	<0.002	<0.006	0.006	<0.001	<0.003	<0.017
29	<0.003	<0.004	0.025	<0.002	<0.006	0.009	<0.001	<0.003	<0.017
Aug. 16	<0.003	<0.004	0.008	<0.002	<0.006	0.010	<0.001	<0.003	<0.017
Sept. 13	<0.003	<0.004	0.017	<0.002	<0.006	0.012	<0.001	<0.003	<0.017
25	<0.003	<0.004	<0.004	<0.002	<0.006	0.058	<0.05	<0.003	<0.017

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
WATER-QUALITY RECORD—CONTINUED

03274500 GREAT MIAMI RIVER AT VENICE, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[µg/L, micrograms per liter; (82667), USGS National Water Information System parameter code; <, concentration or value reported is less than that indicated; e, estimated value]

Date	Methyl-parathion, water, filtered (µg/L) (82667)	EPTC, water, filtered (µg/L) (82668)	Ethalfuralin, water, filtered (µg/L) (82663)	Ethoprop, water, filtered (µg/L) (82672)	Fonofos, water, filtered (µg/L) (04095)	Alpha BHC, water, filtered (µg/L) (34253)	Lindane, water, filtered (µg/L) (39341)	Linuron, water, filtered (µg/L) (82666)
Apr. 26	<0.002	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002
May 3	<0.002	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002
June 1	<0.002	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002
14	<0.002	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002
29	<0.002	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002
Aug. 16	<0.002	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002
Sept. 13	<0.002	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002
25	<0.002	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002

Date	Malathion, water, filtered (µg/L) (39532)	Metolachlor, water, filtered (µg/L) (39415)	Metribuzin, water, filtered (µg/L) (82630)	Molinate, water, filtered (µg/L) (82671)	Napropamide, water, filtered (µg/L) (82684)	Parathion, water, filtered (µg/L) (39542)	Pebulate, water, filtered (µg/L) (82669)	Pendimethalin, water, filtered (µg/L) (82683)
Apr. 26	<0.005	0.14	0.027	<0.004	<0.003	<0.004	<0.004	<0.004
May 3	<0.005	0.080	<0.004	<0.004	<0.003	<0.004	<0.004	<0.004
June 1	<0.005	0.92	0.034	<0.004	<0.003	<0.004	<0.004	<0.004
14	<0.005	0.32	0.008	<0.004	<0.003	<0.004	<0.004	<0.004
29	<0.005	0.72	0.033	<0.004	<0.003	<0.004	<0.004	<0.004
Aug. 16	<0.005	0.20	<0.004	<0.004	<0.003	<0.004	<0.004	<0.004
Sept. 13	<0.005	0.031	<0.004	<0.004	<0.003	<0.004	<0.004	<0.004
25	<0.005	0.039	<0.004	<0.004	<0.003	<0.004	<0.004	<0.004

Date	Permethrin, cis, water, filtered (µg/L) (82687)	Phorate, water, filtered (µg/L) (82664)	Prometon, water, filtered (µg/L) (04037)	Pronamide, water, filtered (µg/L) (82676)	Propachlor, water, filtered (µg/L) (04024)	Propanil, water, filtered (µg/L) (82679)	Propargite, water, filtered (µg/L) (82685)	Simazine, water, filtered (µg/L) (04035)
Apr. 26	<0.005	<0.002	e0.012	<0.003	<0.007	<0.004	<0.013	0.07
May 3	<0.005	<0.002	e0.015	<0.003	<0.007	<0.004	<0.013	0.057
June 1	<0.005	<0.002	0.026	<0.003	<0.007	<0.004	<0.013	0.40
14	<0.005	<0.002	0.028	<0.003	<0.007	<0.004	<0.013	0.12
29	<0.005	<0.002	0.047	<0.003	<0.007	<0.004	<0.013	0.10
Aug. 16	<0.005	<0.002	0.027	<0.003	<0.007	<0.004	<0.013	0.038
Sept. 13	<0.005	<0.002	0.051	<0.003	<0.007	<0.004	<0.013	0.016
25	<0.005	<0.002	0.104	<0.003	<0.007	<0.004	<0.013	0.012

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
WATER-QUALITY RECORD—CONTINUED

03274500 GREAT MIAMI RIVER AT VENICE, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[µg/L, micrograms per liter; (82670), USGS National Water Information System parameter code; e, estimated value]

Date	Tebuthiuron, water, filtered (µg/L) (82670)	Terbacil, water, filtered (µg/L) (82665)	Terbufos, water, filtered (µg/L) (82675)	Thiobencarb, water, filtered (µg/L) (82681)	Triallate, water, filtered (µg/L) (82678)	Trifluralin, water, filtered (µg/L) (82661)
Apr. 26	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
May 3	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
June 1	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
14	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
29	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
Aug. 16	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
Sept. 13	<0.01	e0.048	<0.013	<0.002	<0.001	<0.002
25	<0.01	e0.071	<0.013	<0.002	<0.001	<0.002

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
WATER-QUALITY RECORDS—CONTINUED

393944084120700 HOLES CREEK AT HUFFMAN PARK NEAR KETTERING, OHIO

LOCATION.—Latitude 39°39'44", longitude 84°12'07", Montgomery County, Hydrologic Unit 05080001, and at mile 2.6.

DRAINAGE AREA.—20.0 mi².

REMARKS.—Twenty-four discharge measurements were made at this site. Streamflow computed from these measurements is reported below.

Continuous stage data is collected at Holes Creek at Mad River Road (03271300), a station 0.6 mi upstream of the sampling site that is maintained by the Miami Conservancy District.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

[ft³/s, cubic feet per second; (00061), USGS National Water Information System parameter code; μS/cm, microsiemens per centimeter; deg C, degrees Celsius; mm of Hg, millimeters of mercury; <, concentration or value reported is less than that indicated; --, no data; mg/L, milligrams per liter; k, value is estimated from a non-ideal colony count]

Date	Time	Discharge, instantaneous (ft ³ /s) (00061)	Specific conductance, field (μS/cm) (00095)	Specific conductance, lab (μS/cm) (90095)	pH, whole water field (standard units) (00400)	pH, whole water lab (standard units) (00403)	Water temperature, (deg C) (00010)	Air temperature, (deg C) (00020)	Barometric pressure, (mm of Hg) (00025)	
Oct.										
	12	1320	1.0	608	567	8.0	8.1	15.0	21.0	745
	19	0940	<1.7	688	700	8.3	8.1	8.5	5.0	749
Nov.										
	2	1300	53	548	559	7.9	7.6	10.5	5.0	736
	17	0930	4.0	771	789	8.5	8.2	3.0	1.0	746
Dec.										
	2	1130	2.0	720	752	8.1	8.2	2.0	10.0	748
	8	0930	4.1	624	637	8.3	8.0	1.5	1.0	749
Jan.										
	4	1140	90	464	473	7.1	7.6	8.5	1.0	741
Feb.										
	10	1500	19	3240	3310	7.9	7.9	0.0	7.0	734
	13	1820	439	1020	941	7.9	7.6	3.0	3.0	733
Mar.										
	9	1340	4.1	1110	1100	8.2	8.3	15.5	19.0	735
	22	0830	21	936	960	8.1	8.5	7.0	4.0	752
Apr.										
	3	1200	133	620	644	7.8	8.0	13.5	18.0	734
	25	1000	11	807	832	8.0	8.3	11.0	18.0	740
May										
	2	1540	25	656	669	8.1	8.1	19.5	23.0	743
	10	1220	36	702	730	8.3	8.0	20.5	26.0	737
	31	1130	6.8	673	688	8.3	8.2	21.5	32.0	741
June										
	15	1240	2.8	698	702	8.2	8.1	23.0	28.5	737
	20	0950	7.6	620	619	8.2	8.0	19.5	25.0	744
	29	1440	4.1	755	773	8.4	8.2	23.0	29.0	739
July										
	11	1020	12	712	714	8.3	8.3	22.5	24.5	738
	11	1600	90	595	607	8.1	8.1	24.0	28.0	739
Aug.										
	14	1050	1.7	723	714	8.1	8.2	21.0	--	747
Sept.										
	13	0830	1.0	667	691	7.8	8.0	18.0	12.0	746
	26	1100	33	359	356	8.1	7.8	13.0	16.0	747

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
WATER-QUALITY RECORDS—CONTINUED

393944084120700 HOLES CREEK AT HUFFMAN PARK NEAR KETTERING, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[mg/L, milligrams per liter; (00300), USGS National Water Information System parameter code; col/100mL, colonies per 100 milliliters; k, value is estimated from a non-ideal colony count; IT, incremental titration; <, concentration or value reported is less than that indicated; --, no data]

Date	Dissolved oxygen (mg/L) (00300)	Oxygen, dissolved (percent of saturation) (00301)	<i>E. coli</i> , water, whole, total (col/100 mL) (31633)	Magnesium, dissolved (mg/L as Mg) (00925)	Sodium, dissolved (mg/L as Na) (00930)	Potassium, dissolved (mg/L as K) (00935)	Carbonate, water, dissolved, IT, field (mg/L as CO ₃) (00452)	Bicarbonate, water, dissolved, IT, field (mg/L as HCO ₃) (00453)	Alkalinity, water, dissolved, IT, field (mg/L as CaCO ₃) (39086)
Oct.									
12	10.0	101	80	18	32	2.8	12	174	165
19	12.1	106	100	24	34	2.9	<1	257	214
Nov.									
2	11.3	104	k21000	18	30	4.3	<1	174	145
17	13.1	98	k20	32	39	2.5	<1	299	246
Dec.									
2	14.5	107	30	27	40	2.5	<1	284	233
8	11.9	86	220	19	34	2.7	<1	218	179
Jan.									
4	10.8	93	1500	11	36	3.7	<1	108	89
Feb.									
10	13.5	96	280	32	492	6.2	<1	179	149
13	13.0	100	3300	10	119	3.1	<1	94	78
Mar.									
9	12.4	128	17	33	99	3.1	<1	230	188
22	12.0	101	--	23	81	3.0	<1	234	194
Apr.									
3	10.3	104	2200	15	54	2.5	<1	149	124
25	11.8	110	110	26	52	2.6	30	205	221
May									
2	9.5	106	1900	19	47	2.6	30	128	157
10	8.4	97	k800	20	51	2.7	12	167	159
31	9.1	106	k110	21	40	2.9	<1	228	186
June									
15	9.4	113	850	21	48	3.0	<1	220	182
20	8.8	99	300	18	36	4.7	<1	212	176
29	9.6	113	k70	25	50	2.6	12	229	211
July									
11	--	--	220	23	45	3.2	<1	247	203
11	--	--	4400	18	39	3.3	<1	195	160
Aug.									
14	8.9	101	220	25	45	4.0	<1	242	201
Sept.									
13	--	--	430	22	41	2.9	<1	225	186
26	10.6	101	2500	9.8	21	2.6	<1	116	96

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
WATER-QUALITY RECORDS—CONTINUED

393944084120700 HOLES CREEK AT HUFFMAN PARK NEAR KETTERING, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[mg/L, milligrams per liter; (00900), USGS National Water Information System parameter code; µg/L, micrograms per liter; deg C, degrees Celsius; <, concentration or value reported is less than that indicated; --, no data; e, estimated value]

Date	Hardness, total (mg/L as CaCO ₃) (00900)	Sulfate, dissolved (mg/L as SO ₄) (00945)	Chloride, dissolved (mg/L as Cl) (00940)	Calcium, dissolved (mg/L as Ca) (00915)	Iron, dissolved (µg/L as Fe) (01046)	Manganese, dissolved (µg/L as Mn) (01056)	Fluoride, dissolved (mg/L as F) (00950)	Silica, dissolved (mg/L as SiO ₂) (00955)	Dissolved solids, residue at 180 deg C (mg/L) (70300)
Oct.									
12	205	35	60	53	12	6	0.2	5.4	318
19	268	39	70	67	33	7	0.3	6.8	388
Nov.									
2	196	36	60	50	47	64	0.3	4.6	314
17	323	21	39	77	e8	5	0.3	5.7	426
Dec.									
2	310	42	80	79	12	5	0.3	4.5	408
8	225	37	69	59	11	4	0.2	3.3	360
Jan.									
4	139	30	67	38	14	8	0.1	3.8	257
Feb.									
10	386	57	916	102	<10	61	0.2	4.1	1840
13	135	24	214	37	23	18	0.1	3.1	478
Mar.									
9	323	63	189	74	22	10	0.3	1.2	620
22	270	47	150	70	13	11	0.2	5.0	529
Apr.									
3	180	31	98	48	13	10	0.1	3.9	346
25	289	44	98	73	e8	9	0.3	3.9	462
May									
2	213	34	82	54	<10	8	0.1	3.3	364
10	222	35	96	56	<10	3	0.2	3.2	412
31	236	33	78	60	e5	9	0.2	4.9	379
June									
15	231	33	92	57	<10	11	0.2	5.0	397
20	218	33	68	57	e6	5	0.2	6.9	371
29	268	36	94	66	<10	9	0.2	6.0	427
July									
11	254	35	82	64	<10	4	0.2	6.8	410
11	205	28	73	53	<10	<2	0.6	6.4	353
Aug.									
14	272	34	88	68	<10	11	0.2	4.6	404
Sept.									
13	238	32	80	59	<10	5	0.2	5.0	386
26	125	21	34	34	13	3	0.2	3.8	197

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
WATER-QUALITY RECORDS—CONTINUED

393944084120700 HOLES CREEK AT HUFFMAN PARK NEAR KETTERING, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[mg/L, milligrams per liter; (00613), USGS National Water Information System parameter code; <, concentration or value reported is less than that indicated; e, estimated; --, no data; e, estimated value]

Date	Nitrite, dissolved (mg/L as N) (00613)	Nitrite, plus nitrate, dissolved (mg/L as N) (00631)	Nitrogen, ammonia, dissolved (mg/L as N) (00608)	Nitrogen, ammonia, plus organic, total (mg/L as N) (00625)	Nitrogen, ammonia, plus organic, dissolved (mg/L as N) (00623)	Phosphorus, total (mg/L as P) (00665)	Phosphorus, dissolved (mg/L as P) (00666)	Phosphorus, ortho- phosphate, dissolved (mg/L as P) (00671)	Carbon, organic, dissolved (mg/L as C) (00681)
Oct.									
12	<0.01	0.47	<0.02	0.25	0.25	0.02	0.01	<0.01	4.3
19	<0.01	0.72	<0.02	0.30	0.19	0.01	0.006	<0.01	3.4
Nov.									
2	0.02	0.50	0.03	0.74	0.39	0.11	0.04	0.02	10
17	<0.01	0.80	<0.02	0.16	0.12	e0.005	0.01	<0.01	2.1
Dec.									
2	<0.01	0.83	<0.02	0.23	0.15	e0.007	0.007	0.04	3.1
8	<0.01	0.52	<0.02	0.37	0.33	0.02	e0.005	<0.01	4.3
Jan.									
4	0.01	1.1	0.04	1.1	0.36	0.30	0.05	0.05	5.2
Feb.									
10	0.02	1.2	0.08	0.50	0.39	0.03	0.006	<0.01	4.0
13	0.02	1.0	0.11	1.9	0.39	0.60	0.04	0.03	4.8
Mar.									
9	<0.01	0.71	<0.02	0.30	0.32	0.02	e0.005	<0.01	3.3
22	0.01	1.7	<0.02	0.60	0.44	0.07	0.01	<0.01	4.7
Apr.									
3	0.01	0.81	0.04	1.0	0.49	0.16	0.02	<0.01	5.8
25	<0.01	1.1	<0.02	0.44	0.33	0.04	0.01	<0.01	4.1
May									
2	0.03	0.84	0.09	0.82	0.47	0.08	0.01	<0.01	5.0
10	0.02	0.44	0.04	0.90	0.48	<0.008	<0.01	<0.01	5.8
31	0.01	1.1	<0.02	0.54	0.34	0.05	0.02	0.01	4.3
June									
15	<0.01	0.80	<0.02	0.42	0.29	0.03	0.02	<0.01	5.5
20	0.03	1.8	<0.02	0.65	0.48	0.09	0.04	0.02	6.3
29	<0.01	0.88	<0.02	0.32	0.25	0.02	0.02	0.01	3.7
July									
11	<0.01	0.75	<0.02	0.41	0.35	0.04	0.02	0.01	4.9
11	0.02	0.65	0.03	0.79	0.50	0.18	0.01	<0.01	6.3
Aug.									
14	<0.01	0.98	<0.02	0.26	0.23	0.01	0.009	<0.01	--
Sept.									
13	<0.01	0.90	0.02	0.31	0.22	0.02	0.01	<0.01	3.1
26	0.01	0.37	0.05	0.65	0.36	0.14	0.02	0.01	5.2

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
WATER-QUALITY RECORD—CONTINUED

393944084120700 HOLES CREEK AT HUFFMAN PARK NEAR KETTERING, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[mg/L, milligrams per liter; (00689), USGS National Water Information System parameter code; µg/L, micrograms per liter; <, concentration or value reported is less than that indicated; --, no data; e, estimated value]

Date	Carbon, organic, particulate (mg/L as C) (00689)	Sediment, suspended (mg/L) (80154)	Acetochlor, water, filtered (µg/L) (49260)	Alachlor, water, filtered (µg/L) (46342)	Atrazine, water, filtered (µg/L) (39632)	Deethyl- atrazine, water, filtered (µg/L) (04040)	Methyl- azinphos, water, filtered (µg/L) (82686)	Benfluralin, water, filtered (µg/L) (82673)	Butylate, water, filtered (µg/L) (04028)
Oct.									
12	0.3	4	<0.002	<0.002	0.013	e0.006	<0.001	<0.002	<0.002
19	0.2	5	<0.002	<0.002	0.013	e0.006	<0.001	<0.002	<0.002
Nov.									
2	0.7	55	--	--	--	--	--	--	--
17	0.3	19	<0.002	<0.002	0.011	e0.005	<0.001	<0.002	<0.002
Dec.									
2	<0.2	13	<0.002	<0.002	0.009	e0.006	<0.001	<0.002	<0.002
8	0.3	2	<0.002	<0.002	0.010	e0.005	<0.001	<0.002	<0.002
Jan.									
4	3.0	242	<0.002	<0.002	0.016	e0.009	<0.001	<0.002	<0.002
Feb.									
10	0.5	18	<0.002	<0.002	0.009	<0.002	<0.001	<0.002	<0.002
13	10	765	<0.002	<0.002	0.013	e0.005	<0.001	<0.002	<0.002
Mar.									
9	0.3	20	--	--	--	--	--	--	--
22	1.3	30	0.023	<0.002	0.031	e0.018	<0.001	<0.002	<0.002
Apr.									
3	1.6	135	<0.002	<0.002	0.021	e0.011	<0.001	0.005	<0.002
25	0.4	20	0.018	<0.002	0.040	e0.015	<0.001	<0.002	<0.002
May									
2	1.3	40	0.258	0.039	0.53	e0.062	<0.001	<0.002	<0.002
10	0.8	--	0.172	0.028	0.64	e0.054	<0.001	<0.002	<0.002
31	0.6	18	0.179	<0.002	1.6	e0.20	<0.001	<0.002	<0.002
June									
15	0.3	11	0.016	<0.002	0.42	e0.13	<0.001	<0.002	<0.002
20	0.9	28	0.090	<0.002	0.99	e0.20	<0.001	<0.002	<0.002
29	0.2	30	<0.002	<0.002	0.15	e0.057	<0.001	<0.002	<0.002
July									
11	0.5	16	<0.010	<0.002	0.090	e0.042	<0.001	<0.002	<0.002
11	4.2	136	0.010	<0.002	0.097	e0.049	<0.001	<0.002	<0.002
Aug.									
14	--	6	<0.002	<0.002	0.021	e0.012	<0.001	<0.002	<0.002
Sept.									
13	0.4	12	<0.002	<0.002	0.017	e0.008	<0.001	<0.002	<0.002
26	2.1	74	<0.002	<0.002	0.013	e0.008	<0.001	<0.002	<0.002

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
WATER-QUALITY RECORDS—CONTINUED

393944084120700 HOLES CREEK AT HUFFMAN PARK NEAR KETTERING, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[µg/L, micrograms per liter; (82680), USGS National Water Information System parameter code; <, concentration or value reported is less than that indicated; e, estimated value; --, no data]

Date	Carbaryl, water, filtered (µg/L) (82680)	Carbofuran, water, filtered (µg/L) (82674)	Chlorpyrifos, water, filtered (µg/L) (38933)	Cyanazine, water, filtered (µg/L) (04041)	DCPA, water, filtered (µg/L) (82682)	p,p'-DDE, water, filtered (µg/L) (34653)	Diazinon, water, filtered (µg/L) (39572)	Dieldrin, water, filtered (µg/L) (39381)
Oct.								
12	<0.003	<0.003	<0.004	<0.004	<0.002	<0.006	0.043	<0.001
19	<0.003	<0.003	<0.004	<0.004	<0.002	<0.006	0.017	<0.001
Nov.								
2	--	--	--	--	--	--	--	--
17	<0.003	<0.003	<0.004	<0.004	<0.002	<0.006	<0.002	<0.001
Dec.								
2	<0.003	<0.003	<0.004	<0.004	<0.002	<0.006	0.008	<0.001
8	<0.003	<0.003	<0.004	<0.004	<0.002	<0.006	0.014	<0.001
Jan.								
4	<0.02	<0.010	<0.004	<0.004	<0.002	<0.006	0.10	<0.001
Feb.								
10	<0.003	<0.003	<0.004	<0.004	<0.002	<0.006	0.032	<0.001
13	<0.003	<0.003	0.011	<0.004	<0.002	<0.006	0.073	<0.001
Mar.								
9	--	--	--	--	--	--	--	--
22	<0.003	<0.003	e0.003	<0.004	<0.002	<0.006	0.016	<0.001
Apr.								
3	<0.003	<0.003	<0.004	<0.004	<0.002	<0.006	0.060	<0.001
25	<0.010	<0.003	<0.004	<0.010	<0.002	<0.006	0.053	<0.001
May								
2	e0.048	<0.003	<0.010	<0.010	<0.002	<0.006	0.064	<0.001
10	e0.15	<0.003	<0.010	<0.004	<0.002	<0.006	0.062	<0.001
31	e0.012	<0.003	0.010	<0.004	<0.002	<0.006	0.063	<0.001
June								
15	e0.043	<0.003	0.012	0.006	<0.002	<0.006	0.048	<0.001
20	e0.006	<0.003	0.012	<0.004	<0.002	<0.006	0.098	<0.001
29	e0.009	<0.003	0.005	<0.004	<0.002	<0.006	0.046	<0.001
July								
11	<0.003	<0.003	0.008	<0.004	<0.002	<0.006	0.11	<0.001
11	e0.007	<0.003	0.008	<0.004	<0.002	<0.006	0.12	<0.001
Aug.								
14	<0.003	<0.003	<0.004	<0.004	<0.002	<0.006	0.025	<0.001
Sept.								
13	<0.003	<0.003	<0.004	<0.004	<0.002	<0.006	0.018	<0.001
26	e0.009	<0.003	<0.004	<0.004	<0.002	<0.006	0.10	<0.001

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
WATER-QUALITY RECORDS—CONTINUED

393944084120700 HOLES CREEK AT HUFFMAN PARK NEAR KETTERING, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[µg/L, micrograms per liter; (82660), USGS National Water Information System parameter code; <, concentration or value reported is less than that indicated; --, no data; e, estimated value]

Date	2,6-diethyl-- aniline, water, filtered (µg/L) (82660)	Disulfoton, water, filtered (µg/L) (82677)	Methyl- parathion, water, filtered (µg/L) (82667)	EPTC, water, filtered (µg/L) (82668)	Ethalfuralin, water, filtered (µg/L) (82663)	Ethoprop, water, filtered (µg/L) (82672)	Fonofos, water, filtered (µg/L) (04095)	Alpha BHC, water, filtered (µg/L) (34253)
Oct.								
12	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002
19	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002
Nov.								
2	--	--	--	--	--	--	--	--
17	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002
Dec.								
2	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002
8	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002
Jan.								
4	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002
Feb.								
10	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002
13	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002
Mar.								
9	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002
22	--	--	--	--	--	--	--	--
Apr.								
3	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002
25	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002
May								
2	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002
10	<0.003	<0.017	<0.006	e0.004	<0.004	<0.003	<0.003	<0.002
31	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002
June								
15	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002
20	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002
29	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002
July								
11	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002
11	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002
Aug.								
14	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002
Sept.								
13	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002
26	<0.003	<0.017	<0.006	<0.002	<0.004	<0.003	<0.003	<0.002

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
WATER-QUALITY RECORDS—CONTINUED

393944084120700 HOLES CREEK AT HUFFMAN PARK NEAR KETTERING, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[µg/L, micrograms per liter; (39341), USGS National Water Information System parameter code; <, concentration or value reported is less than that indicated; --, no data; e, estimated value]

Date	Lindane, water, filtered (µg/L) (39341)	Linuron, water, filtered (µg/L) (82666)	Malathion, water, filtered (µg/L) (39532)	Metolachlor, water, filtered (µg/L) (39415)	Metribuzin, water, filtered (µg/L) (82630)	Molinate, water, filtered (µg/L) (82671)	Napropamide, water, filtered (µg/L) (82684)	Parathion, water, filtered (µg/L) (39542)
Oct.								
12	<0.004	<0.002	<0.005	0.006	<0.004	<0.004	<0.003	<0.004
19	<0.004	<0.002	<0.005	<0.002	<0.004	<0.004	<0.003	<0.004
Nov.								
2	--	--	--	--	--	--	--	--
17	<0.004	<0.002	<0.005	0.004	<0.004	<0.004	<0.003	<0.004
Dec.								
2	<0.004	<0.002	<0.005	e0.004	<0.004	<0.004	<0.003	<0.004
8	<0.004	<0.002	<0.005	<0.002	<0.004	<0.004	<0.003	<0.004
Jan.								
4	<0.004	<0.002	<0.005	<0.002	<0.004	<0.004	<0.003	<0.004
Feb.								
10	<0.004	<0.002	<0.005	0.006	<0.004	<0.004	<0.003	<0.004
13	<0.004	<0.002	<0.005	<0.002	<0.004	<0.004	<0.003	<0.004
Mar.								
9	--	--	--	--	--	--	--	--
22	<0.004	<0.002	<0.005	0.006	<0.004	<0.004	<0.003	<0.004
Apr.								
3	<0.004	<0.002	<0.005	0.009	<0.004	<0.004	<0.003	<0.004
25	<0.004	<0.002	<0.005	0.011	<0.004	<0.004	<0.003	<0.004
May								
2	<0.004	<0.002	<0.005	0.14	<0.004	<0.004	<0.003	<0.004
10	<0.004	<0.002	0.04	0.11	<0.004	<0.004	<0.003	<0.004
31	<0.004	<0.002	<0.005	0.31	<0.004	<0.004	<0.003	<0.004
June								
15	<0.004	<0.002	<0.005	0.037	<0.004	<0.004	<0.003	<0.004
20	<0.004	<0.002	<0.005	0.20	<0.004	<0.004	<0.003	<0.004
29	<0.004	<0.002	<0.005	0.042	<0.004	<0.004	<0.003	<0.004
July								
11	<0.004	<0.002	<0.005	0.026	<0.004	<0.004	<0.003	<0.004
11	<0.004	<0.002	<0.005	0.030	<0.004	<0.004	<0.003	<0.004
Aug.								
14	<0.004	<0.002	<0.005	0.005	<0.004	<0.004	<0.003	<0.004
Sept.								
13	<0.004	<0.002	<0.005	e0.003	<0.004	<0.004	<0.003	<0.004
26	<0.004	<0.002	<0.005	e0.004	<0.004	<0.004	<0.003	<0.004

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
WATER-QUALITY RECORDS—CONTINUED

393944084120700 HOLES CREEK AT HUFFMAN PARK NEAR KETTERING, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[µg/L, micrograms per liter; (82669), USGS National Water Information System parameter code; <, concentration or value reported is less than that indicated; --, no data; e, estimated value]

Date	Pebulate, water, filtered (µg/L) (82669)	Pendimethalin, water, filtered (µg/L) (82683)	Permethrin, cis, water, filtered (µg/L) (82687)	Phorate, water, filtered (µg/L) (82664)	Prometon, water, filtered (µg/L) (04037)	Pronamide, water, filtered (µg/L) (82676)	Propachlor, water, filtered (µg/L) (04024)	Propanil, water, filtered (µg/L) (82679)
Oct.								
12	<0.004	<0.004	<0.005	<0.002	0.024	<0.003	<0.007	<0.004
19	<0.004	<0.004	<0.005	<0.002	e0.015	<0.003	<0.007	<0.004
Nov.								
2	--	--	--	--	--	--	--	--
17	<0.004	<0.004	<0.005	<0.002	e0.010	<0.003	<0.007	<0.004
Dec.								
2	<0.004	<0.004	<0.005	<0.002	e0.012	<0.003	<0.007	<0.004
8	<0.004	<0.004	<0.005	<0.002	e0.014	<0.003	<0.007	<0.004
Jan.								
4	<0.004	<0.004	<0.005	<0.002	e0.010	<0.003	<0.007	<0.004
Feb.								
10	<0.004	<0.004	<0.005	<0.002	e0.010	<0.003	<0.007	<0.004
13	<0.004	<0.004	<0.005	<0.002	e0.007	<0.003	<0.007	<0.004
Mar.								
9	--	--	--	--	--	--	--	--
22	<0.004	0.034	<0.005	<0.002	e0.009	<0.003	<0.007	<0.004
Apr.								
3	<0.004	0.078	<0.005	<0.002	0.020	<0.003	<0.007	<0.004
25	<0.004	0.039	<0.005	<0.002	e0.018	<0.003	<0.007	<0.004
May								
2	<0.004	0.051	<0.005	<0.002	0.027	<0.003	<0.007	<0.004
10	<0.004	<0.02	<0.005	<0.002	0.024	<0.003	<0.007	<0.004
31	<0.004	<0.004	<0.005	<0.002	e0.017	<0.003	<0.007	<0.004
June								
15	<0.004	<0.004	<0.005	<0.002	0.059	<0.003	<0.007	<0.004
20	<0.004	<0.01	<0.005	<0.002	0.018	<0.003	<0.007	<0.004
29	<0.004	<0.004	<0.005	<0.002	e0.016	<0.003	<0.007	<0.004
July								
11	<0.004	<0.004	<0.005	<0.002	0.018	<0.003	<0.007	<0.004
11	<0.004	<0.004	<0.005	<0.002	0.025	<0.003	<0.007	<0.004
Aug.								
14	<0.004	<0.004	<0.005	<0.002	0.037	<0.003	<0.007	<0.004
Sept.								
13	<0.004	<0.004	<0.005	<0.002	0.036	<0.003	<0.007	<0.004
26	<0.004	<0.004	<0.005	<0.002	0.038	<0.003	<0.007	<0.004

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
WATER-QUALITY RECORDS—CONTINUED

393944084120700 HOLES CREEK AT HUFFMAN PARK NEAR KETTERING, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[µg/L, micrograms per liter; (82685), USGS National Water Information System parameter code; <, concentration or value reported is less than that indicated; --, no data; e, estimated value]

Date	Propargite, water, filtered (µg/L) (82685)	Simazine, water, filtered (µg/L) (04035)	Tebuthiuron, water, filtered (µg/L) (82670)	Terbacil, water, filtered (µg/L) (82665)	Terbufos, water, filtered (µg/L) (82675)	Thiobencarb, water, filtered (µg/L) (82681)	Triallate, water, filtered (µg/L) (82678)	Trifluralin, water, filtered (µg/L) (82661)
Oct.								
12	<0.013	0.009	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
19	<0.013	0.006	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
Nov.								
2	--	--	--	--	--	--	--	--
17	<0.013	<0.005	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
Dec.								
2	<0.013	<0.010	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
8	<0.013	<0.005	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
Jan.								
4	<0.013	0.015	<0.01	<0.007	<0.013	<0.002	<0.001	e0.003
Feb.								
10	<0.013	<0.005	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
13	<0.013	<0.005	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
Mar.								
9	<0.013	0.006	<0.01	<0.007	<0.013	<0.002	<0.001	e0.004
22	--	--	--	--	--	--	--	--
Apr.								
3	<0.013	0.025	<0.01	<0.007	<0.013	<0.002	<0.001	0.004
25	<0.013	0.018	<0.01	<0.007	<0.013	<0.002	<0.001	0.006
May								
2	<0.013	0.098	<0.01	<0.007	<0.013	<0.002	<0.001	e0.004
10	<0.013	0.12	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
31	<0.013	0.21	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
June								
15	<0.013	0.094	<0.01	<0.035	<0.013	<0.002	<0.001	<0.002
20	<0.013	0.098	<0.01	<0.007	<0.013	<0.002	<0.001	e0.003
29	<0.013	0.022	<0.01	<0.007	<0.013	<0.002	<0.001	e0.003
July								
11	<0.013	0.019	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
11	<0.013	0.022	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
Aug.								
14	<0.013	0.008	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
Sept.								
13	<0.013	0.005	<0.01	e0.085	<0.013	<0.002	<0.001	<0.002
26	<0.013	<0.005	<0.01	e0.062	<0.013	<0.002	<0.001	<0.002

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
WATER-QUALITY RECORDS—CONTINUED

395355084173600 STILLWATER RIVER AT MARTINDALE ROAD NEAR UNION, OHIO

LOCATION.—Latitude 39°53'55", longitude 84°17'36", Montgomery County, Hydrologic Unit 05080001, and at mile 11.4.

DRAINAGE AREA.—645.7 mi².

REMARKS.—Discharge is not measured at this site. Discharge is measured by the Miami Conservancy District 2.5 mi downstream at Stillwater River at Englewood, Ohio (03266000) and is published in volume 1, surface-water records. The site at Martindale Road was inaccessible for the collection of the Apr. 8, 2000 sample because of high water. This sample (flagged with an asterisk (*) in the table) was collected at Frederick-Garland Road (395611084180600), a site 3.6 mi upstream from the Martindale Road site.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

[μ S/cm, microsiemens per centimeter; (00061), USGS National Water Information System parameter code; deg C, degrees Celsius; mm of Hg, millimeters of mercury; mg/L, milligrams per liter; --, no data; col/100mL; colonies per 100 milliliters; <, concentration or value reported is less than that indicated]

Date	Time	Specific conductance, field (μ S/cm) (00095)	Specific conductance, lab (μ S/cm) (90095)	pH, whole water field (standard units) (00400)	pH, whole water lab (standard units) (00403)	Water temperature, (deg C) (00010)	Air temperature, (deg C) (00020)	Barometric pressure, (mm of Hg) (00025)	Dissolved oxygen (mg/L) (00300)	
Oct.	20	0930	771	761	7.8	8.0	9.0	4.0	749	9.1
Nov.	10	1140	756	757	8.3	8.1	11.5	23.0	730	9.7
Dec.	14	1230	621	620	8.6	7.8	5.5	5.0	724	12.1
Jan.	4	1210	733	732	8.7	7.8	3.5	-1.0	731	13.0
Feb.	9	1230	896	928	8.7	8.1	0.5	9.0	736	16.5
Mar.	9	1030	762	759	8.1	8.3	12.5	22.0	733	10.1
	20	1130	717	733	8.1	8.3	8.0	7.0	738	11.8
Apr.	4	1400	711	728	8.2	8.0	10.5	5.5	736	11.3
	*8	1500	306	326	7.4	7.6	9.5	5.0	740	11.5
	21	1030	667	684	8.2	8.0	13.0	7.0	733	10.0
May	2	1140	662	675	8.1	8.2	16.0	18.5	745	10.0
June	15	1100	672	652	8.1	7.7	23.5	25.0	736	6.6
July	20	1100	586	584	8.4	8.4	21.0	22.0	--	--
Aug.	21	1230	706	685	8.2	8.3	21.5	23.0	--	9.4
	23	1430	698	694	8.3	8.4	23.5	29.0	747	11.5
Sept.	12	1500	609	625	7.6	7.4	22.0	26.0	741	--

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
WATER-QUALITY RECORDS—CONTINUED

395355084173600 STILLWATER RIVER AT MARTINDALE ROAD NEAR UNION, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[(00301), USGS National Water Information System parameter code; col/100mL; colonies per 100 milliliters; mg/L, milligrams per liter; <, concentration or value reported is less than that indicated; --, no data; k, value is estimated from a non-ideal colony count; IT, incremental titration; e, estimated value]

Date	Oxygen, dissolved (percent of saturation) (00301)	<i>E. coli</i> , water, whole, total (col/100 mL) (31633)	Magnesium, dissolved (mg/L as Mg) (00925)	Sodium, dissolved (mg/L as Na) (00930)	Potassium, dissolved (mg/L as K) (00935)	Carbonate, water, dissolved, IT, field (mg/L as CO ₃) (00452)	Bicarbonate, water, dissolved, IT, field (mg/L as HCO ₃) (00453)	Alkalinity, water, dissolved, IT, field (mg/L as CaCO ₃) (39086)	Hardness, total (mg/L as CaCO ₃) (00900)
Oct. 20	81	50	34	33	4.8	<1	293	243	310
Nov. 10	93	180	35	30	4.1	<1	306	251	330
Dec. 14	101	860	24	20	3.3	<1	238	195	250
Jan. 4	101	2600	31	26	3.8	<1	268	220	330
Feb. 9	119	580	39	38	3.1	<1	339	278	390
Mar. 9	99	180	33	21	2.2	<1	275	225	340
20	101	520	28	24	2.3	<1	200	166	290
Apr. 4	106	460	32	21	2.3	<1	260	216	320
*8	108	5500	10	5.6	4.4	<1	93	77	120
21	99	230	28	14	2.2	30	183	203	310
May 2	104	160	29	15	1.6	12	218	202	290
June 15	80	680	28	17	2.8	<1	265	220	290
July 20	--	90	31	18	2.2	12	200	184	250
Aug. 21	101	k20	30	18	4.4	10	282	250	300
23	139	180	31	23	4.0	13	267	244	310
Sept. 12	--	260	27	20	4.2	<1	242	201	270

Date	Sulfate, dissolved (mg/L as SO ₄) (00945)	Chloride, dissolved (mg/L as Cl) (00940)	Calcium, dissolved (mg/L as Ca) (00915)	Iron, dissolved (μg/L as Fe) (01046)	Manganese, dissolved (μg/L as Mn) (01056)	Fluoride, dissolved (mg/L as F) (00950)	Silica, dissolved (mg/L as SiO ₂) (00955)	Dissolved solids, residue at 180 deg C (mg/L) (70300)	Nitrogen, nitrite, dissolved (mg/L as N) (00613)
Oct. 20	64	58	69	e6	6	0.4	4.6	440	0.03
Nov. 10	64	53	74	14	7	0.3	1.2	437	0.03
Dec. 14	56	38	59	13	5	0.2	1.9	353	0.02
Jan. 4	86	49	79	e10	6	0.3	3.9	455	0.02
Feb. 9	94	66	93	14	6	0.4	4.4	563	0.02
Mar. 9	76	48	81	14	4	0.3	0.8	456	0.02
20	60	58	71	16	5	0.3	1.8	423	0.02
Apr. 4	65	49	77	20	6	0.2	1.2	419	0.03
*8	18	15	31	57	5	0.3	5.7	203	0.07
21	54	36	77	e6	3	0.3	5.4	399	0.03
May 2	61	40	66	e9	3	0.3	0.7	384	0.02
June 15	53	38	70	<10	3	0.3	2.8	389	0.02
July 20	58	38	50	<10	<2	0.3	0.6	336	0.02
Aug. 21	56	44	71	<10	3	0.3	7.4	411	0.01
23	57	44	71	<10	e2	0.3	6.7	412	<0.01
Sept. 12	50	36	64	<10	e1	0.3	7.1	380	0.01

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)

WATER-QUALITY RECORDS—CONTINUED

395355084173600 STILLWATER RIVER AT MARTINDALE ROAD NEAR UNION, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[mg/L, milligrams per liter; (00631), USGS National Water Information System parameter code; µg/L, micrograms per liter; --, no data; <, concentration or value reported is less than that indicated; e, estimated value]

Date	Nitrogen, nitrite plus nitrate, dissolved (mg/L as N) (00631)	Nitrogen, ammonia, dissolved (mg/L as N) (00608)	Nitrogen, ammonia plus organic, total (mg/L as N) (00625)	Nitrogen, ammonia plus organic, dissolved (mg/L as N) (00623)	Phosphorus, total (mg/L as P) (00665)	Phosphorus, dissolved (mg/L as P) (00666)	Phosphorus, ortho-phosphate, dissolved (mg/L as P) (00671)	Carbon, organic, dissolved (mg/L as C) (00681)	Carbon, organic, particulate (mg/L as C) (00689)
Oct.									
20	1.7	0.21	0.63	0.45	0.20	0.18	0.18	3.8	0.3
Nov.									
10	1.2	0.09	0.57	0.46	0.14	0.12	0.10	3.7	0.5
Dec.									
14	1.4	0.09	0.54	0.38	0.16	0.12	0.10	3.6	0.7
Jan.									
4	3.3	0.16	0.91	0.42	0.26	0.14	0.12	3.9	2.1
Feb.									
9	2.8	0.51	1.0	0.81	0.22	0.18	0.16	3.0	0.3
Mar.									
9	6.4	0.06	0.66	0.39	0.09	0.06	0.04	3.6	0.7
20	7.8	0.08	0.82	0.54	0.10	0.04	0.03	3.7	1.3
Apr.									
4	6.3	0.06	1.6	0.43	0.07	0.04	0.02	3.5	0.3
*8	7.7	0.17	3.4	1.1	1.0	0.20	0.18	9.6	8.7
21	10.3	<0.02	1.3	0.61	0.14	0.08	0.05	4.2	0.8
May									
2	6.3	0.05	0.58	0.38	0.06	0.03	0.02	3.5	1.1
June									
15	4.5	0.06	0.72	0.40	0.13	0.09	0.07	3.7	0.5
July									
20	1.6	0.03	0.89	0.34	0.08	0.02	<0.01	3.2	1.5
Aug.									
21	1.4	<0.02	0.80	0.41	0.25	0.17	0.14	4.3	0.7
23	1.2	<0.02	0.85	0.39	0.26	0.16	0.13	4.2	1.5
Sept.									
12	1.4	0.03	0.64	0.40	0.31	0.23	0.20	4.1	1.0

Date	Sediment, suspended (mg/L) (80154)	Acetochlor, water, filtered (µg/L) (49260)	Alachlor, water, filtered (µg/L) (46342)	Atrazine, water, filtered (µg/L) (39632)	Deethyl atrazine, water, filtered (µg/L) (04040)	Methyl-azinphos, water, filtered (µg/L) (82686)	Benfluralin, water, filtered (µg/L) (82673)	Butylate, water, filtered (µg/L) (04028)	Carbaryl, water, filtered (µg/L) (82680)
Oct.									
20	8	--	--	--	--	--	--	--	--
Nov.									
10	7	--	--	--	--	--	--	--	--
Dec.									
14	15	--	--	--	--	--	--	--	--
Jan.									
4	70	--	--	--	--	--	--	--	--
Feb.									
9	1	--	--	--	--	--	--	--	--
Mar.									
9	16	<0.002	<0.002	0.068	e0.064	<0.001	<0.002	<0.002	<0.003
20	22	<0.002	<0.002	0.088	e0.086	<0.001	<0.002	<0.002	<0.003
Apr.									
4	13	0.007	<0.002	0.10	e0.057	<0.001	<0.002	<0.002	<0.003
*8	531	0.034	0.010	0.38	e0.097	<0.001	<0.002	<0.002	e0.006
21	35	0.010	0.068	0.18	e0.064	<0.001	<0.002	<0.002	<0.003
May									
2	16	0.077	0.011	0.28	e0.058	<0.001	<0.002	<0.002	<0.003
June									
15	22	0.12	0.009	1.5	e0.20	<0.001	<0.002	<0.002	e0.018
July									
20	8	0.022	<0.002	0.42	e0.14	<0.001	<0.002	<0.002	<0.003
Aug.									
21	30	<0.002	<0.002	0.30	e0.082	<0.001	<0.002	<0.002	<0.003
23	34	<0.002	<0.002	0.23	e0.078	<0.001	<0.002	<0.002	<0.003
Sept.									
12	63	0.014	<0.002	0.17	e0.056	<0.001	<0.002	<0.002	<0.003

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
WATER-QUALITY RECORDS—CONTINUED

395355084173600 STILLWATER RIVER AT MARTINDALE ROAD NEAR UNION, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[µg/L, micrograms per liter; (82674), USGS National Water Information System parameter code; --, no data; <, concentration or value reported is less than that indicated; e, estimated value]

Date	Carbofuran, water, filtered (µg/L) (82674)	Chlorpyrifos, water, filtered (µg/L) (38933)	Cyanazine, water, filtered (µg/L) (04041)	DCPA, water, filtered (µg/L) (82682)	p,p'-DDE, water, filtered (µg/L) (34653)	Diazinon, water, filtered (µg/L) (39572)	Dieldrin, water, filtered (µg/L) (39381)	2,6-diethyl- aniline, water, filtered (µg/L) (82660)	Methyl- parathion, water, filtered (µg/L) (82667)
Oct. 20	--	--	--	--	--	--	--	--	--
Nov. 10	--	--	--	--	--	--	--	--	--
Dec. 14	--	--	--	--	--	--	--	--	--
Jan. 4	--	--	--	--	--	--	--	--	--
Feb. 9	--	--	--	--	--	--	--	--	--
Mar. 9	<0.003	<0.004	<0.01	<0.002	<0.006	<0.002	<0.001	<0.003	<0.006
Mar. 20	<0.003	<0.004	0.013	<0.002	<0.006	<0.002	<0.001	<0.003	<0.006
Apr. 4	<0.003	<0.004	0.013	<0.002	<0.006	<0.002	<0.001	<0.003	<0.006
Apr. *8	<0.003	0.005	0.069	<0.002	<0.006	0.013	<0.001	<0.003	<0.006
Apr. 21	<0.003	<0.004	<0.015	<0.002	<0.006	<0.002	<0.001	<0.003	<0.006
May 2	<0.003	<0.004	<0.01	<0.002	<0.006	<0.002	<0.001	<0.003	<0.006
June 15	<0.003	0.006	0.043	<0.002	<0.006	0.013	<0.001	<0.003	<0.006
July 20	<0.003	<0.004	0.01	<0.002	<0.006	0.004	<0.001	<0.003	<0.006
Aug. 21	<0.003	<0.004	0.014	<0.002	<0.006	<0.002	<0.001	<0.003	<0.006
Aug. 23	<0.003	<0.004	0.014	<0.002	<0.006	<0.002	<0.001	<0.003	<0.006
Sept. 12	<0.003	<0.004	0.026	<0.002	<0.006	e0.003	<0.001	<0.003	<0.006

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
WATER-QUALITY RECORDS—CONTINUED

395355084173600 STILLWATER RIVER AT MARTINDALE ROAD NEAR UNION, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[µg/L, micrograms per liter; (82668), USGS National Water Information System parameter code; --, no data; <, concentration or value reported is less than that indicated]

Date	EPTC, water, filtered (µg/L) (82668)	Ethalfuralin, water, filtered (µg/L) (82663)	Ethoprop, water, filtered (µg/L) (82672)	Fonofos, water, filtered (µg/L) (04095)	Alpha BHC, water, filtered (µg/L) (34253)	Lindane, water, filtered (µg/L) (39341)	Linuron, water, filtered (µg/L) (82666)	Malathion, water, filtered (µg/L) (39532)
Oct. 20	--	--	--	--	--	--	--	--
Nov. 10	--	--	--	--	--	--	--	--
Dec. 14	--	--	--	--	--	--	--	--
Jan. 4	--	--	--	--	--	--	--	--
Feb. 9	--	--	--	--	--	--	--	--
Mar. 9	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
20	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
Apr. 4	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
*8	0.007	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
21	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
May 2	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
June 15	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
July 20	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
Aug. 21	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
23	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
Sept. 12	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005

Date	Metolachlor, water, filtered (µg/L) (39415)	Metribuzin, water, filtered (µg/L) (82630)	Molinate, water, filtered (µg/L) (82671)	Napropamide, water, filtered (µg/L) (82684)	Parathion, water, filtered (µg/L) (39542)	Pendimethalin, water, filtered (µg/L) (82683)	Permethrin, cis, water, filtered (µg/L) (82687)
Oct. 20	--	--	--	--	--	--	--
Nov. 10	--	--	--	--	--	--	--
Dec. 14	--	--	--	--	--	--	--
Jan. 4	--	--	--	--	--	--	--
Feb. 9	--	--	--	--	--	--	--
Mar. 9	0.032	<0.004	<0.004	<0.003	<0.004	<0.004	<0.005
20	0.044	<0.004	<0.004	<0.003	<0.004	<0.004	<0.005
Apr. 4	0.047	<0.004	<0.004	<0.003	<0.004	<0.004	<0.005
*8	0.36	0.10	<0.004	<0.003	<0.004	<0.004	<0.005
21	0.34	0.053	<0.004	<0.003	<0.004	<0.01	<0.005
May 2	0.27	<0.01	<0.004	<0.003	<0.004	<0.004	<0.005
June 15							<0.005
July 20	0.30	0.008	<0.004	<0.003	<0.004	<0.004	<0.005
Aug. 21	0.14	<0.004	<0.004	<0.003	<0.004	<0.004	<0.005
23	0.12	<0.004	<0.004	<0.003	<0.004	<0.004	<0.005
Sept. 12	0.084	<0.004	<0.004	<0.003	<0.004	<0.004	<0.005

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
WATER-QUALITY RECORDS—CONTINUED

395355084173600 STILLWATER RIVER AT MARTINDALE ROAD NEAR UNION, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[µg/L, micrograms per liter; (82664), USGS National Water Information System parameter code; --, no data; <, concentration or value reported is less than that indicated; e, estimated value]

Date	Phorate, water, filtered (µg/L) (82664)	Prometon, water, filtered (µg/L) (04037)	Pronamide, water, filtered (µg/L) (82676)	Propachlor, water, filtered (µg/L) (04024)	Propanil, water, filtered (µg/L) (82679)	Propargite, water, filtered (µg/L) (82685)	Simazine, water, filtered (µg/L) (04035)
Oct.							
20	--	--	--	--	--	--	--
Nov.							
10	--	--	--	--	--	--	--
Dec.							
14	--	--	--	--	--	--	--
Jan.							
4	--	--	--	--	--	--	--
Feb.							
9	--	--	--	--	--	--	--
Mar.							
9	<0.002	e0.006	<0.003	<0.007	<0.004	<0.013	0.011
20	<0.002	e0.009	<0.003	<0.007	<0.004	<0.013	0.024
Apr.							
4	<0.002	e0.012	<0.003	<0.007	<0.004	<0.013	0.033
*8	<0.002	0.029	<0.003	<0.007	<0.004	<0.013	0.26
21	<0.002	0.023	<0.003	<0.007	<0.004	<0.013	0.23
May							
2	<0.002	e0.014	<0.003	<0.007	<0.004	<0.013	0.34
June							
15	<0.002	0.037	<0.003	<0.007	<0.004	<0.013	0.11
July							
20	<0.002	e0.018	<0.003	<0.007	<0.004	<0.013	0.027
Aug.							
21	<0.002	0.036	<0.003	<0.007	<0.004	<0.013	0.018
23	<0.002	0.037	<0.003	<0.007	<0.004	<0.013	0.016
Sept.							
12	<0.002	0.055	<0.003	<0.007	<0.004	<0.013	0.015

Date	Tebuthiuron, water, filtered (µg/L) (82670)	Terbacil, water, filtered (µg/L) (82665)	Terbufos, water, filtered (µg/L) (82675)	Thiobencarb, water, filtered (µg/L) (82681)	Triallate, water, filtered (µg/L) (82678)	Trifluralin, water, filtered (µg/L) (82661)
Oct.						
20	--	--	--	--	--	--
Nov.						
10	--	--	--	--	--	--
Dec.						
14	--	--	--	--	--	--
Jan.						
4	--	--	--	--	--	--
Feb.						
9	--	--	--	--	--	--
Mar.						
9	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
20	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
Apr.						
4	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
*8	e0.025	<0.007	<0.013	<0.002	<0.001	<0.002
21	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
May						
2	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
June						
15	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
July						
20	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
Aug.						
21	e0.007	<0.007	<0.013	<0.002	<0.001	<0.002
23	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
Sept.						
12	0.013	<0.007	<0.013	<0.002	<0.001	<0.002

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
WATER-QUALITY RECORDS—CONTINUED

395457084095100 GREAT MIAMI RIVER AT ROSS ROAD NEAR VANDALIA, OHIO

LOCATION.—Latitude 39°54'57", longitude 84°09'51", Montgomery and Miami Counties, Hydrologic Unit 05080001, and at mile 95.7.

DRAINAGE AREA.—1142 mi².

REMARKS.—Discharge is not measured at this site. Discharge is measured by the Miami Conservancy District 4.8 miles downstream at Great Miami River at Taylorsville, Ohio (03263000).

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

[μ S/cm, microsiemens per centimeter; (00061), USGS National Water Information System parameter code; deg C, degrees Celsius; mm of Hg, millimeters of mercury; mg/L, milligrams per liter; --, no data; col/100mL; colonies per 100 milliliters; IT, incremental titration; <, concentration or value reported is less than that indicated]

Date	Time	Specific conductance, field (μ S/cm) (00095)	Specific conductance, lab (μ S/cm) (90095)	pH, whole water field (standard units) (00400)	pH, whole water lab (standard units) (00403)	Air temperature, (deg C) (00020)	Water temperature, (deg C) (00010)	Barometric pressure, (mm of Hg) (00025)	Oxygen, dissolved (mg/L) (00300)	
Oct.										
	20	1130	830	843	8.0	8.1	12.0	10.5	749	10.5
Nov.										
	17	1215	826	846	8.2	7.9	4.0	6.0	746	12.9
Dec.										
	8	1300	817	830	8.3	8.3	10.0	5.0	750	12.4
Jan.										
	4	1400	535	570	7.8	8.0	0.0	6.5	738	9.2
Feb.										
	7	1400	878	927	8.2	8.1	4.0	1.0	747	13.0
Mar.										
	20	1230	704	726	8.3	8.3	13.0	7.5	740	12.0
Apr.										
	4	1645	671	724	8.1	8.1	5.0	10.5	739	11.5
May										
	4	0950	594	610	7.9	7.9	24.0	17.0	745	8.4
June										
	14	1440	727	718	8.7	8.4	32.0	25.0	737	10.8
July										
	20	1140	745	753	8.3	8.2	23.0	--	--	--
Aug.										
	14	1150	623	626	8.2	8.3	--	22.0	747	9.4
Sept.										
	12	1130	773	784	7.5	7.8	25.0	22.0	742	--

Date	Oxygen, dissolved (percent of saturation) (00301)	<i>E. coli</i> , water whole total (col/100 mL) (31633)	Magnesium, dissolved (mg/L as Mg) (00925)	Sodium, dissolved (mg/L as Na) (00930)	Potassium, dissolved (mg/L as K) (00935)	Carbonate, water, dissolved, IT, field (mg/L as CO ₃) (00452)	Bicarbonate, water, dissolved, IT, field (mg/L as HCO ₃) (00453)	Alkalinity, water, dissolved, IT, field (mg/L as CaCO ₃) (39086)	Hardness, total (mg/L as CaCO ₃) (00900)	
Oct.										
	20	95	30	31	47	5.4	<1	295	245	320
Nov.										
	17	105	70	32	44	5.1	<1	309	253	330
Dec.										
	8	98	200	31	44	4.8	11	287	253	330
Jan.										
	4	78	--	21	22	3.9	<1	187	154	230
Feb.										
	7	100	45	32	48	4.1	<1	286	237	350
Mar.										
	20	104	230	27	27	2.6	24	154	168	290
Apr.										
	4	106	370	29	24	2.8	<1	256	213	310
May										
	4	89	580	24	14	3.0	<1	200	166	270
June										
	14	130	160	31	24	2.8	10	264	235	330
July										
	20	--	160	31	30	3.8	<1	290	241	320
Aug.										
	14	110	240	25	18	4.1	7	254	223	300
Sept.										
	12	--	380	31	37	4.6	<1	277	230	320

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
WATER-QUALITY RECORDS—CONTINUED

395457084095100 GREAT MIAMI RIVER AT ROSS ROAD NEAR VANDALIA, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[mg/L, milligrams per liter; (00945), USGS National Water Information System parameter code; µg/L, micrograms per liter; deg C, degrees Celsius; <, concentration or value reported is less than that indicated; >, concentration or value reported is greater than that indicated; --, no data; e, estimated value]

Date	Sulfate, dissolved (mg/L as SO ₄) (00945)	Chloride, dissolved (mg/L as Cl) (00940)	Calcium, dissolved (mg/L as Ca) (00915)	Iron, dissolved (µg/L as Fe) (01046)	Manganese, dissolved (µg/L as Mn) (01056)	Fluoride, dissolved (mg/L as F) (00950)	Silica, dissolved (mg/L as SiO ₂) (00955)	Dissolved solids, residue at 180 deg C (mg/L) (70300)	Nitrogen, nitrite, dissolved (mg/L as N) (00613)	Nitrogen, nitrite, plus nitrate, dissolved (mg/L as N) (00631)
Oct. 20	80	70	76	13	5	0.8	4.1	504	0.02	1.3
Nov. 17	83	64	79	19	4	0.8	0.9	495	0.04	3.5
Dec. 8	84	67	82	14	4	0.7	1.0	498	0.04	1.5
Jan. 4	55	43	57	26	6	0.3	4.4	338	0.06	4.1
Feb. 7	89	84	88	20	14	0.6	4.3	548	0.05	2.6
Mar. 20	63	58	72	20	7	0.3	2.0	421	0.03	5.4
Apr. 4	67	49	77	14	7	0.3	2.1	419	0.04	5.0
May 4	51	34	68	14	2	0.3	5.0	362	0.06	9.2
June 14	66	45	80	<10	<2	0.4	4.4	440	0.02	4.3
July 20	70	53	78	<10	<2	0.6	4.8	452	0.02	1.8
Aug. 14	44	35	77	e8	3	0.4	9.0	384	0.01	2.7
Sept. 12	65	58	77	<10	e2	0.6	6.6	453	0.02	2.1

Date	Nitrogen, ammonia, dissolved (mg/L as N) (00608)	Nitrogen, ammonia plus organic total (mg/L as N) (00625)	Nitrogen, ammonia plus organic dissolved (mg/L as N) (00623)	Phosphorus, total (mg/L as P) (00665)	Phosphorus, dissolved (mg/L as P) (00666)	Phosphorus, ortho-phosphate dissolved (mg/L as P) (00671)	Carbon, organic dissolved (mg/L as C) (00681)	Carbon, organic particulate (mg/L as C) (00689)	Sediment, suspended (mg/L) (80154)
Oct. 20	0.06	0.5	0.4	0.34	0.30	0.33	4.0	0.6	6
Nov. 17	<0.02	0.2	0.2	0.10	0.098	0.074	3.8	0.3	2
Dec. 8	<0.02	0.9	0.4	0.52	0.47	0.41	3.9	1.2	4
Jan. 4	0.11	1.7	0.6	0.52	0.16	0.14	6.9	>10	212
Feb. 7	0.04	0.4	0.3	0.37	0.32	0.29	3.4	0.2	2
Mar. 20	<0.02	0.7	0.4	0.12	0.05	0.036	4.5	1.5	17
Apr. 4	<0.02	0.8	0.4	0.13	0.08	0.060	4.1	0.6	16
May 4	0.09	1.6	0.9	0.21	0.11	0.083	6.9	2.2	36
June 14	<0.02	0.9	0.4	0.19	0.15	0.12	4.2	1.0	22
July 20	<0.02	0.6	0.4	0.30	0.26	0.22	3.4	1.0	21
Aug. 14	<0.02	1.1	0.6	0.32	0.20	0.18	--	--	27
Sept. 12	0.02	0.6	0.4	0.46	0.41	0.36	3.7	0.7	29

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)

FISH-COMMUNITY RESULTS

Fish-community surveys were conducted at three sites in the Great and Little Miami River Basins as part of the National Water-Quality Assessment Program (NAWQA). The sites were sampled as part of a multiyear assessment to estimate year-to-year variability. Additional reaches (indicated below as B and C) were sampled at Holes Creek and Mad River sites to estimate reach-to-reach variability within a single stream. Fish were collected by electrofishing with pulsed-DC current in a mapped reach at each site. Two electrofishing passes were done at each reach in a single day. Electrofishing was done by use of a barge electroshocker at all reaches excluding the Great Miami River below Hamilton, Ohio, where non-wadeable stream depths also required the use of a boat. Fish were identified, measured, weighed, and checked for external anomalies such as parasites, lesions, and skeletal anomalies. Fish were identified in the field by Dr. Terry Keiser, Ohio Northern University, and representative specimens were preserved, identified, and vouchered at the university. More details regarding collection methods can be found in Meador and others (1993). Taxonomy is based on Robins and others (1991).

CALENDER YEAR 2000

[mi², square miles; μ S/cm, microsiemens per centimeter; (00095), USGS National Water Information System parameter code; deg C, degrees Celsius; mg/L, milligrams per liter; --, no data]

Station number	Station name	Date	Drainage area (mi ²)	Reach length (meters)	Specific conductance, field (μ S/cm) (00095)	pH, whole water field (standard units) (00400)	Water temperature, (deg C) (00010)	Oxygen, dissolved (mg/L) (00300)
392246084340100	Great Miami River below Hamilton, Ohio	07/28/00	3635.8	500	816	8.9	28.0	9.0
393944084120700	Holes Creek at Kettering, Ohio—Reach A	08/01/00	20.0	200	788	8.1	21.3	8.5
	Holes Creek at Kettering, Ohio—Reach B	07/31/00	20.0	200	771	8.1	21.4	9.5
	Holes Creek at Kettering, Ohio—Reach C	08/01/00	20.0	200	793	8.2	22.6	9.1
395650083504400	Mad River near Highway 41 near Springfield, Ohio—Reach A	08/02/00	318.6	350	690	8.2	20.0	--
	Mad River near Highway 41 near Springfield, Ohio—Reach B	08/02/00	318.6	350	680	8.2	20.0	9.6
	Mad River near Highway 41 near Springfield, Ohio—Reach C	08/03/00	318.6	350	680	8.1	18.8	11.0

FISH-COMMUNITY RESULTS—CONTINUED

[--, not present at indicated site]

Family	Scientific name	Common name	Great Miami River below Hamilton, Ohio		Holes Creek at Huffman Park at Kettering, Ohio Reach A		Holes Creek at Huffman Park at Kettering, Ohio Reach B		Holes Creek at Huffman Park at Kettering, Ohio Reach C	
			Abundance	Batch weight (gram)	Abundance	Batch weight (gram)	Abundance	Batch weight (gram)	Abundance	Batch weight (gram)
Petromyzontidae	<i>Lampetra appendix</i>	American brook lamprey	--	--	--	--	--	--	--	--
Lepisosteidae	<i>Lepisosteus osseus</i>	longnose gar	2	1657	--	--	--	--	--	--
Clupeidae	<i>Dorosoma cepedianum</i>	gizzard shad	68	4834	--	--	--	--	--	--
Salmonidae	<i>Salmo trutta</i>	brown trout	--	--	--	--	--	--	--	--
Cyprinidae	<i>Cyprinus carpio</i>	common carp	8	11094	1	1122	--	--	--	--
	<i>Exoglossum laurae</i>	tonguetied minnow	--	--	--	--	--	--	--	--
	<i>Rhinichthys atratulus</i>	blacknose dace	--	--	44	79	50	94	117	174
	<i>Semotilus atromaculatus</i>	creek chub	--	--	58	693	128	1933	254	3731
	<i>Phenacobius mirabilis</i>	suckermouth minnow	4	24	--	--	--	--	--	--
	<i>Clinostomus elongatus</i>	redside dace	--	--	--	--	--	--	--	--
	<i>Notropis atherinoides</i>	emerald shiner	4	9	--	--	--	--	--	--
	<i>Notropis photogenis</i>	silver shiner	--	--	--	--	--	--	--	--
	<i>Luxilus chrysocephalus</i>	striped shiner	--	--	125	739	147	885	1	6
	<i>Cyprinella spiloptera</i>	spotfin shiner	50	88	--	--	--	--	--	--
	<i>Notropis stramineus</i>	sand shiner	1	1	87	157	102	189	--	--
	<i>Notropis buccatus</i>	silverjaw minnow	--	--	9	26	42	104	--	--
	<i>Phoxinus erythrogaster</i>	southern redbelly dace	--	--	--	--	--	--	--	--
	<i>Pimephales promelas</i>	fathead minnow	--	--	--	--	--	--	--	--
	<i>Pimephales notatus</i>	bluntnose minnow	1	3	789	988	341	700	--	--
	<i>Campostoma anomalum</i>	central stoneroller	4	28	1154	5013	1791	6779	521	2503
Catostomidae	<i>Carpiodes carpio</i>	river carpsucker	7	3363	--	--	--	--	--	--
	<i>Carpiodes cyprinus</i>	quillback	17	9290	--	--	--	--	--	--
	<i>Carpiodes velifer</i>	highfin carpsucker	2	651	--	--	--	--	--	--
	<i>Ictiobus bubalus</i>	smallmouth buffalo	27	54450	--	--	--	--	--	--
	<i>Moxostoma anisurum</i>	silver redhorse	54	23134	--	--	--	--	--	--
	<i>Moxostoma duquesnei</i>	black redhorse	18	2327	--	--	--	--	--	--
	<i>Moxostoma erythrurum</i>	golden redhorse	96	25453	4	421	--	--	--	--
	<i>Moxostoma macrolepidotum</i>	shorthead redhorse	55	18360	--	--	--	--	--	--
	<i>Hypentelium nigricans</i>	northern hog sucker	7	859	55	907	72	1709	24	341
	<i>Catostomus commersoni</i>	white sucker	--	--	48	527	21	364	31	817
Ictaluridae	<i>Ictalurus punctatus</i>	channel catfish	14	8310	--	--	--	--	--	--
	<i>Ameiurus natalis</i>	yellow bullhead	--	--	2	325	--	--	--	--
	<i>Pylodictis olivaris</i>	flathead catfish	2	467	--	--	--	--	--	--
Percichthyidae	<i>Morone chrysops</i>	white bass	2	340	--	--	--	--	--	--

FISH-COMMUNITY RESULTS—CONTINUED

[--, not present at indicated site]

Family	Scientific name	Common name	Great Miami River below Hamilton, Ohio		Holes Creek at Huffman Park at Kettering, Ohio Reach A		Holes Creek at Huffman Park at Kettering, Ohio Reach B		Holes Creek at Huffman Park at Kettering, Ohio Reach C	
			Abundance	Batch weight (gram)	Abundance	Batch weight (gram)	Abundance	Batch weight (gram)	Abundance	Batch weight (gram)
Centrarchidae	<i>Pomoxis annularis</i>	white crappie	--	--	--	--	--	--	--	--
	<i>Ambloplites rupestris</i>	rock bass	--	--	--	--	--	--	--	--
	<i>Micropterus dolomieu</i>	smallmouth bass	5	589	2	138	13	860	--	--
	<i>Micropterus punctulatus</i>	spotted bass	1	127	7	310	--	--	--	--
	<i>Micropterus salmoides</i>	largemouth bass	1	677	--	--	1	40	--	--
	<i>Lepomis cyanellus</i>	green sunfish	--	--	1	49	--	--	10	254
	<i>Lepomis macrochirus</i>	bluegill	2	27	15	102	1	66	1	3
	<i>Lepomis megalotis</i>	longear sunfish	19	291	--	--	--	--	--	--
	<i>Lepomis gibbosus</i>	pumpkinseed	--	--	1	23	--	--	1	21
Percidae	<i>Stizostedion canadense</i>	sauger	20	5248	--	--	--	--	--	--
	<i>Percina phoxocephala</i>	slenderhead darter	51	172	--	--	--	--	--	--
	<i>Percina caprodes</i>	logperch	22	255	--	--	--	--	--	--
	<i>Etheostoma blennioides</i>	greenside darter	6	28	--	--	--	--	--	--
	<i>Etheostoma zonale</i>	banded darter	8	9	--	--	--	--	--	--
	<i>Etheostoma caeruleum</i>	rainbow darter	--	--	2	3	10	16	--	--
	<i>Etheostoma flabellare</i>	fantail darter	--	--	38	52	45	54	34	35
Sciaenidae	<i>Aplodinotus grunniens</i>	freshwater drum	57	7823	--	--	--	--	--	--
Cottidae	<i>Cottus bairdi</i>	mottled sculpin	--	--	--	--	--	--	--	--
Gasterosteidae	<i>Culaea inconstans</i>	brook stickleback	--	--	--	--	--	--	--	--
NUMBER OF SPECIES			32	--	19	--	14	--	10	--
HYBRID SPECIES			1	--	1	--	--	--	--	--
TOTAL NUMBER OF FISH			627	--	2442	--	2764	--	993	--

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)

FISH-COMMUNITY RESULTS—CONTINUED

[--, not present at indicated site]

Family	Scientific name	Common name	Mad River near Highway 41 near Springfield, Ohio Reach A		Mad River near Highway 41 near Springfield, Ohio Reach B		Mad River near Highway 41 near Springfield, Ohio Reach C	
			Abundance	Batch weight (gram)	Abundance	Batch weight (gram)	Abundance	Batch weight (gram)
Petromyzontidae	<i>Lampetra appendix</i>	american brook lamprey	1	11	3	NA	1	15
Lepisosteidae	<i>Lepisosteus osseus</i>	longnose gar	--	--	--	--	--	--
Clupeidae	<i>Dorosoma cepedianum</i>	gizzard shad	--	--	--	--	--	--
Salmonidae	<i>Salmo trutta</i>	brown trout	1	186	3	36	7	2506
Cyprinidae	<i>Cyprinus carpio</i>	common carp	--	--	23	58456	5	14999
	<i>Exoglossum laurae</i>	tonguetied minnow	2	13	--	--	--	--
	<i>Rhinichthys atratulus</i>	blacknose dace	85	259	55	220	242	791
	<i>Semotilus atromaculatus</i>	creek chub	263	3049	341	3911	335	1849
	<i>Phenacobius mirabilis</i>	suckermouth minnow	--	--	--	--	--	--
	<i>Clinostomus elongatus</i>	redside dace	20	95	8	30	17	58
	<i>Notropis atherinoides</i>	emerald shiner	--	--	--	--	--	--
	<i>Notropis photogenis</i>	silver shiner	9	61	1	8	--	--
	<i>Luxilus chrysocephalus</i>	striped shiner	17	122	--	--	--	--
	<i>Cyprinella spiloptera</i>	spotfin shiner	--	--	--	--	--	--
	<i>Notropis stramineus</i>	sand shiner	--	--	--	--	--	--
	<i>Notropis buccatus</i>	silverjaw minnow	--	--	--	--	--	--
	<i>Phoxinus erythrogaster</i>	southern redbelly dace	--	--	--	--	9	14
	<i>Pimephales promelas</i>	fathead minnow	55	184	1	2	5	14
	<i>Pimephales notatus</i>	bluntnose minnow	13	30	2	5	14	31
	<i>Campostoma anomalum</i>	central stoneroller	474	5552	50	894	107	1327
Catostomidae	<i>Carpiodes carpio</i>	river carpsucker	--	--	--	--	--	--
	<i>Carpiodes cyprinus</i>	quillback carpsucker	--	--	--	--	--	--
	<i>Carpiodes velifer</i>	highfin carpsucker	--	--	--	--	--	--
	<i>Ictiobus bubalus</i>	smallmouth buffalo	--	--	--	--	--	--
	<i>Moxostoma anisurum</i>	silver redbhorse	--	--	--	--	--	--
	<i>Moxostoma duquesnei</i>	black redbhorse	--	--	--	--	--	--
	<i>Moxostoma erythrurum</i>	golden redbhorse	--	--	--	--	2	1356
	<i>Moxostoma macrolepidotum</i>	horthead redbhorse	--	--	--	--	--	--
	<i>Hypentelium nigricans</i>	northern hog sucker	38	10010	17	1415	41	13462
	<i>Catostomus commersoni</i>	white sucker	492	30119	459	15944	365	29171
Ictaluridae	<i>Ictalurus punctatus</i>	channel catfish	--	--	--	--	--	--
	<i>Ameiurus natalis</i>	yellow bullhead	--	--	--	--	--	--
	<i>Pylodictis olivaris</i>	flathead catfish	--	--	--	--	--	--
Percichthyidae	<i>Morone chrysops</i>	white bass	--	--	--	--	--	--

FISH-COMMUNITY RESULTS—CONTINUED

[--, not present at indicated site]

Family	Scientific name	Common name	Mad River near Highway 41 near Springfield, Ohio Reach A		Mad River near Highway 41 near Springfield, Ohio Reach B		Mad River near Highway 41 near Springfield, Ohio Reach C	
			Abundance	Batch weight (gram)	Abundance	Batch weight (gram)	Abundance	Batch weight (gram)
Centrarchidae	<i>Pomoxis annularis</i>	white crappie	--	--	1	114	--	--
	<i>Ambloplites rupestris</i>	rock bass	1	52	1	9	1	7
	<i>Micropterus dolomieu</i>	smallmouth bass	--	--	--	--	--	--
	<i>Micropterus punctulatus</i>	spotted bass	14	62	3	21	9	38
	<i>Micropterus salmoides</i>	largemouth bass	--	--	--	--	--	--
	<i>Lepomis cyanellus</i>	green sunfish	--	--	1	8	1	21
	<i>Lepomis macrochirus</i>	bluegill	15	98	5	36	2	9
	<i>Lepomis megalotis</i>	longear sunfish	--	--	--	--	--	--
	<i>Lepomis gibbosus</i>	pumpkinseed	--	--	--	--	--	--
Percidae	<i>Stizostedion canadense</i>	sauger	--	--	--	--	--	--
	<i>Percina phoxocephala</i>	slenderhead darter	--	--	--	--	--	--
	<i>Percina caprodes</i>	logperch	--	--	--	--	--	--
	<i>Etheostoma blennioides</i>	greenside darter	20	86	11	45	4	18
	<i>Etheostoma zonale</i>	banded darter	9	12	9	10	1	2
	<i>Etheostoma caeruleum</i>	rainbow darter	31	42	21	30	38	69
Sciaenidae	<i>Etheostoma flabellare</i>	fantail darter	--	--	--	--	--	--
	<i>Aplodinotus grunniens</i>	freshwater drum	--	--	--	--	--	--
Cottidae	<i>Cottus bairdi</i>	mottled sculpin	2	16	12	152	7	79
Gasterosteidae	<i>Culaea inconstans</i>	brook stickleback	--	--	--	--	1	1
NUMBER OF SPECIES			20	--	21	--	22	--
HYBRIDS			0	--	0	--	0	--
TOTAL NUMBER OF FISH			1562	--	1027	--	1214	--

References cited:

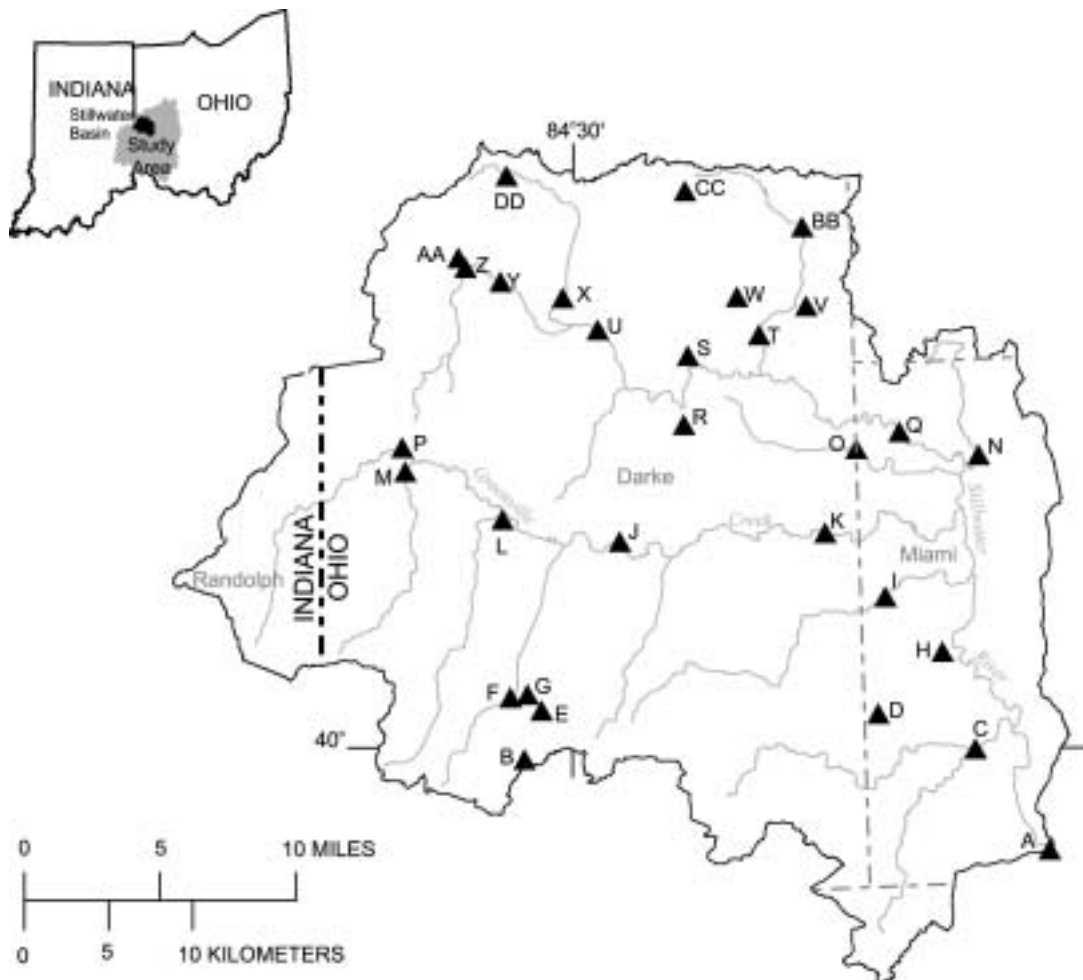
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- Meador, M.R., Cuffney, T.R., and Gurtz, M.E., 1993, Methods for collecting samples of fish communities as part of the National Water-Quality Assessment Program: U.S. Geological Survey Open-File Report 93-104, 40 p.

**Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)**

RESULTS FROM THE STILLWATER RIVER BASIN SYNOPTIC

The Great and Little Miami River Basins NAWQA (MIAM) study conducted a synoptic study to investigate the water quality of streams in the Stillwater River Basin, Darke and Miami Counties, Ohio. Land use in the Stillwater River Basin is largely agricultural and includes extensive row-crop production of corn, soybeans, and winter wheat, as well as extensive production of poultry, swine, and to a lesser extent, dairy cattle. Because most poultry and swine production is associated with animal feedlot operations (AFOs), the Stillwater River Basin has the highest density of AFOs in the MIAM study unit. The water samples were collected at 30 sites during a single high-flow event that occurred in May 2000. Stream samples were collected from one depth-integrated vertical taken at the stream's centroid of flow with a 3-liter teflon bottle. At most sites, stream discharge measurements were taken immediately after sample collection. A churn splitter was used to composite and split the inorganic samples. Samples were collected for analysis of selected physical parameters, major ions, nutrients, and selected pesticides. Specific details describing the guidelines used for sample collection and processing can be found in Wilde and others (1999).

Streambed-sediment samples were collected during low-flow conditions in the Stillwater River Basin at 28 sites in August and September, 2000. Bed-sediment samples were collected from the top 1 to 2 centimeters of material taken from at least 5 depositional areas within the stream reach. The composite samples were wet-sieved using a 2.0-millimeter stainless steel mesh (WS <2 mm) and submitted to the laboratory for carbon content analyses. Details concerning procedures used to collect and process streambed sediment samples are given in Shelton and Capel (1994). Bed-sediment constituent concentrations are provided on a dry-weight (DW) basis.



PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)

RESULTS FROM THE STILLWATER RIVER BASIN SYNOPTIC—CONTINUED

Map index	Station number	Station name	Latitude	Longitude	Drainage area (mi ²)
A	395611084180600	Stillwater River at Frederick-Garland Road	39°56'11"	84°18'06"	609
B	395922084400400	Prairie Outlet at Hollandsburg-Arcanum Road	39°59'22"	84°40'04"	1.5
C	395929084210500	Ludlow Creek at Davis Road	39°59'29"	84°21'05"	62.5
D	400039084250900	Hog Run at Jones Road	40°00'39"	84°25'09"	5.8
E	400056084391900	Prairie Outlet at State Route 121	40°00'56"	84°39'19"	4.9
F	400119084403700	Lake Branch Ditch at Weaver-Fort Jefferson Road	40°01'19"	84°40'37"	6.3
G	400126084395300	Mud Creek at Weaver-Fort Jefferson Road	40°01'26"	84°39'53"	3.8
H	400236084222400	Canyon Run at Rangeline Road	40°02'36"	84°22'24"	6.0
I	400422084244400	Painter Creek at Sugar Grove Road	40°04'22"	84°24'44"	32.0
J	400616084355700	Greenville Creek at Jaysville Road	40°06'16"	84°35'57"	142
K	400627084271400	Greenville Creek at Smith Road	40°06'27"	84°27'14"	191
L	400701084405100	West Branch Greenville Creek at Heller Road	40°07'01"	84°40'51"	25.9
M	400834084445500	Kraut Creek at Bickel Road	40°08'34"	84°44'55"	22.1
N	400850084204500	Trotters Creek at Piqua-Clayton Road	40°08'50"	84°20'45"	14.5
O	400906084255300	Harris Creek at State Route 721	40°09'06"	84°25'53"	9.0
P	400919084450300	Greenville Creek at Palestine-Union City Road	40°09'19"	84°45'03"	26.4
Q	400937084240400	Stillwater River at State Route 185	40°09'37"	84°24'04"	191
R	400958084330900	Unnamed Tributary at State Route 121	40°09'58"	84°33'09"	6.2
S	401208084325700	Unnamed Tributary at State Route 242	40°12'08"	84°32'57"	1.0
T	401247084295500	Swamp Creek downstream of State Route 121	40°12'47"	84°29'55"	58.8
U	401301084364300	Stillwater River at Reisner Road	40°13'01"	84°36'43"	74.3
V	401340084275400	Unnamed Tributary of Swamp Creek at State Route 47	40°13'40"	84°27'54"	9.1
W	401401084304800	Indian Creek at Conover Road	40°14'01"	84°30'48"	17.7
X	401404084381200	North Fork at State Route 118	40°14'04"	84°38'12"	17.3
Y	401436084404800	Stillwater River at Zumbrum Road	40°14'36"	84°40'48"	29.9
Z	401502084421500	South Fork at Washington Road	40°15'02"	84°42'15"	13.8
AA	401522084423400	West Fork Stillwater at Coletown-Lightsville Road	40°15'22"	84°42'34"	13.2
BB	401612084280200	Swamp Creek at Picensbarger Road	40°16'12"	84°28'02"	22.5
CC	401723084325900	Swamp Creek at Greenville-St. Mary's Road	40°17'23"	84°32'59"	6.7
DD	401757084403000	North Fork at Riegle Road	40°17'57"	84°40'30"	2.2

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
RESULTS FROM THE STILLWATER RIVER BASIN SYNOPTIC—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[ft/s³, cubic feet per second; (00061), USGS National Water Information System parameter code; mm of Hg, millimeters of mercury; mg/L, milligrams per liter; --, no data]

Station number	Date	Time	Discharge, instantaneous (ft/s ³) (00061)	Barometric pressure (mm of Hg) (00025)	Oxygen, dissolved (percent of saturation) (00301)	Oxygen, dissolved (mg/L) (00300)	pH, whole water, field, (standard units) (00400)
395611084180600	05/20/00	1600	--	743	98	9.6	8.0
395922084400400	05/19/00	0950	--	--	69	7.0	7.5
395929084210500	05/20/00	1430	--	738	93	9.3	7.8
400039084250900	05/19/00	1300	70	--	95	8.5	7.4
400056084391900	05/19/00	1025	16	730	65	6.3	7.2
400119084403700	05/19/00	1640	6.8	732	79	7.4	7.4
400126084395300	05/19/00	1330	5.8	731	93	8.4	7.8
400236084222400	05/19/00	1500	60	--	143	13.8	7.5
400422084244400	05/20/00	1400	140	737	97	10.0	7.5
400616084355700	05/20/00	1100	578	728	--	--	7.7
400627084271400	05/20/00	1400	809	--	--	--	7.8
400701084405100	05/20/00	1220	34	738	93	9.3	7.8
400834084445500	05/20/00	1200	67	735	92	9.5	7.5
400850084204500	05/19/00	1650	62	--	100	9.2	7.5
400906084255300	05/20/00	1300	9.9	--	99	10.1	7.6
400919084450300	05/20/00	1330	86	735	98	10.0	7.8
400937084240400	05/20/00	1030	323	--	95	9.3	7.6
400958084330900	05/20/00	0800	13	740	98	9.7	7.5
401208084325700	05/20/00	1000	0.46	736	100	10.3	7.3
401247084295500	05/19/00	1730	191	722	--	--	7.4
401301084364300	05/19/00	1910	66	--	103	10.3	7.6
401340084275400	05/19/00	1630	32	--	90	8.4	7.6
401401084304800	05/19/00	1520	64	722	--	--	7.4
401404084381200	05/20/00	0900	--	738	80	8.1	7.6
401436084404800	05/20/00	0810	43	729	--	--	7.8
401502084421500	05/19/00	1230	--	735	87	8.4	7.5
401522084423400	05/19/00	1000	21	--	86	8.4	7.4
401612084280200	05/20/00	0830	24	--	82	8.1	7.7
401723084325900	05/19/00	1100	22	718	--	--	7.3
401757084403000	05/19/00	1415	24	--	103	10.3	7.5

PROJECT DATA
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RESULTS FROM THE STILLWATER RIVER BASIN SYNOPTIC—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[(00403), USGS National Water Information System parameter code; $\mu\text{S}/\text{cm}$, microsiemens per centimeter; deg C, degrees Celsius; mg/L, milligrams per liter; --, no data]

Station number	pH, water, lab (standard units) (00403)	Specific conductance, lab ($\mu\text{S}/\text{cm}$) (90095)	Specific conductance, field ($\mu\text{S}/\text{cm}$) (00095)	Water temperature (deg C) (00010)	Hardness, total (mg/L as CaCO_3) (00900)	Calcium, dissolved (mg/L as Ca) (00915)	Magnesium, dissolved (mg/L as Mg) (00925)
395611084180600	7.5	494	491	15.5	210	54	18
395922084400400	7.3	648	630	14.6	290	74	26
395929084210500	7.5	633	628	13.5	290	73	26
400039084250900	7.3	454	439	16.5	200	52	18
400056084391900	7.2	508	489	14.7	200	52	18
400119084403700	7.3	636	614	16.6	300	86	21
400126084395300	7.4	602	592	18.2	270	67	26
400236084222400	7.4	488	479	17.8	200	52	18
400422084244400	7.6	612	602	13.9	280	71	25
400616084355700	7.3	580	571	11.0	260	68	22
400627084271400	7.4	531	527	--	240	64	20
400701084405100	7.4	632	628	13.5	300	80	25
400834084445500	7.4	549	540	13.5	260	67	23
400850084204500	7.4	434	427	17.5	180	47	15
400906084255300	7.8	680	671	13.0	320	82	27
400919084450300	7.3	579	567	13.4	270	70	24
400937084240400	7.6	647	640	14.9	280	72	24
400958084330900	7.6	652	646	13.0	300	76	27
401208084325700	7.7	904	900	13.7	400	104	35
401247084295500	7.3	646	644	17.0	250	66	22
401301084364300	7.2	657	650	16.0	290	74	25
401340084275400	7.3	708	703	17.1	300	82	24
401401084304800	7.4	658	656	--	280	71	25
401404084381200	7.5	782	774	13.2	340	87	30
401436084404800	7.8	739	737	--	340	87	30
401502084421500	7.4	644	640	15.9	280	70	24
401522084423400	7.2	614	621	14.5	250	64	23
401612084280200	7.4	675	677	13.9	290	75	25
401723084325900	7.4	586	586	18.0	240	61	21
401757084403000	7.3	745	750	15.3	310	79	27

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
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RESULTS FROM THE STILLWATER RIVER BASIN SYNOPTIC—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[mg/L, milligrams per liter; (00935), USGS National Water Information System parameter code; IT, incremental titration]

Station number	Potassium, dissolved (mg/L as K) (00935)	Sodium, dissolved (mg/L as Na) (00930)	Alkalinity, water, dissolved, IT, field (mg/L as CaCO ₃) (39086)	Bicarbonate, water, dissolved, IT, field (mg/L as HCO ₃) (00453)	Carbonate water, dissolved, IT, field (mg/L as Co ₃) (00452)	Chloride, dissolved (mg/L as Cl) (00940)	Fluoride, dissolved (mg/L as F) (00950)
395611084180600	4.0	7.0	123	150	<1	22	0.2
395922084400400	4.3	5.7	132	162	<1	18	0.2
395929084210500	1.3	8.0	160	196	<1	32	0.2
400039084250900	2.6	4.0	95	117	<1	19	0.2
400056084391900	6.0	5.6	99	122	<1	22	0.2
400119084403700	2.9	3.3	165	201	<1	10	0.2
400126084395300	2.7	10	169	206	<1	27	0.2
400236084222400	4.2	5.0	87	106	<1	20	0.2
400422084244400	1.4	7.0	149	181	<1	29	0.2
400616084355700	3.3	6.9	157	191	<1	22	0.2
400627084271400	3.6	6.2	139	169	<1	20	0.2
400701084405100	2.7	5.1	184	225	<1	16	0.2
400834084445500	2.8	4.5	165	201	<1	18	0.2
400850084204500	6.7	6.0	97	119	<1	24	0.2
400906084255300	1.9	8.3	197	241	<1	28	0.2
400919084450300	2.3	4.7	155	189	<1	25	0.2
400937084240400	4.6	9.4	137	168	<1	29	0.2
400958084330900	1.5	9.4	170	208	<1	29	0.2
401208084325700	4.3	21	220	268	<1	52	0.2
401247084295500	6.4	8.9	106	130	<1	27	0.2
401301084364300	4.2	7.6	136	166	<1	29	0.2
401340084275400	6.6	8.3	112	92	<1	25	0.2
401401084304800	6.4	9.5	109	133	<1	27	0.2
401404084381200	4.2	11	145	176	<1	32	0.2
401436084404800	1.9	7.3	182	223	<1	32	0.3
401502084421500	3.5	8.9	142	173	<1	33	0.2
401522084423400	6.3	5.6	124	151	<1	26	0.3
401612084280200	5.2	9.2	133	162	<1	31	0.2
401723084325900	6.2	6.5	111	91	<1	30	0.2
401757084403000	5.3	9.8	109	133	<1	29	0.2

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(National Water-Quality Assessment Program)

RESULTS FROM THE STILLWATER RIVER BASIN SYNOPTIC—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[mg/L, milligrams per liter; (00955), USGS National Water Information System parameter code]

Station number	Silica, dissolved (mg/L as SiO ₂) (00955)	Sulfate, dissolved (mg/L as SO ₄) (00945)	Nitrogen, ammonia plus organic, dissolved (mg/L as N) (00623)	Nitrogen, ammonia plus organic, total (mg/L as N) (00625)	Nitrogen, ammonia, dissolved (mg/L as N) (00608)	Nitrogen, nitrite plus nitrate, dissolved (mg/L as N) (00631)	Nitrogen, nitrite, dissolved (mg/L as N) (00613)
395611084180600	7.3	28	1.3	2.3	0.24	16	0.11
395922084400400	9.1	44	1.9	2.3	0.76	30	0.11
395929084210500	7.5	25	0.48	0.8	0.06	22	0.05
400039084250900	8.1	15	1.0	2.1	0.09	22	0.09
400056084391900	7.2	23	1.8	2.6	0.59	22	0.10
400119084403700	8.3	87	1.5	3.6	0.24	16	0.06
400126084395300	5.2	78	0.98	1.1	0.19	5.7	0.06
400236084222400	7.9	34	1.6	2.2	0.34	24	0.12
400422084244400	7.7	25	0.69	1.0	0.09	23	0.08
400616084355700	7.9	50	1.2	1.8	0.21	13	0.12
400627084271400	8.0	40	1.2	1.8	0.20	14	0.11
400701084405100	8.1	69	0.97	1.4	0.13	13	0.07
400834084445500	8.4	40	1.2	1.5	0.13	13	0.09
400850084204500	7.9	21	2.5	2.9	0.67	14	0.12
400906084255300	8.9	53	0.74	1.0	0.15	15	0.08
400919084450300	8.3	40	0.99	1.4	0.13	15	0.07
400937084240400	8.6	42	1.7	2.3	0.33	25	0.14
400958084330900	8.9	36	0.80	1.1	0.10	20	0.08
401208084325700	9.8	97	1.2	1.3	0.16	21	0.13
401247084295500	8.3	37	2.1	2.9	0.42	32	0.20
401301084364300	8.5	44	1.6	2.5	0.43	25	0.14
401340084275400	9.6	32	2.2	2.5	0.42	45	0.19
401401084304800	9.1	36	2.4	3.2	0.52	35	0.17
401404084381200	9.2	76	1.6	1.8	0.26	32	0.18
401436084404800	8.3	51	0.85	1.0	0.17	26	0.13
401502084421500	7.1	42	1.7	2.3	0.54	21	0.16
401522084423400	8.3	30	2.1	2.9	0.47	27	0.10
401612084280200	8.8	50	1.8	2.0	0.32	27	0.16
401723084325900	9.6	32	2.3	3.3	0.65	29	0.11
401757084403000	9.6	52	1.9	2.2	0.36	41	0.16

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RESULTS FROM THE STILLWATER RIVER BASIN SYNOPTIC—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[mg/L, milligrams per liter; (00666), USGS National Water Information System parameter code; deg C, degrees Celsius; µg/L, microgram per liter; e, estimated value; --, no data]

Station number	Phosphorus, dissolved (mg/L as P) (00666)	Phosphorus, ortho-phosphate, dissolved (mg/L as P) (00671)	Phosphorus, total (mg/L as P) (00665)	Dissolved solids, residue at 180 deg C (mg/L) (70300)	Iron, dissolved (µg/L as Fe) (01046)	Manganese, dissolved (µg/L as Mn) (01056)	Sediment, suspended (mg/L) (80154)
395611084180600	0.17	0.15	0.51	314	e10	e2	218
395922084400400	0.12	0.10	0.27	445	e10	17	101
395929084210500	0.04	0.04	0.07	377	<10	3	26
400039084250900	0.17	0.16	0.55	323	<10	11	226
400056084391900	0.27	0.24	0.55	333	80	19	134
400119084403700	0.09	0.09	0.29	427	10	41	98
400126084395300	0.03	0.02	0.09	368	e10	34	50
400236084222400	0.21	0.20	0.53	326	e10	13	193
400422084244400	0.07	0.06	0.11	397	<10	6	30
400616084355700	0.12	0.12	0.32	359	10	11	104
400627084271400	0.15	0.14	0.36	346	10	6	117
400701084405100	0.06	0.06	0.18	394	e10	22	92
400834084445500	0.12	0.11	0.26	363	20	18	75
400850084204500	0.46	0.42	0.70	294	30	16	128
400906084255300	0.04	0.03	0.08	415	e10	28	30
400919084450300	0.08	0.09	0.20	363	e10	8	63
400937084240400	0.21	0.18	0.39	436	e10	4	112
400958084330900	0.08	0.06	0.12	406	e10	9	23
401208084325700	0.19	0.17	0.25	576	e10	39	13
401247084295500	0.32	0.26	0.63	450	e10	12	192
401301084364300	0.14	0.15	0.38	429	e10	12	105
401340084275400	0.32	0.27	0.48	518	e10	12	79
401401084304800	0.35	0.31	0.59	450	10	13	134
401404084381200	0.14	0.10	0.26	552	<10	13	38
401436084404800	0.05	0.05	0.08	498	<10	9	--
401502084421500	0.08	0.05	0.17	405	e10	11	72
401522084423400	0.30	0.27	0.54	410	10	12	142
401612084280200	0.25	0.21	0.42	459	e10	20	103
401723084325900	0.38	0.34	0.73	414	20	13	280
401757084403000	0.24	0.20	0.36	530	10	15	55

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RESULTS FROM THE STILLWATER RIVER BASIN SYNOPTIC—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[µg/L, micrograms per liter; (82660), USGS National Water Information System parameter code; <, concentration or value reported is less than that indicated; e, estimated value; --, no data]

Station number	2,6						
	Diethylaniline (µg/L) (82660)	Acetochlor (µg/L) (49260)	Alachlor (µg/L) (46342)	Alpha BHC (µg/L) (34253)	Atrazine (µg/L) (39632)	Benfluralin (µg/L) (82673)	Butylate (µg/L) (04028)
395611084180600	<0.003	18	0.83	<0.002	e84	<0.002	<0.005
395922084400400	e0.003	7.2	5.3	<0.002	e32	<0.002	<0.002
395929084210500	<0.003	2.3	0.02	<0.002	14	<0.002	<0.002
400039084250900	e0.001	9.1	0.25	<0.002	e27	<0.002	<0.002
400056084391900	e0.002	7.3	1.4	<0.002	e48	<0.002	<0.002
400119084403700	<0.003	7.1	0.19	<0.002	e22	<0.002	<0.002
400126084395300	e0.001	0.32	0.86	<0.002	8.3	<0.002	<0.002
400236084222400	--	--	--	--	--	--	--
400422084244400	<0.003	2.4	0.64	<0.002	14	<0.002	<0.002
400616084355700	<0.003	4.7	0.25	<0.002	e26	<0.002	<0.002
400627084271400	<0.003	6.4	0.69	<0.002	e31	<0.002	<0.002
400701084405100	<0.003	3.8	0.49	<0.002	14	<0.002	<0.002
400834084445500	<0.003	20	0.04	<0.002	e74	<0.002	<0.002
400850084204500	<0.003	9.1	0.05	<0.002	e64	<0.002	<0.002
400906084255300	<0.003	1.2	0.02	<0.002	13	<0.002	<0.002
400919084450300	<0.003	3.9	0.04	<0.002	e25	<0.002	<0.002
400937084240400	<0.003	12	0.97	<0.002	e63	<0.002	<0.002
400958084330900	<0.003	8.5	0.008	<0.002	e38	<0.002	<0.002
401208084325700	<0.003	0.41	0.005	<0.002	15	<0.002	<0.002
401247084295500	e0.002	16	6.0	<0.002	e45	<0.002	<0.002
401301084364300	e0.001	6.0	0.50	<0.002	e30	<0.002	<0.002
401340084275400	e0.001	15	0.61	<0.002	e44	<0.002	<0.002
401401084304800	<0.003	e23	0.81	<0.002	e51	<0.002	<0.002
401404084381200	<0.003	7.3	0.57	<0.002	e50	<0.002	<0.002
401436084404800	<0.003	2.2	0.007	<0.002	10	<0.002	<0.002
401502084421500	<0.003	2.4	0.02	<0.002	e40	<0.002	<0.002
401522084423400	<0.003	8.7	0.04	<0.002	e30	<0.002	<0.002
401612084280200	<0.003	e21	4.2	<0.002	e76	<0.002	<0.002
401723084325900	0.006	e30	e38	<0.002	e61	<0.002	<0.002
401757084403000	e0.001	9.5	0.03	<0.002	e31	<0.002	<0.002

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WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[µg/L, micrograms per liter; (82680), USGS National Water Information System parameter code; <, concentration or value reported is less than that indicated; e, estimated value; --, no data]

Station number	Carbaryl (µg/L) (82680)	Carbofuran (µg/L) (82674)	Chlorpyrifos (µg/L) (38933)	Cyanazine (µg/L) (04041)	DCPA (µg/L) (82682)	Deethyl- atrazine (µg/L) (04040)	Diazinon (µg/L) (39572)
395611084180600	<0.009	<0.003	0.042	0.62	<0.002	e2.1	0.011
395922084400400	<0.003	<0.003	<0.004	<0.012	<0.002	e2.6	0.007
395929084210500	<0.003	<0.003	0.02	0.52	<0.002	e0.85	<0.002
400039084250900	e0.006	<0.003	0.011	3.9	<0.002	e2.9	<0.002
400056084391900	<0.003	<0.003	<0.004	<0.015	<0.002	e3.0	0.007
400119084403700	<0.003	<0.003	<0.004	5.8	<0.002	e0.96	<0.002
400126084395300	<0.003	<0.003	<0.004	0.013	<0.002	e0.41	0.012
400236084222400	--	<0.003	--	--	--	--	--
400422084244400	<0.003	<0.003	<0.004	0.34	<0.002	e1.2	<0.002
400616084355700	e0.023	<0.003	<0.01	0.86	<0.002	e1.4	0.004
400627084271400	e0.021	<0.003	<0.01	0.86	<0.002	e1.6	0.005
400701084405100	e0.008	<0.003	<0.004	0.68	<0.002	e0.79	e0.004
400834084445500	<0.003	<0.003	0.047	0.75	<0.002	e1.8	<0.002
400850084204500	e0.004	<0.003	<0.008	<0.02	<0.002	e3.7	0.008
400906084255300	<0.003	<0.003	0.007	0.026	<0.002	e0.43	0.005
400919084450300	<0.003	<0.003	<0.004	0.27	<0.002	e1.4	e0.001
400937084240400	e0.012	<0.003	0.025	0.06	<0.002	e1.5	0.006
400958084330900	<0.003	<0.003	<0.010	0.01	<0.002	e0.81	<0.002
401208084325700	<0.003	<0.003	0.008	0.012	<0.002	e0.52	0.004
401247084295500	e0.006	e0.083	<0.02	0.046	<0.002	e2.3	e0.004
401301084364300	e0.079	<0.003	<0.004	0.066	<0.002	e1.5	0.005
401340084275400	e0.005	<0.003	<0.01	<0.03	<0.002	e3.1	e0.004
401401084304800	e0.004	<0.003	<0.004	0.072	<0.002	e2.5	0.005
401404084381200	<0.006	<0.003	0.01	0.011	<0.002	e2.0	<0.002
401436084404800	e0.014	<0.003	<0.004	<0.004	<0.002	e0.56	<0.002
401502084421500	e0.010	<0.007	<0.004	<0.02	e0.001	e1.3	0.005
401522084423400	e0.19	<0.003	<0.004	<0.004	<0.002	e2.4	e0.001
401612084280200	<0.009	<0.003	0.029	0.04	<0.002	e2.1	<0.002
401723084325900	e0.014	<0.003	<0.03	0.073	<0.002	e2.0	<0.002
401757084403000	e0.009	<0.003	<0.008	<0.009	<0.002	e3.1	<0.002

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WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[µg/L, micrograms per liter; (39381), USGS National Water Information System parameter code; <, concentration or value reported is less than that indicated; e, estimated value; --, no data]

Station number	Dieldrin (µg/L) (39381)	Disulfoton (µg/L) (82677)	EPTC (µg/L) (82668)	Ethalfuralin (µg/L) (82663)	Ethoprop (µg/L) (82672)	Fonofos (µg/L) (04095)	Lindane (µg/L) (39341)
395611084180600	<0.001	<0.017	<0.002	<0.004	<0.003	<0.003	<0.004
395922084400400	<0.001	<0.017	<0.002	<0.004	<0.003	<0.003	0.011
395929084210500	<0.02	<0.017	<0.002	<0.004	<0.003	<0.003	<0.004
400039084250900	0.043	<0.017	<0.002	<0.004	<0.003	<0.003	<0.004
400056084391900	<0.001	<0.017	<0.002	<0.004	<0.003	<0.003	0.005
400119084403700	<0.001	<0.017	<0.002	<0.004	<0.003	<0.003	<0.004
400126084395300	<0.001	<0.017	<0.002	<0.004	<0.003	<0.003	<0.004
400236084222400	--	--	--	--	--	--	--
400422084244400	0.009	<0.017	<0.002	<0.004	<0.003	<0.003	<0.004
400616084355700	<0.009	<0.017	<0.002	<0.004	<0.003	<0.003	<0.004
400627084271400	<0.01	<0.017	<0.002	<0.004	<0.003	<0.003	<0.004
400701084405100	0.014	<0.017	<0.002	<0.004	<0.003	<0.003	<0.004
400834084445500	<0.001	<0.017	<0.002	<0.004	<0.003	<0.003	<0.004
400850084204500	<0.001	<0.017	<0.002	<0.004	<0.003	<0.003	0.004
400906084255300	<0.001	<0.017	<0.002	<0.004	<0.003	<0.003	<0.004
400919084450300	<0.006	<0.017	<0.002	<0.004	<0.003	<0.003	<0.004
400937084240400	<0.001	<0.017	<0.002	<0.004	<0.003	<0.003	<0.006
400958084330900	<0.001	<0.017	<0.002	<0.004	<0.003	<0.003	<0.004
401208084325700	0.007	<0.017	<0.002	<0.004	<0.003	<0.003	<0.004
401247084295500	<0.001	<0.017	<0.002	<0.004	<0.003	<0.003	e0.007
401301084364300	<0.001	<0.017	<0.002	<0.004	<0.003	<0.003	e0.004
401340084275400	<0.001	<0.017	<0.002	<0.004	<0.003	<0.003	e0.005
401401084304800	<0.001	<0.017	<0.002	<0.004	<0.003	<0.003	e0.010
401404084381200	<0.001	<0.017	<0.002	<0.004	<0.003	<0.003	<0.004
401436084404800	<0.008	<0.017	<0.002	<0.004	<0.003	<0.003	<0.004
401502084421500	<0.001	<0.017	<0.002	<0.004	<0.003	<0.003	<0.004
401522084423400	<0.001	<0.017	<0.002	<0.004	<0.003	<0.003	<0.004
401612084280200	<0.001	<0.017	<0.006	<0.004	<0.003	<0.003	<0.004
401723084325900	<0.3	<0.017	<0.002	<0.004	<0.003	<0.003	<0.004
401757084403000	<0.001	<0.017	<0.002	<0.004	<0.003	<0.003	<0.004

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)

RESULTS FROM THE STILLWATER RIVER BASIN SYNOPTIC—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[µg/L, micrograms per liter; (82666), USGS National Water Information System parameter code; <, concentration or value reported is less than that indicated; e, estimated value; --, no data]

Station number	Linuron (µg/L) (82666)	Malathion (µg/L) (39532)	Methyl- azinphos (µg/L) (82686)	Methyl- parathion (µg/L) (82667)	Metolachlor (µg/L) (39415)	Metribuzin (µg/L) (82630)	Molinate (µg/L) (82671)
395611084180600	0.028	<0.005	<0.01	<0.006	e28	0.72	<0.004
395922084400400	<0.002	<0.005	<0.001	<0.006	2.1	0.89	<0.004
395929084210500	<0.002	<0.005	<0.01	<0.006	6.0	0.49	<0.004
400039084250900	<0.002	<0.005	<0.001	<0.006	9.0	0.36	<0.004
400056084391900	<0.002	<0.005	<0.001	<0.006	4.7	2.3	<0.004
400119084403700	0.064	<0.005	<0.001	<0.006	0.24	0.24	<0.004
400126084395300	0.16	<0.005	<0.001	<0.006	0.25	0.05	<0.004
400236084222400	--	--	--	--	--	--	--
400422084244400	<0.002	<0.005	<0.001	<0.006	7.2	0.80	<0.004
400616084355700	e0.02	<0.005	<0.001	<0.006	7.6	0.44	<0.004
400627084271400	e0.025	<0.005	<0.001	<0.006	9.0	0.50	<0.004
400701084405100	e0.024	<0.005	<0.001	<0.006	3.1	0.12	<0.004
400834084445500	0.023	<0.005	<0.01	<0.006	14	0.30	<0.004
400850084204500	<0.002	<0.005	<0.001	<0.006	e34	1.6	<0.004
400906084255300	<0.002	<0.005	<0.01	<0.006	3.2	0.07	<0.004
400919084450300	<0.002	<0.005	<0.001	<0.006	7.3	0.78	<0.004
400937084240400	<0.002	<0.005	<0.02	<0.006	e27	1.4	<0.004
400958084330900	<0.002	<0.005	<0.01	<0.006	4.8	0.78	<0.004
401208084325700	<0.002	<0.005	<0.01	<0.006	3.0	0.006	<0.004
401247084295500	<0.002	<0.005	<0.001	<0.006	18	1.0	<0.004
401301084364300	<0.002	<0.005	<0.001	<0.006	12	1.4	<0.004
401340084275400	<0.002	<0.005	<0.001	<0.006	20	1.5	<0.004
401401084304800	<0.002	<0.005	<0.001	<0.006	13	0.43	<0.004
401404084381200	<0.002	<0.005	<0.02	<0.006	4.4	0.40	<0.004
401436084404800	<0.002	<0.005	<0.001	<0.006	4.9	0.91	<0.004
401502084421500	<0.002	e0.005	<0.001	<0.006	e24	1.4	<0.004
401522084423400	<0.002	<0.005	<0.001	<0.006	e21	3.4	<0.004
401612084280200	<0.002	<0.005	<0.02	<0.02	18	0.75	<0.004
401723084325900	<0.002	<0.005	<0.001	<0.006	12	1.3	<0.004
401757084403000	<0.002	<0.005	<0.001	<0.006	0.80	0.04	<0.004

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
RESULTS FROM THE STILLWATER RIVER BASIN SYNOPTIC—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[µg/L, micrograms per liter; (82684), USGS National Water Information System parameter code; <, concentration or value reported is less than that indicated; --, no data

Station number	Napropamide (µg/L) (82684)	p,p'-DDE (µg/L) (34653)	Parathion (µg/L) (39542)	Pebulate (µg/L) (82669)	Pendimethalin (µg/L) (82683)	Permethrin, cis (µg/L) (82687)	Phorate (µg/L) (82664)
395611084180600	<0.003	<0.03	<0.004	<0.004	<0.03	<0.005	<0.002
395922084400400	<0.003	<0.006	<0.004	<0.004	<0.12	<0.005	<0.002
395929084210500	<0.003	<0.01	<0.004	<0.004	<0.004	<0.005	<0.002
400039084250900	<0.003	<0.006	<0.004	<0.004	0.03	<0.005	<0.002
400056084391900	<0.003	<0.006	<0.004	<0.004	0.087	<0.005	<0.002
400119084403700	<0.003	<0.006	<0.004	<0.004	0.031	<0.005	<0.002
400126084395300	<0.003	<0.006	<0.004	<0.004	<0.01	<0.005	<0.002
400236084222400	--	--	--	--	--	--	--
400422084244400	<0.003	<0.006	<0.004	<0.004	<0.009	<0.005	<0.002
400616084355700	<0.003	<0.006	<0.004	<0.004	<0.02	<0.005	<0.002
400627084271400	<0.003	<0.006	<0.004	<0.004	<0.02	<0.005	<0.002
400701084405100	<0.003	<0.006	<0.004	<0.004	<0.02	<0.005	<0.002
400834084445500	<0.003	<0.02	<0.004	<0.004	<0.01	<0.005	<0.002
400850084204500	<0.003	<0.006	<0.004	<0.004	<0.004	<0.005	<0.002
400906084255300	<0.003	<0.009	<0.004	<0.004	<0.005	<0.005	<0.002
400919084450300	<0.003	<0.006	<0.004	<0.004	<0.004	<0.005	<0.002
400937084240400	<0.003	<0.04	<0.004	<0.004	0.047	<0.005	<0.002
400958084330900	<0.003	<0.008	<0.004	<0.004	0.039	<0.005	<0.002
401208084325700	<0.003	<0.006	<0.004	<0.004	<0.005	<0.005	<0.002
401247084295500	<0.003	<0.006	<0.004	<0.004	<0.004	<0.005	<0.002
401301084364300	<0.003	<0.006	<0.004	<0.004	0.062	<0.005	<0.002
401340084275400	<0.003	<0.006	<0.004	<0.004	<0.004	<0.005	<0.002
401401084304800	<0.003	<0.006	<0.004	<0.004	0.062	<0.005	<0.002
401404084381200	<0.003	<0.02	<0.004	<0.004	0.081	<0.005	<0.002
401436084404800	<0.003	<0.006	<0.004	<0.004	<0.008	<0.005	<0.002
401502084421500	<0.003	<0.006	<0.004	<0.004	<0.01	<0.005	<0.002
401522084423400	<0.003	<0.006	<0.004	<0.004	<0.06	<0.005	<0.002
401612084280200	<0.003	<0.006	<0.004	<0.004	<0.02	<0.005	<0.002
401723084325900	<0.003	<0.006	<0.004	<0.004	<0.004	<0.005	<0.002
401757084403000	<0.003	<0.006	<0.004	<0.004	<0.01	<0.005	<0.002

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
RESULTS FROM THE STILLWATER RIVER BASIN SYNOPTIC—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[µg/L, micrograms per liter; (04037), USGS National Water Information System parameter code; <, concentration or value reported is less than that indicated; e, estimated value; --, no data]

Station number	Prometon (µg/L) (04037)	Pronamide (µg/L) (82676)	Propachlor (µg/L) (04024)	Propanil (µg/L) (82679)	Propargite (µg/L) (82685)	Simazine (µg/L) (04035)	Tebuthiuron (µg/L) (82670)
395611084180600	0.031	<0.003	e0.007	<0.004	<0.013	4.4	e0.008
395922084400400	e0.01	<0.003	<0.007	<0.004	<0.013	0.099	<0.01
395929084210500	0.024	<0.003	<0.007	<0.004	<0.013	0.44	<0.01
400039084250900	e0.008	<0.003	<0.007	<0.004	<0.05	2.1	<0.01
400056084391900	0.022	<0.003	<0.007	<0.004		0.32	<0.01
400119084403700	e0.012	<0.003	<0.007	<0.004	<0.013	5.4	<0.01
400126084395300	e0.008	<0.003	<0.007	<0.004	<0.013	0.044	<0.01
400236084222400	--	--	--	--	--	--	--
400422084244400	e0.005	<0.003	<0.007	<0.004	<0.013	2.3	e0.006
400616084355700	e0.012	<0.003	<0.007	<0.004	<0.013	4.5	e0.007
400627084271400	e0.013	<0.003	<0.007	<0.004	<0.013	4.6	e0.006
400701084405100	e0.005	<0.003	<0.007	<0.004	<0.013	1.3	<0.01
400834084445500	0.025	<0.003	<0.007	<0.004	<0.013	4.2	<0.01
400850084204500	<0.018	<0.003	<0.007	<0.004	<0.013	12	<0.01
400906084255300	e0.007	<0.003	<0.007	<0.004	<0.013	0.82	<0.01
400919084450300	e0.005	<0.003	<0.007	<0.004	<0.013	1.02	e0.009
400937084240400	0.043	<0.003	0.58	<0.004	<0.013	1.1	0.019
400958084330900	e0.009	<0.003	<0.007	<0.004	<0.013	0.15	0.11
401208084325700	e0.008	<0.003	<0.007	<0.004	<0.013	0.02	<0.01
401247084295500	0.31	<0.003	0.20	<0.004	<0.013	3.6	0.013
401301084364300	0.038	<0.003	0.089	<0.004	<0.013	0.34	<0.01
401340084275400	e0.015	<0.003	<0.007	<0.004	<0.013	7.5	<0.01
401401084304800	1.4	<0.003	0.065	<0.004	<0.013	1.8	0.026
401404084381200	0.066	<0.003	0.16	<0.004	<0.013	0.70	<0.01
401436084404800	e0.003	<0.003	<0.007	<0.004	<0.013	0.14	<0.01
401502084421500	<0.018	<0.003	<0.007	<0.004	<0.013	0.087	0.011
401522084423400	<0.018	<0.003	<0.007	<0.004	<0.013	0.33	<0.01
401612084280200	e0.01	<0.003	1.5	<0.004	<0.013	3.3	<0.01
401723084325900	e0.004	<0.003	3.0	<0.004	<0.013	1.2	<0.01
401757084403000	0.10	<0.003	<0.007	<0.004	<0.013	1.5	<0.01

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
RESULTS FROM THE STILLWATER RIVER BASIN SYNOPTIC—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[µg/L, micrograms per liter; (04037), USGS National Water Information System parameter code;
 <, concentration or value reported is less than that indicated; e, estimated value; --, no data]

Station number	Terbacil (µg/L) (82665)	Terbufos (µg/L) (82675)	Thiobencarb (µg/L) (82681)	Triallate (µg/L) (82678)	Trifluralin (µg/L) (82661)
395611084180600	<0.007	<0.013	<0.002	<0.001	<0.002
395922084400400	<0.007	<0.013	<0.002	<0.001	<0.002
395929084210500	<0.007	<0.013	<0.002	<0.001	<0.002
400039084250900	<0.007	<0.013	<0.002	<0.001	<0.002
400056084391900	<0.007	<0.013	<0.002	<0.001	<0.002
400119084403700	<0.007	<0.013	<0.002	<0.001	<0.002
400126084395300	<0.007	<0.013	<0.002	<0.001	<0.002
400236084222400	--	--	--	--	--
400422084244400	<0.007	<0.013	<0.002	<0.001	<0.002
400616084355700	<0.007	<0.013	<0.002	<0.001	<0.002
400627084271400	<0.007	<0.013	<0.002	<0.001	<0.002
400701084405100	<0.007	<0.013	<0.002	<0.001	<0.002
400834084445500	<0.007	<0.013	<0.002	<0.001	<0.002
400850084204500	<0.007	<0.013	<0.002	<0.001	<0.002
400906084255300	<0.007	<0.013	<0.002	<0.001	<0.002
400919084450300	<0.007	<0.013	<0.002	<0.001	<0.002
400937084240400	e0.006	<0.013	<0.002	<0.001	<0.004
400958084330900	<0.007	<0.013	<0.002	<0.001	<0.002
401208084325700	<0.007	<0.013	<0.002	<0.001	<0.004
401247084295500	<0.007	<0.013	<0.002	<0.001	<0.002
401301084364300	<0.007	<0.013	<0.002	<0.001	<0.002
401340084275400	<0.007	<0.013	<0.002	<0.001	<0.002
401401084304800	<0.007	<0.013	<0.002	<0.001	<0.002
401404084381200	e0.006	<0.013	<0.002	<0.001	<0.002
401436084404800	<0.007	<0.013	<0.002	<0.001	<0.002
401502084421500	<0.007	<0.013	<0.002	<0.001	<0.002
401522084423400	<0.007	<0.013	<0.002	<0.001	<0.002
401612084280200	e0.006	<0.013	<0.002	<0.001	<0.004
401723084325900	<0.007	<0.013	<0.002	<0.001	e0.002
401757084403000	<0.007	<0.013	<0.002	<0.001	<0.002

Reference cited:

—Wilde, F.D., Radtke, D.B., Gibs, J., and Iwatsubo, R.T., 1999, National Field Manual for the Collection of Water-Quality Data: U.S. Geological Survey Techniques of Water-Resources Investigations book 9, chap. A5, 128 p.

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)

RESULTS FROM THE STILLWATER RIVER BASIN SYNOPTIC—CONTINUED

SEDIMENT-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

[(49270), USGS National Water Information System parameter code; bm, bottom material; ws, wet sieved; mm, millimeters; dw, dry weight; g/kg, grams per kilograms; --, no data]

Station number	Date	Time	Carbon, inorganic sediment, bm ws, 2mm dw, (g/kg) (49270)	Carbon, organic sediment, bm ws, 2mm dw, (g/kg) (49271)	Carbon, organic plus inorganic sediment, bm ws, 2mm dw, (g/kg) (49272)
395611084180600	08/24/00	1115	30	18	48
395922084400400	--	--	--	--	--
395929084210500	08/24/00	1315	51	7.1	58
400039084250900	08/24/00	1430	16	27	43
400056084391900	08/29/00	1230	21	26	47
400119084403700	08/29/00	1345	40	44	84
400126084395300	08/29/00	1315	39	31	70
400236084222400	09/07/00	1230	40	7.1	47
400422084244400	09/07/00	1145	26	6.8	34
400616084355700	08/30/00	1030	29	36	65
400627084271400	--	--	--	--	--
400701084405100	08/29/00	1445	34	12	46
400834084445500	08/29/00	1530	28	30	58
400850084204500	09/07/00	1100	28	7.2	35
400906084255300	09/07/00	1030	18	18	36
400919084450300	08/29/00	1615	22	19	41
400937084240400	09/07/00	1000	37	2.1	39
400958084330900	09/06/00	1800	30	26	56
401208084325700	09/06/00	1700	7.0	24	31
401247084295500	09/06/00	1600	28	22	50
401301084364300	08/30/00	1130	42	6.2	48
401340084275400	09/06/00	1530	25	15	40
401401084304800	09/06/00	1630	59	11	70
401404084381200	08/30/00	1230	45	12	57
401436084404800	08/30/00	1535	36	15	51
401502084421500	08/30/00	1500	36	12	48
401522084423400	08/30/00	1430	46	11	57
401612084280200	09/06/00	1500	17	19	36
401723084325900	09/06/00	1400	28	11	39
401757084403000	08/30/00	1330	12	24	36

Reference cited:

—Shelton, L.R., and Capel, P.D., 1994, Guidelines for collecting and processing samples of stream bed sediment for analysis of trace elements and organic contaminants for the National Water-Quality Assessment Program: U.S. Geological Survey Open-File Report 94-458, 20 p.

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
CHLOROPHYLL AND NUTRIENTS MEASUREMENTS

Field measurements of water quality and samples of algal chlorophyll *a* and *b* were taken from the water column (phytoplankton) and from the stream bottom (periphyton) in riffles representing the richest-targeted habitat and depositional-targeted habitats as defined in the NAWQA algal protocols (Porter, S.D., Cuffney, T.F., Gurtz, M.E., and Meador, M.R., 1993, Methods for collecting algal samples as part of the National Water-Quality Assessment Program: U.S. Geological Survey Open-file Report 93-409, 39 p.). Partial support to collect these data was provided by the U.S. Environmental Protection Agency as a collaborative study to provide data on stream nutrient and algal conditions for the development of nutrient criteria. In some cases, the nutrient samples were collected at the water-quality gaging station near the ecological station. Those sites that are in close proximity are:

Stillwater River at Martindale Road near Union, Ohio, (395355084173600) and Stillwater River at Old Springfield Road near Union, Ohio (395433084175300),

Great Miami River at Ross Road near Vanadalia, Ohio (395457084095100) and Great Miami River near Tipp City, Ohio, (395534084091400)

Mad River at St. Paris Pike at Eagle City, Ohio (03267900) and Mad River near Highway 41 near Springfield, Ohio (395650083504400).

WATER-QUALITY DATA

[µg/L, micrograms per liter; (70953), USGS National Water Information System parameter code; mg/m², milligrams per square meter; rth, richest-targeted habitat for periphyton; dth, depositional-targeted habitat for periphyton; --, no data; <, concentration or value reported is less than that indicated]

Date	Time	Sample type	Phytoplankton, chlorophyll <i>a</i> (µg/L) (70953)	Phytoplankton, chlorophyll <i>b</i> (µg/L) (70954)	Periphyton, chlorophyll <i>a</i> (mg/m ²) (70957)	Periphyton, chlorophyll <i>b</i> (mg/m ²) (70958)
<u>03245500 LITTLE MIAMI RIVER AT MILFORD, OHIO</u>						
7/13/00	1430		--	--	--	--
7/26/00	1410		--	--	--	--
7/26/00	1446	rth	--	--	116	18.7
7/26/00	1501	dth	--	--	30.2	3.6
7/26/00	1611		33.3	2.1	--	--
<u>03246400 EAST FORK LITTLE MIAMI RIVER NEAR WILLIAMSBURG, OHIO</u>						
7/06/00	1030		--	--	--	--
7/18/00	1040		--	--	--	--
7/26/00	1001	rth	--	--	86.6	11.6
7/26/00	1031	dth	--	--	28.9	2.6
7/26/00	1200		--	--	--	--
7/26/00	1201		55.4	5.9	--	--
<u>03271510 GREAT MIAMI RIVER AT MIAMISBURG, OHIO</u>						
7/14/00	0931	rth	--	--	77.3	16.6
7/14/00	1031	dth	--	--	32.3	2.5
7/14/00	1231		51.9	3.4	--	--
7/14/00	1245		--	--	--	--
<u>392246084340100 GREAT MIAMI RIVER BELOW HAMILTON, OHIO</u>						
7/12/00	1116	rth	--	--	60.0	8.6
7/12/00	1331	dth	--	--	40.5	3.0
7/12/00	1431		73.9	3.6	--	--
7/12/00	1720		--	--	--	--
<u>393944084120700 HOLES CREEK IN HUFFMAN PARK AT KETTERING, OHIO-REACH A</u>						
7/11/00	0941	rth	--	--	144	18.3
7/11/00	1020		--	--	--	--
7/11/00	1131	dth	--	--	35.6	2.1
7/11/00	1231		4.5	1.1	--	--
7/11/00	1600		--	--	--	--
<u>393944084120700 HOLES CREEK IN HUFFMAN PARK AT KETTERING, OHIO-REACH B</u>						
7/10/00	1040		--	--	--	--
7/10/00	1131	dth	--	--	7.9	1.1
<u>393944084120700 HOLES CREEK IN HUFFMAN PARK AT KETTERING, OHIO-REACH C</u>						
7/13/00	0931	rth	--	--	95.9	12.7
7/13/00	1101	dth	--	--	30.7	0.9
7/13/00	1300		--	--	--	--
<u>395355084173600 STILLWATER RIVER AT MARTINDALE ROAD NEAR UNION, OHIO</u>						
7/20/00	1100		--	--	--	--
<u>395433084175300 STILLWATER RIVER AT OLD SPRINGFIELD ROAD NEAR UNION, OHIO</u>						
7/20/00	0946	rth	--	--	302	104
7/20/00	1046	dth	--	--	14.9	1.2
7/20/00	1216		88.7	6.4	--	--

PROJECT DATA

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Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)CHLOROPHYLL AND NUTRIENTS MEASUREMENTS—CONTINUED

WATER-QUALITY DATA—Continued

[µg/L, micrograms per liter; (70953), USGS National Water Information System parameter code; mg/m², milligrams per square meter; rth, richest-targeted habitat for periphyton; dth, depositional-targeted habitat for periphyton; --, no data; <, concentration or value reported is less than that indicated]

Date	Sample time	Sample type	Phytoplankton, chlorophyll a (µg/L) (70953)	Phytoplankton, chlorophyll b (µg/L) (70954)	Periphyton, chlorophyll a (mg/m ²) (70957)	Periphyton, chlorophyll b (mg/m ²) (70958)
<u>395534084091400 GREAT MIAMI RIVER NEAR TIPP CITY, OHIO</u>						
7/20/00	1431	rth	--	--	115	12.2
7/20/00	1631	dth	--	--	12.8	<0.1
7/20/00	1732		16.4	1.3	--	--
<u>395650083504400 MAD RIVER NEAR HIGHWAY 41 NEAR SPRINGFIELD, OHIO—REACH A</u>						
7/17/00	0931	rth	--	--	310	36.9
7/17/00	1031	dth	--	--	78.8	6.7
7/17/00	1401		2.8	0.11	--	--
<u>395650083504400 MAD RIVER NEAR HIGHWAY 41 NEAR SPRINGFIELD, OHIO—REACH B</u>						
7/18/00	0931	rth	--	--	164	15.7
7/18/00	1001	dth	--	--	85.8	3.8
<u>395650083504400 MAD RIVER NEAR HIGHWAY 41 NEAR SPRINGFIELD, OHIO—REACH C</u>						
7/19/00	0931	rth	--	--	230	23.2
7/19/00	1031	dth	--	--	111	4.6
<u>393259085101200 WHITEWATER RIVER NEAR NULLTOWN, INDIANA</u>						
7/25/00	1031	rth	--	--	153	15.7
7/25/00	1131	dth	--	--	101	<0.1
7/25/00	1230		--	--	--	--
7/25/00	1231		5.4	0.2	--	--

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
CHLOROPHYLL AND NUTRIENTS MEASUREMENTS—CONTINUED

WATER-QUALITY DATA—Continued

[mg/L, milligrams per liter; (00608), USGS National Water Information System parameter code; --, no data; <, concentration or value reported is less than that indicated]

Date	Nitrogen, ammonia, dissolved (mg/L as N) (00608)	Nitrogen, nitrite, dissolved (mg/L as N) (00613)	Nitrogen, ammonia plus organic, dissolved (mg/L as N) (00623)	Nitrogen, ammonia plus organic, total (mg/L as N) (00625)	Nitrogen, nitrite plus nitrate, dissolved (mg/L as N) (00631)	Phosphorus, total (mg/L as P) (00665)	Phosphorus, dissolved (mg/L as P) (00666)	Phosphorus, ortho-phosphate, dissolved (mg/L as P) (00671)
<u>03245500 LITTLE MIAMI RIVER AT MILFORD, OHIO</u>								
7/13/00	<0.02	0.02	0.4	0.7	3.5	0.30	0.20	0.18
7/26/00	0.02	0.02	0.4	0.6	3.8	0.27	0.19	0.16
7/26/00	--	--	--	--	--	--	--	--
7/26/00	--	--	--	--	--	--	--	--
7/26/00	--	--	--	--	--	--	--	--
<u>03246400 EAST FORK LITTLE MIAMI RIVER NEAR WILLIAMSBURG, OHIO</u>								
7/06/00	0.04	0.02	0.7	1.2	1.2	0.44	0.27	0.24
7/18/00	<0.02	<0.01	0.4	0.9	0.5	0.18	0.05	0.03
7/26/00	--	--	--	--	--	--	--	--
7/26/00	--	--	--	--	--	--	--	--
7/26/00	<0.02	<0.01	0.5	0.8	0.1	0.2	0.09	0.07
7/26/00	--	--	--	--	--	--	--	--
<u>03267900 MAD RIVER AT ST. PARIS PIKE AT EAGLE CITY, OHIO</u>								
7/11/00	--	0.01	0.2	0.2	3.6	0.06	0.05	0.05
7/17/00	--	0.01	0.2	0.2	3.6	0.03	0.02	0.01
7/18/00	--	0.03	0.2	0.2	3.8	0.03	0.02	0.02
7/19/00	--	0.02	0.2	0.4	3.5	0.07	0.03	0.03
<u>03271510 GREAT MIAMI RIVER AT MIAMISBURG, OHIO</u>								
7/14/00	--	--	--	--	--	--	--	--
7/14/00	--	--	--	--	--	--	--	--
7/14/00	--	--	--	--	--	--	--	--
7/14/00	<0.02	0.02	0.4	0.9	3.8	0.35	0.26	0.21
<u>392246084340100 GREAT MIAMI RIVER BELOW HAMILTON, OHIO</u>								
7/12/00	--	--	--	--	--	--	--	--
7/12/00	--	--	--	--	--	--	--	--
7/12/00	--	--	--	--	--	--	--	--
7/12/00	<0.02	0.02	0.4	1.1	4.1	0.28	0.16	0.13
<u>393944084120700 HOLES CREEK IN HUFFMAN PARK AT KETTERING, OHIO—REACH A</u>								
7/11/00	--	--	--	--	--	--	--	--
7/11/00	<0.02	<0.01	0.3	0.4	0.8	0.04	0.02	0.01
7/11/00	--	--	--	--	--	--	--	--
7/11/00	--	--	--	--	--	--	--	--
7/11/00	0.03	0.02	0.5	0.8	0.6	0.18	0.01	<0.01
<u>393944084120700 HOLES CREEK IN HUFFMAN PARK AT KETTERING, OHIO—REACH B</u>								
7/10/00	<0.02	<0.01	0.3	0.5	0.8	0.04	0.02	0.02
7/10/00	--	--	--	--	--	--	--	--
7/13/00	--	--	--	--	--	--	--	--
<u>393944084120700 HOLES CREEK IN HUFFMAN PARK AT KETTERING, OHIO—REACH C</u>								
7/13/00	--	--	--	--	--	--	--	--
7/13/00	<0.02	<0.01	0.3	0.4	0.6	0.04	0.01	<0.01
<u>395355084173600 STILLWATER RIVER AT MARTINDALE ROAD NEAR UNION, OHIO</u>								
7/20/00	--	0.02	0.3	0.9	1.6	0.83	0.02	<0.01
<u>395457084095100 GREAT MIAMI RIVER AT ROSS ROAD NEAR VANADALIA, OHIO</u>								
7/20/00	--	0.02	0.4	0.6	1.8	0.30	0.26	0.22
<u>393259085101200 WHITEWATER RIVER NEAR NULLTOWN, INDIANA</u>								
7/25/00	--	--	--	--	--	--	--	--
7/25/00	--	--	--	--	--	--	--	--
7/25/00	<0.02	0.02	0.1	0.2	3.1	0.02	0.01	0.01

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
CHLOROPHYLL AND NUTRIENTS MEASUREMENTS—CONTINUED

Selected water-quality parameters including water temperature, pH, specific conductance, dissolved oxygen and in vivo chlorophyll were monitored at 15-minute intervals for approximately 48 hours at selected sites in July 2000. Data collection was done by use of multi-probe data sondes. Data collection was done to measure diurnal fluctuations in these parameters in relation to in-stream productivity, nutrient concentrations, and habitat features at each site. Partial support to collect these data was provided by the U.S. Environmental Protection Agency and YSI Incorporated (Yellow Springs, Ohio) as a collaborative study to provide data on stream nutrient and algal conditions for the development of nutrient criteria.

WATER-QUALITY DATA—Continued

[µg/L, micrograms per liter]

Beginning sample date	End sample date	Chlorophyll, minimum (µg/L)	Chlorophyll, maximum (µg/L)	Chlorophyll, range (µg/L)	Chlorophyll, median (µg/L)
<u>03245500 LITTLE MIAMI RIVER AT MILFORD, OHIO</u>					
7/25/00	7/27/00	10.6	34.2	23.6	20.2
<u>03246400 EAST FORK LITTLE MIAMI RIVER NEAR WILLIAMSBURG, OHIO</u>					
7/25/00	7/27/00	36.9	70.7	33.8	56.6
<u>03271510 GREAT MIAMI RIVER AT MIAMISBURG, OHIO</u>					
7/12/00	7/14/00	30.0	104.5	74.5	55.4
<u>392246084340100 GREAT MIAMI RIVER BELOW HAMILTON, OHIO</u>					
7/12/00	7/14/00	35.7	119.8	84.1	73.1
<u>393944084120700 HOLES CREEK AT KETTERING, OHIO—REACH A</u>					
7/09/00	7/11/00	3.4	26.0	22.6	7.0
<u>393944084120700 HOLES CREEK AT KETTERING, OHIO—REACH B</u>					
7/09/00	7/11/00	3.8	24.7	20.9	7.3
<u>393944084120700 HOLES CREEK AT KETTERING, OHIO—REACH C</u>					
7/09/00	7/12/00	6.3	34.9	28.6	9.3
<u>395433084175300 STILLWATER RIVER AT OLD SPRINGFIELD ROAD NEAR UNION, OHIO</u>					
7/19/00	7/21/00	38.4	73.2	34.8	57.0
<u>395534084091400 GREAT MIAMI RIVER NEAR TIPP CITY, OHIO</u>					
7/12/00	7/14/00	26.4	60.3	33.9	41.3
7/19/00	7/21/00	10.3	26.7	20.6	23.3
<u>395650083504400 MAD RIVER NEAR HIGHWAY 41 NEAR SPRINGFIELD, OHIO—REACH A</u>					
7/17/00	7/19/00	2.3	6.1	3.8	3.7
7/19/00	7/21/00	3.1	7.2	4.1	4.5
<u>395650083504400 MAD RIVER NEAR HIGHWAY 41 NEAR SPRINGFIELD, OHIO—REACH B</u>					
7/17/00	7/19/00	0.7	7.2	6.5	4.1
<u>395650083504400 MAD RIVER NEAR HIGHWAY 41 NEAR SPRINGFIELD, OHIO, REACH C</u>					
7/17/00	7/19/00	0.8	5.9	5.1	2.3
<u>393259085101200 WHITEWATER RIVER NEAR NULLTOWN, INDIANA</u>					
7/25/00	7/27/00	2.0	6.2	4.2	4.4

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
CHLOROPHYLL AND NUTRIENTS MEASUREMENTS—CONTINUED

WATER-QUALITY DATA—Continued

[mg/L, milligrams per liter; (00300), USGS National Water Information System parameter code]

Dates	Oxygen, dissolved, minimum (mg/L) (00300)	Oxygen, dissolved, maximum (mg/L) (00300)	Oxygen, dissolved, range (mg/L) (00300)	Oxygen, dissolved, median (mg/L) (00300)	pH, whole water, field, minimum (standard units) (00400)	pH, whole water, field, maximum (standard units) (00400)	pH, whole water, field, range (standard units) (00400)	pH, whole water, field, median (standard units) (00400)
	<u>03245500 LITTLE MIAMI RIVER AT MILFORD, OHIO</u>							
7/25-27/00	7.5	13.3	4.8	9.0	8.3	8.6	0.3	8.4
	<u>03246400 EAST FORK LITTLE MIAMI RIVER NEAR WILLIAMSBURG, OHIO</u>							
7/25-27/00	7.8	12.2	4.4	9.3	8.1	8.8	0.7	8.5
	<u>03271510 GREAT MIAMI RIVER AT MIAMISBURG, OHIO</u>							
7/12-14/00	7.0	14.7	7.7	9.5	8.3	8.8	0.5	8.5
	<u>392246084340100 GREAT MIAMI RIVER BELOW HAMILTON, OHIO</u>							
7/12-14/00	7.5	11.2	3.7	9.2	8.4	8.7	0.3	8.6
	<u>393944084120700 HOLES CREEK AT KETTERING, OHIO—REACH A</u>							
7/10-11/00	7.0	8.2	1.2	7.3	8.2	8.5	0.3	8.3
	<u>393944084120700 HOLES CREEK AT KETTERING, OHIO—REACH B</u>							
7/10-11/00	7.3	9.1	1.8	8.5	8.0	8.4	0.4	8.2
	<u>393944084120700 HOLES CREEK AT KETTERING, OHIO—REACH C</u>							
7/10-11/00	7.3	10.6	3.3	7.9	8.2	8.5	0.3	8.3
	<u>395433084175300 STILLWATER RIVER AT OLD SPRINGFIELD ROAD NEAR UNION, OHIO</u>							
7/19-21/00	8.4	14.0	5.6	10.4	8.2	8.7	0.5	8.5
	<u>395534084091400 GREAT MIAMI RIVER NEAR TIPP CITY, OHIO</u>							
7/12-14/00	6.5	15.0	8.5	9.3	8.2	8.7	0.5	8.5
7/19-21/00	6.4	13.0	6.6	8.1	8.1	8.6	0.5	8.2
	<u>395650083504400 MAD RIVER NEAR HIGHWAY 41 NEAR SPRINGFIELD, OHIO—REACH A</u>							
7/17-19/00	7.8	16.6	8.8	9.6	8.0	8.5	0.5	8.1
7/19-21/00	8.3	17.23	9.3	10.5	8.0	8.5	0.5	8.2
	<u>395650083504400 MAD RIVER NEAR HIGHWAY 41 NEAR SPRINGFIELD, OHIO—REACH B</u>							
7/17-19/00	7.6	13.3	5.7	8.8	7.9	8.3	0.4	8.0
	<u>395650083504400 MAD RIVER NEAR HIGHWAY 41 NEAR SPRINGFIELD, OHIO, REACH C</u>							
7/17-19/00	7.4	13.9	6.5	8.9	7.9	8.4	0.5	8.0
	<u>393259085101200 WHITEWATER RIVER NEAR NULLTOWN, INDIANA</u>							
7/25-27/00	6.8	13.6	6.7	9.5	8.0	8.4	0.4	8.2

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
CHLOROPHYLL AND NUTRIENTS MEASUREMENTS—CONTINUED

WATER-QUALITY DATA—Continued

[$\mu\text{S/cm}$, microsiemens per centimeter; (00095), USGS National Water Information System parameter code; deg C, degrees Celsius]

Dates	Specific conductance, field, minimum ($\mu\text{S/cm}$) (00095)	Specific conductance, field, maximum ($\mu\text{S/cm}$) (00095)	Specific conductance, field, range ($\mu\text{S/cm}$) (00095)	Specific conductance, field, median ($\mu\text{S/cm}$) (00095)	Water temperature, minimum (deg C) (00010)	Water temperature, maximum (deg C) (00010)	Water temperature, range (deg C) (00010)	Water temperature, median (deg C) (00010)
	<u>03245500 LITTLE MIAMI RIVER AT MILFORD, OHIO</u>							
7/25-27/00	661	800	139	738	23.4	26.3	2.9	24.5
	<u>03246400 EAST FORK LITTLE MIAMI RIVER NEAR WILLIAMSBURG, OHIO</u>							
7/25-27/00	243	331	88	323	22.7	25.5	2.8	23.7
	<u>03271510 GREAT MIAMI RIVER AT MIAMISBURG, OHIO</u>							
7/12-14/00	647	736	89	718	24.3	27.6	3.3	25.2
	<u>392246084340100 GREAT MIAMI RIVER BELOW HAMILTON, OHIO</u>							
7/12-14/00	658	760	102	745	26.0	28.6	2.6	27.4
	<u>393944084120700 HOLES CREEK AT KETTERING, OHIO—REACH A</u>							
7/10-11/00	587	798	211	719	20.5	30.5	10.0	23.7
	<u>393944084120700 HOLES CREEK AT KETTERING, OHIO—REACH B</u>							
7/10-11/00	602	795	193	717	20.2	26.3	6.1	23.5
	<u>393944084120700 HOLES CREEK AT KETTERING, OHIO—REACH C</u>							
7/10-11/00	549	738	189	663	19.9	26.0	6.1	23.6
	<u>395433084175300 STILLWATER RIVER AT OLD SPRINGFIELD ROAD NEAR UNION, OHIO</u>							
7/19-21/00	535	591	56	573	21.9	25.3	3.4	23.4
	<u>395534084091400 GREAT MIAMI RIVER NEAR TIPP CITY, OHIO</u>							
7/12-14/00	682	710	28	701	22.9	27.0	4.9	24.6
7/19-21/00	740	759	19	749	21.7	25.9	4.2	23.3
	<u>395650083504400 MAD RIVER NEAR HIGHWAY 41 NEAR SPRINGFIELD, OHIO—REACH A</u>							
7/17-19/00	--	--	--	--	17.3	22.3	5.0	19.4
7/19-21/00	--	--	--	--	15.9	20.4	4.5	17.5
	<u>395650083504400 MAD RIVER NEAR HIGHWAY 41 NEAR SPRINGFIELD, OHIO—REACH B</u>							
7/17-19/00	651	720	69	710	17.1	21.3	4.2	19.2
	<u>395650083504400 MAD RIVER NEAR HIGHWAY 41 NEAR SPRINGFIELD, OHIO, REACH C</u>							
7/17-19/00	654	718	64	710	17.2	21.2	4.0	19.2
	<u>393259085101200 WHITEWATER RIVER NEAR NULLTOWN, INDIANA</u>							
7/25-27/00	627	667	40	652	19.8	24.9	5.1	22.1

PROJECT DATA

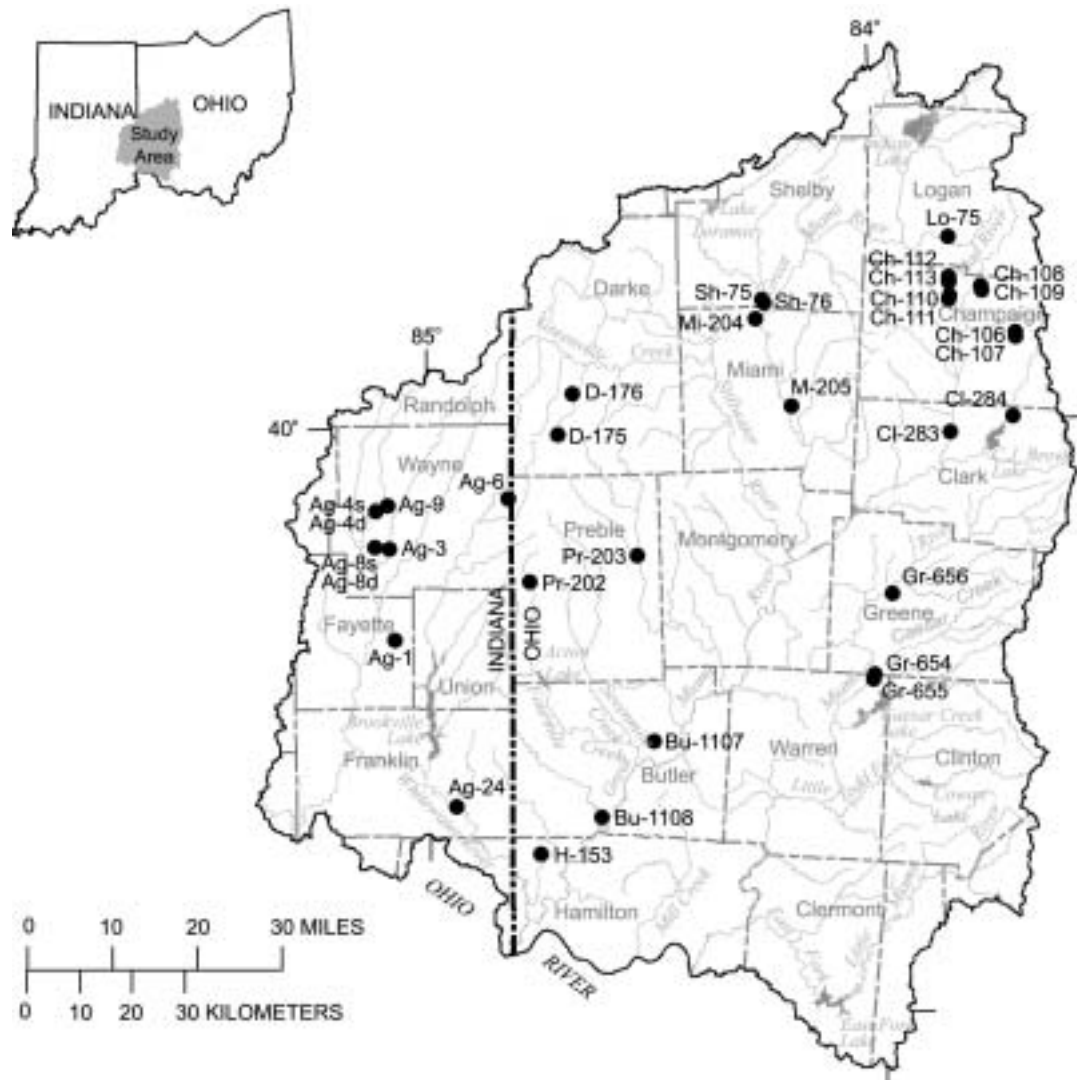
**Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)**

GROUND-WATER DATA COLLECTED AT SPECIAL STUDY SITES
(Results from selected sites in the Great and Little Miami River Basin)

AGRICULTURAL LAND-USE STUDY

The following tables contain water-level and water-quality data collected for ground-water studies by the Great and Little Miami River Basins NAWQA (National Water-Quality Assessment) Project. A network of 26 shallow and 8 intermediate depth monitor wells were installed and sampled in spring-summer 2000 as part of an Agricultural Land-Use study. NAWQA Land-Use studies focus on the quality of recently recharged ground water so that the influence of land-use practices and natural conditions can be assessed. In this study, monitor wells were installed at randomly selected locations where row-crop production of corn and soybeans overlies the Buried Valley Aquifer System (BVAS). The BVAS consists of highly permeable sand and gravel deposits that filled in buried ancestral river valleys. The BVAS supplies the greatest quantity of water in the area and has been designated a sole-source aquifer by the U.S. Environmental Protection Agency.

Water samples from the monitor wells were tested for physical characteristics, nutrients, major and trace elements, and pesticides. General site and well characteristics data, sampling date and time, water-level records and physical characteristics are presented first. These are followed by nutrient, major ion, trace element, and pesticide data.



PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
GROUND-WATER DATA COLLECTED AT SPECIAL STUDY SITES—CONTINUED

AGRICULTURAL LAND-USE STUDY—Continued

[(00300) USGS National Water Information System parameter code; mg/L, milligrams per liter; --, no data]

Station number	Local well number	Map location name	Altitude of land surface datum (feet)	Well depth (feet)	Sample date	Sample time	Water level, below land surface (feet)	Oxygen, dissolved (mg/L) (00300)	pH, water, whole, field (standard units) (00400)
<u>BUTLER COUNTY, OHIO</u>									
392018084371800	Bu-1108	Shandon, Ohio	560	42	08/02/00	1530	16.92	0.2	6.9
392756084300900	Bu-1107	Trenton, Ohio	640	42	08/02/00	1100	27.16	7.2	6.7
<u>CHAMPAIGN COUNTY, OHIO</u>									
400850083404700	Ch-106	Kingscreek, Ohio	1145	27	07/13/00	1130	17.91	8.5	7.0
400850083404701	Ch-107	Kingscreek, Ohio	1145	53	07/13/00	1400	18.00	0.4	6.9
401240083492600	Ch-110	Northville, Ohio	1052	20	07/19/00	1100	14.77	8.0	7.2
401240083492601	Ch-111	Northville, Ohio	1052	49	07/19/00	1430	14.68	0.6	7.1
401307083450600	Ch-108	Northville, Ohio	1072	18	07/18/00	1100	6.80	0.3	7.0
401307083450601	Ch-109	Northville, Ohio	1072	49	07/18/00	1330	7.08	0.4	7.0
401359083493100	Ch-112	Northville, Ohio	1079	27	07/25/00	1230	19.66	8.4	7.1
401359083493101	Ch-113	Northville, Ohio	1079	45	07/25/00	1500	18.89	3.6	7.1
<u>CLARK COUNTY, OHIO</u>									
395849083494501	Cl-283	Springfield, Ohio	930	35	07/12/00	1200	12.52	6.3	6.9
400019083412000	Cl-284	Urbana East, Ohio	1030	11	07/19/00	1800	5.49	0.5	6.9
<u>DARKE COUNTY, OHIO</u>									
395911084422700	D-175	New Madison, Ohio	1100	19	07/24/00	1700	14.50	9.0	6.9
400320084402400	D-176	Greenville West, Ohio	1018	24	08/08/00	1230	7.09	1.3	7.0
<u>GREENE COUNTY, OHIO</u>									
393421084003300	Gr-654	Waynesville, Ohio	710	25	07/26/00	1600	21.62	10.8	7.3
393421084003301	Gr-655	Waynesville, Ohio	710	55	07/26/00	1300	42.73	5.8	7.1
394233083576000	Gr-656	Xenia, Ohio	808	11	07/26/00	0930	2.27	9.8	7.1
<u>HAMILTON COUNTY, OHIO</u>									
391636084452800	H-153	Harrison, Ohio	570	40	08/03/00	1200	30.92	0.4	6.8
<u>LOGAN COUNTY, OHIO</u>									
401837083492900	Lo-75	Bellefontaine, Ohio	1099	26	07/20/00	1100	21.13	13.7	7.1
<u>MIAMI COUNTY, OHIO</u>									
400145084106000	Mi-205	Troy, Ohio	820	24	08/01/00	1000	6.51	0.2	7.2
401040084154000	Mi-204	Piqua West, Ohio	890	32	07/28/00	1100	20.84	8.8	7.2
<u>PREBLE COUNTY, OHIO</u>									
394420084463001	Pr-202	Fairhaven, Ohio	1100	27	08/16/00	1500	11.92	2.1	7.5
394650084320300	Pr-203	Lewisburg, Ohio	900	33	07/17/00	1730	23.51	3.8	7.1
<u>SHELBY COUNTY, OHIO</u>									
401238084144400	Sh-75	Piqua East, Ohio	890	20	07/27/00	1430	18.79	10.6	7.1
401238084144401	Sh-76	Piqua East, Ohio	890	43	07/27/00	1100	18.43	0.1	7.3
<u>FAYETTE COUNTY, INDIANA</u>									
393831085043500	Ag-1	Brownsville, Indiana	887	28	08/09/00	1700	5.55	0.2	7.1
<u>FRANKLIN COUNTY, INDIANA</u>									
392134084563200	Ag-24	Cedar Grove, Indiana	600	50	08/03/00	1630	38.14	1.2	6.7
<u>WAYNE COUNTY, INDIANA</u>									
394745085051300	Ag-3	Jacksonburg, Indiana	960	46	08/25/00	1000	40.11	--	7.6
394759085071000	Ag-8s	Jacksonburg, Indiana	938	18	08/10/00	1430	13.72	9.2	7.1
394759085071001	Ag-8d	Jacksonburg, Indiana	938	45	08/10/00	1000	11.80	0.1	7.2
395135085070000	Ag-4s	Jacksonburg, Indiana	995	20	08/09/00	1230	10.17	8.8	7.1
395135085070001	Ag-4d	Jacksonburg, Indiana	995	47	08/15/00	0900	12.66	1.5	7.4
395213085052200	Ag-9	Jacksonburg, Indiana	1008	15	08/24/00	1300	10.57	--	--
395248084491600	Ag-6	Whitewater, Indiana	1068	18	08/16/00	1230	3.88	0.9	9.5

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
GROUND-WATER DATA COLLECTED AT SPECIAL STUDY SITES—CONTINUED

AGRICULTURAL LAND-USE STUDY—Continued

[$\mu\text{S}/\text{cm}$, microsiemens per centimeter at 25 degrees Celsius; (00095) USGS National Water Information System parameter code; deg C, degrees Celsius; mg/L, milligrams per liter; ANC, acid-neutralizing capacity; FET, fixed-endpoint titration; IT, incremental titration; --, no data]

Local well number	Specific conductance, field median ($\mu\text{S}/\text{cm}$) (00095)	Water temperature (deg C) (00010)	Hardness, total (mg/L as CaCO_3) (00900)	Calcium, dissolved (mg/L as Ca) (00915)	Magnesium, dissolved (mg/L as Mg) (00925)	Potassium, dissolved (mg/L as K) (00935)	Sodium, dissolved (mg/L as Na) (00930)	ANC, unfiltered, FET, field (mg/L as CaCO_3) (00410)	ANC, bicarbonate, IT, field (HCO_3) (00450)
<u>BUTLER COUNTY, OHIO</u>									
Bu-1108	580	14.3	281	76	22	2.3	7.8	285	335
Bu-1107	776	13.2	372	98	31	2.3	8.3	285	335
<u>CHAMPAIGN COUNTY, OHIO</u>									
Ch-106	663	12.1	344	84	32	1.2	4.0	231	279
Ch-107	685	12.2	368	90	35	1.5	4.7	271	326
Ch-110	630	11.4	322	79	30	1.5	2.1	240	290
Ch-111	693	11.7	365	85	36	1.1	4.2	317	381
Ch-108	834	12.0	426	107	38	1.3	3.1	283	341
Ch-109	821	11.8	425	105	39	1.1	3.3	313	378
Ch-112	657	11.4	343	86	31	1.5	3.4	256	308
Ch-113	694	12.0	364	91	33	1.8	4.1	256	308
<u>CLARK COUNTY, OHIO</u>									
Cl-283	662	12.3	344	90	29	1.3	7.3	246	297
Cl-284	826	13.2	420	109	36	2.0	9.8	333	401
<u>DARKE COUNTY, OHIO</u>									
D-175	605	13.2	263	65	24	37	2.4	269	324
D-176	1127	17.1	590	136	60	4.1	9.6	241	291
<u>GREENE COUNTY, OHIO</u>									
Gr-654	520	13.4	278	72	24	0.6	1.8	317	381
Gr-655	776	15.6	399	103	34	1.3	7.2	332	399
Gr-656	910	14.7	460	120	39	1.6	12.2	246	296
<u>HAMILTON COUNTY, OHIO</u>									
H-153	677	14.7	330	85	27	2.2	7.0	276	333
<u>LOGAN COUNTY, OHIO</u>									
Lo-75	721	12.9	358	85	36	1.6	9.2	294	354
<u>MIAMI COUNTY, OHIO</u>									
Mi-205	724	12.5	351	99	25	1.1	6.6	286	344
Mi-204	668	13.0	311	79	27	1.3	14.3	271	327
<u>PREBLE COUNTY, OHIO</u>									
Pr-202	580	16.2	223	49	24	2.3	35.6	281	338
Pr-203	709	12.5	315	77	30	2.1	15.9	236	288
<u>SHELBY COUNTY, OHIO</u>									
Sh-75	675	14.2	346	86	32	0.8	2.4	274	331
Sh-76	665	12.6	350	85	33	1.2	6.0	282	339
<u>FAYETTE COUNTY, INDIANA</u>									
Ag-1	713	13.1	340	82	32	3.1	18.8	352	430
<u>FRANKLIN COUNTY, INDIANA</u>									
Ag-24	775	15.2	369	103	27	2.1	10.3	320	386
<u>WAYNE COUNTY, INDIANA</u>									
Ag-3	438	--	401	91	42	9.0	8.8	518	624
Ag-8s	712	15.8	310	79	28	7.3	16.1	241	291
Ag-8d	715	12.8	362	85	36	1.2	10.6	412	496
Ag-4s	662	15.5	340	85	31	1.7	5.8	250	300
Ag-4d	582	17.0	278	58	31	3.4	11.6	318	378
Ag-9	775	--	373	92	34	1.7	3.2	269	324
Ag-6	592	18.1	109	29	7	2.9	76.9	101	74

PROJECT DATA
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GROUND-WATER DATA COLLECTED AT SPECIAL STUDY SITES—CONTINUED

AGRICULTURAL LAND-USE STUDY—Continued

[mg/L, milligrams per liter; (00940) USGS National Water Information System parameter code; <, concentration or value reported is less than that indicated; e, estimated value]

Local well number	Chloride, dissolved (mg/L as Cl) (00940)	Fluoride, dissolved (mg/L as F) (00950)	Silica, dissolved (mg/L as SiO ₂) (00955)	Sulfate, dissolved (mg/L as SO ₄) (00945)	Nitrogen, ammonia plus organic, dissolved (mg/L as N) (00623)	Nitrogen, ammonia, dissolved (mg/L as N) (00608)	Nitrogen, nitrite plus nitrate, dissolved (mg/L as N) (00631)	Nitrogen, nitrite, dissolved (mg/L as N) (00613)	Phosphorus, dissolved (mg/L as P) (00666)
<u>BUTLER COUNTY, OHIO</u>									
Bu-1108	9	0.1	7	18	<.1	<.02	0.64	<.01	<.006
Bu-1107	16	0.1	10	30	<.1	<.02	12.5	<.01	0.035
<u>CHAMPAIGN COUNTY, OHIO</u>									
Ch-106	22	0.1	8	32	<.1	<.02	15.7	<.01	0.037
Ch-107	23	0.1	10	68	<.1	<.02	2.2	<.01	0.050
Ch-110	14	0.3	9	27	e.05	<.02	10.4	<.01	<.006
Ch-111	9	0.9	15	56	e.09	0.07	<.05	<.01	<.006
Ch-108	18	0.2	7	149	e.08	<.02	1.0	0.02	<.006
Ch-109	18	0.2	11	119	e.07	<.02	<.05	<.01	<.006
Ch-112	20	0.2	9	37	e.07	<.02	7.7	<.01	e.003
Ch-113	17	0.2	10	51	e.06	<.02	6.7	<.01	e.003
<u>CLARK COUNTY, OHIO</u>									
Cl-283	19	0.2	8	55	e.06	<.02	6.8	<.01	<.006
Cl-284	24	0.2	8	84	e.09	<.02	2.3	<.01	<.006
<u>DARKE COUNTY, OHIO</u>									
D-175	5	0.2	12	23	0.19	<.02	5.8	<.01	0.126
D-176	23	1.0	22	226	0.28	0.21	0.07	<.01	<.006
<u>GREENE COUNTY, OHIO</u>									
Gr-654	4	0.1	9	9	<.1	<.02	3.2	<.01	<.006
Gr-655	18	0.3	14	43	e.05	<.02	7.2	<.01	<.006
Gr-656	32	0.1	10	180	0.17	<.02	6.7	<.01	<.006
<u>HAMILTON COUNTY, OHIO</u>									
H-153	18	0.3	10	40	0.30	0.22	6.0	0.01	0.024
<u>LOGAN COUNTY, OHIO</u>									
Lo-75	24	0.3	11	44	0.76	<.02	7.2	<.01	<.006
<u>MIAMI COUNTY, OHIO</u>									
Mi-205	18	0.2	9	59	<.1	<.02	3.6	0.02	<.006
Mi-204	26	0.1	9	32	<.1	<.02	4.3	<.01	<.006
<u>PREBLE COUNTY, OHIO</u>									
Pr-202	14	1.2	11	23	0.93	0.74	0.38	0.08	<.006
Pr-203	37	0.2	6	47	0.13	<.02	8.4	<.01	<.006
<u>SHELBY COUNTY, OHIO</u>									
Sh-75	2	0.1	8	15	e.07	<.02	16.4	<.01	<.006
Sh-76	3	0.5	10	81	0.31	0.24	<.05	<.01	<.006
<u>FAYETTE COUNTY, INDIANA</u>									
Ag-1	23	0.3	13	36	0.61	0.49	<.05	<.01	<.006
<u>FRANKLIN COUNTY, INDIANA</u>									
Ag-24	22	0.1	9	66	<.1	<.02	1.7	<.01	<.006
<u>WAYNE COUNTY, INDIANA</u>									
Ag-3	7	0.4	13	78	0.31	0.13	<.05	<.01	e.005
Ag-8s	37	0.2	8	20	0.18	<.02	15.9	<.01	0.317
Ag-8d	2	0.4	16	<.3	1.9	1.8	<.05	<.01	0.021
Ag-4s	17	0.2	10	40	<.1	0.03	11.2	<.01	<.006
Ag-4d	6	0.7	16	2	0.82	0.66	<.05	<.01	<.006
Ag-9	16	0.2	10	30	0.16	<.02	17.7	0.02	e.004
Ag-6	12	1.6	21	167	0.34	0.16	<.05	0.01	0.009

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
GROUND-WATER DATA COLLECTED AT SPECIAL STUDY SITES—CONTINUED

AGRICULTURAL LAND-USE STUDY—Continued

[mg/L, milligrams per liter; (00671) USGS National Water Information System parameter code; deg C, degrees Celsius; µg/L, micrograms per liter; <, concentration or value reported is less than that indicated; e, estimated value]

Local well number	Phosphorus, ortho-phosphate, dissolved (mg/L as P) (00671)	Carbon, organic, dissolved (mg/L as C) (00681)	Dissolved solids, residue at 180 deg C (mg/L) (70300)	Aluminum, dissolved (µg/L as Al) (01106)	Antimony, dissolved (µg/L as Sb) (01095)	Arsenic, dissolved (µg/L as As) (01000)	Barium, dissolved (µg/L as Ba) (01005)	Beryllium, dissolved (µg/L as Be) (01010)	Boron, dissolved (µg/L as B) (01020)
<u>BUTLER COUNTY, OHIO</u>									
Bu-1108	<.01	0.6	336	22	<1	<.9	76	<1	38.7
Bu-1107	0.03	0.5	468	23	<1	e.5	54	<1	30.1
<u>CHAMPAIGN COUNTY, OHIO</u>									
Ch-106	0.03	0.7	407	9	<1	<.9	48	<1	16.1
Ch-107	0.05	0.6	422	11	<1	e.6	59	<1	15.5
Ch-110	<.01	0.6	374	<1	<1	<.9	203	<1	17.3
Ch-111	<.01	0.9	424	<1	<1	4	246	<1	28.0
Ch-108	<.01	1.2	551	7	<1	<.9	58	<1	21.8
Ch-109	<.01	0.8	527	<1	<1	1	79	<1	<12.
Ch-112	<.01	0.9	384	3	<1	<.9	97	<1	15.6
Ch-113	<.01	0.9	418	5	<1	<.9	134	<1	16.7
<u>CLARK COUNTY, OHIO</u>									
Cl-283	<.01	0.7	405	11	<1	<.9	145	<1	27.0
Cl-284	<.01	1.4	509	<1	<1	e.9	146	<1	21.0
<u>DARKE COUNTY, OHIO</u>									
D-175	0.11	1.5	362	15	<1	1	64	<1	40.7
D-176	0.14	<.33	790	<1	<1	24	42	<1	37.0
<u>GREENE COUNTY, OHIO</u>									
Gr-654	<.01	0.6	295	11	<1	<.9	36	<1	48.9
Gr-655	<.01	0.6	464	11	<1	<.9	189	<1	27.8
Gr-656	<.01	1.5	626	3	<1	2	104	<1	22.8
<u>HAMILTON COUNTY, OHIO</u>									
H-153	0.03	1.0	411	16	1	5	236	<1	32.0
<u>LOGAN COUNTY, OHIO</u>									
Lo-75	<.01	0.6	441	<1	<1	e.5	167	<1	23.6
<u>MIAMI COUNTY, OHIO</u>									
Mi-205	<.01	0.7	440	54	<1	<.9	125	<1	38.0
Mi-204	<.01	0.6	386	16	<1	<.9	68	<1	27.6
<u>PREBLE COUNTY, OHIO</u>									
Pr-202	<.01	2.9	338	2	<1	3	137	<1	120
Pr-203	<.01	1.1	417	7	<1	<.9	58	<1	18.0
<u>SHELBY COUNTY, OHIO</u>									
Sh-75	<.01	0.8	396	9	<1	<.9	42	<1	20.6
Sh-76	<.01	0.8	415	9	<1	<.9	135	<1	29.9
<u>FAYETTE COUNTY, INDIANA</u>									
Ag-1	0.01	1.2	428	3	<1	7	220	<1	439
<u>FRANKLIN COUNTY, INDIANA</u>									
Ag-24	<.01	0.6	476	29	<1	<.9	65	<1	42.0
<u>WAYNE COUNTY, INDIANA</u>									
Ag-3	<.01	1.4	491	2	<1	1	164	<1	154
Ag-8s	0.28	1.5	434	<1	<1	3	39	<1	
Ag-8d	0.02	1.8	413	<1	<1	55	133	<1	26.2
Ag-4s	<.01	0.6	396	1	<1	<.9	78	<1	29.0
Ag-4d	<.01	1.9	329	2	<1	6	356	<1	83.4
Ag-9	<.01	1.0	436	2	<1	<.9	86	<1	35.2
Ag-6	<.01	1.9	379	142	<1	10	27	<1	184

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Results from Selected Sites in the Great Miami and Little Miami River Basin
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GROUND-WATER DATA COLLECTED AT SPECIAL STUDY SITES—CONTINUED

AGRICULTURAL LAND-USE STUDY—Continued

[mg/L, milligrams per liter; (71870) USGS National Water Information System parameter code; µg/L, micrograms per liter; <, concentration or value reported is less than that indicated; e, estimated value]

Local well number	Bromide, dissolved (mg/L as Br) (71870)	Cadmium, dissolved (µg/L as Cd) (01025)	Chromium, dissolved (µg/L as Cr) (01030)	Cobalt, dissolved (µg/L as Co) (01035)	Copper, dissolved (µg/L as Cu) (01040)	Iron, dissolved (µg/L as Fe) (01046)	Lead, dissolved (µg/L as Pb) (01049)	Lithium, dissolved (µg/L as Li) (01130)	Manganese, dissolved (µg/L as Mn) (01056)	Molybdenum, dissolved (µg/L as Mo) (01060)
<u>BUTLER COUNTY, OHIO</u>										
Bu-1108	0.08	<1	<.8	<1	<1	<10	<1	2	29	1
Bu-1107	0.05	<1	<.8	<1	<1	<10	<1	2	<1	<1
<u>CHAMPAIGN COUNTY, OHIO</u>										
Ch-106	0.04	<1	<.8	<1	<1	<10	<1	1	<1	<1
Ch-107	0.04	<1	<.8	<1	1	<10	<1	1	21	1
Ch-110	0.03	<1	e.6	<1	<1	<10	<1	2	<1	5
Ch-111	0.04	<1	<.8	<1	<1	2320	<1	4	23	8
Ch-108	0.02	<1	e.5	1	1	e5.7	<1	4	601	7
Ch-109	0.06	<1	e.8	<1	<1	1080	<1	3	73	4
Ch-112	0.03	<1	<.8	<1	<1	<10	<1	1	<1	2
Ch-113	0.02	<1	<.8	<1	<1	<10	<1	2	3	3
<u>CLARK COUNTY, OHIO</u>										
Cl-283	0.03	<1	<.8	<1	1	<10	<1	2	<1	1
Cl-284	0.04	<1	<.8	1	1	100	<1	3	492	1
<u>DARKE COUNTY, OHIO</u>										
D-175	0.02	<1	<.8	<1	1	<10	<1	1	17	5
D-176	0.13	<1	<.8	3	13	1530	<1	14	59	13
<u>GREENE COUNTY, OHIO</u>										
Gr-654	0.02	<1	<.8	<1	<1	<10	<1	1	2	<1
Gr-655	0.06	<1	1.3	<1	<1	<10	<1	4	31	6
Gr-656	0.03	<1	<.8	<1	1	<10	<1	2	5	1
<u>HAMILTON COUNTY, OHIO</u>										
H-153	0.06	<1	<.8	2	<1	120	<1	2	399	28
<u>LOGAN COUNTY, OHIO</u>										
Lo-75	0.04	<1	<.8	1	<1	139	<1	3	171	6
<u>MIAMI COUNTY, OHIO</u>										
Mi-205	0.05	<1	<.8	<1	<1	<10	<1	3	68	2
Mi-204	0.03	<1	e.5	<1	<1	<10	<1	2	2	2
<u>PREBLE COUNTY, OHIO</u>										
Pr-202	<.01	<1	<.8	<1	3	<10	<1	4	60	112
Pr-203	0.03	<1	0.8	<1	1	<10	<1	2	1	3
<u>SHELBY COUNTY, OHIO</u>										
Sh-75	0.03	<1	<.8	<1	<1	<10	<1	1	<1	<1
Sh-76	0.03	<1	<.8	<1	1	<10	<1	5	230	15
<u>FAYETTE COUNTY, INDIANA</u>										
Ag-1	0.20	<1	<.8	2	52	1260	<1	14	202	3
<u>FRANKLIN COUNTY, INDIANA</u>										
Ag-24	0.06	<1	e.4	<1	4	<10	<1	4	2	2
<u>WAYNE COUNTY, INDIANA</u>										
Ag-3	0.08	<1	<.8	2	6	<10	<1	18	299	56
Ag-8s	0.04	<1	<.8	<1	4	<10	<1	1	<1	2
Ag-8d	0.05	<1	<.8	<1	<1	3510	<1	2	22	13
Ag-4s	0.04	<1	<.8	<1	<1	<10	<1	1	<1	2
Ag-4d	0.02	<1	<.8	10	107	<10	<1	5	263	39
Ag-9	0.04	<1	e.8	<1	2	<10	<1	2	103	4
Ag-6	<.01	<1	<.8	<1	1	<10	<1	25	16	67

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
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GROUND-WATER DATA COLLECTED AT SPECIAL STUDY SITES—CONTINUED

AGRICULTURAL LAND-USE STUDY—Continued

[µg/L, micrograms per liter; (01065) USGS National Water Information System parameter code; pCi/L, picocuries per liter; e, estimated value; <, concentration or value reported is less than that indicated]

Local well number	Nickel, dissolved (µg/L as Ni) (01065)	Selenium, dissolved (µg/L as Se) (01145)	Silver, dissolved (µg/L as Ag) (01075)	Strontium, dissolved (µg/L as Sr) (01080)	Thallium, dissolved (µg/L as Tl) (01057)	Vanadium, dissolved (µg/L as V) (01085)	Zinc, dissolved (µg/L as Zn) (01090)	Radon-222, water, whole, total, (pCi/L) (82303)	Uranium, natural, dissolved (µg/L as U) (22703)
<u>BUTLER COUNTY, OHIO</u>									
Bu-1108	2	4	<1	276	<.9	<1	4	463	<1
Bu-1107	1	e.45	<1	201	<.9	<1	4	444	<1
<u>CHAMPAIGN COUNTY, OHIO</u>									
Ch-106	4	1	<1	105	<.9	<1	2	551	<1
Ch-107	5	<.7	<1	112	<.9	<1	3	308	<1
Ch-110	3	1	<1	321	<.9	<1	<1	741	<1
Ch-111	2	<.7	<1	2630	<.9	<1	<1	98	<1
Ch-108	5	<.7	<1	210	<.9	<1	6	279	14
Ch-109	1	<.7	<1	255	<.9	<1	2	234	2
Ch-112	<1	1	<1	318	<.9	<1	1	651	1
Ch-113	<1	1	<1	475	<.9	<1	2	425	1
<u>CLARK COUNTY, OHIO</u>									
Cl-283	4	2	<1	443	<.9	<1	3	345	2
Cl-284	5	<.7	<1	507	<.9	<1	1	384	5
<u>DARKE COUNTY, OHIO</u>									
D-175	1	1	<1	69	<.9	<1	4	765	<1
D-176	5	e.4	<1	9120	<.9	1	3	167	3
<u>GREENE COUNTY, OHIO</u>									
Gr-654	<1	<.7	<1	61	<.9	<1	2	361	<1
Gr-655	2	e.44	<1	1310	<.9	<1	3	502	<1
Gr-656	<1	56	<1	131	<.9	<1	2	496	2
<u>HAMILTON COUNTY, OHIO</u>									
H-153	3	.7	<1	1890	<.9	<1	4	334	4
<u>LOGAN COUNTY, OHIO</u>									
Lo-75	3	e.6	<1	160	<.9	<1	<1	503	1
<u>MIAMI COUNTY, OHIO</u>									
Mi-205	3	1	<1	448	<.9	<1	5	322	3
Mi-204	<1	<.7	<1	423	<.9	<1	7	543	<1
<u>PREBLE COUNTY, OHIO</u>									
Pr-202	5	<.7	<1	1450	<.9	3	3	282	1
Pr-203	2	e.66	<1	585	<.9	<1	2	354	2
<u>SHELBY COUNTY, OHIO</u>									
Sh-75	2	e.47	<1	89	<.9	<1	2	635	<1
Sh-76	3	<.7	<1	1000	<.9	<1	2	506	<1
<u>FAYETTE COUNTY, INDIANA</u>									
Ag-1	2	<.7	<1	1490	<.9	<1	11	791	<1
<u>FRANKLIN COUNTY, INDIANA</u>									
Ag-24	3	1	<1	387	<.9	<1	7	384	2
<u>WAYNE COUNTY, INDIANA</u>									
Ag-3	12	<.7	<1	413	<.9	4	7	215	8
Ag-8s	3	e.6	<1	90	<.9	1	2	387	<1
Ag-8d	<1	<.7	<1	1320	<.9	<1	<1	336	<1
Ag-4s	3	<.7	<1	299	<.9	<1	2	590	<1
Ag-4d	4	<.7	<1	2380	<.9	4	8	273	<1
Ag-9	5	<.7	<1	315	<.9	2	3	323	1
Ag-6	1	e.68	<1	6730	<.9	4	1	147	<1

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
GROUND-WATER DATA COLLECTED AT SPECIAL STUDY SITES—CONTINUED

AGRICULTURAL LAND-USE STUDY—Continued

[µg/L, micrograms per liter; (82660) USGS National Water Information System parameter code; <, concentration or value reported is less than that indicated]

Local well number	2,6 Diethylaniline (µg/L) (82660)	Acetochlor (µg/L) (49260)	Alachlor (µg/L) (46342)	Alpha BHC (µg/L) (34253)	Atrazine (µg/L) (39632)	Benfluralin (µg/L) (82673)	Butylate (µg/L) (04028)	Carbaryl (µg/L) (82680)	Carbofuran (µg/L) (82674)
<u>BUTLER COUNTY, OHIO</u>									
Bu-1108	<.003	<.002	<.002	<.002	<.001	<.002	<.002	<.003	<.003
Bu-1107	<.003	<.002	<.002	<.002	<.001	<.002	<.002	<.003	<.003
<u>CHAMPAIGN COUNTY, OHIO</u>									
Ch-106	<.003	<.002	<.002	<.002	<.001	<.002	<.002	<.003	<.003
Ch-107	<.003	<.002	<.002	<.002	<.001	<.002	<.002	<.003	<.003
Ch-110	<.003	<.002	<.002	<.002	<.001	<.002	<.002	<.003	<.003
Ch-111	<.003	<.002	<.002	<.002	<.001	<.002	<.002	<.003	<.003
Ch-108	<.003	<.002	<.002	<.002	<.001	<.002	<.002	<.003	<.003
Ch-109	<.003	<.002	<.002	<.002	<.001	<.002	<.002	<.003	<.003
Ch-112	<.003	<.002	<.002	<.002	<.001	<.002	<.002	<.003	<.003
Ch-113	<.003	<.002	<.002	<.002	<.001	<.002	<.002	<.003	<.003
<u>CLARK COUNTY, OHIO</u>									
Cl-283	<.003	<.002	<.002	<.002	<.074	<.002	<.002	<.003	<.003
Cl-284	<.003	<.002	<.002	<.002	<.001	<.002	<.002	<.003	<.003
<u>DARKE COUNTY, OHIO</u>									
D-175	<.003	<.002	<.002	<.002	<.001	<.002	<.002	<.003	<.003
D-176	<.003	<.002	<.002	<.002	<.074	<.002	<.002	<.003	<.003
<u>GREENE COUNTY, OHIO</u>									
Gr-654	<.003	<.002	<.002	<.002	<.001	<.002	<.002	<.003	<.003
Gr-655	<.003	<.002	<.002	<.002	<.001	<.002	<.002	<.003	<.003
Gr-656	<.003	<.002	<.002	<.002	<.001	<.002	<.002	<.003	<.003
<u>HAMILTON COUNTY, OHIO</u>									
H-153	<.003	<.002	<.002	<.002	<.001	<.002	<.002	<.003	<.003
<u>LOGAN COUNTY, OHIO</u>									
Lo-75	<.003	<.002	<.002	<.002	<.001	<.002	<.002	<.003	<.003
<u>MIAMI COUNTY, OHIO</u>									
Mi-205	<.003	<.002	<.002	<.002	<.001	<.002	<.002	<.003	<.003
Mi-204	<.003	<.002	<.002	<.002	<.001	<.002	<.002	<.003	<.003
<u>PREBLE COUNTY, OHIO</u>									
Pr-202	<.003	<.002	<.002	<.002	0.005	<.002	<.002	<.003	<.003
Pr-203	<.003	<.002	<.002	<.002	0.147	<.002	<.002	<.003	<.003
<u>SHELBY COUNTY, OHIO</u>									
Sh-75	<.003	<.002	<.002	<.002	<.001	<.002	<.002	<.003	<.003
Sh-76	<.003	<.002	<.002	<.002	<.001	<.002	<.002	<.003	<.003
<u>FAYETTE COUNTY, INDIANA</u>									
Ag-1	<.003	<.002	<.002	<.002	<.001	<.002	<.002	<.003	<.003
<u>FRANKLIN COUNTY, INDIANA</u>									
Ag-24	<.003	<.002	<.002	<.002	<.074	<.002	<.002	<.003	<.003
<u>WAYNE COUNTY, INDIANA</u>									
Ag-3	<.003	<.002	<.002	<.002	<.001	<.002	<.002	<.003	<.003
Ag-8s	<.003	<.002	0.014	<.002	0.371	<.002	<.002	<.003	<.003
Ag-8d	<.003	<.002	<.002	<.002	<.001	<.002	<.002	<.003	<.003
Ag-4s	<.003	<.002	<.002	<.002	0.005	<.002	<.002	<.003	<.003
Ag-4d	<.003	<.002	<.002	<.002	<.001	<.002	<.002	<.003	<.003
Ag-9	<.003	<.002	<.002	<.002	0.23	<.002	<.002	<.003	<.003
Ag-6	<.003	<.002	<.002	<.002	<.005	<.002	<.002	<.003	<.003

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
GROUND-WATER DATA COLLECTED AT SPECIAL STUDY SITES—CONTINUED

AGRICULTURAL LAND-USE STUDY—Continued

[µg/L, micrograms per liter; (82660) USGS National Water Information System parameter code; <, concentration or value reported is less than that indicated; e, estimated value]

Local well number	Chlorpyrifos (µg/L) (38933)	Cyanazine (µg/L) (04041)	DCPA (µg/L) (82682)	Deethyl- atrazine (µg/L) (04040)	Diazinon (µg/L) (39572)	Dieldrin (µg/L) (39381)	Disulfoton (µg/L) (82677)	EPTC (µg/L) (82668)	Ethalfuralin (µg/L) (82663)
<u>BUTLER COUNTY, OHIO</u>									
Bu-1108	<.004	<.004	<.002	<.002	<.002	<.001	<.017	<.002	<.004
Bu-1107	<.004	<.004	<.002	e.005	<.002	<.001	<.017	<.002	<.004
<u>CHAMPAIGN COUNTY, OHIO</u>									
Ch-106	<.004	<.004	<.002	e.011	<.002	<.001	<.017	<.002	<.004
Ch-107	<.004	<.004	<.002	<.002	<.002	<.001	<.017	<.002	<.004
Ch-110	<.004	<.004	<.002	e.008	<.002	<.001	<.017	<.002	<.004
Ch-111	<.004	<.004	<.002	<.002	<.002	<.001	<.017	<.002	<.004
Ch-108	<.004	<.004	<.002	<.002	<.002	<.001	<.017	<.002	<.004
Ch-109	<.004	<.004	<.002	<.002	<.002	<.001	<.017	<.002	<.004
Ch-112	<.004	<.004	<.002	e.019	<.002	<.001	<.017	<.002	<.004
Ch-113	<.004	<.004	<.002	e.011	<.002	<.001	<.017	<.002	<.004
<u>CLARK COUNTY, OHIO</u>									
Cl-283	<.004	<.004	<.002	<.087	<.002	<.001	<.017	<.002	<.004
Cl-284	<.004	<.004	<.002	<.002	<.002	<.001	<.017	<.002	<.004
<u>DARKE COUNTY, OHIO</u>									
D-175	<.004	<.004	<.002	<.002	<.002	<.001	<.017	<.002	<.004
D-176	<.004	<.004	<.002	<.087	<.002	<.001	<.017	<.002	<.004
<u>GREENE COUNTY, OHIO</u>									
Gr-654	<.004	<.004	<.002	e.004	<.002	<.001	<.017	<.002	<.004
Gr-655	<.004	<.004	<.002	e.006	<.002	<.001	<.017	<.002	<.004
Gr-656	<.004	<.004	<.002	<.002	<.002	<.001	<.017	<.002	<.004
<u>HAMILTON COUNTY, OHIO</u>									
H-153	<.004	<.004	<.002	<.002	<.002	<.001	<.017	<.002	<.004
<u>LOGAN COUNTY, OHIO</u>									
Lo-75	<.004	<.004	<.002	<.002	<.002	<.001	<.017	<.002	<.004
<u>MIAMI COUNTY, OHIO</u>									
Mi-205	<.004	<.004	<.002	<.002	<.002	<.001	<.017	<.002	<.004
Mi-204	<.004	<.004	<.002	e.012	<.002	<.001	<.017	<.002	<.004
<u>PREBLE COUNTY, OHIO</u>									
Pr-202	<.004	<.004	<.002	e.015	<.002	<.001	<.017	<.002	<.004
Pr-203	<.004	<.004	<.002	e.070	<.002	<.001	<.017	<.002	<.004
<u>SHELBY COUNTY, OHIO</u>									
Sh-75	<.004	<.004	<.002	e.009	<.002	<.001	<.017	<.002	<.004
Sh-76	<.004	<.004	<.002	<.002	<.002	<.001	<.017	<.002	<.004
<u>FAYETTE COUNTY, INDIANA</u>									
Ag-1	<.004	<.004	<.002	<.002	<.002	<.001	<.017	<.002	<.004
<u>FRANKLIN COUNTY, INDIANA</u>									
Ag-24	<.004	<.004	<.002	<.087	<.002	<.001	<.017	<.002	<.004
<u>WAYNE COUNTY, INDIANA</u>									
Ag-3	<.004	<.004	<.002	<.002	<.002	<.001	<.017	<.002	<.004
Ag-8s	<.004	<.004	<.002	e.270	<.002	<.001	<.017	<.002	<.004
Ag-8d	<.004	<.004	<.002	<.002	<.002	<.001	<.017	<.002	<.004
Ag-4s	<.004	<.004	<.002	e.051	<.002	<.001	<.017	<.002	<.004
Ag-4d	<.004	<.004	<.002	<.002	<.002	<.001	<.017	<.002	<.004
Ag-9	<.004	<.004	<.002	e.120	<.002	<.001	<.017	<.002	<.004
Ag-6	<.004	<.004	<.002	e.008	<.002	<.001	<.017	<.002	<.004

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
GROUND-WATER DATA COLLECTED AT SPECIAL STUDY SITES—CONTINUED

AGRICULTURAL LAND-USE STUDY—Continued

[µg/L, micrograms per liter; (82672) USGS National Water Information System parameter code; <, concentration or value reported is less than that indicated]

Local well number	Ethoprop (µg/L) (82672)	Fonofos (µg/L) (04095)	Lindane (µg/L) (39341)	Linuron (µg/L) (82666)	Malathion (µg/L) (39532)	Methyl-azinphos (µg/L) (82686)	Methyl-parathion (µg/L) (82667)	Metolachlor (µg/L) (39415)	Metribuzin (µg/L) (82630)
<u>BUTLER COUNTY, OHIO</u>									
Bu-1108	<.003	<.003	<.004	<.002	<.005	<.001	<.006	<.002	<.004
Bu-1107	<.003	<.003	<.004	<.002	<.005	<.001	<.006	<.002	<.004
<u>CHAMPAIGN COUNTY, OHIO</u>									
Ch-106	<.003	<.003	<.004	<.002	<.005	<.001	<.006	<.002	<.004
Ch-107	<.003	<.003	<.004	<.002	<.005	<.001	<.006	<.002	<.004
Ch-110	<.003	<.003	<.004	<.002	<.005	<.001	<.006	<.002	<.004
Ch-111	<.003	<.003	<.004	<.002	<.005	<.001	<.006	<.002	<.004
Ch-108	<.003	<.003	<.004	<.002	<.005	<.001	<.006	<.002	<.004
Ch-109	<.003	<.003	<.004	<.002	<.005	<.001	<.006	<.002	<.004
Ch-112	<.003	<.003	<.004	<.002	<.005	<.001	<.006	<.002	<.004
Ch-113	<.003	<.003	<.004	<.002	<.005	<.001	<.006	<.002	<.004
<u>CLARK COUNTY, OHIO</u>									
Cl-283	<.003	<.003	<.004	<.002	<.005	<.001	<.006	<.002	<.004
Cl-284	<.003	<.003	<.004	<.002	<.005	<.001	<.006	<.002	<.004
<u>DARKE COUNTY, OHIO</u>									
D-175	<.003	<.003	<.004	<.002	<.005	<.001	<.006	<.002	<.004
D-176	<.003	<.003	<.004	<.002	<.005	<.001	<.006	<.002	<.004
<u>GREENE COUNTY, OHIO</u>									
Gr-654	<.003	<.003	<.004	<.002	<.005	<.001	<.006	<.002	<.004
Gr-655	<.003	<.003	<.004	<.002	<.005	<.001	<.006	<.002	<.004
Gr-656	<.003	<.003	<.004	<.002	<.005	<.001	<.006	<.002	<.004
<u>HAMILTON COUNTY, OHIO</u>									
H-153	<.003	<.003	<.004	<.002	<.005	<.001	<.006	<.002	<.004
<u>LOGAN COUNTY, OHIO</u>									
Lo-75	<.003	<.003	<.004	<.002	<.005	<.001	<.006	<.002	<.004
<u>MIAMI COUNTY, OHIO</u>									
Mi-205	<.003	<.003	<.004	<.002	<.005	<.001	<.006	<.002	<.004
Mi-204	<.003	<.003	<.004	<.002	<.005	<.001	<.006	<.002	<.004
<u>PREBLE COUNTY, OHIO</u>									
Pr-202	<.003	<.003	<.004	<.002	<.005	<.001	<.006	<.002	<.004
Pr-203	<.003	<.003	<.004	<.002	<.005	<.001	<.006	0.004	<.004
<u>SHELBY COUNTY, OHIO</u>									
Sh-75	<.003	<.003	<.004	<.002	<.005	<.001	<.006	<.002	<.004
Sh-76	<.003	<.003	<.004	<.002	<.005	<.001	<.006	<.002	<.004
<u>FAYETTE COUNTY, INDIANA</u>									
Ag-1	<.003	<.003	<.004	<.002	<.005	<.001	<.006	<.002	<.004
<u>FRANKLIN COUNTY, INDIANA</u>									
Ag-24	<.003	<.003	<.004	<.002	<.005	<.001	<.006	<.002	<.004
<u>WAYNE COUNTY, INDIANA</u>									
Ag-3	<.003	<.003	<.004	<.002	<.005	<.001	<.006	<.002	<.004
Ag-8s	<.003	<.003	<.004	<.002	<.005	<.001	<.006	0.004	0.005
Ag-8d	<.003	<.003	<.004	<.002	<.005	<.001	<.006	<.002	<.004
Ag-4s	<.003	<.003	<.004	<.002	<.005	<.001	<.006	<.002	<.004
Ag-4d	<.003	<.003	<.004	<.002	<.005	<.001	<.006	<.002	<.004
Ag-9	<.003	<.003	<.004	<.002	<.005	<.001	<.006	0.087	<.004
Ag-6	<.003	<.003	<.004	<.002	<.005	<.001	<.006	<.002	<.004

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
GROUND-WATER DATA COLLECTED AT SPECIAL STUDY SITES—CONTINUED

AGRICULTURAL LAND-USE STUDY—Continued

[µg/L, micrograms per liter; (82671) USGS National Water Information System parameter code; <, concentration or value reported is less than that indicated; e, estimated value]

Local well number	Molinate (µg/L) (82671)	Napropamide (µg/L) (82684)	p,p'-DDE (µg/L) (34653)	Parathion (µg/L) (39542)	Pebulate (µg/L) (82669)	Pendimethalin (µg/L) (82683)	Permethrin, cis (µg/L) (82687)	Phorate (µg/L) (82664)	Prometon (µg/L) (04037)	Pronamide (µg/L) (82676)
<u>BUTLER COUNTY, OHIO</u>										
Bu-1108	<.004	<.003	<.006	<.004	<.004	<.004	<.005	<.002	<.018	<.003
Bu-1107	<.004	<.003	<.006	<.004	<.004	<.004	<.005	<.002	<.018	<.003
<u>CHAMPAIGN COUNTY, OHIO</u>										
Ch-106	<.004	<.003	<.006	<.004	<.004	<.004	<.005	<.002	<.018	<.003
Ch-107	<.004	<.003	<.006	<.004	<.004	<.004	<.005	<.002	<.018	<.003
Ch-110	<.004	<.003	<.006	<.004	<.004	<.004	<.005	<.002	<.018	<.003
Ch-111	<.004	<.003	<.006	<.004	<.004	<.004	<.005	<.002	<.018	<.003
Ch-108	<.004	<.003	<.006	<.004	<.004	<.004	<.005	<.002	<.018	<.003
Ch-109	<.004	<.003	<.006	<.004	<.004	<.004	<.005	<.002	<.018	<.003
Ch-112	<.004	<.003	<.006	<.004	<.004	<.004	<.005	<.002	<.018	<.003
Ch-113	<.004	<.003	<.006	<.004	<.004	<.004	<.005	<.002	<.018	<.003
<u>CLARK COUNTY, OHIO</u>										
Cl-283	<.004	<.003	<.006	<.004	<.004	<.004	<.005	<.002	<.018	<.003
Cl-284	<.004	<.003	<.006	<.004	<.004	<.004	<.005	<.002	<.018	<.003
<u>DARKE COUNTY, OHIO</u>										
D-175	<.004	<.003	<.006	<.004	<.004	<.004	<.005	<.002	<.018	<.003
D-176	<.004	<.003	<.006	<.004	<.004	<.004	<.005	<.002	<.018	<.003
<u>GREENE COUNTY, OHIO</u>										
Gr-654	<.004	<.003	<.006	<.004	<.004	<.004	<.005	<.002	<.018	<.003
Gr-655	<.004	<.003	<.006	<.004	<.004	<.004	<.005	<.002	<.018	<.003
Gr-656	<.004	<.003	<.006	<.004	<.004	<.004	<.005	<.002	<.018	<.003
<u>HAMILTON COUNTY, OHIO</u>										
H-153	<.004	<.003	<.006	<.004	<.004	<.004	<.005	<.002	<.018	<.003
<u>LOGAN COUNTY, OHIO</u>										
Lo-75	<.004	<.003	<.006	<.004	<.004	<.004	<.005	<.002	<.018	<.003
<u>MIAMI COUNTY, OHIO</u>										
Mi-205	<.004	<.003	<.006	<.004	<.004	<.004	<.005	<.002	<.018	<.003
Mi-204	<.004	<.003	<.006	<.004	<.004	<.004	<.005	<.002	<.018	<.003
<u>PREBLE COUNTY, OHIO</u>										
Pr-202	<.004	<.003	<.006	<.004	<.004	<.004	<.005	<.002	<.018	<.003
Pr-203	<.004	<.003	<.006	<.004	<.004	<.004	<.005	<.002	e.007	<.003
<u>SHELBY COUNTY, OHIO</u>										
Sh-75	<.004	<.003	<.006	<.004	<.004	<.004	<.005	<.002	<.018	<.003
Sh-76	<.004	<.003	<.006	<.004	<.004	<.004	<.005	<.002	<.018	<.003
<u>FAYETTE COUNTY, INDIANA</u>										
Ag-1	<.004	<.003	<.006	<.004	<.004	<.004	<.005	<.002	<.018	<.003
<u>FRANKLIN COUNTY, INDIANA</u>										
Ag-24	<.004	<.003	<.006	<.004	<.004	<.004	<.005	<.002	<.018	<.003
<u>WAYNE COUNTY, INDIANA</u>										
Ag-3	<.004	<.003	<.006	<.004	<.004	<.004	<.005	<.002	<.018	<.003
Ag-8s	<.004	<.003	<.006	<.004	<.004	<.004	<.005	<.002	0.018	<.003
Ag-8d	<.004	<.003	<.006	<.004	<.004	<.004	<.005	<.002	<.018	<.003
Ag-4s	<.004	<.003	<.006	<.004	<.004	<.004	<.005	<.002	<.018	<.003
Ag-4d	<.004	<.003	<.006	<.004	<.004	<.004	<.005	<.002	<.018	<.003
Ag-9	<.004	<.003	<.006	<.004	<.004	<.004	<.005	<.002	<.018	<.003
Ag-6	<.004	<.003	<.006	<.004	<.004	<.004	<.005	<.002	<.018	<.003

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
GROUND-WATER DATA COLLECTED AT SPECIAL STUDY SITES—CONTINUED

AGRICULTURAL LAND-USE STUDY—Continued

[µg/L, micrograms per liter; (82671) USGS National Water Information System parameter code; <, concentration or value reported is less than that indicated]

Local well number	Propachlor (µg/L) (04024)	Propanil (µg/L) (82679)	Propargite (µg/L) (82685)	Simazine (µg/L) (04035)	Tebuthiuron (µg/L) (82670)	Terbacil (µg/L) (82665)	Terbufos (µg/L) (82675)	Thiobencarb (µg/L) (82681)	Triallate (µg/L) (82678)	Trifluralin (µg/L) (82661)
<u>BUTLER COUNTY, OHIO</u>										
Bu-1108	<.007	<.004	<.013	<.005	<.010	<.007	<.013	<.002	<.001	<.002
Bu-1107	<.007	<.004	<.013	<.005	<.010	<.007	<.013	<.002	<.001	<.002
<u>CHAMPAIGN COUNTY, OHIO</u>										
Ch-106	<.007	<.004	<.013	<.005	<.010	<.007	<.013	<.002	<.001	<.002
Ch-107	<.007	<.004	<.013	<.005	<.010	<.007	<.013	<.002	<.001	<.002
Ch-110	<.007	<.004	<.013	<.005	<.010	<.007	<.013	<.002	<.001	<.002
Ch-111	<.007	<.004	<.013	<.005	<.010	<.007	<.013	<.002	<.001	<.002
Ch-108	<.007	<.004	<.013	<.005	<.010	<.007	<.013	<.002	<.001	<.002
Ch-109	<.007	<.004	<.013	<.005	<.010	<.007	<.013	<.002	<.001	<.002
Ch-112	<.007	<.004	<.013	<.005	<.010	<.007	<.013	<.002	<.001	<.002
Ch-113	<.007	<.004	<.013	<.005	<.010	<.007	<.013	<.002	<.001	<.002
<u>CLARK COUNTY, OHIO</u>										
Cl-283	<.007	<.004	<.013	<.005	<.077	<.007	<.013	<.002	<.001	<.002
Cl-284	<.007	<.004	<.013	<.005	<.010	<.007	<.013	<.002	<.001	<.002
<u>DARKE COUNTY, OHIO</u>										
D-175	<.007	<.004	<.013	<.005	<.010	<.007	<.013	<.002	<.001	<.002
D-176	<.007	<.004	<.013	<.005	<.077	<.007	<.013	<.002	<.001	<.002
<u>GREENE COUNTY, OHIO</u>										
Gr-654	<.007	<.004	<.013	<.005	<.010	<.007	<.013	<.002	<.001	<.002
Gr-655	<.007	<.004	<.013	<.005	<.010	<.007	<.013	<.002	<.001	<.002
Gr-656	<.007	<.004	<.013	<.005	<.010	<.007	<.013	<.002	<.001	<.002
<u>HAMILTON COUNTY, OHIO</u>										
H-153	<.007	<.004	<.013	<.005	<.010	<.007	<.013	<.002	<.001	<.002
<u>LOGAN COUNTY, OHIO</u>										
Lo-75	<.007	<.004	<.013	<.005	<.010	<.007	<.013	<.002	<.001	<.002
<u>MIAMI COUNTY, OHIO</u>										
Mi-205	<.007	<.004	<.013	<.005	<.010	<.007	<.013	<.002	<.001	<.002
Mi-204	<.007	<.004	<.013	<.005	<.010	<.007	<.013	<.002	<.001	<.002
<u>PREBLE COUNTY, OHIO</u>										
Pr-202	<.007	<.004	<.013	<.005	<.010	<.007	<.013	<.002	<.001	<.002
Pr-203	<.007	<.004	<.013	0.012	<.010	<.007	<.013	<.002	<.001	<.002
<u>SHELBY COUNTY, OHIO</u>										
Sh-75	<.007	<.004	<.013	<.005	<.010	<.007	<.013	<.002	<.001	<.002
Sh-76	<.007	<.004	<.013	<.005	<.010	<.007	<.013	<.002	<.001	<.002
<u>FAYETTE COUNTY, INDIANA</u>										
Ag-1	<.007	<.004	<.013	<.005	<.010	<.007	<.013	<.002	<.001	<.002
<u>FRANKLIN COUNTY, INDIANA</u>										
Ag-24	<.007	<.004	<.013	<.005	<.077	<.007	<.013	<.002	<.001	<.002
<u>WAYNE COUNTY, INDIANA</u>										
Ag-3	<.007	<.004	<.013	<.005	<.010	<.007	<.013	<.002	<.001	<.002
Ag-8s	<.007	<.004	<.013	0.014	<.010	<.007	<.013	<.002	<.001	<.002
Ag-8d	<.007	<.004	<.013	<.005	<.010	<.007	<.013	<.002	<.001	<.002
Ag-4s	<.007	<.004	<.013	<.005	<.010	<.007	<.013	<.002	<.001	<.002
Ag-4d	<.007	<.004	<.013	<.005	<.010	<.007	<.013	<.002	<.001	<.002
Ag-9	<.007	<.004	<.013	<.005	<.010	<.007	<.013	<.002	<.001	<.002
Ag-6	<.007	<.004	<.013	<.005	<.010	<.007	<.013	<.002	<.001	<.002

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
MIAMI CONSERVANCY DISTRICT GROUND-WATER PRESERVATION COOPERATIVE PROJECT

PESTICIDE DATA

A network of 15 public supply wells was sampled in summer 1999 in cooperation with the Miami Conservancy District's Groundwater Preservation Program. The network was designed to target public supply wells in the Buried-Valley Aquifer System (BVAS) that are vulnerable to induced infiltration. Induced infiltration occurs when some fraction of the ground water pumped from a supply well is derived from a nearby surface-water body. Water samples from the wells were tested for physical characteristics, nutrients, major and trace elements, and selected pesticides. Data for physical characteristics, nutrients, major and trace elements were published in Water-Data Report OH-99-2 (Shindel and others, 2000, Water Resources Data Ohio Water Year 1999 report, Volume 2. St. Lawrence River Basin and Statewide Project Data, p. 387-392). Water samples from the 15 public supply wells were also tested for 45 pesticides and 2 pesticide metabolites. However, these data were unavailable at the time 1999 report was published.

The table below lists general site data and the time and date the 15 wells were sampled. The table that follows lists the 47 pesticide compounds analyzed, the unit of measure (micrograms per liter, µg/L), the U.S. Geological Survey National Water Information System parameter code, and the method reporting level. The analytical method used detects selected pesticides and metabolites that are effeciently partitioned from a water sample by solid-phase extraction and are sufficiently volatile and thermally stable for analysis by gas chromatography. Each sample was analyzed for all of the compounds in this schedule; however, only detections are reported in the results table that appears on the page following the analytical schedule.

Site identifier	Local well number	Map location name	Elevation of land surface (feet)	Depth of well (feet)	Date	Time
<u>BUTLER COUNTY, OHIO</u>						
392944084343000	Bu-1100	Hamilton, Ohio	670	89	06/02/99	1400
392034084352700	Bu-1102	Greenhills, Ohio	553	161	06/08/99	1030
391858084364600	Bu-1103	Greenhills, Ohio	550	79	06/08/99	1500
393206084240800	Bu-1104	Middletown, Ohio	649	49	06/23/99	1030
<u>CLARK COUNTY, OHIO</u>						
395102084020900	Cl-115	Fairborn, Ohio	820	78	05/19/99	1630
395839083491500	Cl-276	Springfield, Ohio	922	104	05/25/99	1200
<u>GREENE COUNTY, OHIO</u>						
394312084002600	Gr-652	Bellbrook, Ohio	801	73	05/19/99	1100
<u>MIAMI COUNTY, OHIO</u>						
395734084085800	Mi-200	Tipp City, Ohio	795	85	05/25/99	1600
400319084213100	Mi-201	Pleasant Hill, Ohio	853	58	06/09/99	1500
<u>MONTGOMERY COUNTY, OHIO</u>						
395134084160700	Mt-1252	Trotwood, Ohio	770	80	05/26/99	1200
393815084174100	Mt-1253	Miamisburg, Ohio	685	96	05/26/99	1600
393702084224200	Mt-1254	Middletown, Ohio	721	45	06/09/99	1030
<u>PREBLE COUNTY, OHIO</u>						
394016084411300	Pr-200	Eaton South, Ohio	937	40	06/01/99	1500
<u>WARREN COUNTY, OHIO</u>						
393506084173100	W-50	Franklin, Ohio	675	66	05/18/99	1030
393254084205500	W-51	Franklin, Ohio	658	77	05/18/99	1500

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
MIAMI CONSERVANCY DISTRICT GROUNDWATER PRESERVATION COOPERATIVE PROJECT

PESTICIDE DATA—ANALYTICAL SCHEDULE

Only pesticide compounds that were detected in one or more wells are listed in the water-quality table that follow the list of analytes given below.

[µg/L, micrograms per liter; (49260) USGS National Water Information System parameter code; <, concentration or value reported is less than that indicated]

Acetochlor (µg/L) (49260)	Alachlor (µg/L) (46342)	Atrazine (µg/L) (39632)	Deethylatrazine (µg/L) (04040)	Methylazinphos (µg/L) (82686)	Benfluralin (µg/L) (82673)
<0.002	<0.002	<0.001	<0.002	<0.001	<0.002
Butylate (µg/L) (04028)	Carbaryl (µg/L) (82680)	Carbofuran (µg/L) (82674)	Chlopyrifos (µg/L) (38933)	Cyanazine (µg/L) (04041)	DCPA (µg/L) (82682)
<0.002	<0.003	<0.003	<0.004	<0.004	<0.002
p,p'-DDE (µg/L) (34653)	Diazinon (µg/L) (39572)	Dieldrin (µg/L) (39381)	Diethylaniline (µg/L) (82660)	Disulfoton (µg/L) (82677)	EPTC (µg/L) (82668)
0.006	<0.002	<0.001	<0.003	<0.017	<0.002
Ethalfuralin (µg/L) (82663)	Ethoprop (µg/L) (82672)	Fonofos (µg/L) (04095)	Alpha BHC (µg/L) (34253)	Lindane (µg/L) (39341)	Linuron (µg/L) (82666)
<0.004	<0.003	<0.003	<0.002	<0.004	<0.002
Malathion (µg/L) (39532)	Meholachlor (µg/L) (39415)	Metribuzin (µg/L) (82630)	Molinate (µg/L) (82671)	Napropamide (µg/L) (82684)	Parathion (µg/L) (39542)
<0.005	<0.002	<0.004	<0.004	<0.003	<0.004
Methylparathion (µg/L) (82667)	Pebulate (µg/L) (82669)	Pendimethalin (µg/L) (82683)	Permethrin, cis (µg/L) (82687)	Phorate (µg/L) (82664)	Pronamide (µg/L) (82676)
<0.006	<0.004	<0.004	<0.005	<0.002	<0.003
Prometon (µg/L) (04037)	Propachlor (µg/L) (04024)	Propanil (µg/L) (82679)	Propargite (µg/L) (82685)	Simazine (µg/L) (04035)	Thiobencarb (µg/L) (82681)
<0.018	<0.007	<0.004	<0.013	<0.005	<0.002
Tebuthiuron (µg/L) (82670)	Terbacil (µg/L) (82665)	Terbufos (µg/L) (82675)	Triallate (µg/L) (82678)	Trifluralin (µg/L) (82661)	
<0.010	<0.007	<0.013	<0.001	<0.002	

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)
MIAMI CONSERVANCY DISTRICT GROUNDWATER PRESERVATION COOPERATIVE PROJECT

PESTICIDE DATA—RESULTS

Results listed below are for compounds that were detected in one or more public supply well.

[µg/L, micrograms per liter; (04035) USGS National Water Information System parameter code; <, concentration or value reported is less than that indicated; e, estimated value]

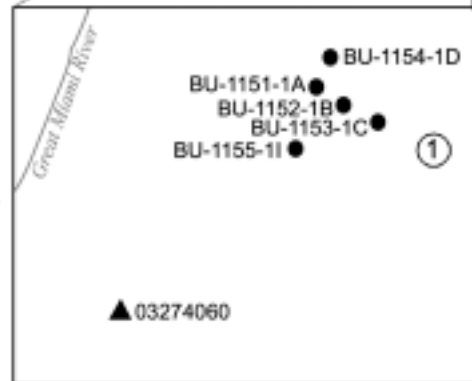
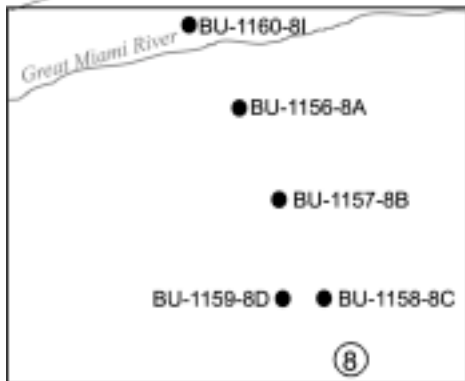
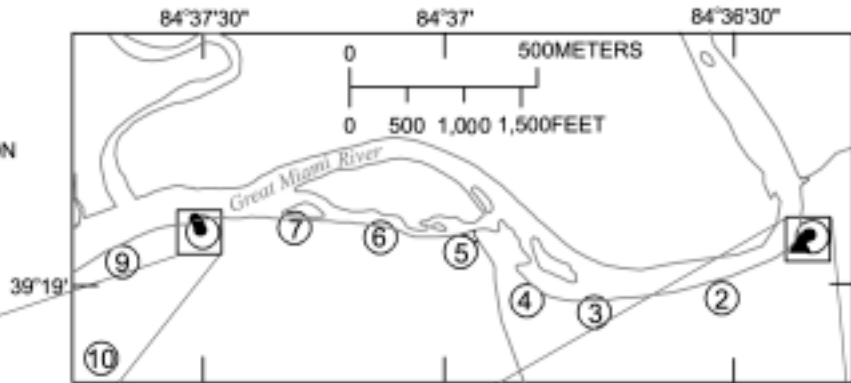
Local well number	Simazine (µg/L) (04035)	Prometon (µg/L) (04037)	Deethylatrazine (µg/L) (04040)	Cyanazine (µg/L) (04041)	Metolachlor (µg/L) (39415)	Atrazine (µg/L) (39632)	Metribuzin (µg/L) (82630)
<u>BUTLER COUNTY, OHIO</u>							
Bu-1100	<.005	<.018	e.004	<.004	<.002	<.001	<.004
Bu-1102	<.005	<.018	<.002	<.004	<.002	<.001	<.004
Bu-1103	0.012	0.027	e.016	0.026	0.033	0.077	0.007
Bu-1104	0.019	0.021	e.035	<.004	0.021	0.124	<.004
<u>CLARK COUNTY, OHIO</u>							
Cl-115	<.005	e.003	e.008	0.005	0.005	0.011	<.004
Cl-276	<.005	<.018	e.004	<.004	e.004	e.011	<.004
<u>GREENE COUNTY, OHIO</u>							
Gr-652	<.005	<.018	<.002	<.004	<.002	<.001	<.004
<u>MIAMI COUNTY, OHIO</u>							
Mi-200	<.005	<.018	<.002	<.004	<.002	<.001	<.004
Mi-201	<.005	<.018	<.002	<.004	<.002	<.001	<.004
<u>MONTGOMERY COUNTY, OHIO</u>							
Mt-1252	<.005	<.018	<.002	<.004	e.002	<.001	<.004
Mt-1253	0.012	0.032	e.026	0.024	0.016	0.055	<.010
Mt-1254	<.005	e.011	e.004	<.004	<.002	<.001	<.004
<u>PREBLE COUNTY, OHIO</u>							
Pr-200	<.005	<.018	<.002	<.004	<.002	<.001	<.004
<u>WARREN COUNTY, OHIO</u>							
W-50	<.005	<.018	<.002	<.004	<.002	<.001	<.004
W-51	<.005	<.018	e.064	<.004	<.002	0.036	<.004

PROJECT DATA
Water Data for Bolton Well Field

The tables on subsequent pages list maximum and minimum daily values of hourly data collected at wells and half-hour data collected at a surface-water station in southern Butler County, Ohio. The tables also include the results of chemical analysis of ground-water samples. These wells and station were established to assist in defining aquifer characteristics near the Cincinnati Water Works, Bolton Well Field, and the Great Miami River.



- EXPLANATION**
- ① PRODUCTION WELL LOCATION
 - MONITORING WELLS



PROJECT DATA
Water Data for Bolton Well Field

391904084362101. LOCAL NUMBER, BU-1151-1A

LOCATION.—Latitude 39°19'04", longitude 84°36'21", Butler County, Hydrologic Unit 05080002.

AQUIFER.—Glacial outwash, sand and gravel; 112OTSH.

WELL CHARACTERISTICS.—Observation well drilled by rotasonic techniques, diameter 4.0 in., depth 30 ft from land surface to bottom of screen.

INSTRUMENTATION.—YSI Model 6920 data sonde with turbidity probe set for 60-minute records. Sonde set at a depth of 27.6 ft below land surface.

DATUM.—Altitude of land surface is 546.87 ft above North American Vertical Datum of 1988 (NAVD of 1988). Measuring point is top of inner casing, 2.18 ft above land-surface datum.

REMARK.—This station is part of a network of wells designed to help model flow characteristics from the Great Miami River through the aquifer. Data collection began on July 21, 1999. Negative turbidity and dissolved oxygen values are due to the resolution of the data sonde and the close proximity of the actual value to zero.

PERIOD OF RECORD.—

WATER LEVEL ELEVATION: July 21, 1999 to current year.

SPECIFIC CONDUCTANCE: July 21, 1999 to current year.

pH: July 21, 1999 to current year.

WATER TEMPERATURE: July 21, 1999 to current year.

TURBIDITY: July 21, 1999 to current year.

DISSOLVED OXYGEN: July 21, 1999 to current year.

EXTREMES FOR PERIOD OF RECORD.—

WATER LEVEL ELEVATION: Maximum daily low, 525.27 ft above NAVD of 1988, Jan. 1 and 2, 2000; Maximum daily high, 537.22 ft above NAVD of 1988, Apr. 12, 2000.

SPECIFIC CONDUCTANCE: Maximum, 1,170 microsiemens per centimeter, Sept. 28 and 29, 1999; Minimum, 524 microsiemens per centimeter, Apr. 11, 2000.

pH: Maximum, 7.5, several days during period of record; Minimum, 7.1, July 22 to July 28, 1999.

WATER TEMPERATURE: Maximum, 28.7°C, Aug. 10, 11 and 12, 1999; Minimum, 4.8°C, Feb. 23, 2000.

TURBIDITY: Maximum, 4.0 NTU, July 31, 2000; Minimum, -1.0 NTU, several days during period of record.

DISSOLVED OXYGEN: Maximum, 3.4 milligrams per liter, Feb. 16 and 17, 2000; Minimum, -0.2 milligram per liter, Aug. 24 and 25, 2000.

EXTREMES FOR CURRENT YEAR.—

WATER LEVEL ELEVATION: Maximum daily low, 525.27 ft above NAVD of 1988, Jan. 1 and 2, 2000; Maximum daily high, 537.22 ft above NAVD of 1988, Apr. 12, 2000.

SPECIFIC CONDUCTANCE: Maximum, 1,150 microsiemens per centimeter, Oct. 1-3, 1999; Minimum, 524 microsiemens per centimeter, Apr. 11, 2000.

pH: Maximum, 7.5, several days during period of record; Minimum, 7.2, several days during period of record.

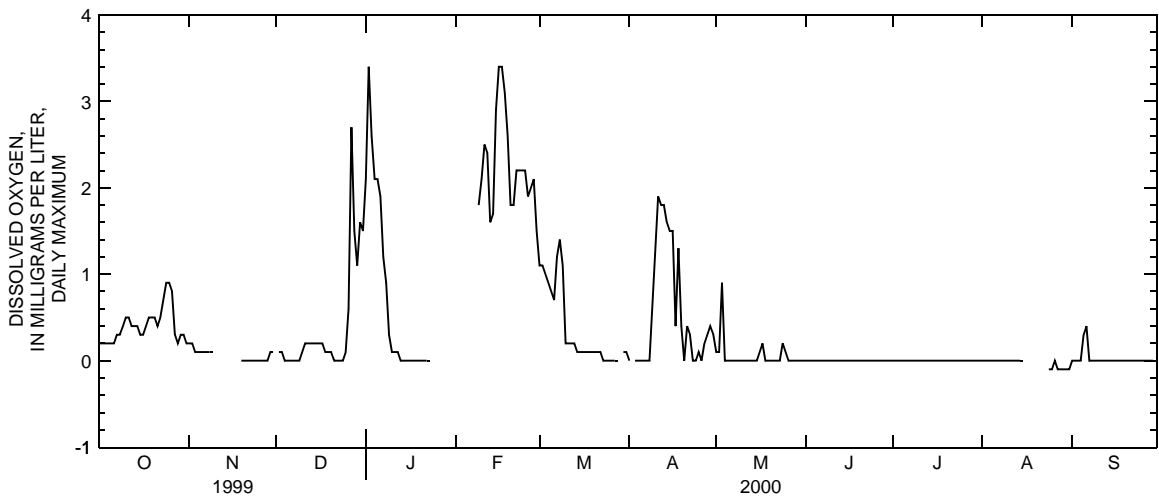
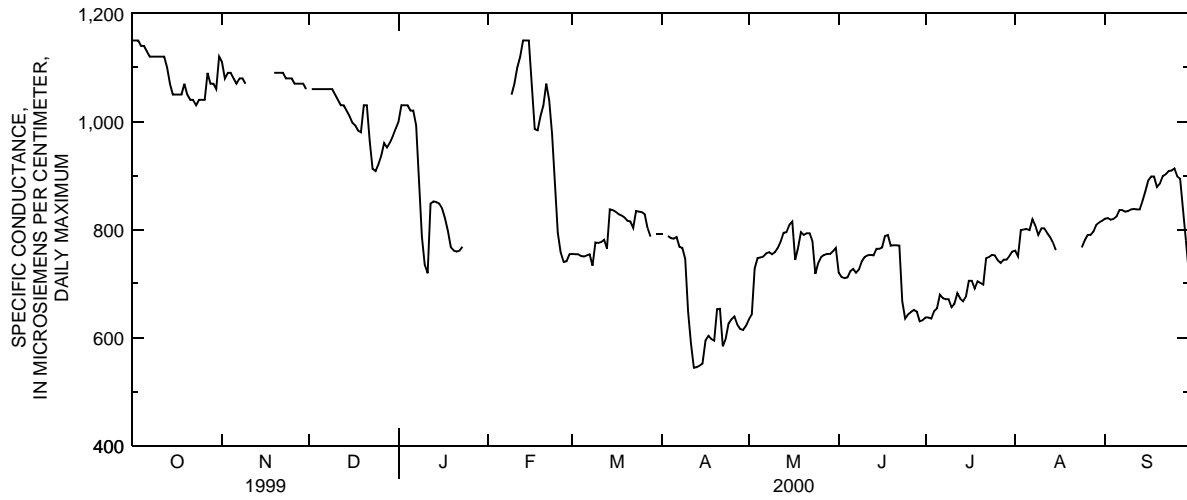
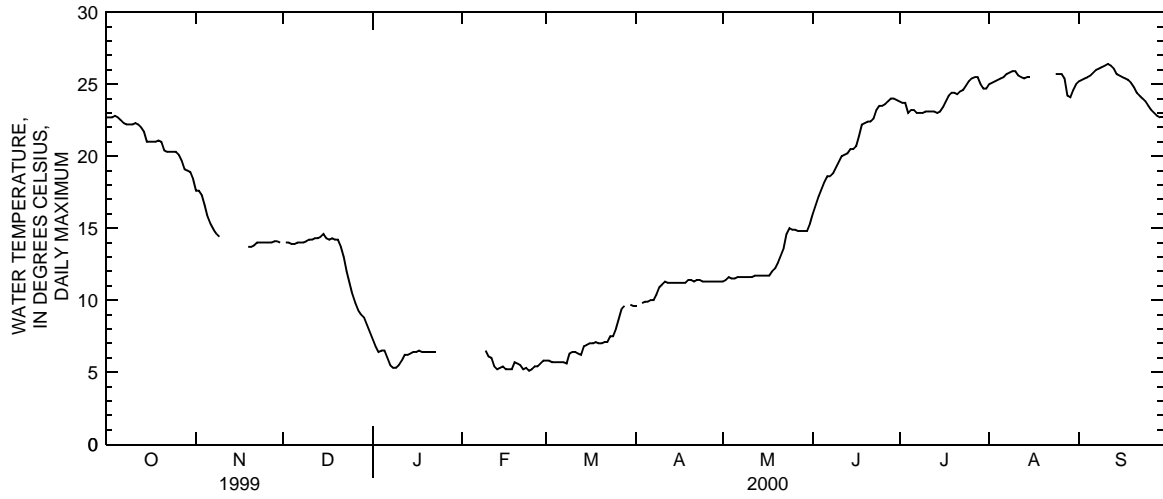
WATER TEMPERATURE: Maximum, 26.4°C, Sept. 11, 2000; Minimum, 4.8°C, Feb. 23, 2000.

TURBIDITY: Maximum, 4.0 NTU, July 31, 2000; Minimum, -1.0 NTU, several days during period of record.

DISSOLVED OXYGEN: Maximum, 3.4 milligrams per liter, Feb. 16 and 17, 2000; Minimum, -0.2 milligram per liter, Aug. 24 and 25, 2000.

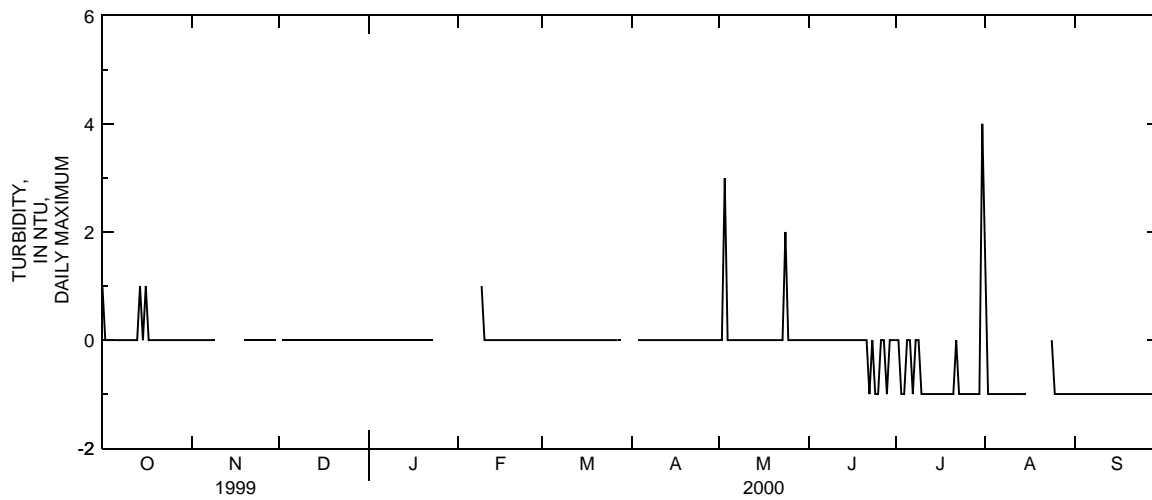
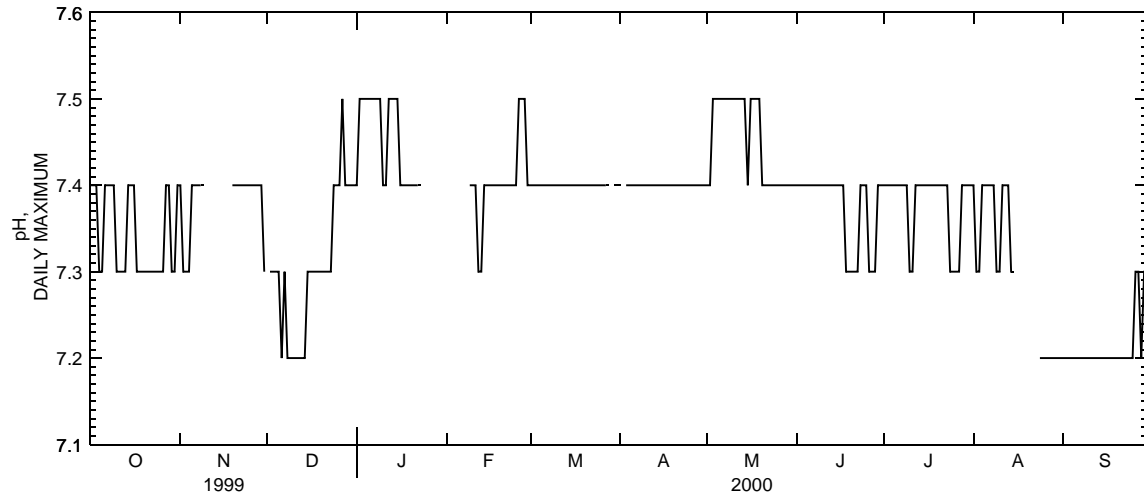
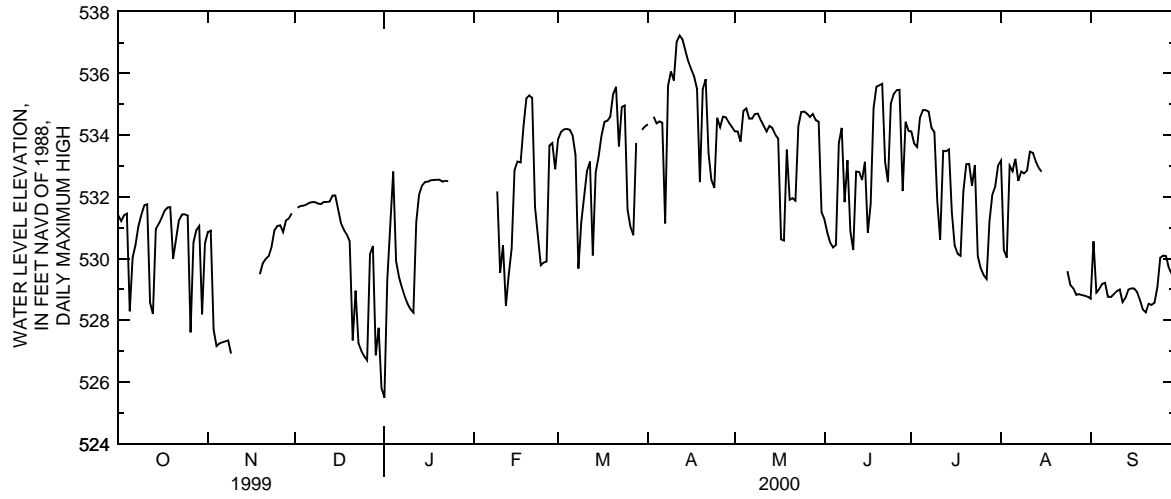
PROJECT DATA
Water Data for Bolton Well Field

391904084362101. LOCAL NUMBER, BU-1151-1A—Continued



PROJECT DATA Water Data for Bolton Well Field

391904084362101. LOCAL NUMBER, BU-1151-1A—Continued



PROJECT DATA
Water Data for Bolton Well Field

391904084362101. LOCAL NUMBER, BU-1151-1A—Continued

WATER-QUALITY RECORDS

WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

[μ S/cm, microsiemens per centimeter; (00028), USGS National Water Information System parameter code; UV, ultraviolet; units/cm, units per centimeter; nm, nanometer; mg/L, milligrams per liter; --, no data; <, concentration or value reported is less than that indicated; NAVD of 1988, North American Vertical Datum of 1988; mf, membrane filtration; col/100 mL, colonies per 100 milliliter; k, value is estimated from a non-ideal colony count]

Date	Medium code	Agency analyzing sample (code number) (00028)	Agency collecting sample (code number) (00027)	pH, water, field (standard units) (00400)	pH, water, lab (standard units) (00403)	Specific conductance, field (μ S/cm) (00095)	Specific conductance, lab (μ S/cm) (90095)	UV absorbance 254 nm, water, filtered (units/cm) (50624)	UV absorbance 280 nm, water, filtered (units/cm) (61726)	Calcium, dissolved (mg/L as Ca) (00915)
Dec. 1	6	80020	1028	7.5	7.7	1060	1010	--	--	74.7
Feb. 23	6	80020	1028	7.4	7.7	915	985	.056	.043	71.5
July 26	6	80020	1028	7.3	7.6	738	725	.071	.054	67.1
Aug. 23	6	1028	1028	--	--	--	--	--	--	--

Date	Magnesium, dissolved (mg/L as Mg) (00925)	Potassium, dissolved (mg/L as K) (00935)	Sodium, dissolved (mg/L as Na) (00930)	Alkalinity, water, dissolved, lab (mg/L as CaCO ₃) (29801)	Chloride, dissolved, (mg/L as Cl) (00940)	Silica, dissolved (mg/L as SiO ₂) (00955)	Sulfate, dissolved (mg/L as SO ₄) (00945)	Nitrogen, ammonia, dissolved (mg/L as N) (00608)	Nitrogen, nitrate, dissolved (mg/L as N) (00618)
Dec. 1	33.2	5.9	90.8	239	136	4.6	112	<.020	--
Feb. 23	28.1	5.1	79.0	219	126	4.3	79.3	<.020	4.63
July 26	24.2	5.2	39.4	204	70.7	8.2	63.7	<.020	.090
Aug. 23	--	--	--	--	--	--	--	--	--

Date	Nitrogen, nitrite plus nitrate, dissolved (mg/L as N) (00631)	Nitrogen, nitrite, dissolved (mg/L as N) (00613)	Carbon, organic, dissolved (mg/L as C) (00681)	Depth of well, total (feet) (72008)	Elevation of land surface datum (feet above NAVD of 1988) (72000)	<i>E. coli</i> , water, unfiltered, mf, MI (col/100 mL) (90901)	Coliform, total, water, unfiltered mf, MI (col/100 mL) (90900)	Boron, dissolved (mg/L as B) (01020)
Dec. 1	.892	--	--	30.00	546.87	<1	<1	171
Feb. 23	4.63	<.000	2.5	30.00	546.87	<1	k4	122
July 26	.204	.114	2.6	30.00	546.87	<1	k1	102
Aug. 23	--	--	--	30.00	546.87	<1	<1	--

PROJECT DATA
Water Data for Bolton Well Field

391904084362102. LOCAL NUMBER, BU-1152-1B

LOCATION.—Latitude 39°19'04", longitude 84°36'21", Butler County, Hydrologic Unit 05080002.

AQUIFER.—Glacial outwash, sand and gravel; 112OTSH.

WELL CHARACTERISTICS.—Observation well drilled by rotasonic techniques, diameter 4.0 in., depth 45 ft from land surface to bottom of screen.

INSTRUMENTATION.—YSI Model 6920 data sonde set for 60-minute records. Sonde set at a depth of 42.7 ft below land surface.

DATUM.—Altitude of land surface is 547.58 ft above North American Vertical Datum of 1988 (NAVD of 1988). Measuring point is top of inner casing, 1.97 ft above land-surface datum.

REMARK.— This station is part of a network of wells designed to help model flow characteristics from the Great Miami River through the aquifer. Data collection began on July 22, 1999. Negative dissolved oxygen values are due to the resolution of the data sonde. This is a non-vented sonde; water level data are not corrected for barometric pressure.

PERIOD OF RECORD.—

WATER LEVEL ELEVATION: July 22, 1999 to current year.

SPECIFIC CONDUCTANCE: July 22, 1999 to current year.

pH: July 22, 1999 to current year.

WATER TEMPERATURE: July 22, 1999 to current year.

DISSOLVED OXYGEN: July 22, 1999 to current year.

EXTREMES FOR PERIOD OF RECORD.—

WATER LEVEL ELEVATION: Maximum daily low, 524.40 ft above NAVD of 1988, Jan. 1 and 2, 2000; Maximum daily high, 537.84 ft above NAVD of 1988, Apr. 12, 2000.

SPECIFIC CONDUCTANCE: Maximum, 1,160 microsiemens per centimeter, Oct. 4, 1999; Minimum, 583 microsiemens per centimeter, Apr. 24, 2000.

pH: Maximum, 7.6, Oct. 5, 1999; Minimum, 6.6, Nov. 15 and 16, 1999.

WATER TEMPERATURE: Maximum, 29.8°C, Aug. 6 and 7, 1999; Minimum, 5.5°C, Jan. 6 and 7, 2000.

DISSOLVED OXYGEN: Maximum, 2.7 milligrams per liter, Feb. 24, 2000; Minimum -0.7 milligram per liter, Aug. 4, 1999.

EXTREMES FOR CURRENT YEAR.—

WATER LEVEL ELEVATION: Maximum daily low, 524.40 ft above NAVD of 1988, Jan. 1 and 2, 2000; Maximum daily high, 537.84 ft above NAVD of 1988, Apr. 12, 2000.

SPECIFIC CONDUCTANCE: Maximum, 1,160 microsiemens per centimeter, Oct. 4, 1999; Minimum, 583 microsiemens per centimeter, Apr. 24, 2000.

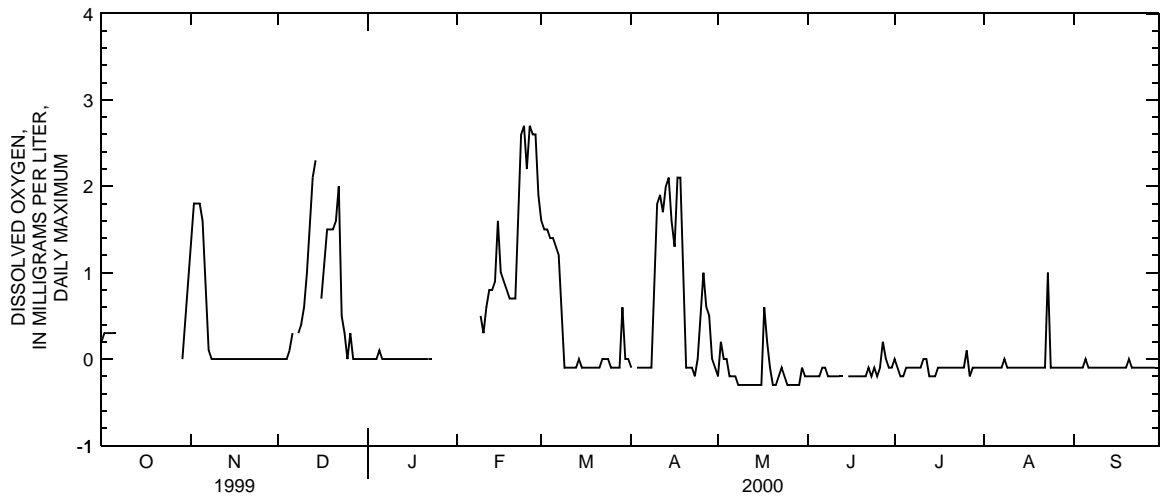
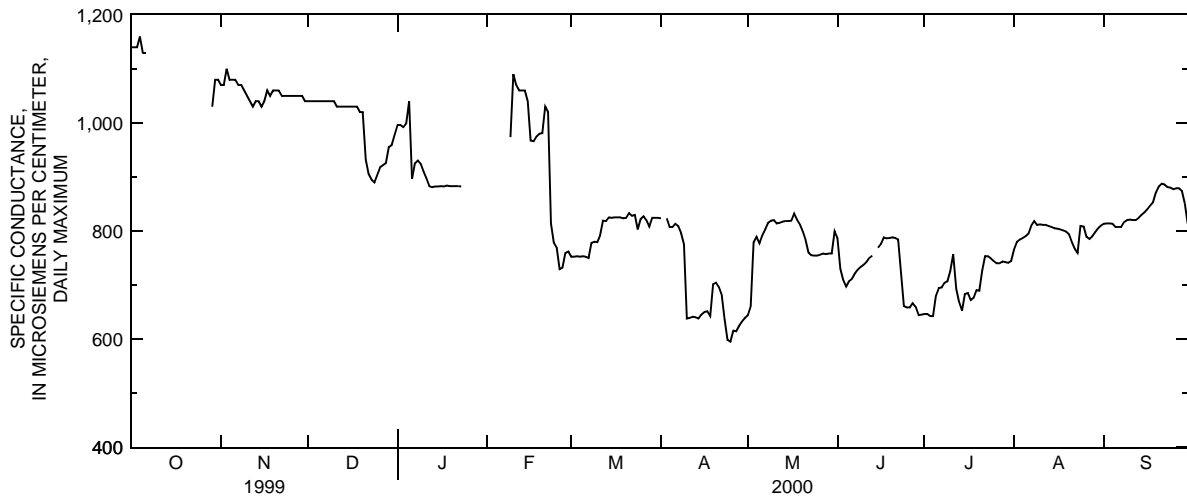
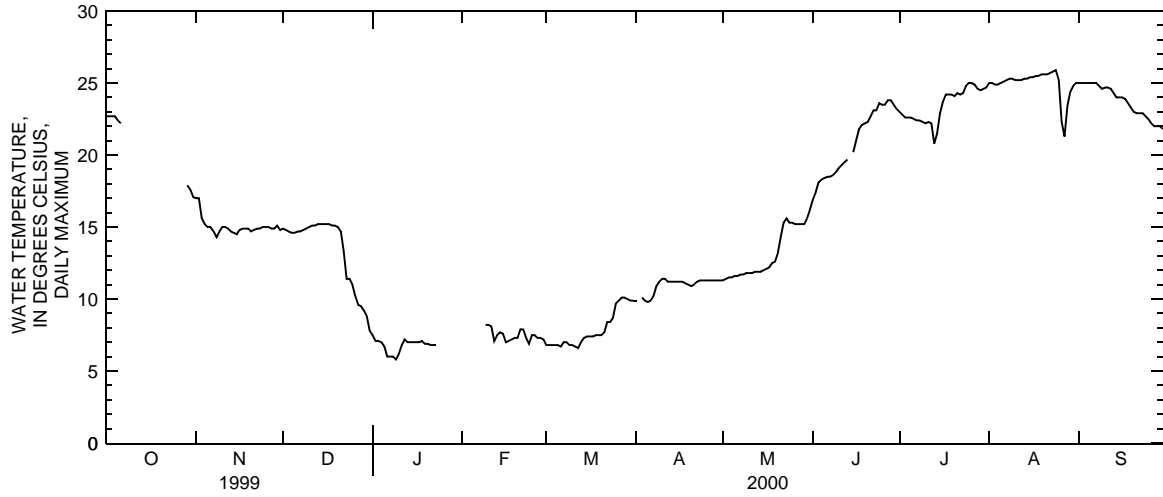
pH: Maximum, 7.6, Oct. 5, 1999; Minimum, 6.6, Nov. 15 and 16, 1999.

WATER TEMPERATURE: Maximum, 25.9°C, Aug. 24, 2000; Minimum, 5.5°C, Jan. 6 and 7, 2000.

DISSOLVED OXYGEN: Maximum, 2.7 milligrams per liter, Feb. 24, 2000; Minimum -0.3 milligram per liter, May 6-30, 2000.

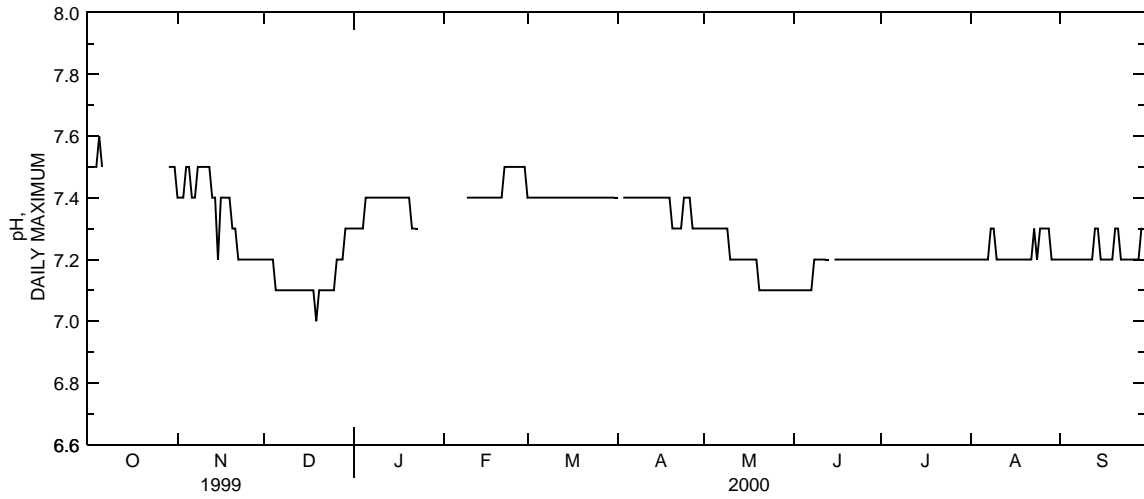
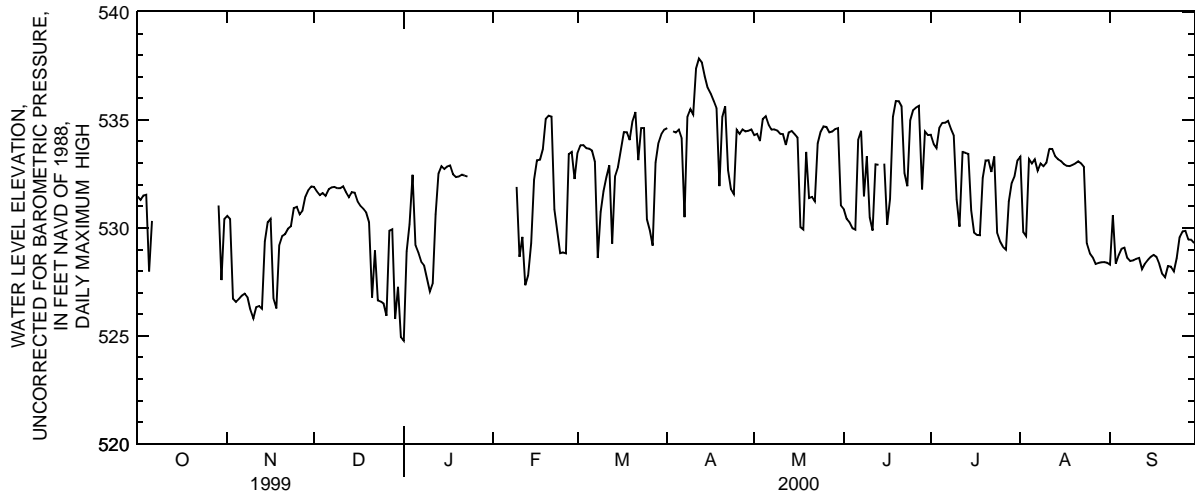
PROJECT DATA
Water Data for Bolton Well Field

391904084362102. LOCAL NUMBER, BU-1152-1B—Continued



PROJECT DATA
Water Data for Bolton Well Field

391904084362102. LOCAL NUMBER, BU-1152-1B—Continued



PROJECT DATA
Water Data for Bolton Well Field

391904084362102. LOCAL NUMBER, BU-1152-1B—Continued

WATER-QUALITY RECORDS

WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

[μ S/cm, microsiemens per centimeter; (00028), USGS National Water Information System parameter code; UV, ultraviolet; units/cm, units per centimeter; nm, nanometer; mg/L, milligrams per liter; --, no data; <, concentration or value reported is less than that indicated; NAVD of 1988, North American Vertical Datum of 1988; mf, membrane filtration; col/100 mL, colonies per 100 milliliter; k, value is estimated from a non-ideal colony count]

Date	Medium code	Agency analyzing sample (code number) (00028)	Agency collecting sample (code number) (00027)	pH, water, field (standard units) (00400)	pH, water, lab (standard units) (00403)	Specific conductance, field (μ S/cm) (00095)	Specific conductance, lab (μ S/cm) (90095)	UV absorbance 254 nm, water, filtered (units/cm) (50624)	UV absorbance 280 nm, water, filtered (units/cm) (61726)
Oct. 6	6	80020	1028	7.5	7.6	1130	1100	--	--
Jan. 26	6	80020	1028	--	7.8	--	835	.059	.045
Apr. 19	6	80020	1028	7.4	7.7	650	663	.053	.040
May 3	6	80020	1028	7.3	7.7	746	795	.045	.033
July 26	6	1028	1028	--	--	--	--	--	--
Aug. 23	6	1028	1028	--	--	--	--	--	--

Date	Calcium, dissolved (mg/L as Ca) (00915)	Magnesium, dissolved (mg/L as Mg) (00925)	Potassium, dissolved (mg/L as K) (00935)	Sodium, dissolved (mg/L as Na) (00930)	Alkalinity, water, dissolved, lab (mg/L as CaCO ₃) (29801)	Chloride, dissolved (mg/L as Cl) (00940)	Silica, dissolved (mg/L as SiO ₂) (00955)	Sulfate, dissolved (mg/L as SO ₄) (00945)	Nitrogen, ammonia, dissolved (mg/L as N) (00608)
Oct. 6	69.8	32.5	5.8	107	222	157	5.8	113	.268
Jan. 26	70.5	29.2	5.4	58.3	227	78.6	4.6	82.0	<.020
Apr. 19	62.2	23.0	4.5	30.1	213	41.8	5.4	54.7	<.020
May 3	80.3	29.4	4.9	32.1	266	45.0	6.2	66.5	<.020
July 26	--	--	--	--	--	--	--	--	--
Aug. 23	--	--	--	--	--	--	--	--	--

Date	Nitrogen, nitrate, dissolved (mg/L as N) (00618)	Nitrogen, nitrite plus nitrate, dissolved (mg/L as N) (00631)	Nitrogen, nitrite, dissolved (mg/L as N) (00613)	Carbon, organic, dissolved (mg/L as C) (00681)	Depth of well, total (feet) (72008)	Elevation of land surface datum (feet above NAVD of 1988) (72000)	<i>E. coli</i> , water, unfiltered, mf, MI (col/100 mL) (90901)	Coliform, total, water, unfiltered, mf, MI (col/100 mL) (90900)	Boron, dissolved (mg/L as B) (01020)
Oct. 6	--	<.050	--	--	45.00	547.58	--	--	193
Jan. 26	3.32	3.38	.054	2.4	45.00	547.58	<1	k5	131
Apr. 19	--	3.69	<.010	2.2	45.00	547.58	<1	<1	77
May 3	--	3.59	<.010	2.0	45.00	547.58	<1	<1	77
July 26	--	--	--	--	45.00	547.58	<1	k1	--
Aug. 23	--	--	--	--	45.00	547.58	<1	<1	--

PROJECT DATA
Water Data for Bolton Well Field

267

391904084362103. LOCAL NUMBER, BU-1153-1C

LOCATION.—Latitude 39°19'04", longitude 84°36'21", Butler County, Hydrologic Unit 05080002.

AQUIFER.—Glacial outwash, sand and gravel; 112OTSH.

WELL CHARACTERISTICS.—Observation well drilled by rotasonic techniques, diameter 4.0 in., depth 57 ft from land surface to bottom of screen.

INSTRUMENTATION.—YSI Model 6920 data sonde set for 60-minute records. Sonde set at a depth of 54.6 ft below land surface.

DATUM.—Altitude of land surface is 547.60 ft above North American Vertical Datum of 1988 (NAVD of 1988). Measuring point is top of inner casing, 2.07 ft above land-surface datum.

REMARK.—This station is part of a network of wells designed to help model flow characteristics from the Great Miami River through the aquifer. Data collection began on July 22, 1999. This is a non-vented sonde, water level data is not corrected for barometric pressure.

PERIOD OF RECORD.—

WATER LEVEL ELEVATION: July 22, 1999 to current year

SPECIFIC CONDUCTANCE: July 22, 1999 to current year

pH: July 22, 1999 to current year

WATER TEMPERATURE: July 22, 1999 to current year

DISSOLVED OXYGEN: July 22, 1999 to current year

EXTREMES FOR PERIOD OF RECORD.—

WATER LEVEL ELEVATION: Maximum daily low, 523.01 ft above NAVD of 1988, Jan. 1 and 2, 2000; Maximum daily high, 537.80 ft above NAVD of 1988, Apr. 12, 2000.

SPECIFIC CONDUCTANCE: Maximum, 1,160 microsiemens per centimeter, Oct. 4 and 5, 1999; Minimum, 584 microsiemens per centimeter, Apr. 25 and 26, 2000.

pH: Maximum, 7.6, several days during period of record; Minimum, 7.0, July 26 to 31, 1999.

WATER TEMPERATURE: Maximum, 30.1°C, Aug. 8 and 9, 1999; Minimum, 5.6°C, Jan. 10, 2000.

DISSOLVED OXYGEN: Maximum, 2.6 milligrams per liter, Feb. 29, 2000; Minimum 0.0 milligram per liter, several days during period of record.

EXTREMES FOR CURRENT YEAR.—

WATER LEVEL ELEVATION: Maximum daily low, 523.01 ft above NAVD of 1988, Jan. 1 and 2, 2000; Maximum daily high, 537.80 ft above NAVD of 1988, Apr.12, 2000.

SPECIFIC CONDUCTANCE: Maximum, 1,160 microsiemens per centimeter, Oct. 4 and 5, 1999; Minimum, 584 microsiemens per centimeter, Apr. 25 and 26, 2000.

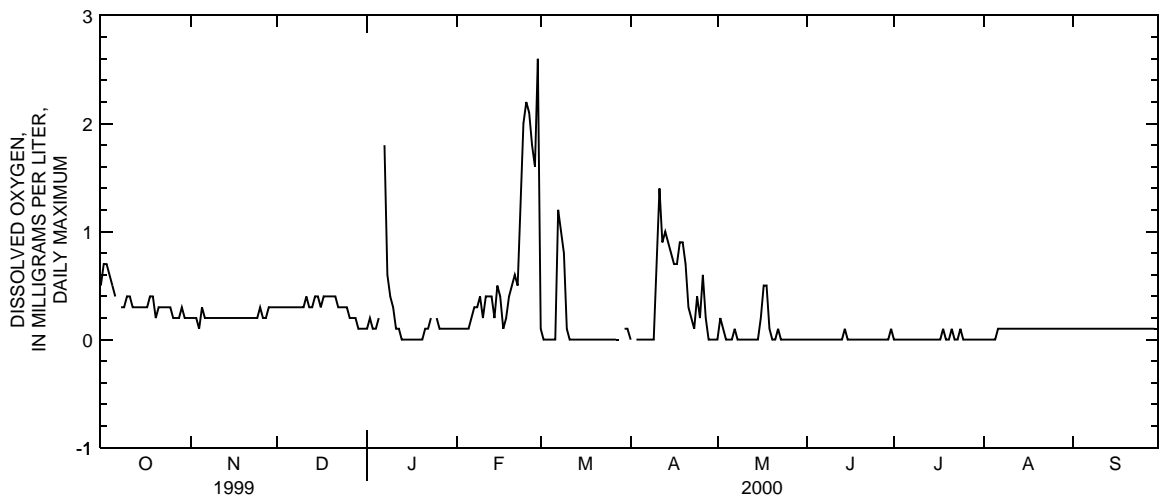
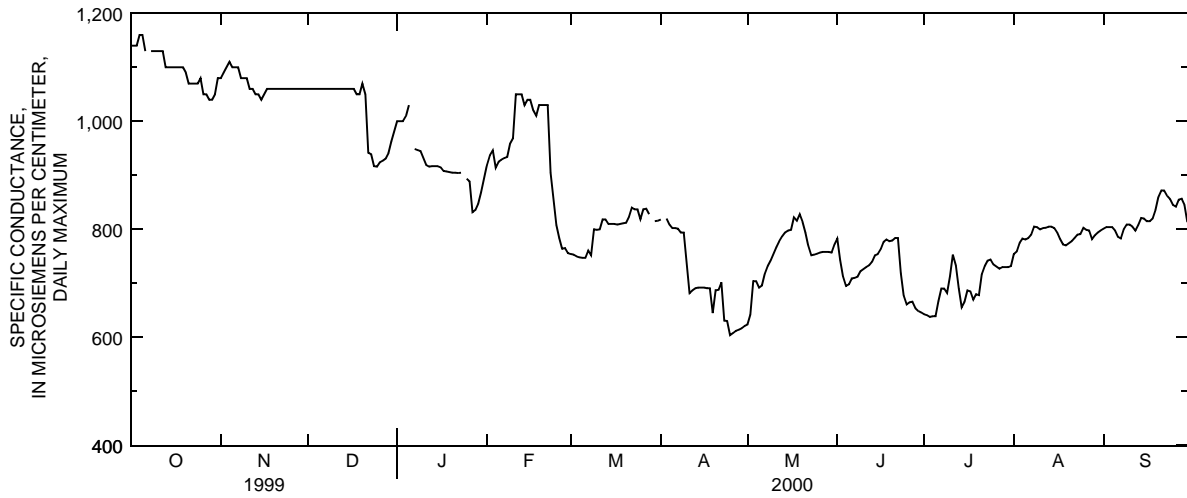
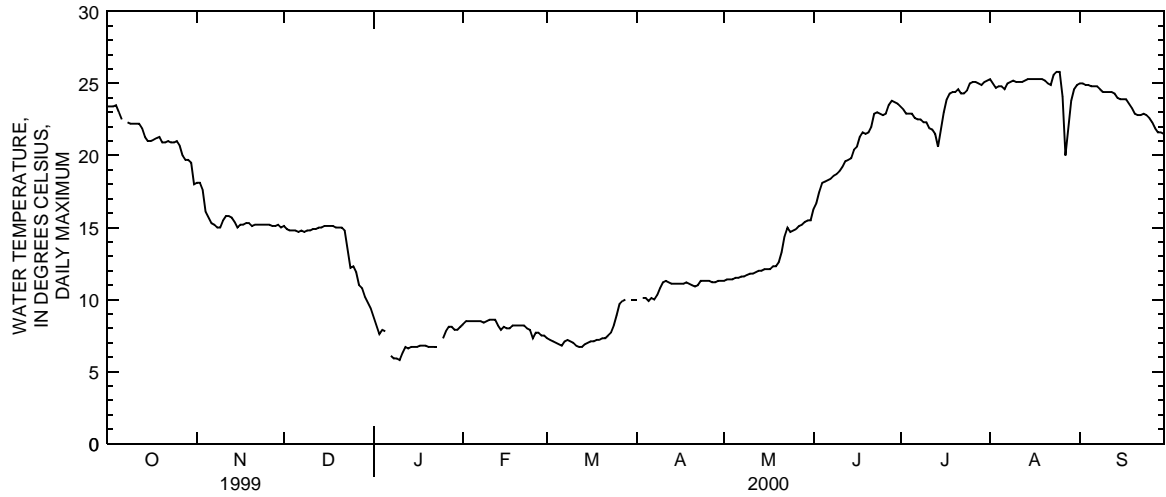
pH: Maximum, 7.6, several days during period of record; Minimum, 7.2, several days during period of record.

WATER TEMPERATURE: Maximum, 25.8°C, Aug. 24 and 25, 2000; Minimum, 5.6°C, Jan. 10, 2000.

DISSOLVED OXYGEN: Maximum, 2.6 milligrams per liter, Feb. 29, 2000; Minimum 0.0 milligram per liter, several days during period of record.

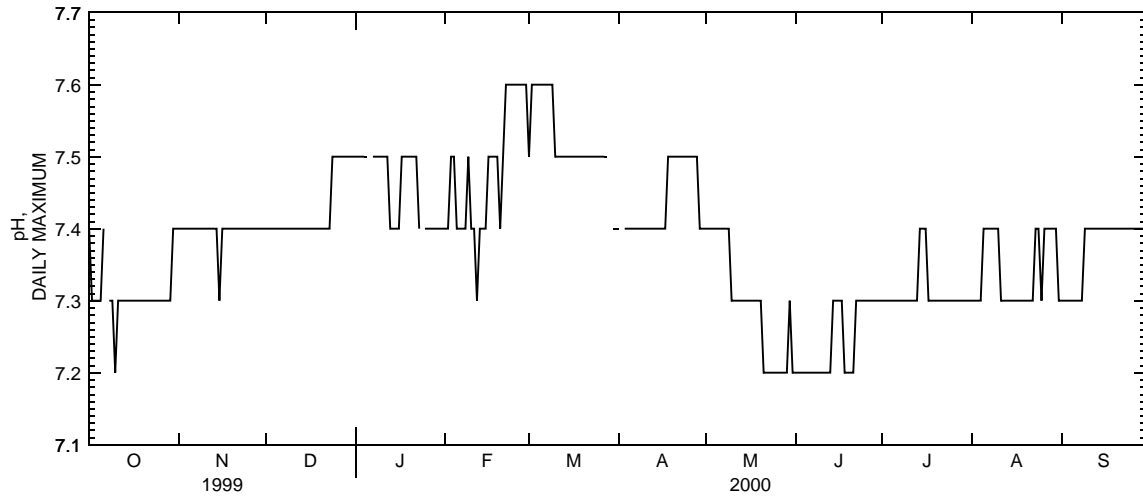
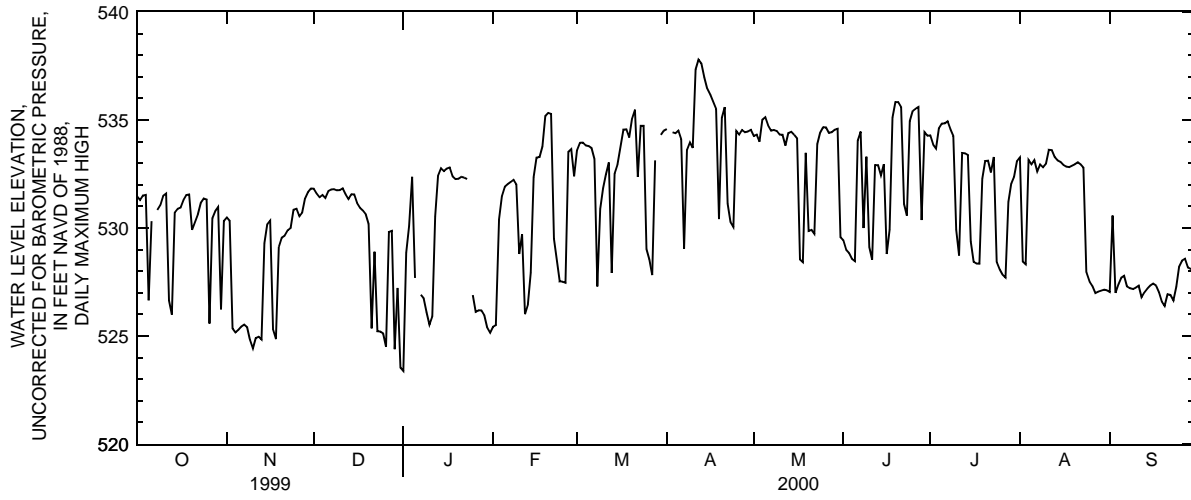
PROJECT DATA
Water Data for Bolton Well Field

391904084362103. LOCAL NUMBER, BU-1153-1C—Continued



PROJECT DATA
Water Data for Bolton Well Field

391904084362103. LOCAL NUMBER, BU-1153-1C—Continued



PROJECT DATA
Water Data for Bolton Well Field

391904084362103. LOCAL NUMBER, BU-1153-1C—Continued

WATER-QUALITY RECORDS

WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

[µS/cm, microsiemens per centimeter; (00028), USGS National Water Information System parameter code; UV, ultraviolet; units/cm, units per centimeter; nm, nanometer; mg/L, milligrams per liter; --, no data; <, concentration or value reported is less than that indicated; NAVD of 1988, North American Vertical Datum of 1988; mf, membrane filtration; col/100 mL, colonies per 100 milliliter; k, value is estimated from a non-ideal colony count]

Date	Medium code	Agency analyzing sample (code number) (00028)	Agency collecting sample (code number) (00027)	pH, water, field (standard units) (00400)	pH, water, lab (standard units) (00403)	Specific conductance, field (µS/cm) (00095)	Specific conductance, lab (µS/cm) (90095)	UV absorbance 254 nm, water, filtered (units/cm) (50624)	UV absorbance 280 nm, water, filtered (units/cm) (61726)
Oct. 20	6	80020	1028	7.4	7.6	1110	1060	--	--
Feb. 1	6	80020	1028	7.6	7.8	908	929	.055	.041
1	S	80020	1028	7.6	7.8	908	931	.058	.043
June 28	Q	80020	1028	--	--	--	--	--	--
28	6	80020	1028	7.3	7.5	657	656	.062	.046
July 26	6	1028	1028	--	--	--	--	--	--
Aug. 23	6	1028	1028	--	--	--	--	--	--

Date	Calcium, dissolved (mg/L as Ca) (00915)	Magnesium, dissolved (mg/L as Mg) (00925)	Potassium, dissolved (mg/L as K) (00935)	Sodium, dissolved (mg/L as Na) (00930)	Alkalinity, water, dissolved, lab (mg/L as CaCO ₃) (29801)	Chloride, dissolved (mg/L as Cl) (00940)	Silica, dissolved (mg/L as SiO ₂) (00955)	Sulfate, dissolved (mg/L as SO ₄) (00945)	Nitrogen, ammonia, dissolved (mg/L as N) (00608)
Oct. 20	70.0	31.1	5.6	96.3	221	148	6.1	108	.325
Feb. 1	76.6	31.9	5.1	63.1	224	103	4.8	89.8	<.020
1	76.6	31.9	5.2	63.9	224	105	4.8	90.5	<.020
June 28	--	--	--	--	--	--	--	--	--
28	63.7	22.0	4.4	32.4	192	48.0	7.7	52.4	<.020
July 26	--	--	--	--	--	--	--	--	--
Aug. 23	--	--	--	--	--	--	--	--	--

Date	Nitrogen, nitrate, dissolved (mg/L as N) (00618)	Nitrogen, nitrite plus nitrate, dissolved (mg/L as N) (00631)	Nitrogen, nitrite, dissolved (mg/L as N) (00613)	Carbon, organic, dissolved (mg/L as C) (00681)	Depth of well, total (feet) (72008)	Elevation of land surface datum (feet above NAVD of 1988) (72000)	<i>E. coli</i> , water, unfiltered, mf, MI (col/100 mL) (90901)	Coliform, total, water, unfiltered, mf, MI (col/100 mL) (90900)	Boron, dissolved (mg/L as B) (01020)
Oct. 20	--	<.050	--	--	60.00	547.60	<1	k2	184
Feb. 1	3.80	3.82	.016	2.3	60.00	547.60	<1	k1	119
1	3.80	3.81	.016	2.5	60.00	547.60	<1	k2	119
June 28	--	--	--	<.33	60.00	547.60	--	--	--
28	5.18	5.53	.346	2.6	60.00	547.60	<1	k1	98
July 26	--	--	--	--	60.00	547.60	<1	<1	--
Aug. 23	--	--	--	--	60.00	547.60	<1	<1	--

PROJECT DATA
Water Data for Bolton Well Field

391904084362104. LOCAL NUMBER, BU-1154-1D

LOCATION.—Latitude 39°19'04", longitude 84°36'21", Butler County, Hydrologic Unit 05080002.

AQUIFER.—Glacial outwash, sand and gravel; 112OTSH.

WELL CHARACTERISTICS.—Observation well drilled by rotasonic techniques, diameter 4.0 in., depth 87 ft from land surface to bottom of screen.

INSTRUMENTATION.—YSI Model 6920 data sonde set for 60-minute records. Sonde set at a depth of 85.0 ft below land surface.

DATUM.—Altitude of land surface is 547.70 ft above North American Vertical Datum of 1988 (NAVD of 1988). Measuring point is top of inner casing, 2.38 ft above land-surface datum.

REMARK.—This station is part of a network of wells designed to help model flow characteristics from the Great Miami River through the aquifer. Data collection began on July 27, 1999. Negative dissolved oxygen values are due to the resolution of the data sonde. This is a non-vented sonde; water level data are not corrected for barometric pressure.

PERIOD OF RECORD.—

WATER LEVEL ELEVATION: July 27, 1999 to current year

SPECIFIC CONDUCTANCE: July 27, 1999 to current year

pH: July 27, 1999 to current year

WATER TEMPERATURE: July 27, 1999 to current year

DISSOLVED OXYGEN: July 27, 1999 to current year

EXTREMES FOR PERIOD OF RECORD.—

WATER LEVEL ELEVATION: Maximum daily low, 505.18 ft above NAVD of 1988, Feb. 1, 2000; Maximum daily high, 537.82 ft above NAVD of 1988, Apr. 12, 2000.

SPECIFIC CONDUCTANCE: Maximum, 785 microsiemens per centimeter, Dec. 20, 1999; Minimum, 712 microsiemens per centimeter, Aug. 20, 2000.

pH: Maximum, 7.3, Aug. 12 to 18, 1999 and Jan. 7-18, 2000; Minimum, 6.8, Feb. 21, 2000.

WATER TEMPERATURE: Maximum, 14.6°C, July 14, 2000; Minimum, 9.9°C, Feb. 1, 2000.

DISSOLVED OXYGEN: Maximum, 1.3 milligrams per liter, Feb. 21, 2000; Minimum -0.1 milligram per liter, Aug. 19, Sept. 9, 10 and 11, 1999 and Feb. 20, 2000.

EXTREMES FOR CURRENT YEAR.—

WATER LEVEL ELEVATION: Maximum daily low, 505.18 ft above NAVD of 1988, Feb. 1, 2000; Maximum daily high, 537.82 ft above NAVD of 1988, Apr. 12, 2000.

SPECIFIC CONDUCTANCE: Maximum, 785 microsiemens per centimeter, Dec. 20, 1999; Minimum, 712 microsiemens per centimeter, Aug. 20, 2000.

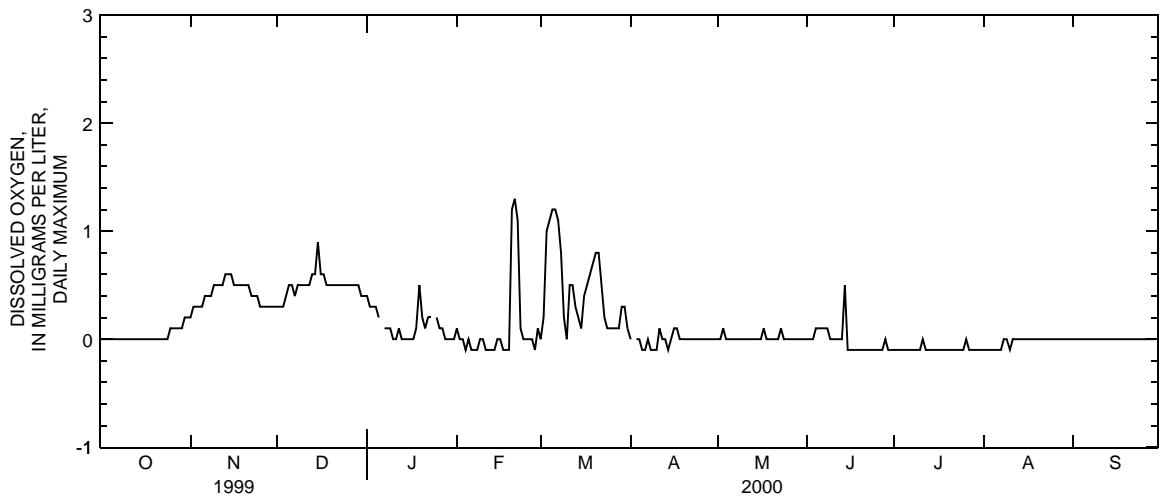
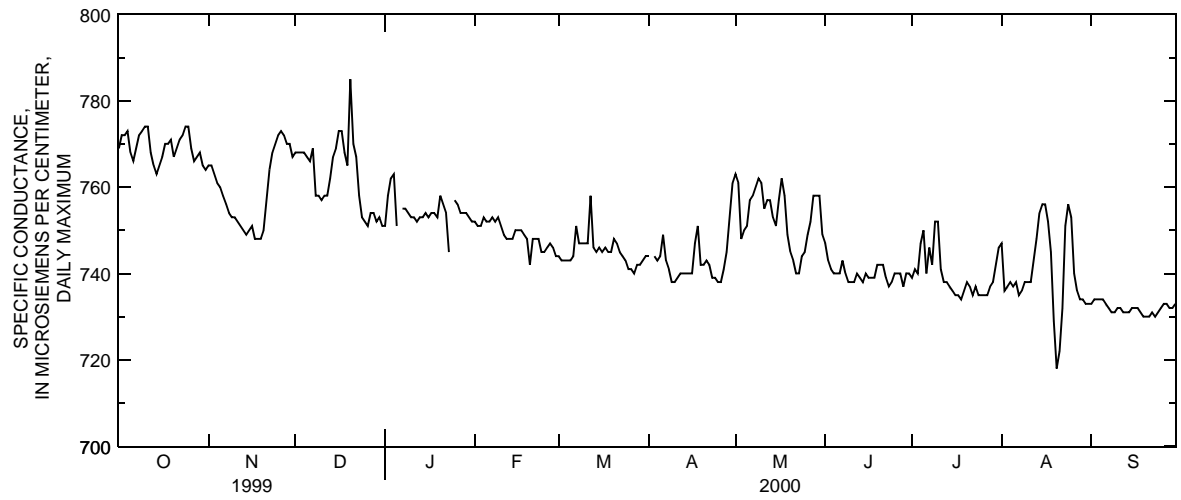
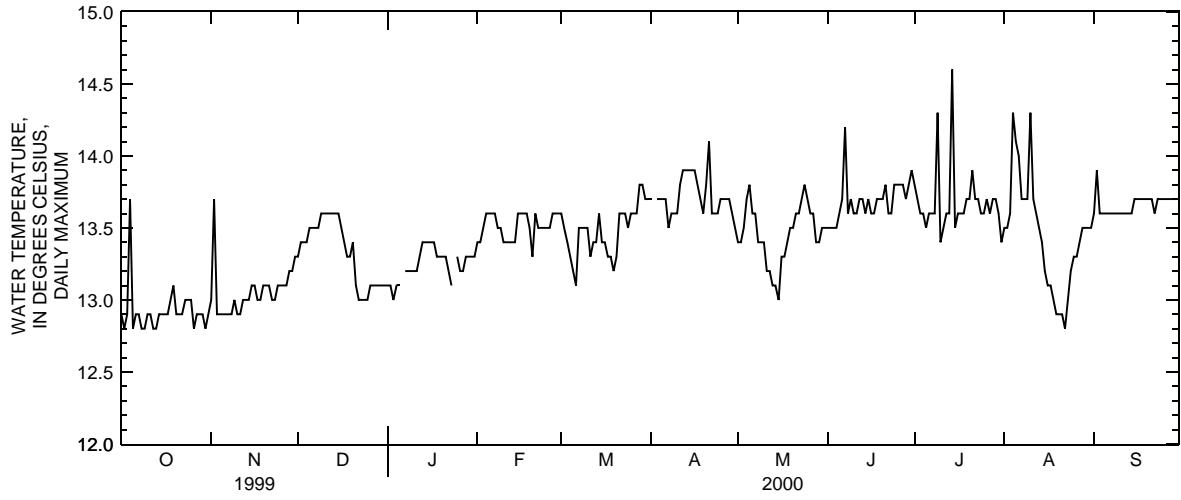
pH: Maximum, 7.3, Jan. 7 to 18, 2000; Minimum, 6.8, Feb. 21, 2000.

WATER TEMPERATURE: Maximum, 14.6°C, July 14, 2000; Minimum, 9.9°C, Feb. 1, 2000.

DISSOLVED OXYGEN: Maximum, 1.3 milligrams per liter, Feb. 21, 2000; Minimum -0.1 milligram per liter, Feb. 20, 2000.

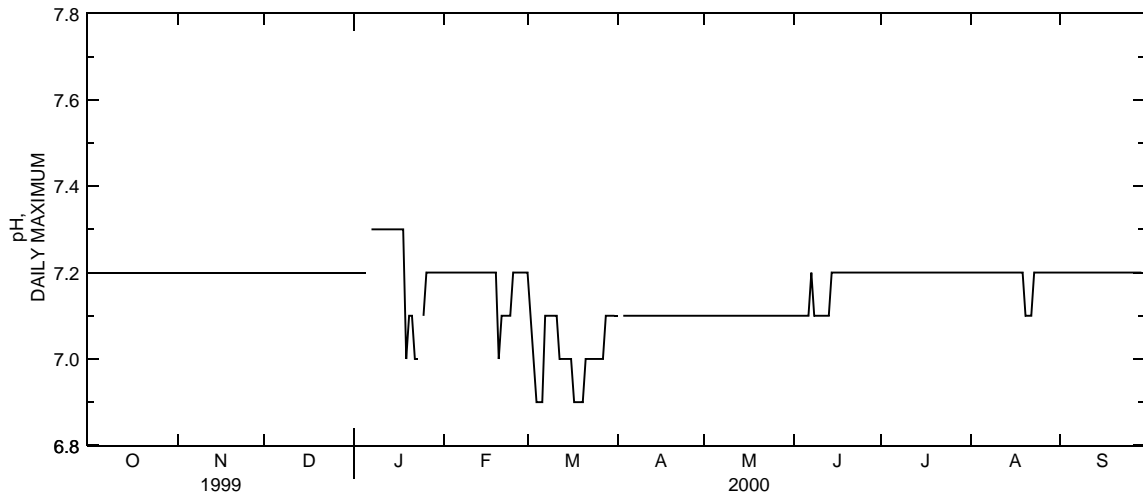
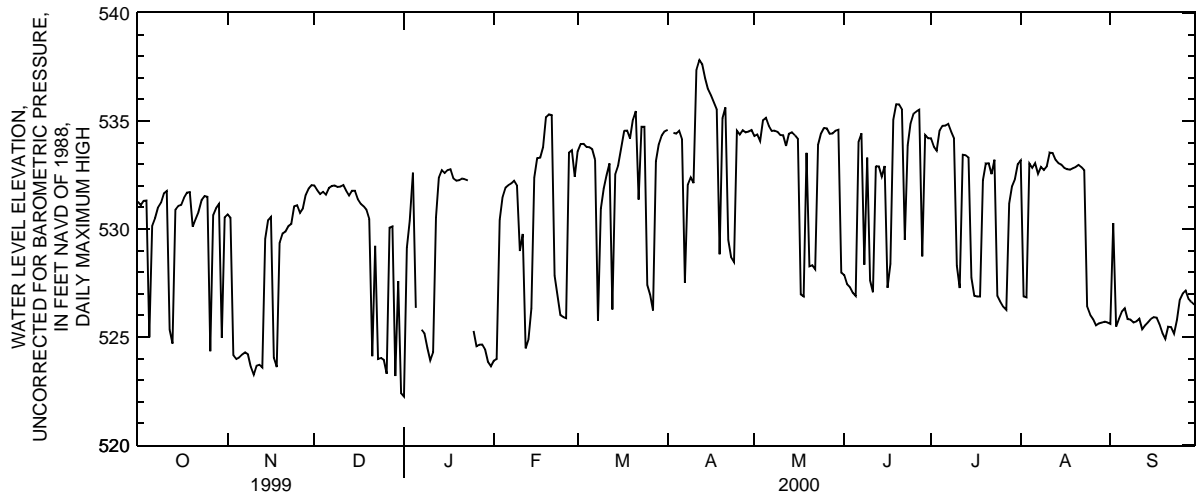
PROJECT DATA
Water Data for Bolton Well Field

391904084362104. LOCAL NUMBER, BU-1154-1D—Continued



PROJECT DATA
Water Data for Bolton Well Field

391904084362104. LOCAL NUMBER, BU-1154-1D



PROJECT DATA
Water Data for Bolton Well Field

391904084362104. LOCAL NUMBER, BU-1154-1D—Continued

WATER-QUALITY RECORDS

WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

[μ S/cm, microsiemens per centimeter; (00028), USGS National Water Information System parameter code; UV, ultraviolet; units/cm, units per centimeter; nm, nanometer; mg/L, milligrams per liter; --, no data; <, concentration or value reported is less than that indicated; NAVD of 1988, North American Vertical Datum of 1988; mf, membrane filtration; col/100 mL, colonies per 100 milliliter; k, value is estimated from a non-ideal colony count]

Date	Medium code	Agency analyzing sample (code number) (00028)	Agency collecting sample (code number) (00027)	pH, water, field (standard units) (00400)	pH, water, lab (standard units) (00403)	Specific conductance, field (μ S/cm) (00095)	Specific conductance, lab (μ S/cm) (90095)	UV absorbance 254 nm, water, filtered (units/cm) (50624)	UV absorbance 280 nm, water, filtered (units/cm) (61726)
Nov. 3	6	80020	1028	7.2	7.4	760	762	--	--
Mar. 8	6	80020	1028	7.3	7.2	725	754	.005	.004
June 14	6	80020	1028	7.2	7.5	734	745	.008	.006
July 26	6	1028	1028	--	--	--	--	--	--
Aug. 23	6	1028	1028	--	--	--	--	--	--

Date	Calcium, dissolved (mg/L as Ca) (00915)	Magnesium, dissolved (mg/L as Mg) (00925)	Potassium, dissolved (mg/L as K) (00935)	Sodium, dissolved (mg/L as Na) (00930)	Alkalinity, water, dissolved, lab (mg/L as CaCO ₃) (29801)	Chloride, dissolved (mg/L as Cl) (00940)	Silica, dissolved (mg/L as SiO ₂) (00955)	Sulfate, dissolved (mg/L as SO ₄) (00945)	Nitrogen, ammonia, dissolved (mg/L as N) (00608)
Nov. 3	103	30.0	1.4	11.7	236	48.2	12.5	107	<.020
Mar. 8	92.3	27.3	1.6	12.8	215	52.0	11.6	105	<.020
June 14	91.2	26.0	2.1	13.1	210	50.8	11.6	104	<.020
July 26	--	--	--	--	--	--	--	--	--
Aug. 23	--	--	--	--	--	--	--	--	--

Date	Nitrogen, nitrate, dissolved (mg/L as N) (00618)	Nitrogen, nitrite, plus nitrate, dissolved (mg/L as N) (00631)	Nitrogen, nitrite, dissolved (mg/L as N) (00613)	Carbon, organic, dissolved (mg/L as C) (00681)	Depth of well, total (feet) (72008)	Elevation of land surface datum (feet above NAVD of 1988) (72000)	<i>E. coli</i> , water, unfiltered, mf, MI (col/100 mL) (90901)	Coliform, total, water, unfiltered, mf, MI (col/100 mL) (90900)	Boron, dissolved (mg/L as B) (01020)
Nov. 3	--	<.050	--	--	87.00	547.7	--	--	21
Mar. 8	<.000	<.050	<.001	.67	87.00	547.7	<1	<1	19
June 14	--	<.050	<.010	.60	87.00	547.7	<1	<1	25
July 26	--	--	--	--	87.00	547.7	<1	<1	--
Aug. 23	--	--	--	--	87.00	547.7	<1	k1	--

PROJECT DATA
Water Data for Bolton Well Field

285

391904084362105. LOCAL NUMBER, BU-1155-11

LOCATION.—Latitude 39°19'04", longitude 84°36'21", Butler County, Hydrologic Unit 05080002.

AQUIFER.—Glacial outwash, sand and gravel; 112OTSH.

WELL CHARACTERISTICS.—Inclined observation well drilled at 30 degree angle from horizontal by rotasonic techniques, diameter 4.0 in., depth 57 ft from top of casing to bottom of screen.

INSTRUMENTATION.—YSI Model 6600 data sonde with turbidity probe set for 60-minute records. Sonde set at an altitude of 521.86 feet above North American Vertical Datum of 1988 (NAVD of 1988). Elevation estimated from angle of well (inclinometer) and length to transducer.

DATUM.—Altitude of land surface is 547.37 ft above North American Vertical Datum of 1988 (NAVD of 1988). Measuring point is top of inner casing, 2.63 ft above land-surface datum.

REMARK.—This station is part of a network of wells designed to help model flow characteristics from the Great Miami River through the aquifer. Data collection began on Oct. 7, 1999. Negative turbidity and dissolved oxygen values are due to the resolution of the data sonde and the close proximity of the actual value to zero.

PERIOD OF RECORD.—

WATER LEVEL ELEVATION: October 7, 1999 to current year.

SPECIFIC CONDUCTANCE: October 7, 1999 to current year.

pH: October 7, 1999 to current year.

WATER TEMPERATURE: October 7, 1999 to current year.

TURBIDITY: October 7, 1999 to current year.

DISSOLVED OXYGEN: October 7, 1999 to current year.

EXTREMES FOR PERIOD OF RECORD.—

WATER LEVEL ELEVATION: Maximum daily low, 526.78 ft above NAVD of 1988, Jan. 1 and 2, 2000; Maximum daily high, 537.53 ft above NAVD of 1988, Apr. 9, 2000.

SPECIFIC CONDUCTANCE: Maximum, 1270 microsiemens per centimeter, Feb. 11 and 12, 2000; Minimum, 412 microsiemens per centimeter, Apr. 10, 2000.

pH: Maximum, 8.0, Oct. 20, 26, and Nov. 3, 1999; Minimum, 5.4, Mar. 5, 2000.

WATER TEMPERATURE: Maximum, 28.8°C, Sept. 5, 2000; Minimum, 2.0°C, Feb. 1, 2000.

TURBIDITY: Maximum, 11.0 NTU, Jan. 4, 2000; Minimum, -1.4 NTU, June 17, 2000.

DISSOLVED OXYGEN: Maximum, 9.4 milligrams per liter, Dec. 30, 1999; Minimum, -3.0 milligrams per liter, Nov. 9, 1999.

EXTREMES FOR CURRENT YEAR.—

WATER LEVEL ELEVATION: Maximum daily low, 526.78 ft above NAVD of 1988, Jan. 1 and 2, 2000; Maximum daily high, 537.53 ft above NAVD of 1988, Apr. 9, 2000.

SPECIFIC CONDUCTANCE: Maximum, 1270 microsiemens per centimeter, Feb. 11 and 12, 2000; Minimum, 412 microsiemens per centimeter, Apr. 10, 2000.

pH: Maximum, 8.0, Oct. 20, 26, and Nov. 3, 1999; Minimum, 5.4, Mar. 5, 2000.

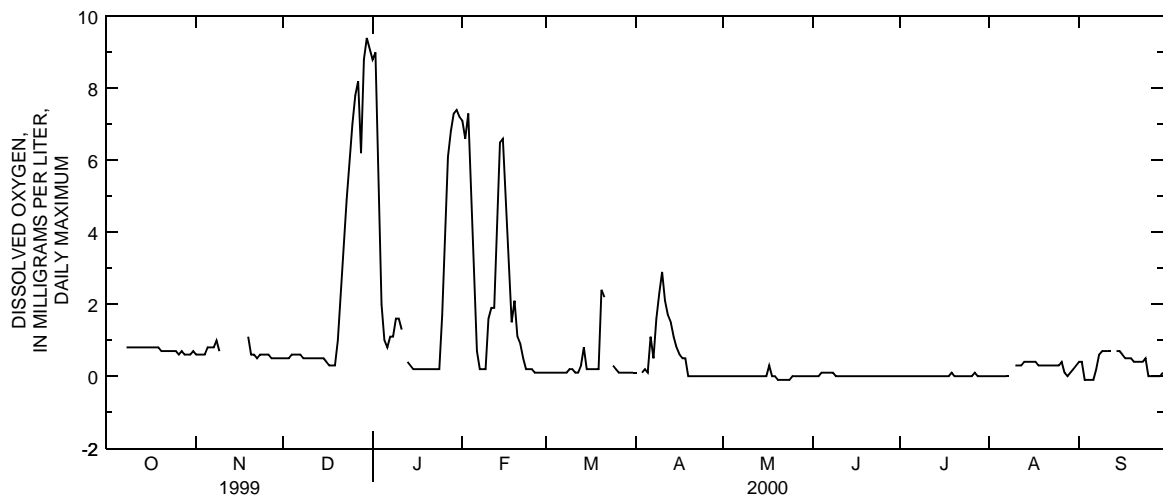
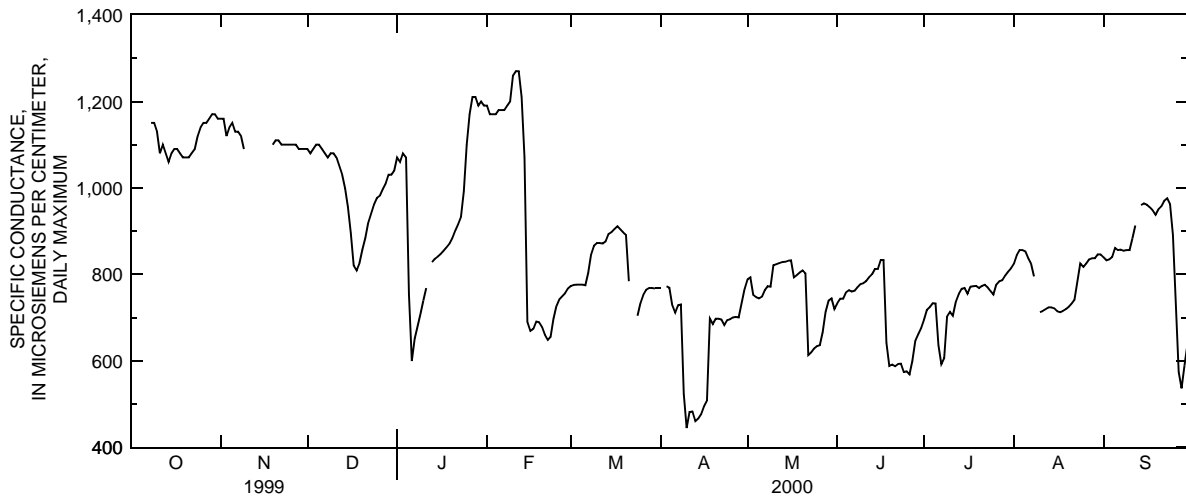
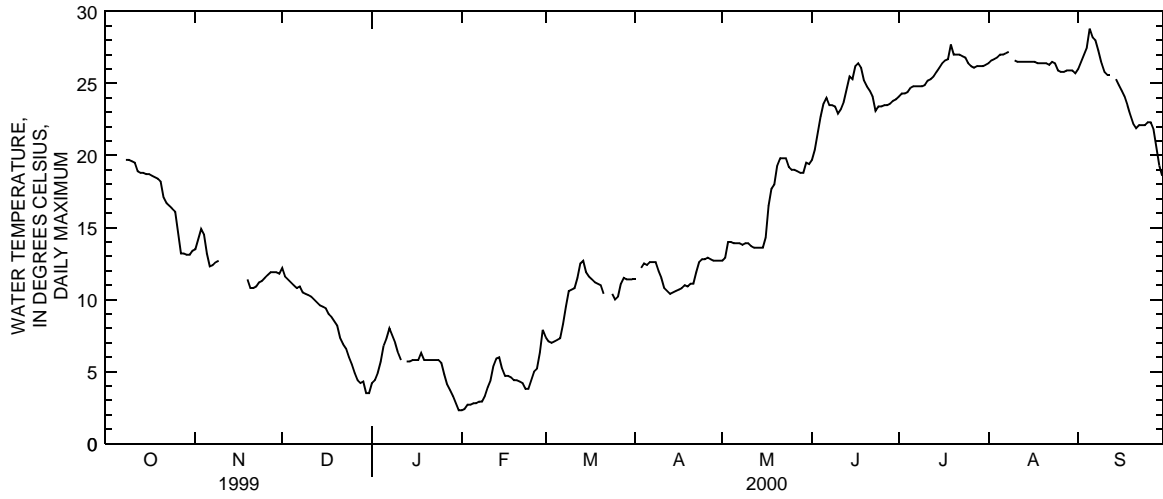
WATER TEMPERATURE: Maximum, 28.8°C, Sept. 5, 2000; Minimum, 2.0°C, Feb. 1, 2000.

TURBIDITY: Maximum, 11.0 NTU, Jan. 4, 2000; Minimum, -1.4 NTU, June 17, 2000.

DISSOLVED OXYGEN: Maximum, 9.4 milligrams per liter, Dec. 30, 1999; Minimum, -3.0 milligrams per liter, Nov. 9, 1999.

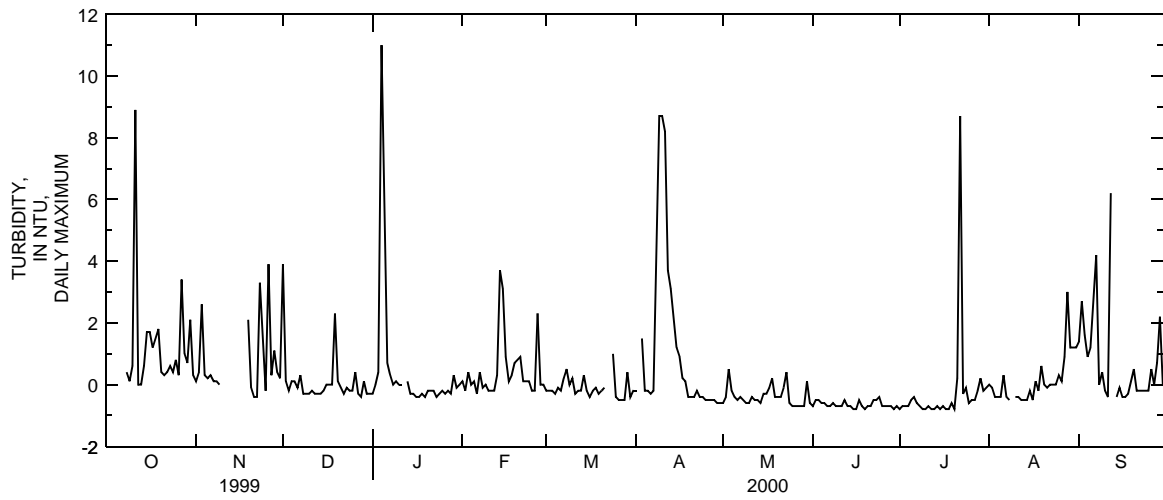
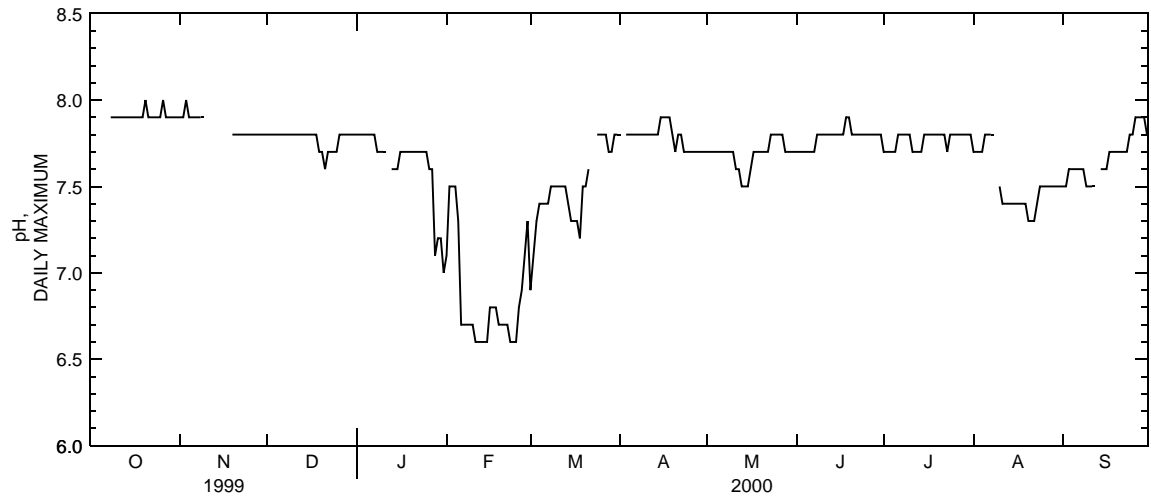
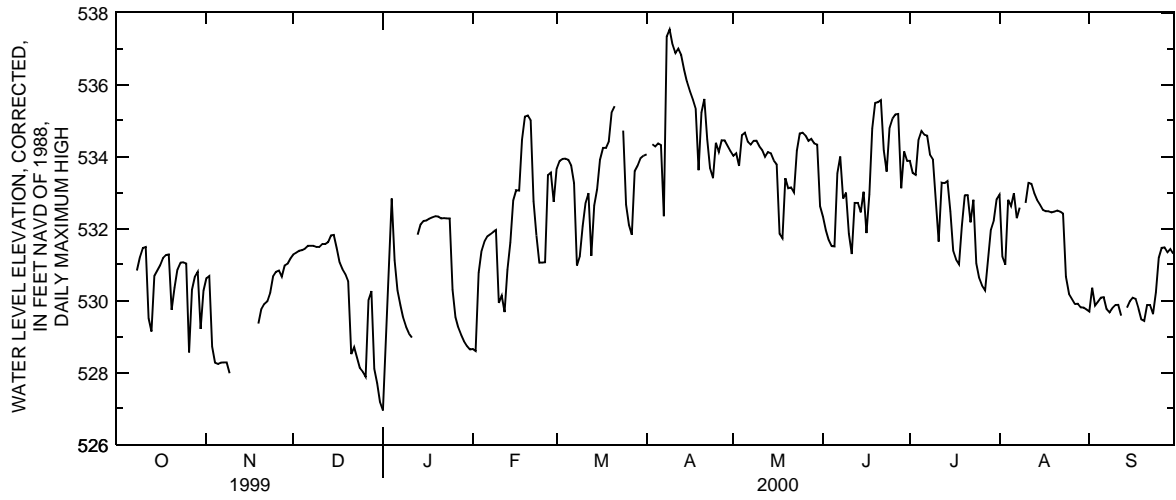
PROJECT DATA
Water Data for Bolton Well Field

391904084362105. LOCAL NUMBER, BU-1155-1I—Continued



PROJECT DATA
Water Data for Bolton Well Field

391904084362105. LOCAL NUMBER, BU-1155-11—Continued



PROJECT DATA
Water Data for Bolton Well Field

391904084362105. LOCAL NUMBER, BU-1155-1I—Continued

WATER-QUALITY RECORDS

WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

[μ S/cm, microsiemens per centimeter; (00028), USGS National Water Information System parameter code; UV, ultraviolet; units/cm, units per centimeter; nm, nanometer; mg/L, milligrams per liter; --, no data; <, concentration or value reported is less than that indicated; mf, membrane filtration; col/100 mL, colonies per 100 milliliter; k, value is estimated from a non-ideal colony count]

Date	Medium code	Agency analyzing sample (code number) (00028)	Agency collecting sample (code number) (00027)	pH, water, field (standard units) (00400)	pH, water, lab (standard units) (00403)	Specific conductance, field (μ S/cm) (00095)	Specific conductance, lab (μ S/cm) (90095)	UV absorbance 254 nm, water, filtered (units/cm) (50624)	UV absorbance 280 nm, water, filtered (units/cm) (61726)
Oct. 6	6	80020	1028	7.9	8.0	1150	1110	--	--
Nov. 17	6	80020	1028	7.9	8.0	1110	1130	.089	.070
Nov. 17	S	80020	1028	7.9	8.0	1110	1140	.089	.070
Jan. 12	6	80020	1028	7.6	7.7	776	804	.101	.076
Mar. 22	6	80020	1028	7.6	8.1	720	717	.087	.065
July 26	6	1028	1028	--	--	--	--	--	--
Aug. 23	6	80020	1028	7.4	--	764	--	.109	.082

Date	Calcium, dissolved (mg/L as Ca) (00915)	Magnesium, dissolved (mg/L as Mg) (00925)	Potassium, dissolved (mg/L as K) (00935)	Sodium, dissolved (mg/L as Na) (00930)	Alkalinity, water, dissolved, lab (mg/L as CaCO ₃) (29801)	Chloride, dissolved (mg/L as Cl) (00940)	Silica, dissolved (mg/L as SiO ₂) (00955)	Sulfate, dissolved (mg/L as SO ₄) (00945)
Oct. 6	74.5	34.5	6.7	105	239	159	5.5	116
Nov. 17	91.0	34.1	7.0	95.4	259	141	5.8	114
Nov. 17	91.3	34.8	7.0	94.6	259	138	5.8	114
Jan. 12	74.6	28.1	5.0	40.0	208	73.6	6.4	77.2
Mar. 22	64.6	23.7	4.1	41.1	194	68.5	5.0	55.6
July 26	--	--	--	--	--	--	--	--
Aug. 23	--	--	--	--	--	--	--	--

Date	Nitrogen, ammonia, dissolved (mg/L as N) (00608)	Nitrogen, nitrate, dissolved (mg/L as N) (00618)	Nitrogen, nitrite, plus nitrate, dissolved (mg/L as N) (00631)	Nitrogen, nitrite, dissolved (mg/L as N) (00613)	Carbon, organic, dissolved (mg/L as C) (00681)	<i>E. coli</i> , water, unfiltered, mf, MI (col/100 mL) (90901)	Coliform, total, water, unfiltered, mf, MI (col/100 mL) (90900)	Boron, dissolved (mg/L as B) (01020)
Oct. 6	.341	--	<.050	--	--	--	--	200
Nov. 17	<.020	--	2.45	--	3.6	--	--	178
Nov. 17	<.020	--	2.43	--	3.7	--	--	183
Jan. 12	<.020	6.64	6.65	.003	3.7	k3	k130	85
Mar. 22	<.020	3.59	3.62	.031	4.0	--	--	67
July 26	--	--	--	--	--	k2	1100	--
Aug. 23	.371	--	<.050	<.010	3.9	<1	77	--

PROJECT DATA
Water Data for Bolton Well Field

295

391905084372901. LOCAL NUMBER, BU-1156-8A

LOCATION.—Latitude 39°19'05", longitude 84°37'29", Butler County, Hydrologic Unit 05080002.

AQUIFER.—Glacial outwash, sand and gravel; 112OTSH.

WELL CHARACTERISTICS.—Observation well drilled by rotasonic techniques, diameter 4.0 in., depth 40 ft from land surface to bottom of screen.

INSTRUMENTATION.—YSI Model 6920 data sonde with turbidity probe set for 60-minute records. Sonde set at a depth of 38.4 ft below land surface.

DATUM.—Altitude of land surface is 541.18 ft above North American Vertical Datum of 1988 (NAVD of 1988). Measuring point is top of inner casing, 4.42 ft above land-surface datum.

REMARK.—This station is part of a network of wells designed to help model flow characteristics from the Great Miami River through the aquifer. Data collection began on July 28, 1999. Negative turbidity and dissolved oxygen values are due to the resolution of the data sonde and the close proximity of the actual value to zero. Rotasonic drilling of a well in close proximity to this well began on Sept. 7, 1999. This is a non-vented sonde; water level data are not corrected for barometric pressure.

PERIOD OF RECORD.—

WATER LEVEL ELEVATION: July 28, 1999 to current year

SPECIFIC CONDUCTANCE: July 28, 1999 to current year

pH: July 28, 1999 to current year

WATER TEMPERATURE: July 28, 1999 to current year

TURBIDITY: July 28, 1999 to current year

DISSOLVED OXYGEN: July 28, 1999 to current year

EXTREMES FOR PERIOD OF RECORD.—

WATER LEVEL ELEVATION: Maximum daily low, 514.39 ft above NAVD of 1988, Feb. 2, 2000; Maximum daily high, 538.00 ft above NAVD of 1988, Apr. 9, 2000.

SPECIFIC CONDUCTANCE: Maximum, 1,220 microsiemens per centimeter, Feb. 29, 2000; Minimum, 602 microsiemens per centimeter, July 25, 2000.

pH: Maximum, 7.7, Apr. 16-23, 2000; Minimum, 6.7, Sept. 11, 12, 13, and 14, 1999.

WATER TEMPERATURE: Maximum, 30.2°C, Aug. 26, 29, 30 and 31, 1999; Minimum, 4.1°C, Mar. 14 and 16, 2000.

TURBIDITY: Maximum, 10 NTU, Sept. 13, 1999; Minimum, -3.0 NTU, Oct. 1, 1999.

DISSOLVED OXYGEN: Maximum, 3.7 milligrams per liter, Sept. 14, 1999; Minimum -1.0 milligram per liter, June 28, 2000.

EXTREMES FOR CURRENT YEAR.—

WATER LEVEL ELEVATION: Maximum daily low, 514.39 ft above NAVD of 1988, Feb. 2, 2000; Maximum daily high, 538.00 ft above NAVD of 1988, Apr. 9, 2000.

SPECIFIC CONDUCTANCE: Maximum, 1,220 microsiemens per centimeter, Feb. 29, 2000; Minimum, 602 microsiemens per centimeter, July 25, 2000.

pH: Maximum, 7.7, Apr. 16-23, 2000; Minimum, 7.3 Oct. 2-4, 1999.

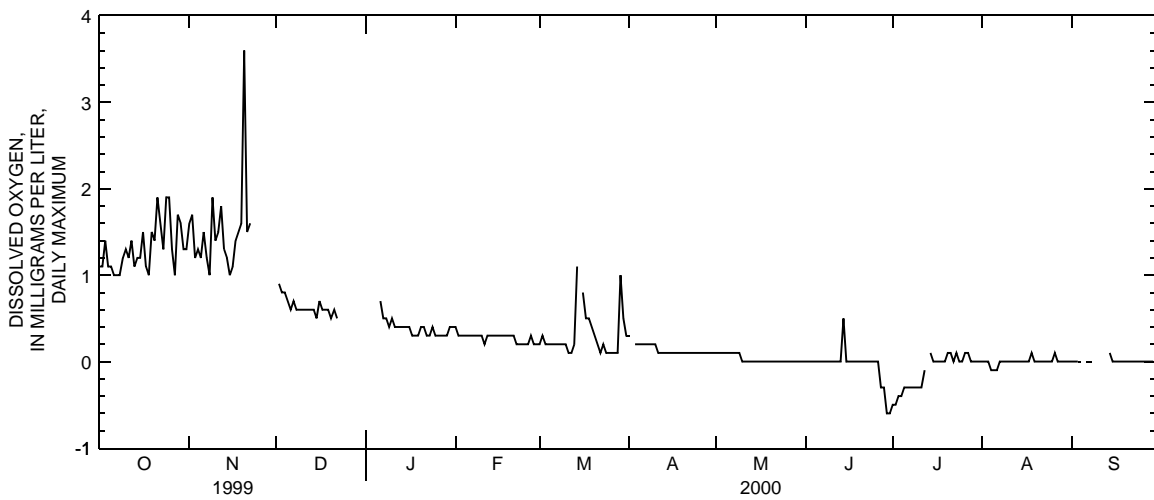
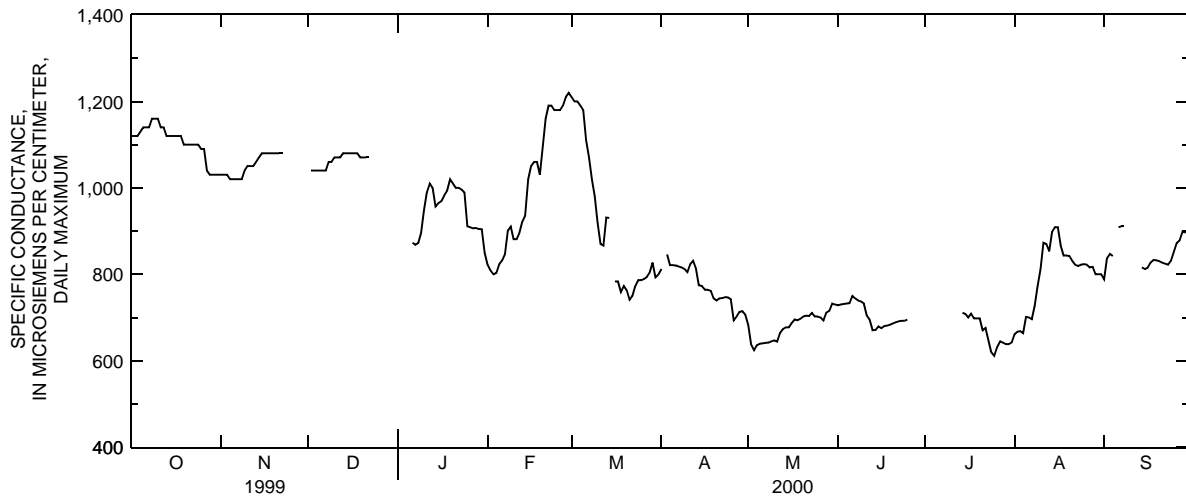
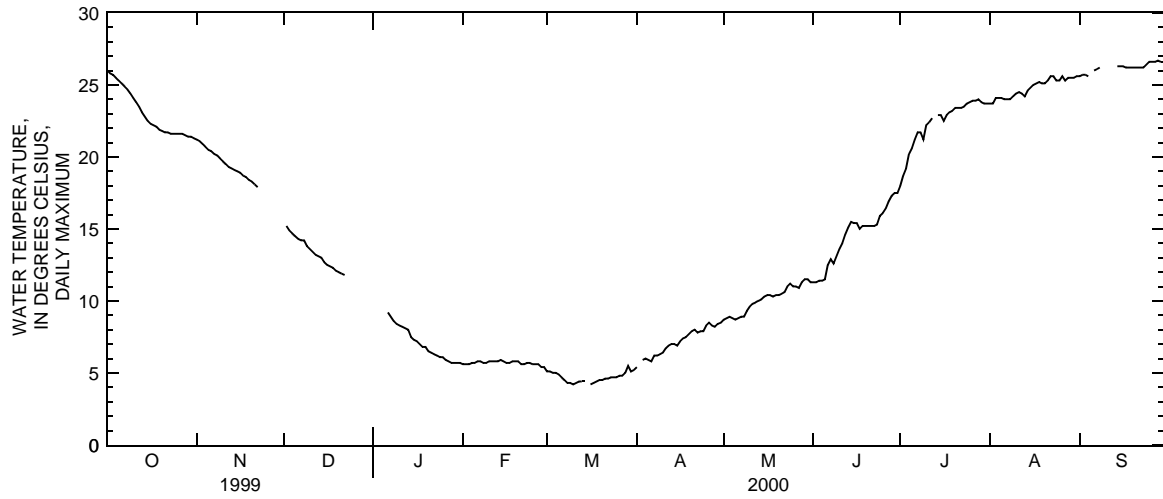
WATER TEMPERATURE: Maximum, 26.7°C, Sept. 28, 2000; Minimum, 4.1°C, Mar. 14 and 16, 2000.

TURBIDITY: Maximum, 1.0 NTU, several days during period of record; Minimum, -3.0 NTU, Oct. 1, 1999.

DISSOLVED OXYGEN: Maximum, 3.6 milligrams per liter, Nov. 20, 1999; Minimum -1.0 milligram per liter, June 28, 2000.

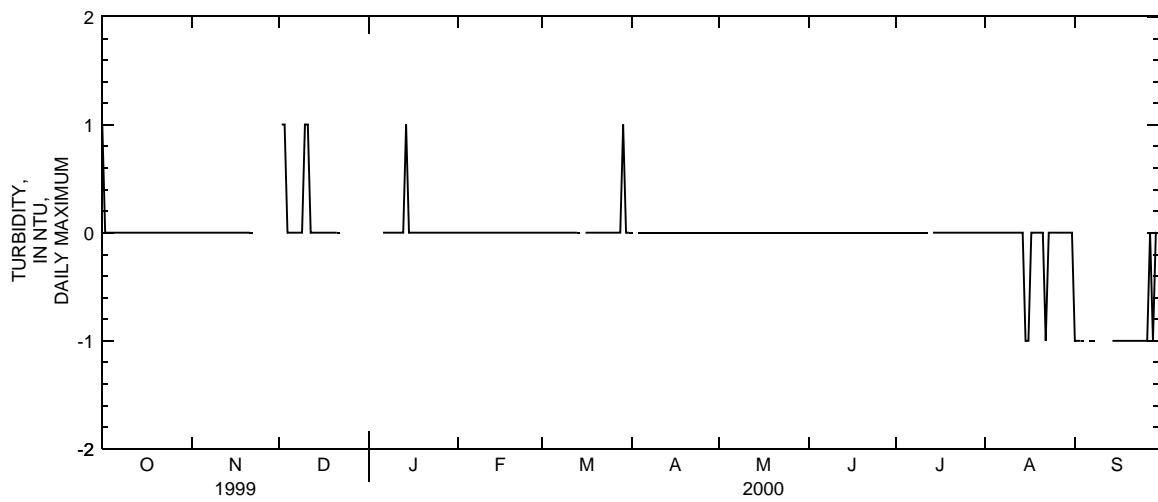
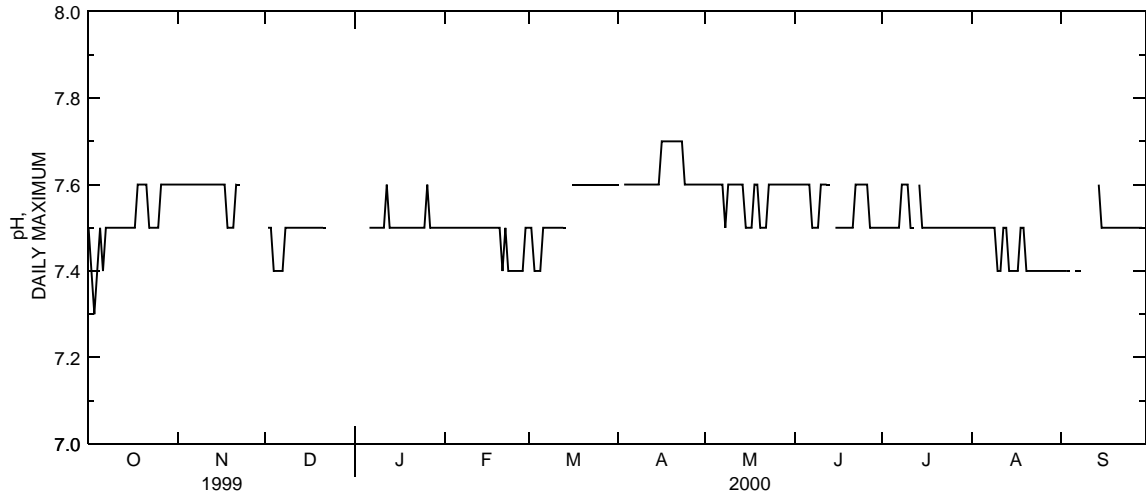
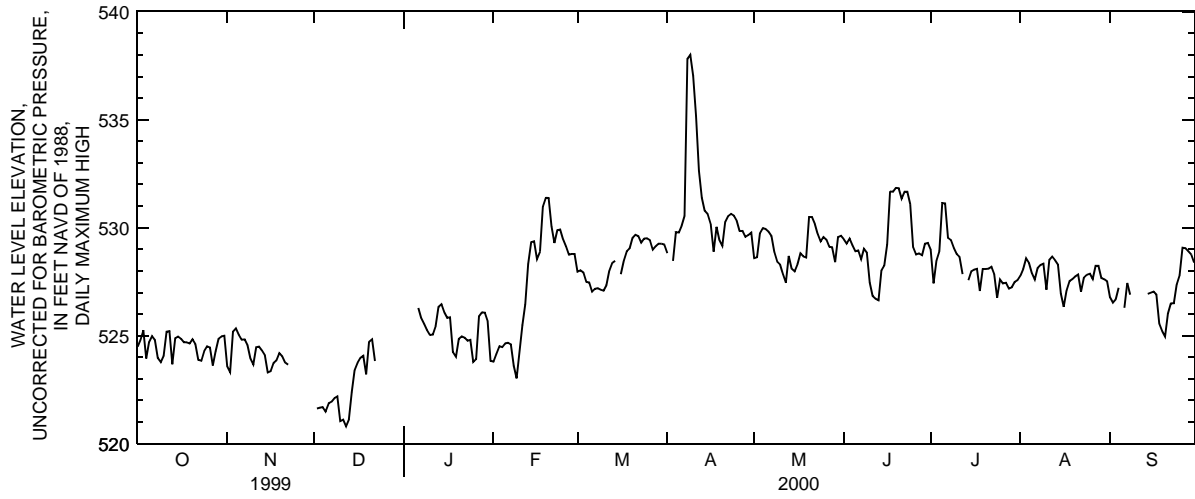
PROJECT DATA
Water Data for Bolton Well Field

391905084372901. LOCAL NUMBER, BU-1156-8A—Continued



PROJECT DATA
Water Data for Bolton Well Field

391905084372901. LOCAL NUMBER, BU-1156-8A—Continued



PROJECT DATA
Water Data for Bolton Well Field

391905084372901. LOCAL NUMBER, BU-1156-8A—Continued

WATER-QUALITY RECORDS

WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

[μ S/cm, microsiemens per centimeter; (00028), USGS National Water Information System parameter code; UV, ultraviolet; units/cm, units per centimeter; nm, nanometer; mg/L, milligrams per liter; --, no data; <, concentration or value reported is less than that indicated; NAVD of 1988, North American Vertical Datum of 1988; mf, membrane filtration; col/100 mL, colonies per 100 milliliter]

Date	Medium code	Agency analyzing sample (code number) (00028)	Agency collecting sample (code number) (00027)	pH, water, field (standard units) (00400)	pH, water, lab (standard units) (00403)	Specific conductance, field (μ S/cm) (00095)	Specific conductance, lab (μ S/cm) (90095)	UV absorbance 254 nm, water, filtered (units/cm) (50624)	UV absorbance 280 nm, water, filtered (units/cm) (61726)
Dec. 8	6	80020	1028	7.5	7.8	1060	1080	.063	.050
Mar. 15	6	80020	1028	7.6	8.0	770	780	.058	.044
Aug. 9	6	1028	1028	--	--	--	--	--	--
Sept. 6	6	80020	1028	7.4	7.7	899	797	.065	.049

Date	Calcium, dissolved (mg/L as Ca) (00915)	Magnesium, dissolved (mg/L as Mg) (00925)	Potassium, dissolved (mg/L as K) (00935)	Sodium, dissolved (mg/L as Na) (00930)	Alkalinity, water, dissolved, lab (mg/L as CaCO ₃) (29801)	Chloride, dissolved (mg/L as Cl) (00940)	Silica, dissolved (mg/L as SiO ₂) (00955)	Sulfate, dissolved (mg/L as SO ₄) (00945)	Nitrogen, ammonia, dissolved (mg/L as N) (00608)
Dec. 8	68.7	37.0	4.0	96.4	235	22.1	5.6	11.7	.267
Mar. 15	48.5	24.0	4.1	72.9	215	70.7	3.1	59.8	<.020
Aug. 9	--	--	--	--	--	--	--	--	--
Sept. 6	76.4	26.0	7.0	46.8	201	92.2	7.7	72.8	--

Date	Nitrogen, nitrate, dissolved (mg/L as N) (00618)	Nitrogen, nitrite, plus nitrate, dissolved (mg/L as N) (00631)	Nitrogen, nitrite, dissolved (mg/L as N) (00613)	Carbon, organic, dissolved (mg/L as C) (00681)	Depth of well, total (feet) (72008)	Elevation of land surface datum (feet above NAVD of 1988) (72000)	<i>E. coli</i> , water, unfiltered, mf, MI (col/100 mL) (90901)	Coliform, total, water, unfiltered, mf, MI (col/100 mL) (90900)	Boron, dissolved (mg/L as B) (01020)
Dec. 8	--	.570	--	2.5	40.00	541.18	<1	61	152
Mar. 15	5.11	5.42	.309	2.6	40.00	541.18	--	--	126
Aug. 9	--	--	--	--	40.00	541.18	<1	<1	--
Sept. 6	--	--	--	2.4	40.00	541.18	<1	<1	129

PROJECT DATA
Water Data for Bolton Well Field

305

391905084372902. LOCAL NUMBER, BU-1157-8B

LOCATION.—Latitude 39°19'05", longitude 84°37'29", Butler County, Hydrologic Unit 05080002.

AQUIFER.—Glacial outwash, sand and gravel; 112OTSH.

WELL CHARACTERISTICS.—Observation well drilled by rotasonic techniques, diameter 4.0 in., depth 60 ft from land surface to bottom of screen.

INSTRUMENTATION.—YSI Model 6920 data sonde set for 60-minute records. Sonde set at a depth of 58.2 ft below land surface.

DATUM.—Altitude of land surface is 543.74 ft above North American Vertical Datum of 1988 (NAVD of 1988). Measuring point is top of inner casing, 2.41 ft above land-surface datum.

REMARK.—This station is part of a network of wells designed to help model flow characteristics from the Great Miami River through the aquifer. Data collection began on July 28, 1999. Negative and dissolved oxygen values are due to the resolution of the data sonde and the close proximity of the actual value to zero. This is a non-vented sonde; water level data are not corrected for barometric pressure.

PERIOD OF RECORD.—

WATER LEVEL ELEVATION: July 28, 1999 to current year

SPECIFIC CONDUCTANCE: July 28, 1999 to current year

pH: July 28, 1999 to current year

WATER TEMPERATURE: July 28, 1999 to current year

DISSOLVED OXYGEN: July 28, 1999 to current year

EXTREMES FOR PERIOD OF RECORD.—

WATER LEVEL ELEVATION: Maximum daily low, 520.37 ft above NAVD of 1988, Dec. 12, 1999; Maximum daily high, 537.66 ft above NAVD of 1988, Apr. 9, 2000.

SPECIFIC CONDUCTANCE: Maximum, 1130 microsiemens per centimeter, Apr. 12, 2000; Minimum, 652 microsiemens per centimeter, Aug. 9, 2000.

pH: Maximum, 7.8, July 12, 2000; Minimum, 7.1, several days during period of record

WATER TEMPERATURE: Maximum, 29.0°C, Sept. 24, 25, 26, and 29, 1999; Minimum, 6.1°C, Mar. 24-29, 2000.

DISSOLVED OXYGEN: Maximum, 9.8 milligrams per liter, Aug. 10, 1999; Minimum -0.2 milligram per liter, July 3-12, 2000.

EXTREMES FOR CURRENT YEAR.—

WATER LEVEL ELEVATION: Maximum daily low, 520.37 ft above NAVD of 1988, Dec. 12, 1999; Maximum daily high, 537.66 ft above NAVD of 1988, Apr. 9, 2000.

SPECIFIC CONDUCTANCE: Maximum, 1130 microsiemens per centimeter, Apr. 12, 2000; Minimum, 652 microsiemens per centimeter, Aug. 9, 2000.

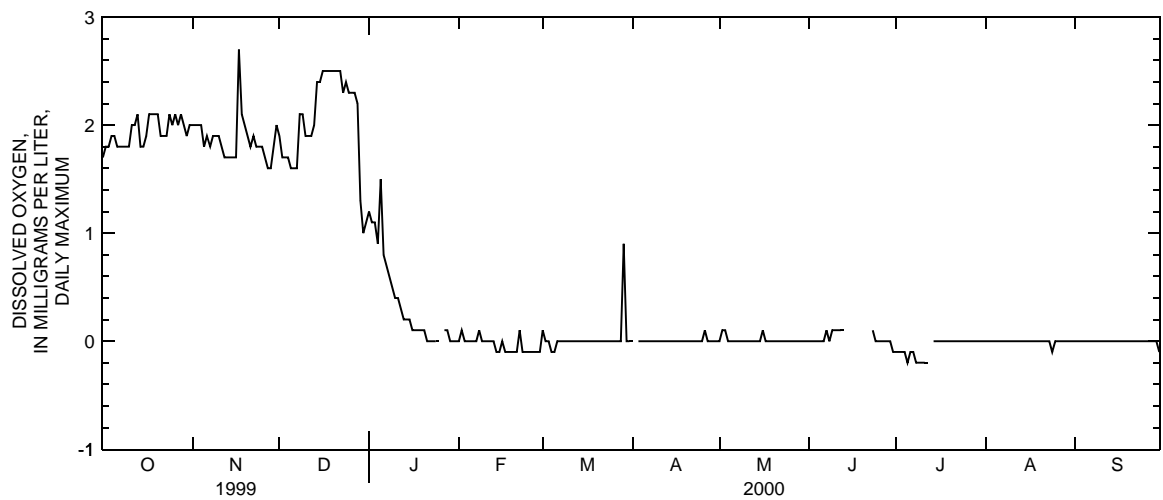
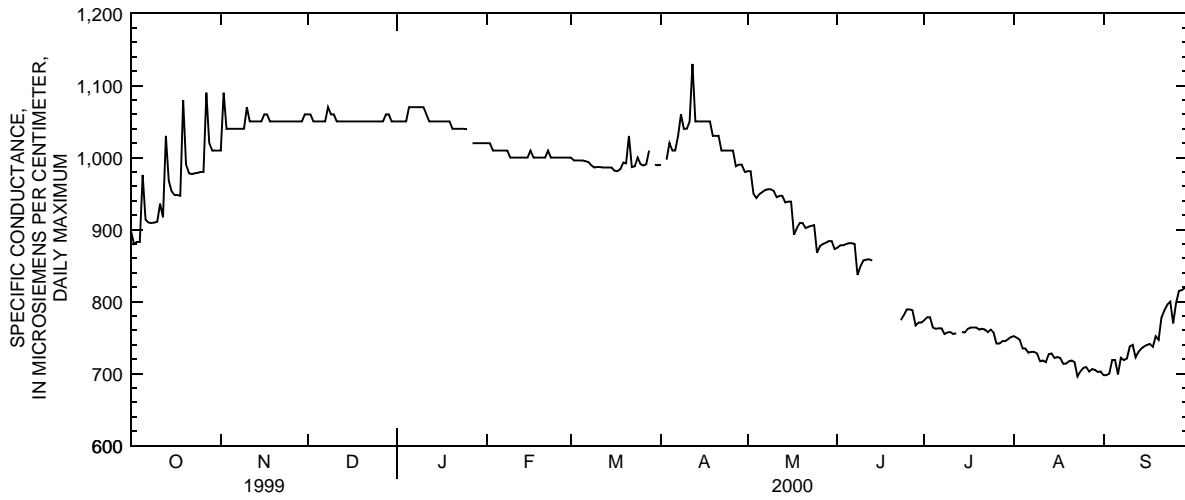
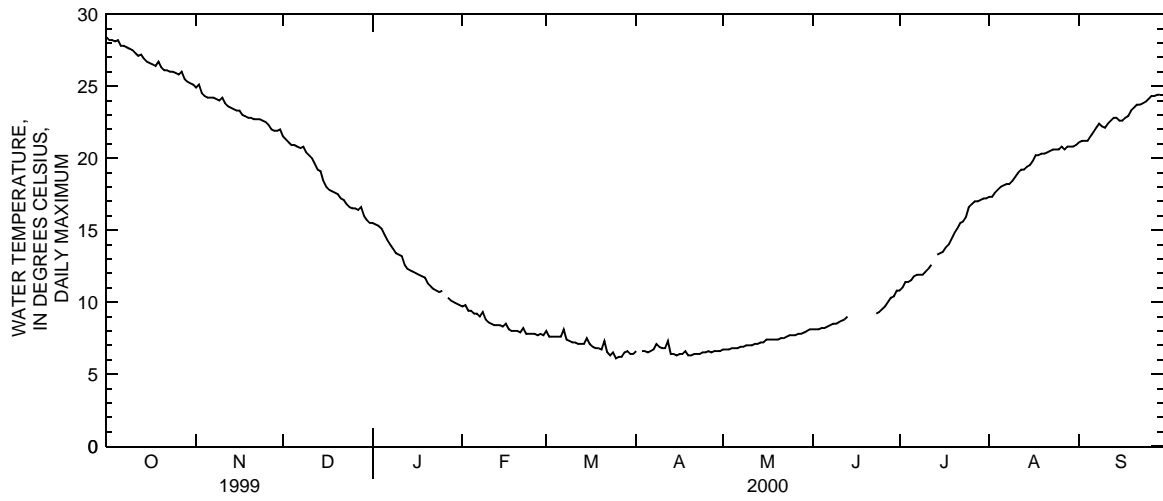
pH: Maximum, 7.8, July 12, 2000; Minimum, 7.1, several days during period of record.

WATER TEMPERATURE: Maximum, 28.4°C, Oct. 1, 1999; Minimum, 6.1°C, Mar. 24 to 29, 2000.

DISSOLVED OXYGEN: Maximum, 2.7 milligrams per liter, Nov. 17, 1999; Minimum -0.2 milligram per liter, July 3 to 12, 2000.

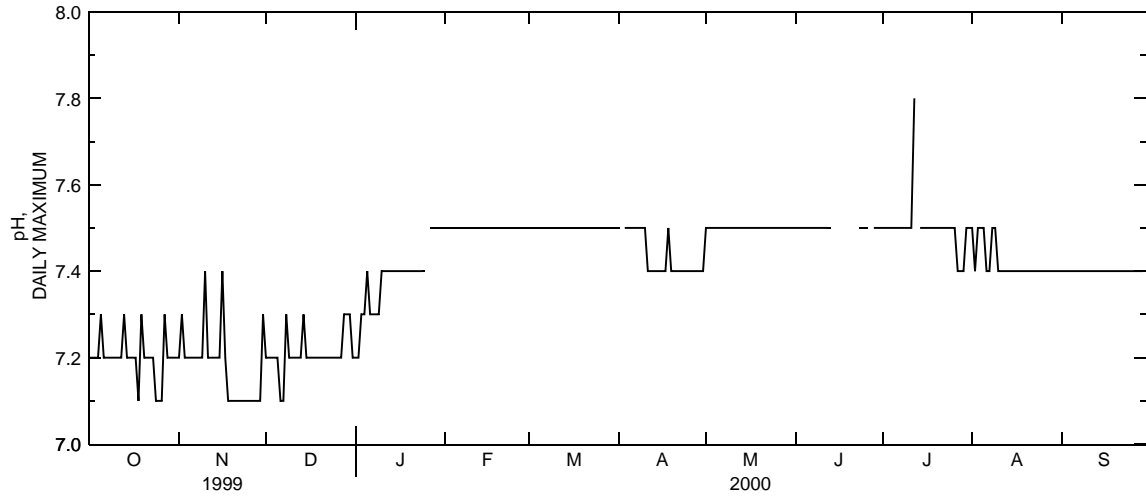
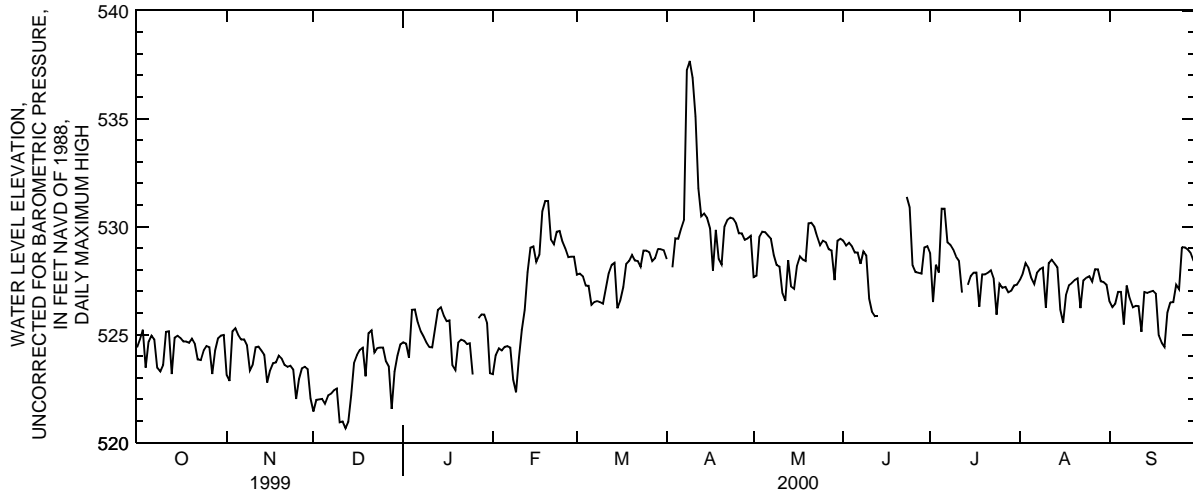
PROJECT DATA
Water Data for Bolton Well Field

391905084372902. LOCAL NUMBER, BU-1157-8B—Continued



PROJECT DATA
Water Data for Bolton Well Field

391905084372902. LOCAL NUMBER, BU-1157-8B—Continued



PROJECT DATA
Water Data for Bolton Well Field

391905084372902. LOCAL NUMBER, BU-1157-8B—Continued

WATER-QUALITY RECORDS

WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

[μ S/cm, microsiemens per centimeter; (00028), USGS National Water Information System parameter code; UV, ultraviolet; units/cm, units per centimeter; nm, nanometer; mg/L, milligrams per liter; --, no data; <, concentration or value reported is less than that indicated; NAVD of 1988, North American Vertical Datum of 1988; mf, membrane filtration; col/100 mL, colonies per 100 milliliter; k, value is estimated from a non-ideal colony count]

Date	Medium code	Agency analyzing sample (code number) (00028)	Agency collecting sample (code number) (00027)	pH, water, field (standard units) (00400)	pH, water, lab (standard units) (00403)	Specific conductance, field (μ S/cm) (00095)	Specific conductance, lab (μ S/cm) (90095)	UV absorbance 254 nm, water, filtered (units/cm) (50624)	UV absorbance 280 nm, water, filtered (units/cm) (61726)
Oct. 13	6	80020	1028	7.4	7.5	1010	961	--	--
Jan. 5	6	80020	1028	7.3	7.7	1060	1060	.048	.037
Apr. 12	6	80020	1028	7.4	7.7	1130	1140	.043	.033
July 12	6	80020	1028	7.7	7.8	691	733	.056	.049
Aug. 9	6	1028	1028	--	--	--	--	--	--

Date	Calcium, dissolved (mg/L as Ca) (00915)	Magnesium, dissolved (mg/L as Mg) (00925)	Potassium, dissolved (mg/L as K) (00935)	Sodium, dissolved (mg/L as Na) (00930)	Alkalinity, water, dissolved, lab (mg/L as CaCO ₃) (29801)	Chloride, dissolved (mg/L as Cl) (00940)	Silica, dissolved (mg/L as SiO ₂) (00955)	Sulfate, dissolved (mg/L as SO ₄) (00945)	Nitrogen, ammonia, dissolved (mg/L as N) (00608)
Oct. 13	73.3	28.8	7.7	87.2	208	145	8.6	103	.021
Jan. 5	74.6	30.6	6.0	98.7	228	140	6.3	108	.031
Apr. 12	86.0	39.5	4.4	74.9	234	151	5.1	106	<.020
July 12	65.2	31.9	3.7	39.3	218	65.5	5.6	59.7	<.020
Aug. 9	--	--	--	--	--	--	--	--	--

Date	Nitrogen, nitrate, dissolved (mg/L as N) (00618)	Nitrogen, nitrite, plus nitrate, dissolved (mg/L as N) (00631)	Nitrogen, nitrite, dissolved (mg/L as N) (00613)	Carbon, organic, dissolved (mg/L as C) (00681)	Depth of well, total (feet) (72008)	Elevation of land surface datum (feet above NAVD of 1988) (72000)	E. coli, water, unfiltered, mf, MI (col/100 mL) (90901)	Coliform, total, water, unfiltered, mf, MI (col/100 mL) (90900)	Boron, dissolved (mg/L as B) (01020)
Oct. 13	--	<.050	--	--	60.00	543.74	<1	k4	144
Jan. 5	1.69	1.98	.107	2.5	60.00	543.74	<1	36	124
Apr. 12	2.84	3.12	.282	2.1	60.00	543.74	<1	<1	113
July 12	3.07	3.63	.562	2.4	60.00	543.74	--	--	159
Aug. 9	--	--	--	--	60.00	544.73	<1	<1	--

PROJECT DATA
Water Data for Bolton Well Field

391905084372903. LOCAL NUMBER, BU-1158-8C

LOCATION.—Latitude 39°19'05", longitude 84°37'29", Butler County, Hydrologic Unit 05080002.

AQUIFER.—Glacial outwash, sand and gravel; 112OTSH.

WELL CHARACTERISTICS.—Observation well drilled by rotasonic techniques, diameter 4.0 in., depth 96 ft from land surface to bottom of screen.

INSTRUMENTATION.—YSI Model 6920 data sonde set for 60-minute records. Sonde set at a depth of 93.9 ft below land surface.

DATUM.—Altitude of land surface is 545.46 ft above North American Vertical Datum of 1988 (NAVD of 1988). Measuring point is top of inner casing, 2.24 ft above land-surface datum.

REMARK.—This station is part of a network of wells designed to help model flow characteristics from the Great Miami River through the aquifer. Data collection began on July 27, 1999. Negative dissolved oxygen values are due to the resolution of the data sonde and the close proximity of the actual value to zero. This is a non-vented sonde; water level data are not corrected for barometric pressure.

PERIOD OF RECORD.—

WATER LEVEL ELEVATION: July 27, 1999 to current year

SPECIFIC CONDUCTANCE: July 27, 1999 to current year

pH: July 27, 1999 to current year

WATER TEMPERATURE: July 27, 1999 to current year

DISSOLVED OXYGEN: July 27, 1999 to current year

EXTREMES FOR PERIOD OF RECORD.—

WATER LEVEL ELEVATION: Maximum daily low, 518.33 ft above NAVD of 1988, Dec. 12, 1999; Maximum daily high, 538.01 ft above NAVD of 1988, Apr. 9, 2000.

SPECIFIC CONDUCTANCE: Maximum, 1130 microsiemens per centimeter, Nov. 3, 1999; Minimum, 609 microsiemens per centimeter, Aug. 29, 2000.

pH: Maximum, 7.6, July 29, 1999; Minimum, 7.2, several days during period of record.

WATER TEMPERATURE: Maximum, 24.8°C, Oct. 14, 1999; Minimum, 10.8°C, June 29, 2000.

DISSOLVED OXYGEN: Maximum, 1.1 milligrams per liter, Jan. 1 and 2, 2000; Minimum, -0.7 milligram per liter, Dec. 23, 1999.

EXTREMES FOR CURRENT YEAR.—

WATER LEVEL ELEVATION: Maximum daily low, 518.33 ft above NAVD of 1988, Dec. 12, 1999; Maximum daily high, 538.01 ft above NAVD of 1988, Apr. 9, 2000.

SPECIFIC CONDUCTANCE: Maximum, 1130 microsiemens per centimeter, Nov. 3, 1999; Minimum, 609 microsiemens per centimeter, Aug. 29, 2000.

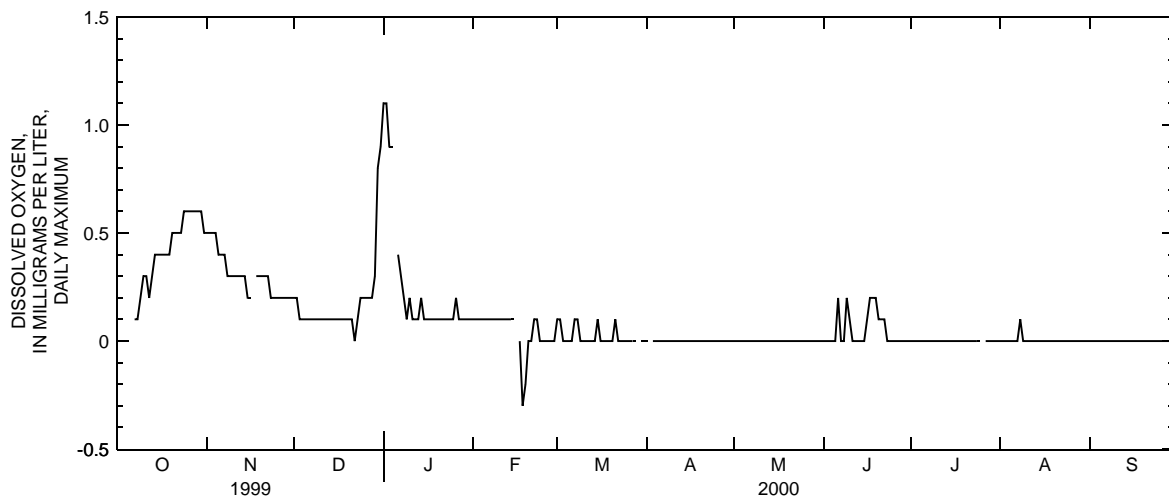
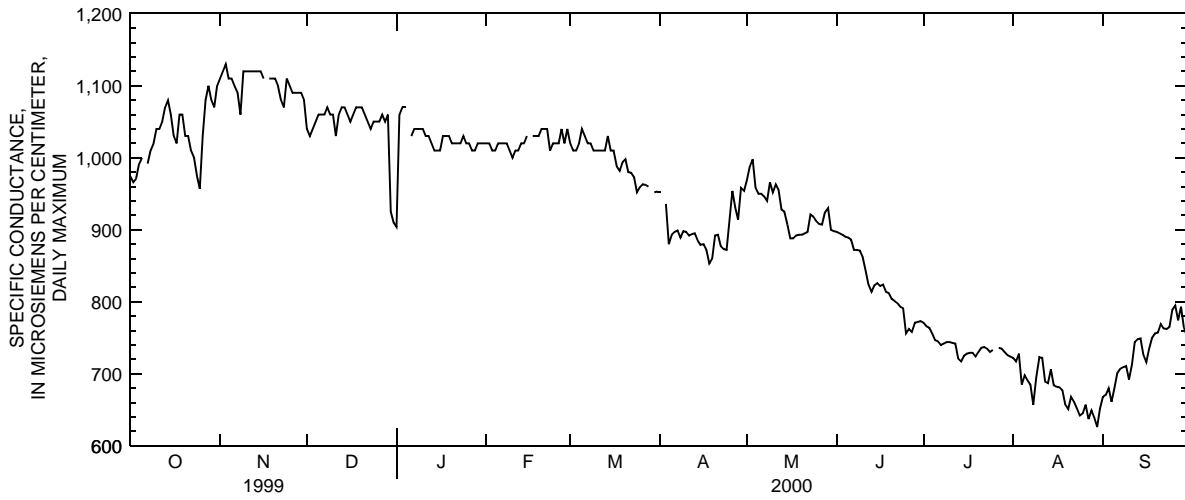
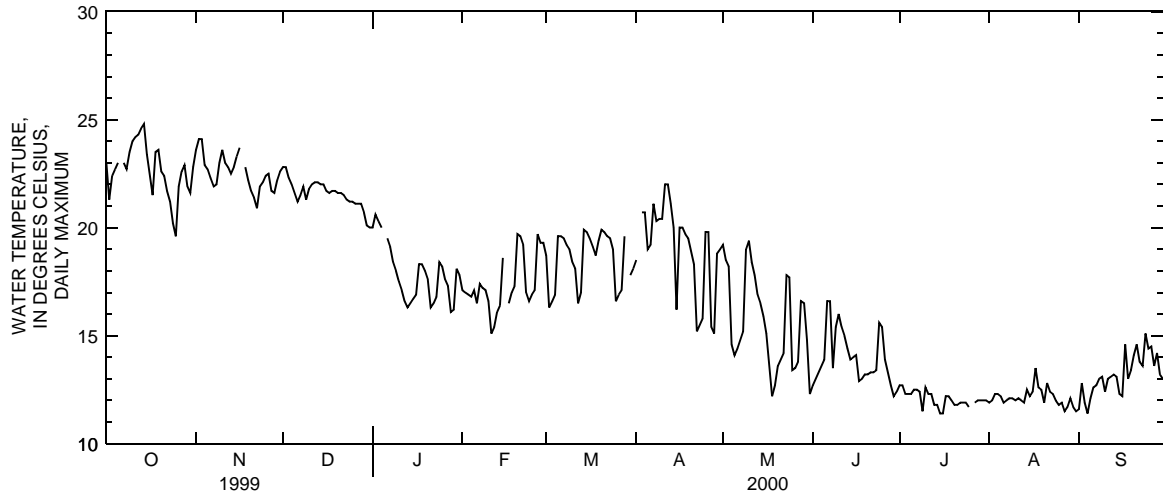
pH: Maximum, 7.5, several days during period of record; Minimum, 7.2, several days during period of record.

WATER TEMPERATURE: Maximum, 24.8°C, Oct. 14, 1999; Minimum, 10.8°C, June 29, 2000.

DISSOLVED OXYGEN: Maximum, 1.1 milligrams per liter, Jan. 1 and 2, 2000; Minimum, -0.7 milligram per liter, Dec. 23, 1999.

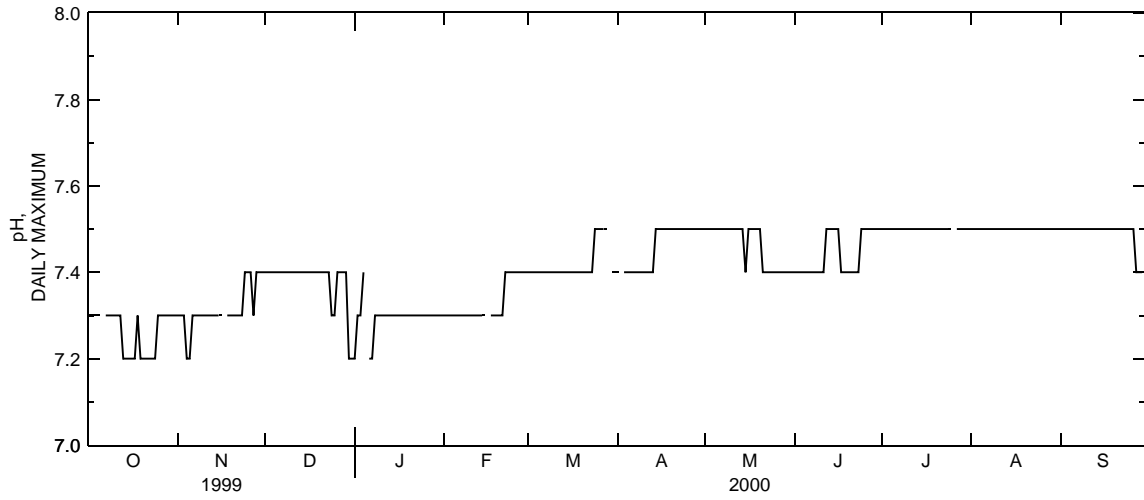
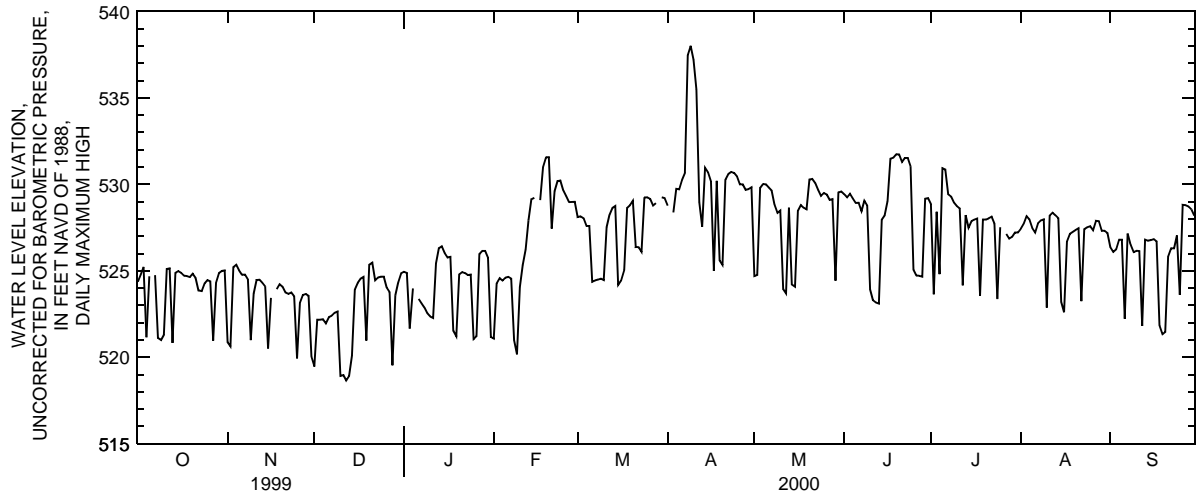
PROJECT DATA
Water Data for Bolton Well Field

391905084372903. LOCAL NUMBER, BU-1158-8C—Continued



PROJECT DATA
Water Data for Bolton Well Field

391905084372903. LOCAL NUMBER, BU-1158-8C—Continued



PROJECT DATA
Water Data for Bolton Well Field

391905084372903. LOCAL NUMBER, BU-1158-8C—Continued

WATER-QUALITY RECORDS

WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

[μ S/cm, microsiemens per centimeter; (00028), USGS National Water Information System parameter code; UV, ultraviolet; units/cm, units per centimeter; nm, nanometer; mg/L, milligrams per liter; --, no data; <, concentration or value reported is less than that indicated; NAVD of 1988, North American Vertical Datum of 1988; mf, membrane filtration; col/100 mL, colonies per 100 milliliter]

Date	Medium code	Agency analyzing sample (code number) (00028)	Agency collecting sample (code number) (00027)	pH, water, field (standard units) (00400)	pH, water, lab (standard units) (00403)	Specific conductance, field (μ S/cm) (00095)	Specific conductance, lab (μ S/cm) (90095)	UV absorbance 254 nm, water, filtered (units/cm) (50624)	UV absorbance 280 nm, water, filtered (units/cm) (61726)
Oct. 27	6	80020	1028	--	7.5	--	1030	--	--
Jan. 19	6	80020	1028	7.3	7.6	1030	1040	.035	.027
Mar. 1	6	80020	1028	7.5	7.6	1060	1030	.028	.023
Aug. 9	6	80020	1028	7.5	7.7	680	658	.024	.018
Sept. 6	6	1028	1028	--	--	--	--	--	--

Date	Calcium, dissolved (mg/L as Ca) (00915)	Magnesium, dissolved (mg/L as Mg) (00925)	Potassium, dissolved (mg/L as K) (00935)	Sodium, dissolved (mg/L as Na) (00930)	Alkalinity, water, dissolved, lab (mg/L as CaCO ₃) (29801)	Chloride, dissolved (mg/L as Cl) (00940)	Silica, dissolved (mg/L as SiO ₂) (00955)	Sulfate, dissolved (mg/L as SO ₄) (00945)	Nitrogen, ammonia, dissolved (mg/L as N) (00608)
Oct. 27	74.6	30.1	6.0	79.8	199	144	8.3	109	<.020
Jan. 19	72.0	29.4	5.4	97.6	215	137	7.4	108	<.020
Mar. 1	69.2	27.2	4.9	89.7	217	133	7.5	107	<.020
Aug. 9	55.3	22.8	3.1	45.1	201	47.1	6.2	52.9	<.020
Sept. 6	--	--	--	--	--	--	--	--	--

Date	Nitrogen, nitrate, dissolved (mg/L as N) (00618)	Nitrogen, nitrite plus nitrate, dissolved (mg/L as N) (00631)	Nitrogen, nitrite, dissolved (mg/L as N) (00613)	Carbon, organic, dissolved (mg/L as C) (00681)	Depth of well, total (feet) (72008)	Elevation of land surface datum (feet above NAVD of 1988) (72000)	<i>E. coli</i> , water, unfiltered, mf, MI (col/100 mL) (90901)	Coliform, total, water, unfiltered, mf, MI (col/100 mL) (90900)	Boron, dissolved (mg/L as B) (01020)
Oct. 27	--	<.050	--	--	96.00	545.46	<1	<1	161
Jan. 19	1.85	1.89	.044	2.0	96.00	545.46	<1	<1	122
Mar. 1	.627	.660	.033	1.7	96.00	545.46	<1	<1	154
Aug. 9	4.93	4.94	.016	1.3	96.00	545.46	<1	<1	66
Sept. 6	--	--	--	--	96.00	545.46	<1	<1	--

PROJECT DATA
Water Data for Bolton Well Field

323

391905084372904. LOCAL NUMBER, BU-1159-8D

LOCATION.—Latitude 39°19'05", longitude 84°37'29", Butler County, Hydrologic Unit 05080002.

AQUIFER.—Glacial outwash, sand and gravel; 112OTSH.

WELL CHARACTERISTICS.—Observation well drilled by rotasonic techniques, diameter 4.0 in., depth 185 ft from land surface to bottom of screen.

INSTRUMENTATION.—SI Model 6920 data sonde set for 60-minute records. Sonde set at a depth of 183.5 ft below land surface.

DATUM.—Altitude of land surface is 545.75 ft above North American Vertical Datum of 1988 (NAVD of 1988). Measuring point is top of inner casing, 2.20 ft above land-surface datum.

REMARK.—This station is part of a network of wells designed to help model flow characteristics from the Great Miami River through the aquifer. Data collection began on July 28, 1999. Negative dissolved oxygen values are due to the resolution of the data sonde and the close proximity of the actual value to zero. This is a non-vented sonde; water level data are not corrected for barometric pressure.

PERIOD OF RECORD.—

WATER LEVEL ELEVATION: July 28, 1999 to current year

SPECIFIC CONDUCTANCE: July 28, 1999 to current year

pH: July 28, 1999 to current year

WATER TEMPERATURE: July 28, 1999 to current year

DISSOLVED OXYGEN: July 28, 1999 to current year

EXTREMES FOR PERIOD OF RECORD.—

WATER LEVEL ELEVATION: Maximum daily low, 515.24 ft above NAVD of 1988, Dec. 12, 1999; Maximum daily high, 537.90 ft above NAVD of 1988, Apr. 9, 2000.

SPECIFIC CONDUCTANCE: Maximum, 646 microsiemens per centimeter, Jan. 1 and 12, 2000; Minimum, 601 microsiemens per centimeter, July 31, 1999.

pH: Maximum, 7.5, July 29-Aug. 9, Nov. 11, and 16, 1999; Minimum, 7.3, several days during period of record.

WATER TEMPERATURE: Maximum, 12.6°C, several days during period of record; Minimum, 12.3°C, Jan. 5, 2000.

DISSOLVED OXYGEN: Maximum, 1.8 milligrams per liter, Aug. 21, 1999; Minimum -0.2 milligram per liter, several days during period of record.

EXTREMES FOR CURRENT YEAR.—

WATER LEVEL ELEVATION: Maximum daily low, 515.24 ft above NAVD of 1988, Dec. 12, 1999; Maximum daily high, 537.90 ft above NAVD of 1988, Apr. 9, 2000.

SPECIFIC CONDUCTANCE: Maximum, 646 microsiemens per centimeter, Jan. 1 and 12, 2000; Minimum, 602 microsiemens per centimeter, Mar. 21, 2000.

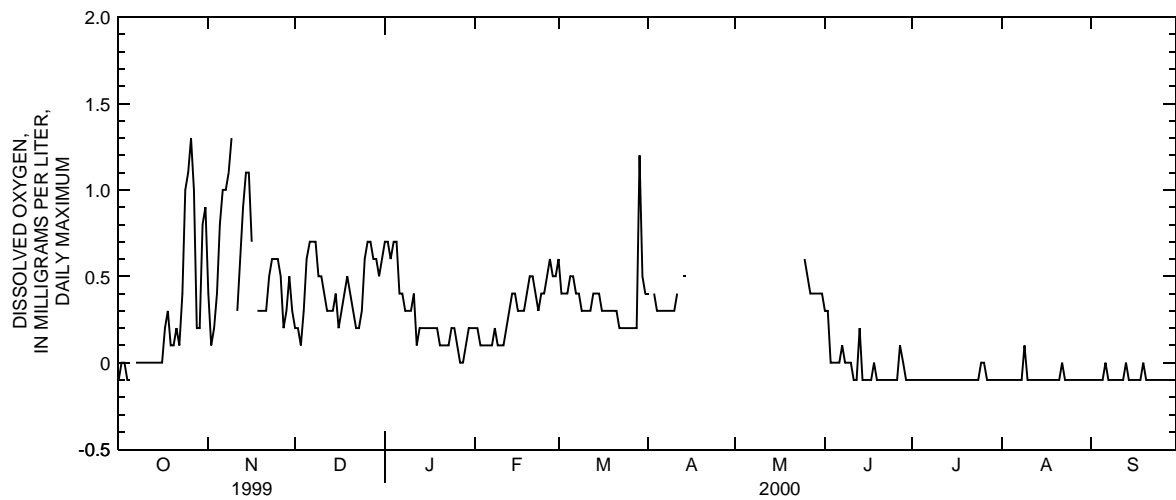
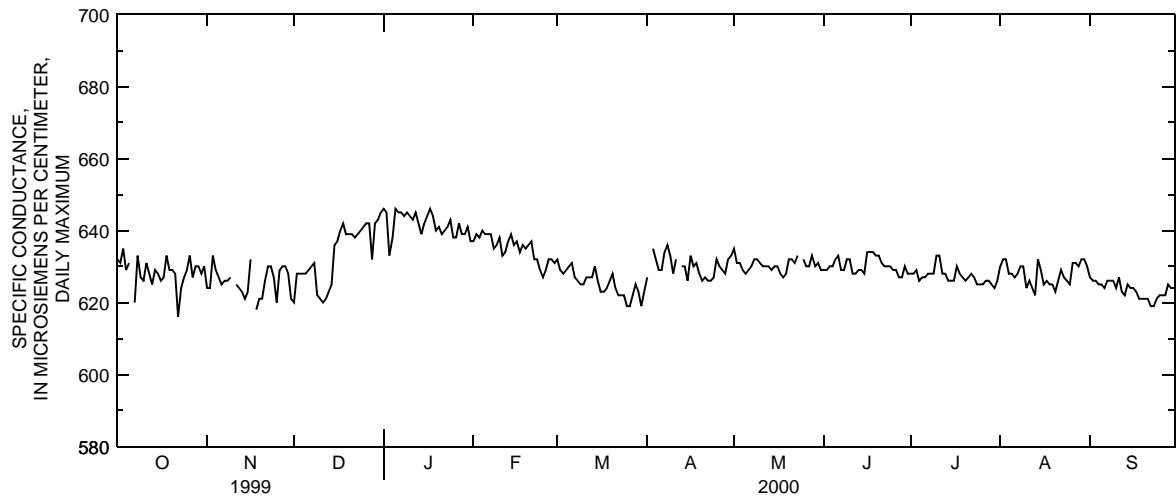
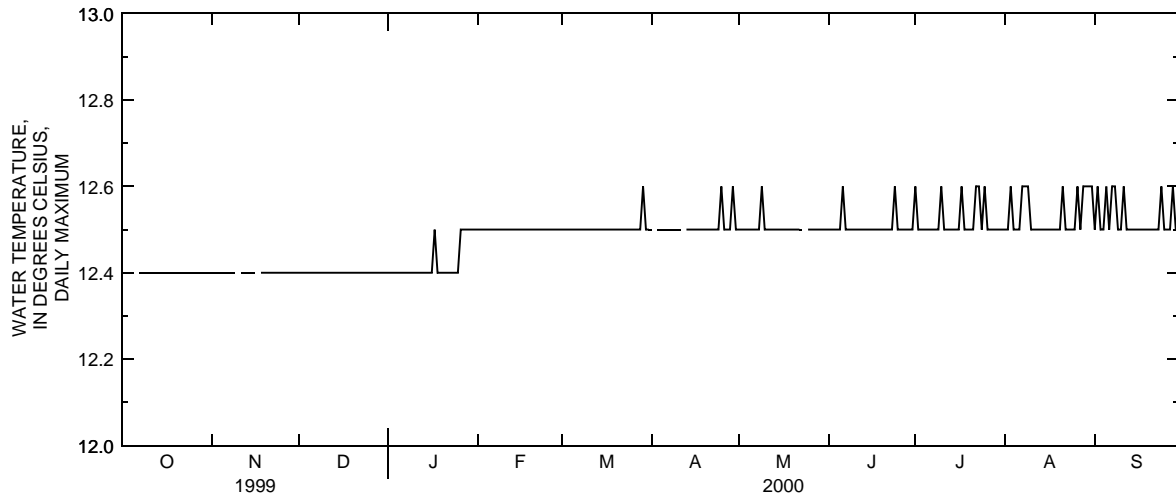
pH: Maximum, 7.5, Nov. 11 and 16, 1999; Minimum, 7.3, several days during period of record.

WATER TEMPERATURE: Maximum, 12.6°C, several days during period of record; Minimum, 12.3°C, Jan. 5, 2000.

DISSOLVED OXYGEN: Maximum, 1.3 milligrams per liter, Oct. 26, 1999 and Nov. 9, 1999; Minimum -0.2 milligram per liter, several days during period of record.

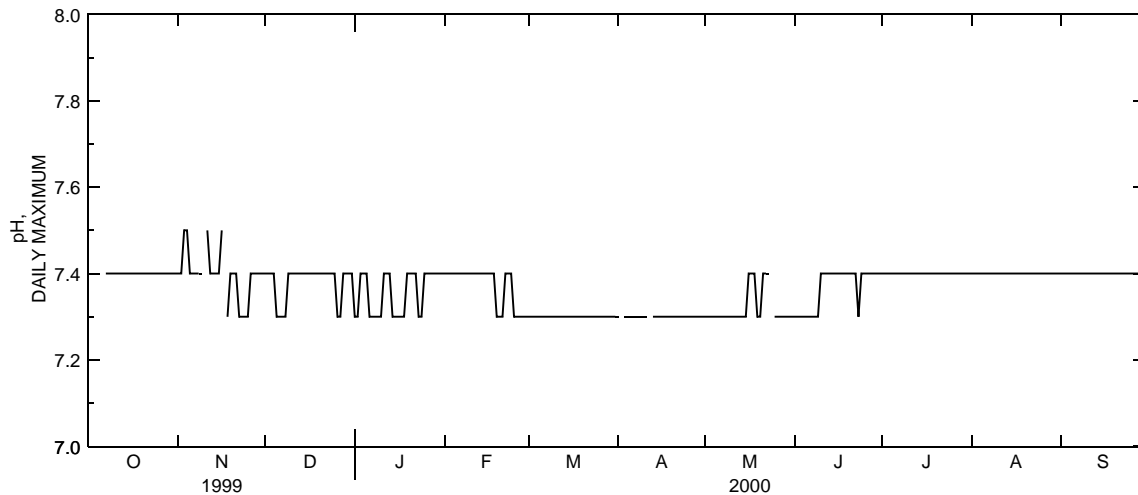
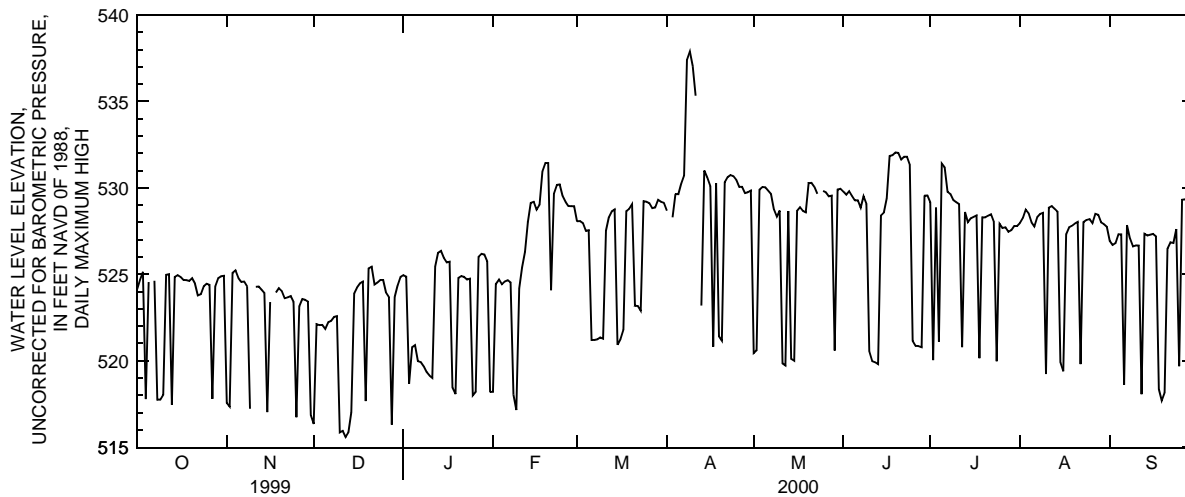
PROJECT DATA
Water Data for Bolton Well Field

391905084372904. LOCAL NUMBER, BU-1159-8D—Continued



PROJECT DATA
Water Data for Bolton Well Field

391905084372904. LOCAL NUMBER, BU-1159-8D—Continued



PROJECT DATA
Water Data for Bolton Well Field

391905084372904. LOCAL NUMBER, BU-1159-8D—Continued

WATER LEVEL ELEVATION, UNCORRECTED, FEET NAVD OF 1988, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

Table with columns: DAY, MAX, MIN, MAX, MIN, MAX, MIN, MAX, MIN, MAX, MIN, MAX, MIN. Rows for months OCTOBER, NOVEMBER, DECEMBER, JANUARY, FEBRUARY, MARCH. Includes monthly and year totals.

Table with columns: DAY, MAX, MIN, MAX, MIN, MAX, MIN, MAX, MIN, MAX, MIN, MAX, MIN. Rows for months APRIL, MAY, JUNE, JULY, AUGUST, SEPTEMBER. Includes monthly and year totals.

PROJECT DATA
Water Data for Bolton Well Field

391905084372904. LOCAL NUMBER, BU-1159-8D—Continued

WATER-QUALITY RECORDS

WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

[µS/cm, microsiemens per centimeter; (00028), USGS National Water Information System parameter code; UV, ultraviolet; units/cm, units per centimeter; nm, nanometer; mg/L, milligrams per liter; --, no data; <, concentration or value reported is less than that indicated; NAVD of 1988, North American Vertical Datum of 1988; mf, membrane filtration; col/100 mL, colonies per 100 milliliter; k, value is estimated from a non-ideal colony count]

Date	Medium code	Agency analyzing sample (code number) (00028)	Agency collecting sample (code number) (00027)	pH, water, field (standard units) (00400)	pH, water, lab (standard units) (00403)	Specific conductance, field (µS/cm) (00095)	Specific conductance, lab (µS/cm) (90095)	UV absorbance 254 nm, water, filtered (units/cm) (50624)	UV absorbance 280 nm, water, filtered (units/cm) (61726)
Nov. 10	6	80020	1028	7.4	7.6	611	620	.021	.019
Feb. 8	6	80020	1028	7.3	7.4	589	620	.032	.032
Mar. 1	6	1028	1028	--	--	--	--	--	--
June 7	6	80020	1028	7.3	7.5	611	615	.022	.020
Aug. 9	6	1028	1028	--	--	--	--	--	--
Sept. 6	6	1028	1028	--	--	--	--	--	--

Date	Calcium, dissolved (mg/L as Ca) (00915)	Magnesium, dissolved (mg/L as Mg) (00925)	Potassium, dissolved (mg/L as K) (00935)	Sodium, dissolved (mg/L as Na) (00930)	Alkalinity, water, dissolved, lab (mg/L as CaCO ₃) (29801)	Chloride, dissolved (mg/L as Cl) (00940)	Silica, dissolved (mg/L as SiO ₂) (00955)	Sulfate, dissolved (mg/L as SO ₄) (00945)	Nitrogen, ammonia, dissolved (mg/L as N) (00608)
Nov. 10	85.8	24.9	1.8	8.7	258	20.7	10.1	50.5	.043
Feb. 8	82.8	24.3	1.9	8.8	254	22.0	9.6	49.8	.044
Mar. 1	--	--	--	--	--	--	--	--	--
June 7	79.0	23.3	1.8	8.8	251	20.5	9.1	49.9	.070
Aug. 9	--	--	--	--	--	--	--	--	--
Sept. 6	--	--	--	--	--	--	--	--	--

Date	Nitrogen, nitrate, dissolved (mg/L as N) (00618)	Nitrogen, nitrite plus nitrate, dissolved (mg/L as N) (00631)	Nitrogen, nitrite, dissolved (mg/L as N) (00613)	Carbon, organic, dissolved (mg/L as C) (00681)	Depth of well, total (feet) (72008)	Elevation of land surface datum (feet above NAVD of 1988) (72000)	<i>E. coli</i> , water, unfiltered, mf, MI (col/100 mL) (90901)	Coliform, total, water, unfiltered, mf, MI (col/100 mL) (90900)	Boron, dissolved (mg/L as B) (01020)
Nov. 10	--	<.050	--	.49	185.00	545.75	<1	k1	32
Feb. 8	.014	<.050	<.000	.52	185.00	545.75	<1	<1	28
Mar. 1	--	--	--	--	185.00	545.75	<1	<1	--
June 7	--	<.050	<.010	.60	185.00	545.75	<1	<1	30
Aug. 9	--	--	--	--	185.00	545.75	<1	<1	--
Sept. 6	--	--	--	--	185.00	545.75	<1	<1	--

PROJECT DATA
Water Data for Bolton Well Field

391905084372905. LOCAL NUMBER, BU-1160-81

LOCATION.—Latitude 39°19'05", longitude 84°37'29". Butler County, Hydrologic Unit 05080002.

AQUIFER.—Glacial outwash, sand and gravel; 112OTSH.

WELL CHARACTERISTICS.—Inclined observation well drilled at 20 degree angle from horizontal by rotasonic techniques, diameter 4.0 in., depth 55 ft from land surface to bottom of screen.

INSTRUMENTATION.—YSI Model 6920 data sonde with turbidity probe set for 60-minute records. Sonde set at an altitude of 515.80 feet above North American Vertical Datum of 1988 (NAVD of 1988). Elevation estimated from angle of well (inclinometer) and length to transducer.

DATUM.—Altitude of land surface is 532.88 ft above North American Vertical Datum of 1988 (NAVD of 1988). Measuring point is top of inner casing, 3.05 ft above land-surface datum.

REMARK.—This station is part of a network of wells designed to help model flow characteristics from the Great Miami River through the aquifer. Data collection began on Nov. 4, 1999. Negative turbidity and dissolved oxygen values are due to the resolution of the data sonde and the close proximity of the actual value to zero.

PERIOD OF RECORD.—

WATER LEVEL ELEVATION: November 4, 1999 to current year.

SPECIFIC CONDUCTANCE: November 4, 1999 to current year.

pH: November 4, 1999 to current year.

WATER TEMPERATURE: November 4, 1999 to current year.

TURBIDITY: November 4, 1999 to current year.

DISSOLVED OXYGEN: November 4, 1999 to current year.

EXTREMES FOR PERIOD OF RECORD.—

WATER LEVEL ELEVATION: Maximum daily low, 517.98 ft above NAVD of 1988, Sept. 19, 2000; Maximum daily high, 537.13 ft above NAVD of 1988, Apr. 8, 2000.

SPECIFIC CONDUCTANCE: Maximum, 1200 microsiemens per centimeter, Feb. 6 and 7, 2000; Minimum, 380 microsiemens per centimeter, Feb. 18, 2000.

pH: Maximum, 8.2, Dec. 19-22, 1999, Jan. 3, and 4, 2000; Minimum, 6.7, Mar. 21, 2000.

WATER TEMPERATURE: Maximum, 27.2°C, Sept. 8, 2000; Minimum, 3.2°C, Feb. 8, 2000.

TURBIDITY: Maximum, 1200 NTU, Jan. 3, 4, Feb. 8, and Apr. 12, 2000; Minimum, -3.7 NTU, Aug. 6-8, 2000.

DISSOLVED OXYGEN: Maximum, 12.6 milligrams per liter, Feb. 18 and 19, 2000; Minimum, -0.8 milligram per liter, Aug. 11 and 12, 2000.

EXTREMES FOR CURRENT YEAR.—

WATER LEVEL ELEVATION: Maximum daily low, 517.98 ft above NAVD of 1988, Sept. 19, 2000; Maximum daily high, 537.13 ft above NAVD of 1988, Apr. 8, 2000.

SPECIFIC CONDUCTANCE: Maximum, 1200 microsiemens per centimeter, Feb. 6 and 7, 2000; Minimum, 380 microsiemens per centimeter, Feb. 18, 2000.

pH: Maximum, 8.2, Dec. 19-22, 1999, Jan. 3, and 4, 2000; Minimum, 6.7, Mar. 21, 2000.

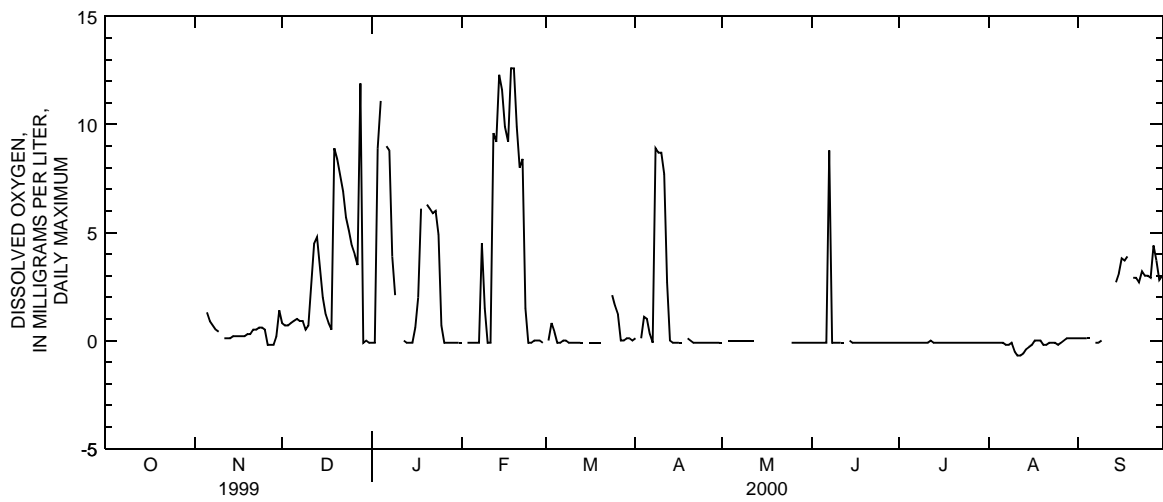
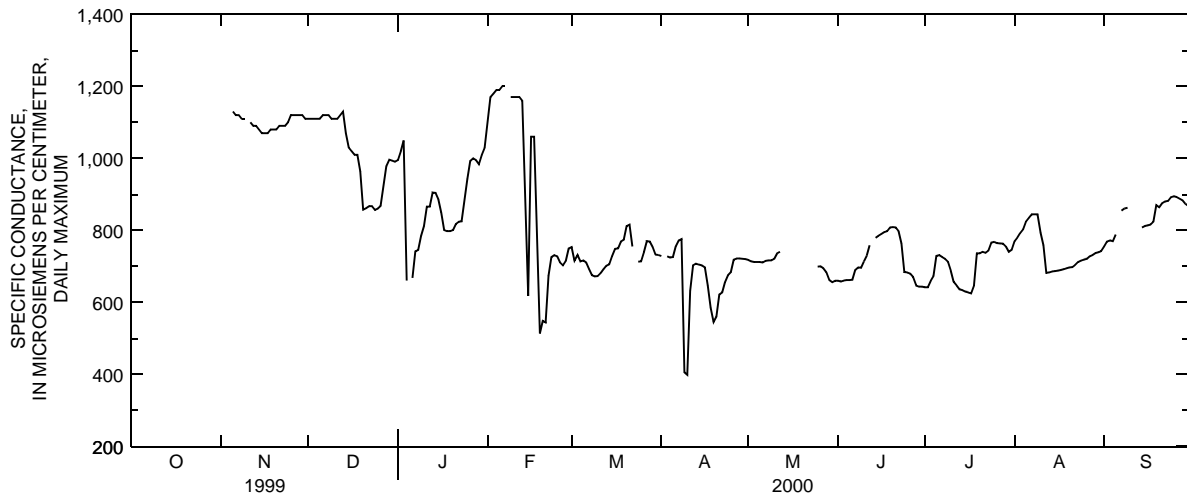
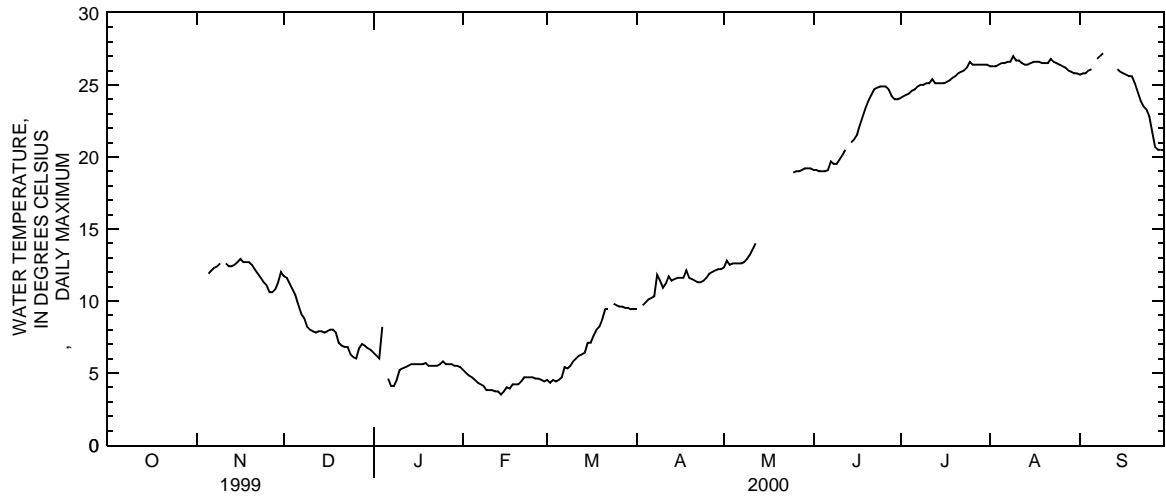
WATER TEMPERATURE: Maximum, 27.2°C, Sept. 8, 2000; Minimum, 3.2°C, Feb. 8, 2000.

TURBIDITY: Maximum, 1200 NTU, Jan. 3, 4, Feb. 8, and Apr. 12, 2000; Minimum, -3.7 NTU, Aug. 6-8, 2000.

DISSOLVED OXYGEN: Maximum, 12.6 milligrams per liter, Feb. 18 and 19, 2000; Minimum, -0.8 milligram per liter, Aug. 11 and 12, 2000.

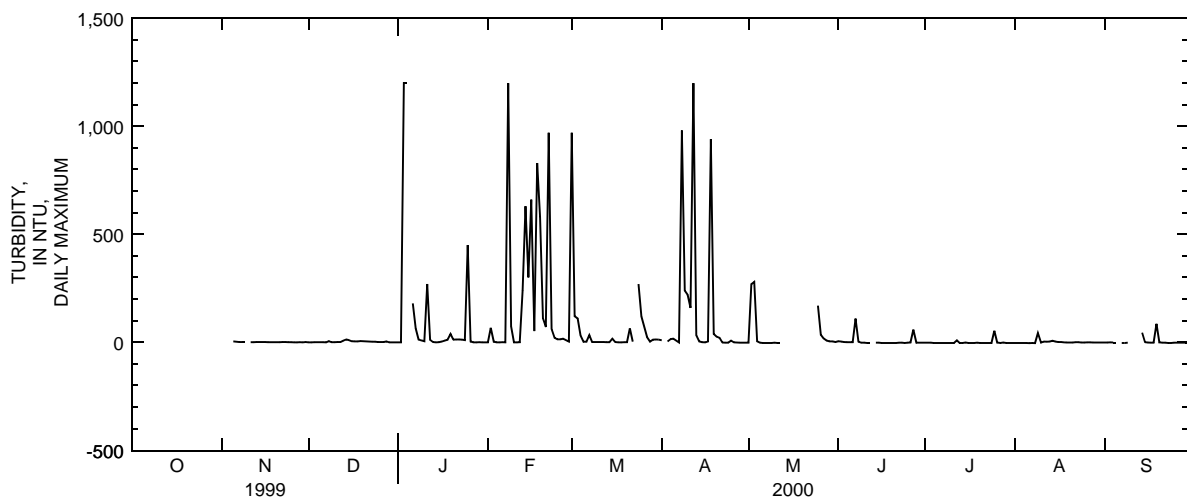
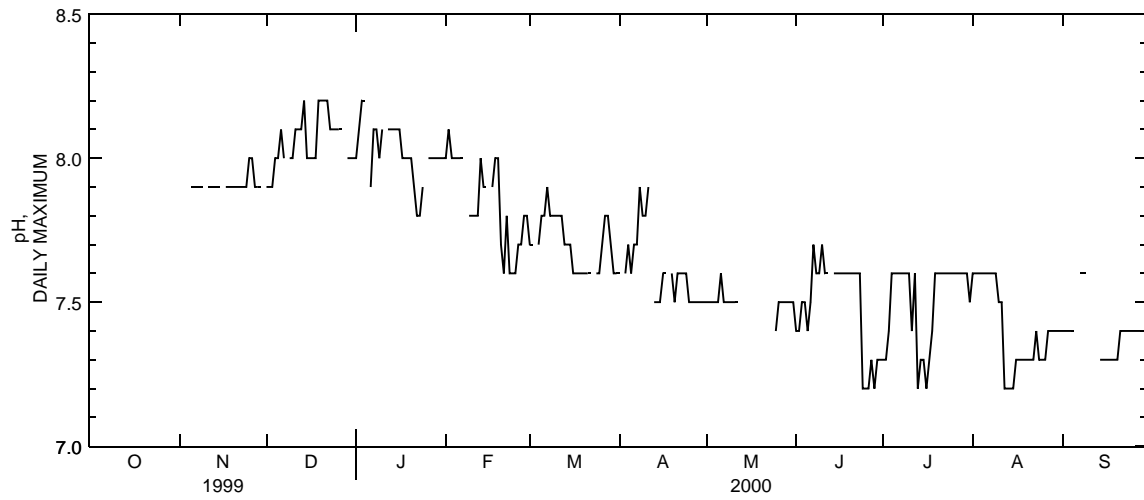
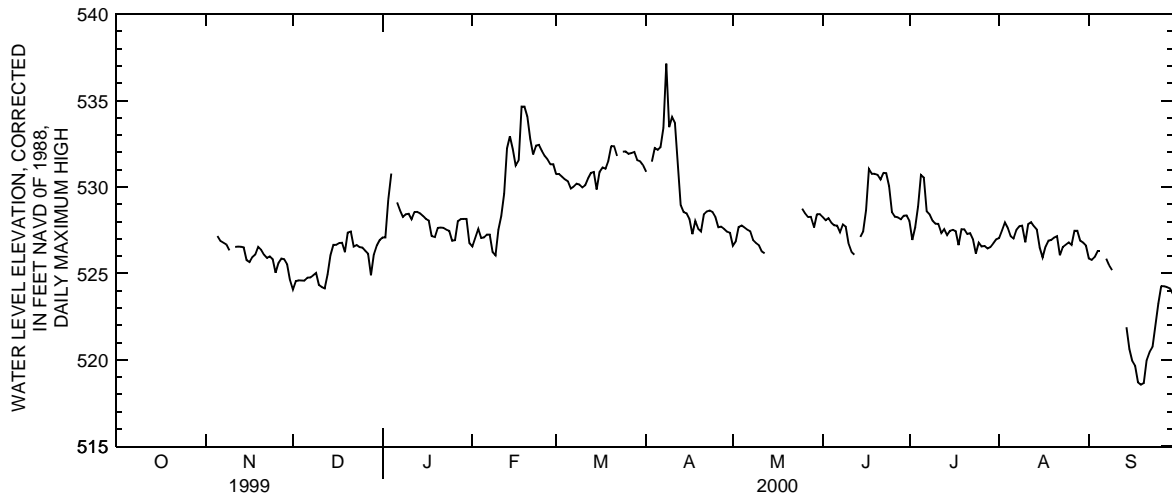
PROJECT DATA
Water Data for Bolton Well Field

391905084372905. LOCAL NUMBER, BU-1160-8I—Continued



PROJECT DATA Water Data for Bolton Well Field

391905084372905. LOCAL NUMBER, BU-1160-8I—Continued



PROJECT DATA
Water Data for Bolton Well Field

391905084372905. LOCAL NUMBER, BU-1160-8I—Continued

WATER-QUALITY RECORDS

WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

[μ S/cm, microsiemens per centimeter; (00028), USGS National Water Information System parameter code; UV, ultraviolet; units/cm, units per centimeter; nm, nanometer; mg/L, milligrams per liter; --, no data; <, concentration or value reported is less than that indicated; mf, membrane filtration; col/100 mL, colonies per 100 milliliter; k, value is estimated from a non-ideal colony count]

Date	Medium code	Agency analyzing sample (code number) (00028)	Agency collecting sample (code number) (00027)	pH, water, field (standard units) (00400)	pH, water, lab (standard units) (00403)	Specific conductance, field (μ S/cm) (00095)	Specific conductance, lab (μ S/cm) (90095)	UV absorbance 254 nm, water, filtered (units/cm) (50624)	UV absorbance 280 nm, water, filtered (units/cm) (61726)
Dec. 28	6	80020	1028	--	8.0	--	950	.059	.046
Feb. 16	6	80020	1028	8.0	7.8	716	1010	.105	.081
May 24	6	80020	1028	7.2	7.8	647	801	.070	.042
Aug. 9	6	1028	1028	--	--	--	--	--	--
Sept. 6	6	1028	1028	--	--	--	--	--	--

Date	Calcium, dissolved (mg/L as Ca) (00915)	Magnesium, dissolved (mg/L as Mg) (00925)	Potassium, dissolved (mg/L as K) (00935)	Sodium, dissolved (mg/L as Na) (00930)	Alkalinity, water, dissolved, lab (mg/L as CaCO ₃) (29801)	Chloride, dissolved (mg/L as Cl) (00940)	Silica, dissolved (mg/L as SiO ₂) (00955)	Sulfate, dissolved (mg/L as SO ₄) (00945)
Dec. 28	78.9	32.7	5.3	64.2	245	100	3.6	93.3
Feb. 16	84.3	29.5	5.9	78.8	221	152	4.8	88.6
May 24	79.9	27.2	6.1	36.7	239	67.6	6.8	71.2
Aug. 9	--	--	--	--	--	--	--	--
Sept. 6	--	--	--	--	--	--	--	--

Date	Nitrogen, ammonia, dissolved (mg/L as N) (00608)	Nitrogen, nitrate, dissolved (mg/L as N) (00618)	Nitrogen, nitrite, plus nitrate, dissolved (mg/L as N) (00631)	Nitrogen, nitrite, dissolved (mg/L as N) (00613)	Carbon, organic, dissolved (mg/L as C) (00681)	<i>E. coli</i> , water, unfiltered, mf, MI (col/100 mL) (90901)	Coliform, total, water, unfiltered, mf, MI (col/100 mL) (90900)	Boron, dissolved (mg/L as B) (01020)
Dec. 28	<.020	3.21	3.35	.136	2.8	--	k16	134
Feb. 16	.139	3.09	3.19	.105	4.2	--	>80	107
May 24	<.020	1.02	1.47	.446	2.8	k3	31	103
Aug. 9	--	--	--	--	--	<1	<1	--
Sept. 6	--	--	--	--	--	<1	k6	--

PROJECT DATA
Water Data for Bolton Well Field

03274060 GREAT MIAMI RIVER NEAR FAIRFIELD, OHIO

LOCATION.—Latitude 39°19'03", longitude 84°36'22", Butler County, Hydrologic Unit 05080002, north of Miami River Road, northeast of Cincinnati Water Works, Bolton Plant, Fairfield, Ohio.

INSTRUMENTATION.—YSI Model 6600 data sonde with turbidity probe set for 30-minute records, ISCO water sampler and CR10 data recorder with water-stage gage.

DATUM.—Datum of gage is 530 ft above North American Vertical Datum of 1988 (NAVD of 1988).

REMARK.—This station is part of a flow path study designed to help model flow characteristics from the Great Miami River through the aquifer. Data collection began on Aug. 3, 1999.

PERIOD OF RECORD.—

WATER LEVEL ELEVATION: August 3, 1999 to current year

SPECIFIC CONDUCTANCE: August 3, 1999 to current year

pH: August 3, 1999 to current year

WATER TEMPERATURE: August 3, 1999 to current year

TURBIDITY: August 3, 1999 to current year

DISSOLVED OXYGEN: August 3, 1999 to current year

EXTREMES FOR PERIOD OF RECORD.—

WATER LEVEL ELEVATION: Minimum daily stage, 531.92 ft above NAVD of 1988, Sept. 17, 1999; Maximum daily stage, 545.95 ft above NAVD of 1988, Apr. 8, 2000.

SPECIFIC CONDUCTANCE: Maximum, 1,260 microsiemens per centimeter, Jan. 26 and 27, 2000; Minimum, 235 microsiemens per centimeter, June 21, 2000.

pH: Maximum, 9.2, Oct. 14, 1999; Minimum, 7.5, Jan. 4 and 5, 2000.

WATER TEMPERATURE: Maximum, 30.6°C, Sept. 2, 2000; Minimum, 0.5°C, Jan. 27, 2000.

TURBIDITY: Maximum, 1200 NTU, Jan. 3, 4, and Apr. 8, 2000; Minimum, 1.0 NTU, Feb. 27, 2000.

DISSOLVED OXYGEN: Maximum, 19.4 milligrams per liter, July 18, 2000; Minimum 0.1 milligram per liter, July 17, 2000.

EXTREMES FOR CURRENT YEAR.—

WATER LEVEL ELEVATION: Minimum daily stage, 532.03 ft above NAVD of 1988, Oct. 7, 1999; Maximum daily stage, 545.95 ft above NAVD of 1988, Apr. 8, 2000.

SPECIFIC CONDUCTANCE: Maximum, 1,260 microsiemens per centimeter, Jan. 26 and 27, 2000; Minimum, 235 microsiemens per centimeter, June 21, 2000.

pH: Maximum, 9.2, Oct. 14, 1999; Minimum, 7.5, Jan. 4 and 5, 2000.

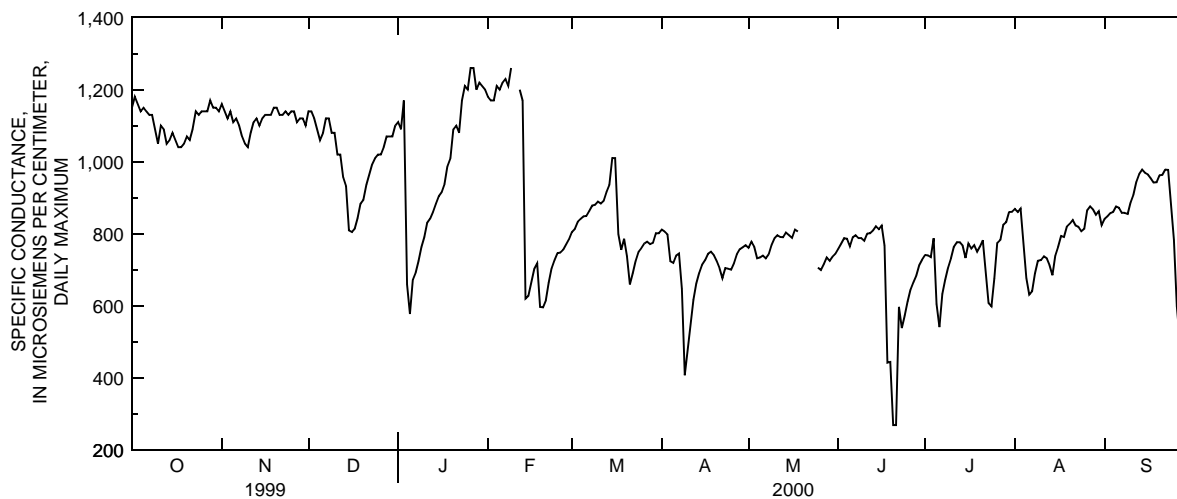
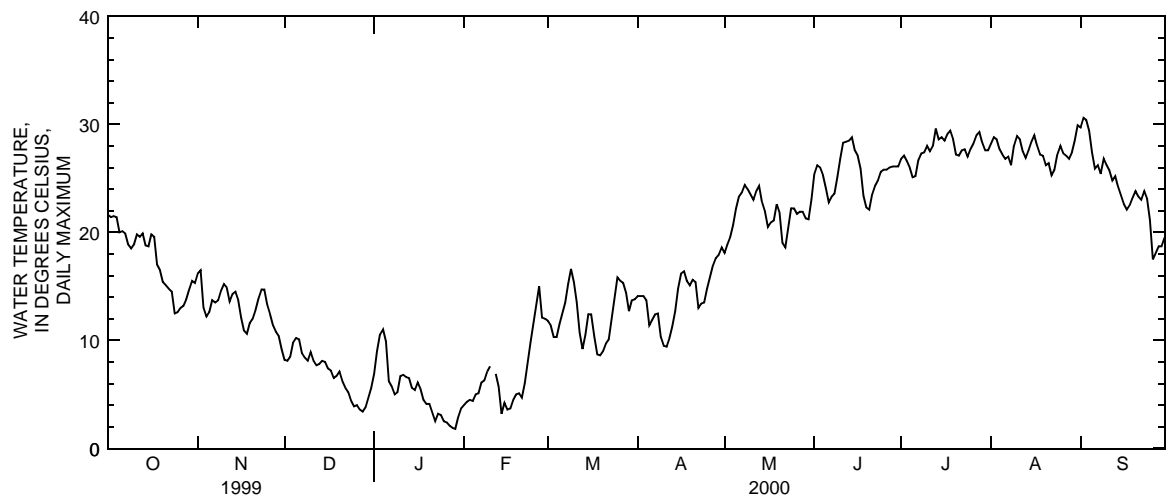
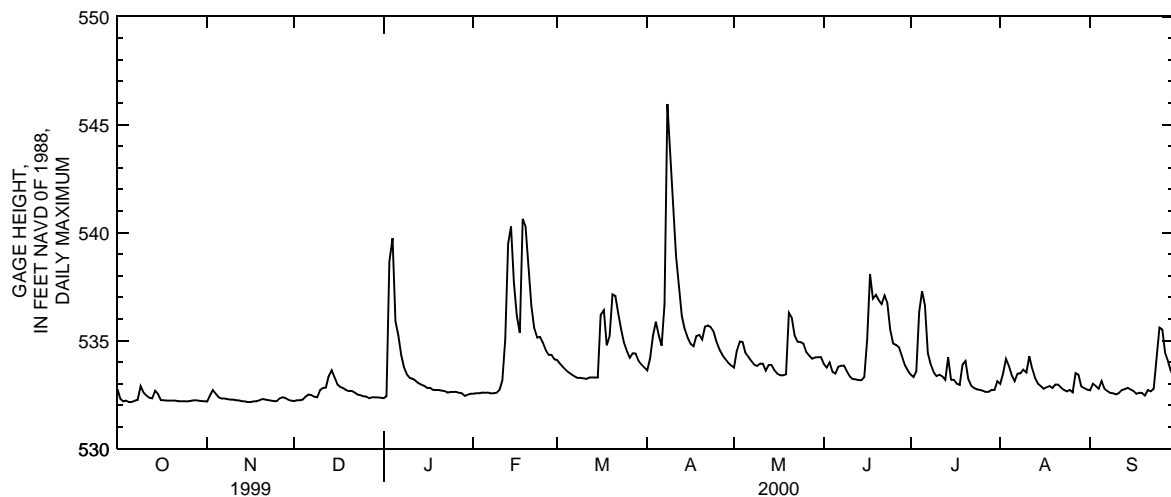
WATER TEMPERATURE: Maximum, 30.6°C, Sept. 2, 2000; Minimum, 0.5°C, Jan. 27, 2000.

TURBIDITY: Maximum, 1200 NTU, Jan. 3, 4, and Apr. 8, 2000; Minimum, 1.0 NTU, Feb. 27, 2000.

DISSOLVED OXYGEN: Maximum, 19.4 milligrams per liter, July 18, 2000; Minimum 0.1 milligram per liter, July 17, 2000.

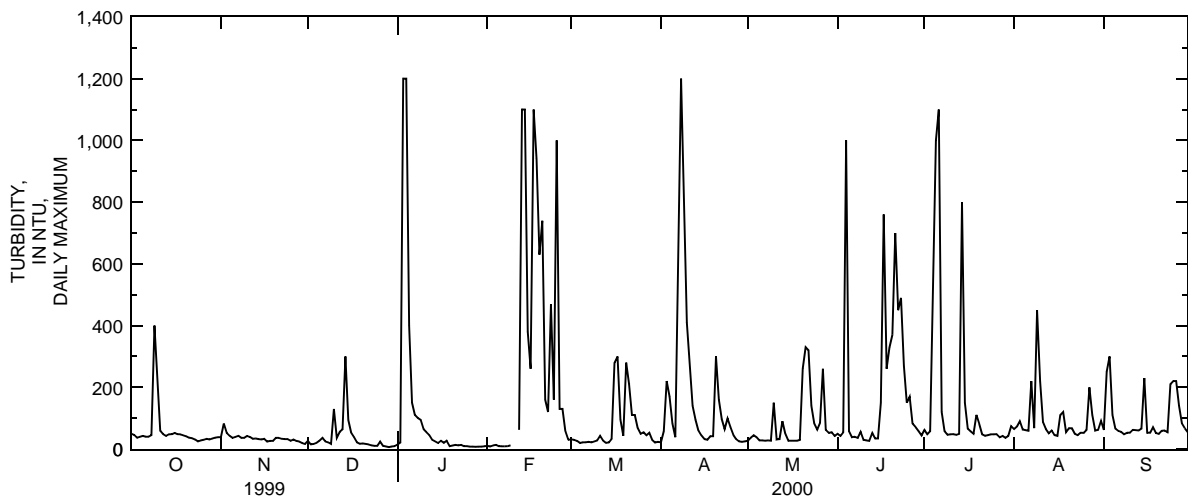
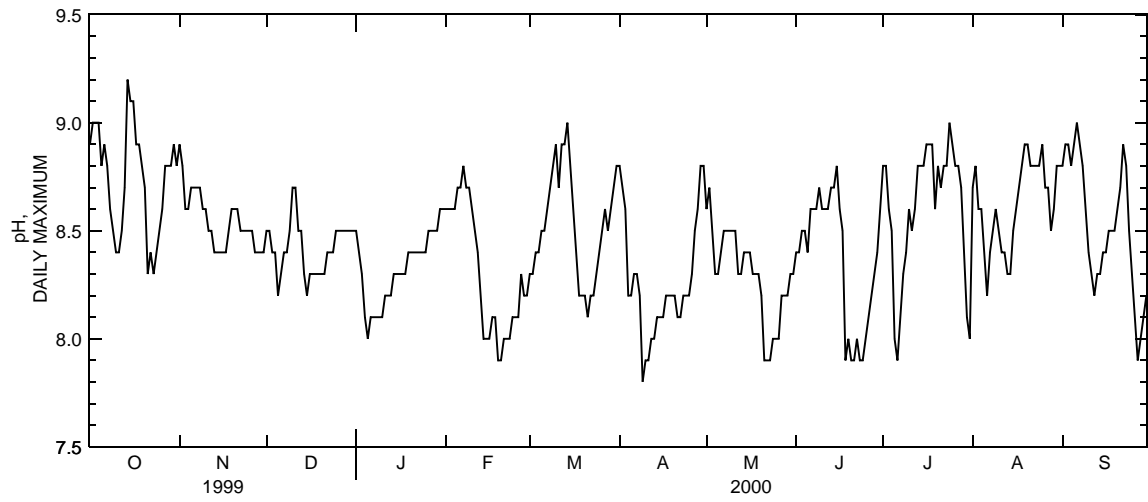
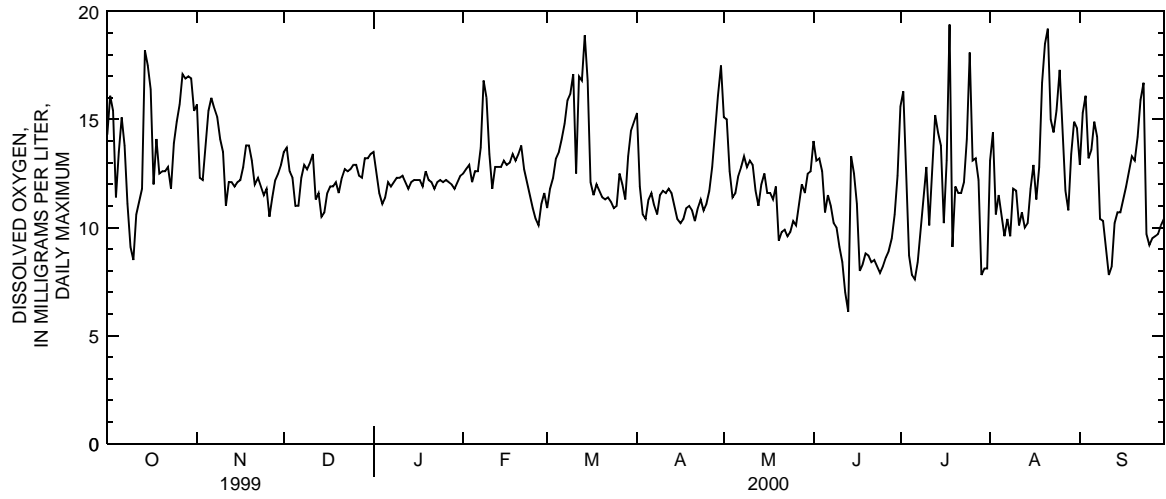
PROJECT DATA
Water Data for Bolton Well Field

03274060 GREAT MIAMI RIVER NEAR FAIRFIELD, OHIO—Continued



PROJECT DATA
Water Data for Bolton Well Field

03274060 GREAT MIAMI RIVER NEAR FAIRFIELD, OHIO—Continued



PROJECT DATA
Water Data for Bolton Well Field

03274060 GREAT MIAMI RIVER NEAR FAIRFIELD, OHIO—Continued

WATER-QUALITY RECORDS

WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

[µS/cm, microsiemens per centimeter; (00028), USGS National Water Information System parameter code; UV, ultraviolet; units/cm, units per centimeter; nm, nanometer; mg/L, milligrams per liter; --, no data; <, concentration or value reported is less than that indicated; mf, membrane filtration; col/100 mL, colonies per 100 milliliter; k, value is estimated from a non-ideal colony count]

Date	Medium code	Agency analyzing sample (code number) (00028)	Agency collecting sample (code number) (00027)	pH, water, field (standard units) (00400)	pH, water, lab (standard units) (00403)	Specific conductance, field (µS/cm) (00095)	Specific conductance, lab (µS/cm) (90095)	UV absorbance 254 nm, water, filtered (units/cm) (50624)	UV absorbance 280 nm, water, filtered (units/cm) (61726)
Oct. 20	9	80020	1028	--	8.2	--	1060	--	--
Jan. 12	9	80020	1028	8.2	8.1	835	824	.145	.112
Mar. 1	9	1028	1028	--	--	--	--	--	--
Mar. 22	9	80020	1028	8.1	8.1	677	688	.127	.097
July 26	9	1028	1028	--	--	--	--	--	--
Aug. 23	9	80020	1028	8.5	--	805	--	.114	.086
Sept. 6	9	1028	1028	--	--	--	--	--	--

Date	Calcium, dissolved (mg/L as Ca) (00915)	Magnesium, dissolved (mg/L as Mg) (00925)	Potassium, dissolved (mg/L as K) (00935)	Sodium, dissolved (mg/L as Na) (00930)	Alkalinity, water, dissolved, lab (mg/L as CaCO ₃) (29801)	Chloride, dissolved (mg/L as Cl) (00940)	Silica, dissolved (mg/L as SiO ₂) (00955)	Sulfate, dissolved (mg/L as SO ₄) (00945)
Oct. 20	84.8	31.3	7.1	86.1	241	136	5.4	109
Jan. 12	75.6	28.4	4.5	45.4	211	79.7	7.5	80.3
Mar. 1	--	--	--	--	--	--	--	--
Mar. 22	69.6	25.2	3.1	29.8	188	59.1	4.7	52.5
July 26	--	--	--	--	--	--	--	--
Aug. 23	--	--	--	--	--	--	--	--
Sept. 6	--	--	--	--	--	--	--	--

Date	Nitrogen, ammonia, dissolved (mg/L as N) (00608)	Nitrogen, nitrate, dissolved (mg/L as N) (00618)	Nitrogen, nitrite, plus nitrate, dissolved (mg/L as N) (00631)	Nitrogen, nitrite, dissolved (mg/L as N) (00613)	Carbon, organic, dissolved (mg/L as C) (00681)	<i>E. coli</i> , water, unfiltered, mf, MI (col/100 mL) (90901)	Coliform, total, water, unfiltered, mf, MI (col/100 mL) (90900)	Boron, dissolved (mg/L as B) (01020)
Oct. 20	.155	--	2.70	--	--	k400	k8200	199
Jan. 12	.240	6.02	6.09	.061	5.8	500	6900	84
Mar. 1	--	--	--	--	--	k390	5700	--
Mar. 22	.048	6.53	6.55	.022	4.8	--	--	44
July 26	--	--	--	--	--	67	k9200	--
Aug. 23	.145	1.42	1.45	.028	5.2	k200	29000	--
Sept. 6	--	--	--	--	--	k170	66000	--

PROJECT DATA
Water Data for Bolton Well Field

MANUAL GROUND-WATER LEVEL MEASUREMENTS

Water level date	Measurement time	Water level (feet)	Altitude of water level (feet)
<u>391904084362101. LOCAL NUMBER, BU-1151-1A</u>			
10/07/99	1224	16.63	530.24
10/13/99	1544	18.74	528.13
10/20/99	1848	19.28	527.59
10/27/99	1505	17.25	529.62
11/03/99	2014	19.51	527.36
11/10/99	1457	20.35	526.52
11/17/99	2053	19.80	527.07
12/01/99	1450	15.36	531.51
12/08/99	1638	15.06	531.81
12/22/99	1717	19.81	527.06
12/28/99	1618	18.94	527.93
01/05/00	2100	17.35	529.52
01/12/00	1545	18.71	528.16
01/19/00	1617	14.36	532.51
02/08/00	1526	14.77	532.10
02/16/00	1513	13.75	533.12
02/23/00	1603	16.72	530.15
03/01/00	1628	13.26	533.61
03/08/00	1531	17.61	529.26
03/15/00	1729	13.75	533.12
03/22/00	1838	13.56	533.31
03/29/00	1435	13.18	533.69
04/12/00	1350	9.64	537.23
04/19/00	1413	14.48	532.39
05/24/00	1602	12.23	534.64
06/07/00	1509	12.81	534.06
06/14/00	1352	16.83	530.04
06/22/00	1056	14.25	532.62
06/28/00	1020	15.00	531.87
07/12/00	1045	14.37	532.50
07/26/00	1113	17.68	529.19
08/09/00	1003	15.01	531.86
09/06/00	0926	17.78	529.09
09/13/00	1130	18.37	528.50
<u>391904084362102. LOCAL NUMBER, BU-1152-1B</u>			
10/07/99	1230	17.31	530.27
10/13/99	1551	20.02	527.56
10/20/99	1859	20.53	527.05
10/27/99	1612	17.91	529.67
10/28/99	1415	16.78	530.80
11/03/99	2023	20.77	526.81
11/10/99	1514	21.62	525.96
11/17/99	2105	21.09	526.49
12/01/99	1524	16.07	531.51
12/08/99	1645	15.77	531.81
12/22/99	1725	21.09	526.49
12/28/99	1626	20.22	527.36
01/05/00	2107	18.69	528.89
01/19/00	1627	15.05	532.53
02/08/00	1608	15.52	532.06
02/16/00	1521	14.47	533.11
02/23/00	1609	18.02	529.56
03/01/00	1633	13.98	533.60
03/08/00	1537	18.95	528.63
03/15/00	1735	14.46	533.12
03/22/00	1844	14.68	532.90
03/29/00	1503	13.87	533.71
04/12/00	1354	10.35	537.23
04/19/00	1414	15.91	531.67
05/03/00	1505	16.86	530.72
05/24/00	1600	12.93	534.65

PROJECT DATA
Water Data for Bolton Well Field

MANUAL GROUND-WATER LEVEL MEASUREMENTS—CONTINUED

Water level date	Measurement time	Water level (feet)	Altitude of water level (feet)
<u>391904084362102. LOCAL NUMBER, BU-1152-1B—Continued</u>			
06/07/00	1515	13.49	534.09
06/14/00	1358	18.11	529.47
06/22/00	1103	15.53	532.05
06/28/00	1025	16.29	531.29
07/12/00	1046	15.05	532.53
07/26/00	1119	18.91	528.67
08/09/00	1006	15.69	531.89
09/06/00	0936	19.09	528.49
09/13/00	1123	19.63	527.95
<u>391904084362103. LOCAL NUMBER, BU-1153-1C</u>			
10/07/99	1239	17.34	530.26
10/13/99	1601	21.39	526.21
10/20/99	1905	21.85	525.75
10/27/99	1530	17.94	529.66
11/03/99	2031	22.11	525.49
11/10/99	1523	22.97	524.63
11/17/99	2109	22.48	525.12
12/01/99	1519	16.10	531.50
12/08/99	1651	15.84	531.76
12/22/99	1737	22.46	525.14
12/28/99	1634	21.64	525.96
01/05/00	2110	20.19	527.41
01/06/00	1240	20.42	527.18
01/12/00	1539	21.58	526.02
01/19/00	1633	15.09	532.51
02/08/00	1607	15.52	532.08
02/16/00	1528	14.50	533.10
02/23/00	1614	19.52	528.08
03/01/00	1639	14.01	533.59
03/08/00	1542	20.43	527.17
03/15/00	1741	14.49	533.11
03/23/00	1849	15.62	531.98
03/29/00	1556	13.90	533.70
04/12/00	1355	10.39	537.21
05/03/00	1501	18.25	529.35
05/24/00	1613	12.96	534.64
06/07/00	1520	13.52	534.08
06/14/00	1401	19.52	528.08
06/22/00	1108	16.94	530.66
06/28/00	1031	17.71	529.89
07/12/00	1048	15.07	532.53
07/26/00	1125	20.28	527.32
08/09/00	1016	15.69	531.91
09/06/00	0942	20.39	527.21
09/13/00	1118	20.94	526.66
<u>391904084362104. LOCAL NUMBER, BU-1154-1D</u>			
10/07/99	1245	17.37	530.33
10/13/99	1606	22.89	524.81
10/20/99	1908	23.30	524.40
10/27/99	1538	17.95	529.75
11/03/99	2037	23.56	524.14
11/10/99	1530	24.43	523.27
11/17/99	2115	24.02	523.68
12/01/99	1510	16.21	531.49
12/08/99	1657	15.92	531.78
12/22/99	1743	24.00	523.70
12/28/99	1642	23.24	524.46
01/05/00	2115	21.83	525.87
01/06/00	1326	22.09	525.61
01/12/00	1534	23.17	524.53
01/19/00	1638	15.19	532.51

PROJECT DATA
Water Data for Bolton Well Field

MANUAL GROUND-WATER LEVEL MEASUREMENTS—CONTINUED

Water level date	Measurement time	Water level (feet)	Altitude of water level (feet)
<u>391904084362104. LOCAL NUMBER, BU-1154-1D—Continued</u>			
02/08/00	1610	15.61	532.09
02/16/00	1737	14.59	533.11
02/23/00	1618	21.13	526.57
03/01/00	1643	14.10	533.60
03/08/00	1546	22.06	525.64
03/15/00	1745	14.58	533.12
03/22/00	1854	16.69	531.01
03/29/00	1618	13.98	533.72
04/12/00	1352	10.48	537.22
04/19/00	1411	19.02	528.68
05/03/00	1454	19.78	527.92
05/24/00	1618	13.01	534.69
06/07/00	1522	13.60	534.10
06/22/00	1110	18.52	529.18
06/28/00	1032	19.31	528.39
07/12/00	1049	15.08	532.62
07/26/00	1124	21.81	525.89
08/09/00	1015	15.68	532.02
09/06/00	0942	21.87	525.83
09/13/00	1106	22.39	525.31
<u>391905084372901. LOCAL NUMBER, BU-1156-8A</u>			
10/06/99	2045	16.28	524.90
10/13/99	1428	17.49	523.69
10/20/99	2122	16.39	524.79
10/27/99	1935	17.83	523.35
10/28/99	1704	17.84	523.34
11/03/99	1542	16.39	524.79
11/10/99	1746	18.31	522.87
11/17/99	1805	18.03	523.15
11/30/99	2104	19.48	521.70
12/01/99	1741	19.82	521.36
12/08/99	1545	19.27	521.91
12/22/99	1607	17.49	523.69
01/05/00	1903	14.46	526.72
01/12/00	1710	15.87	525.31
01/19/00	1534	16.79	524.39
01/26/00	1606	17.00	524.18
02/08/00	1520	17.96	523.22
02/16/00	1623	13.39	527.79
02/23/00	1458	11.21	529.97
03/01/00	1543	13.44	527.74
03/08/00	1439	13.52	527.66
03/15/00	1616	14.15	527.03
03/15/00	1711	14.17	527.01
03/22/00	2018	12.04	529.14
03/29/00	1813	11.87	529.31
04/12/00	1509	9.63	531.55
04/19/00	1342	11.90	529.28
05/03/00	1601	12.74	528.44
05/24/00	1421	12.39	528.79
06/07/00	1438	13.84	527.34
06/14/00	1640	13.56	527.62
06/22/00	1008	9.67	531.51
06/28/00	1108	12.77	528.41
07/12/00	1124	13.57	527.61
07/13/00	1232	13.03	528.15
07/26/00	0830	15.03	526.15
08/09/00	0858	13.70	527.48
08/23/00	1111	14.37	526.81
09/06/00	0845	15.49	525.69
09/13/00	1300	14.18	527.00

PROJECT DATA
Water Data for Bolton Well Field

MANUAL GROUND-WATER LEVEL MEASUREMENTS—CONTINUED

Water level date	Measurement time	Water level (feet)	Altitude of water level (feet)
<u>391905084372902. LOCAL NUMBER, BU-1157-8B</u>			
10/06/99	2038	18.94	524.80
10/13/99	1413	20.63	523.11
10/20/99	2112	19.04	524.70
10/28/99	1646	21.28	522.46
11/03/99	1554	19.02	524.72
11/10/99	1755	21.42	522.32
11/17/99	1755	20.18	523.56
12/01/99	1732	22.92	520.82
12/08/99	1538	21.85	521.89
12/22/99	1617	20.60	523.14
12/28/99	1513	22.11	521.63
01/05/00	1500	17.66	526.08
01/12/00	1709	19.05	524.69
01/19/00	1542	20.06	523.68
01/26/00	1557	20.18	523.56
02/08/00	1655	21.15	522.59
02/16/00	1628	16.66	527.08
02/23/00	1503	13.84	529.90
03/01/00	1536	16.66	527.08
03/08/00	1445	16.69	527.05
03/15/00	1622	17.39	526.35
03/22/00	2013	15.32	528.42
03/29/00	1850	14.55	529.19
04/12/00	1502	12.97	530.77
04/19/00	1341	15.26	528.48
05/03/00	1555	16.04	527.70
05/24/00	1421	15.70	528.04
06/07/00	1449	17.28	526.46
06/14/00	1642	16.25	527.49
06/22/00	1015	12.42	531.32
06/28/00	1058	16.11	527.63
07/12/00	1134	16.85	526.89
07/13/00	1226	15.65	528.09
07/26/00	0836	18.25	525.49
08/09/00	0907	17.05	526.69
08/23/00	1107	17.01	526.73
09/06/00	0852	18.79	524.95
09/13/00	1248	16.83	526.91
<u>391905084372903. LOCAL NUMBER, BU-1158-8C</u>			
10/06/99	2033	20.68	524.78
10/13/99	1356	24.67	520.79
10/20/99	2108	20.77	524.69
10/28/99	1635	25.28	520.18
11/03/99	1604	20.73	524.73
11/10/99	1827	25.54	519.92
11/17/99	1823	21.90	523.56
12/01/99	1800	26.87	518.59
12/08/99	1531	23.62	521.84
12/22/99	1630	24.62	520.84
12/28/99	1528	26.15	519.31
01/05/00	1450	21.85	523.61
01/05/00	2025	22.04	523.42
01/12/00	1703	23.17	522.29
01/19/00	1554	24.20	521.26
01/26/00	1555	24.25	521.21
02/08/00	1652	25.35	520.11
02/16/00	1638	20.97	524.49
02/23/00	1508	15.64	529.82
03/01/00	1530	20.90	524.56
03/08/00	1450	20.97	524.49
03/15/00	1627	21.68	523.78
03/22/00	2009	19.58	525.88
03/29/00	1748	16.34	529.12

PROJECT DATA
Water Data for Bolton Well Field

MANUAL GROUND-WATER LEVEL MEASUREMENTS—CONTINUED

Water level date	Measurement time	Water level (feet)	Altitude of water level (feet)
<u>391905084372903. LOCAL NUMBER, BU-1158-8C-Continued</u>			
04/12/00	1415	17.98	527.48
04/19/00	1340	20.30	525.16
05/03/00	1553	20.61	524.85
05/24/00	1419	20.83	524.63
06/07/00	1405	22.45	523.01
06/14/00	1659	18.00	527.46
06/22/00	1031	14.31	531.15
06/28/00	1051	21.43	524.03
07/12/00	1127	22.09	523.37
07/26/00	0842	22.93	522.53
07/26/00	1216	18.66	526.80
08/09/00	0944	22.38	523.08
08/23/00	1103	18.81	526.65
09/06/00	1102	23.88	521.58
09/13/00	1242	18.63	526.83
<u>391905084372904. LOCAL NUMBER, BU-1159-8D</u>			
10/06/99	2026	21.03	524.72
10/13/99	1347	28.22	517.53
10/20/99	2104	21.07	524.68
10/28/99	1626	28.72	517.03
11/03/99	1613	20.90	524.85
11/10/99	1900	29.11	516.64
11/17/99	1830	22.11	523.64
12/01/99	1756	30.20	515.55
12/08/99	1533	23.81	521.94
12/22/99	1636	28.02	517.73
12/28/99	1550	29.55	516.20
01/05/00	1444	25.26	520.49
01/05/00	2020	25.64	520.11
01/12/00	1700	26.68	519.07
01/19/00	1602	27.57	518.18
01/26/00	1550	27.53	518.22
02/08/00	1705	27.79	517.96
02/16/00	1649	24.50	521.25
02/23/00	1515	15.81	529.94
03/01/00	1533	24.36	521.39
03/08/00	1455	24.41	521.34
03/15/00	1633	25.08	520.67
03/22/00	2005	22.96	522.79
03/29/00	1738	16.57	529.18
04/12/00	1413	22.63	523.12
04/19/00	1337	24.68	521.07
05/03/00	1550	24.40	521.35
05/24/00	1410	25.26	520.49
06/07/00	1401	26.93	518.82
06/14/00	1705	18.05	527.70
06/22/00	1028	14.49	531.26
06/28/00	1049	26.03	519.72
07/12/00	1121	26.69	519.06
07/26/00	0849	26.88	518.87
08/09/00	0952	27.15	518.60
08/23/00	1102	18.89	526.86
09/06/00	1059	28.42	517.33
09/13/00	1241	18.91	526.84

Ground-Water-Quality Data for Ohio Department of Natural Resources Wells

The following tables contain ground-water-quality data collected as part of a cooperative study with the Ohio Department of Natural Resources. Descriptions of the eight sample sites are specified below. Well construction data were obtained from ODNR station descriptions or from measurements made by U.S. Geological Survey personnel.



Local number	Site Identifier	Latitude	Longitude	Altitude of land surface (feet)	Depth (feet)	Casing Diameter (inches)	County	Township
D-2	400514084345700	40°05'14"	84°34'57"	1038	70	6	Darke	Greenville
F-7	393450082403600	39°34'50"	82°40'36"	980	120	5	Fairfield	Madison
H-10	391201084281600	39°12'01"	84°28'16"	544	170	8	Hamilton	Springfield
Pu-1	405505084032900	40°55'05"	84°03'29"	770	110	6	Putnam	Pleasant
U-5	402010083321900	40°20'10"	83°32'19"	1085	142	6	Union	Liberty
V-1	391452082282900	39°14'52"	82°28'29"	730	218	6	Vinton	Elk
VW-1	405215084335400	40°52'15"	84°33'54"	784	340	8	Van Wert	Ridge
W-6	392119084142000	39°21'19"	84°14'20"	619	48	6	Warren	Deerfield

PROJECT DATA
Ground-Water-Quality Data for Ohio Department of Natural Resources Wells

WATER-QUALITY DATA

[(72008), USGS National Water Information System parameter code; mg/L, milligrams per liter; µS/cm, microsiemens per centimeter; deg C, degrees Celsius; --, no data; <, concentration or value reported is less than that indicated; >, concentration or value is greater than that indicated; col/100mL, colonies per 100 milliliters; mf, membrane filtration; MI, type of agar; µg/L, microgram per liter; e, estimated value; k, value is estimated from a non-ideal colony count]

Local number	Date	Depth, total (feet) (72008)	Water level (feet below land surface) (72019)	Oxygen, dissolved (mg/L) (00300)	pH, water, whole, field (standard units) (00400)	pH, water, whole, lab (standard units) (00403)	Specific conductance, lab (µS/cm) (90095)	Specific conductance (µS/cm) (00095)	Water temperature (deg C) (00010)
D-2	06/06/00	70.00	19.24	.2	7.2	7.2	742	736	12.7
F-7	05/17/00	120.00	30.37	8.7	6.0	6.2	71	58	12.2
H-1	05/31/00	150.00	37.50	.2	--	8.4	331	--	16.4
Pu-1	05/24/00	116.00	12.25	.4	7.2	7.4	858	847	13.8
U-5	06/08/00	145.00	27.10	.1	7.2	7.2	711	631	12.8
V-1	07/20/00	220.00	100.00	.3	8.4	8.7	583	562	14.2
VW-1	05/24/00	335.00	32.82	.2	7.3	7.3	1640	1690	12.9
W-6	06/01/00	48.00	23.15	.4	7.1	7.2	784	768	13.0

Local number	Date	Calcium, dissolved (mg/L as Ca) (00915)	Magnesium, dissolved (mg/L as Mg) (00925)	Sodium, dissolved (mg/L as Na) (39086)	Alkalinity, water, whole, field (mg/L as CaCO ₃) (39086)	Silica, dissolved (mg/L as SiO ₂) (00955)	Sulfide, total (mg/L as S) (00745)	Nitrogen, ammonia, dissolved (mg/L as N) (00608)	Nitrogen, ammonia plus organic, dissolved (mg/L as N) (00623)
D-2	06/06/00	98	39	6.1	360	15	.01	.071	.11
F-7	05/17/00	5.7	2.7	1.8	18	12	.05	<.020	<.10
H-10	05/31/00	22	13	23	109	.85	.02	<.020	.10
Pu-1	05/24/00	93	43	17	316	21	280	.352	.52
U-5	06/08/00	86	37	8.1	338	11	.04	<.020	.24
V-1	07/20/00	2.2	.89	131	240	7.1	.1	.564	.72
VW-1	05/24/00	190	84	60	190	11	.1	.341	.44
W-6	06/01/00	110	29	16	328	11	.0	.112	.15

Local number	Date	Nitrogen, nitrite, plus nitrate, dissolved (mg/L as N) (00631)	Nitrogen, nitrite, dissolved (mg/L as N) (00613)	Phosphorus, dissolved (mg/L as P) (00666)	Phosphorus ortho-phosphate, dissolved (mg/L as P) (00671)	E. coli, water, unfiltered, mf, MI (90901)	Coliform, total, water, unfiltered, mf, MI (90900)	Barium, dissolved (µg/L as Ba) (01005)	Beryllium, dissolved (µg/L as Be) (01010)
D-2	06/06/00	<.050	<.010	<.050	<.010	<1	k16	277	<1.6
F-7	05/17/00	1.14	<.010	<.050	<.010	<1	k4	33	<1.6
H-10	05/31/00	<.050	<.010	<.050	<.010	<1	150	147	<1.6
Pu-1	05/24/00	<.050	<.010	<.050	<.010	<1	190	199	<1.6
U-5	06/08/00	.057	<.010	<.050	<.010	k9	>800	70	<1.6
V-1	07/20/00	<.050	<.010	e.040	.031	<1	31	35	<1.6
VW-1	05/24/00	<.050	<.010	<.050	<.010	<1	k22	14	<1.6
W-6	06/01/00	<.050	<.010	<.050	<.010	<1	k6	144	<1.6

Local number	Date	Cadmium, dissolved (µg/L as Cd) (01025)	Chromium, dissolved (µg/L as Cr) (01030)	Cobalt, dissolved (µg/L as Co) (01035)	Copper, dissolved (µg/L as Cu) (01040)	Iron, dissolved (µg/L as Fe) (01046)	Lead, dissolved (µg/L as Pb) (01049)	Lithium, dissolved (µg/L as Li) (01130)
D-2	06/06/00	<8.0	<14	<13	<10	2200	<100	4
F-7	05/17/00	<8.0	<14	<13	<10	12	<100	e3
H-10	05/31/00	e3.2	16	<13	<10	130	<100	5
Pu-1	05/24/00	<8.0	<14	<13	<10	610	<100	25
U-5	06/08/00	<8.0	<14	<13	e5.6	25	<100	8
V-1	07/20/00	<8.0	<14	<13	<10	18	<100	9
VW-1	05/24/00	<8.0	<14	<13	<10	3100	<100	41
W-6	06/01/00	<8.0	<14	<13	<10	410	<100	e3

Local number	Date	Manganese, dissolved (mg/L as Mn) (01056)	Molybdenum, dissolved (mg/L as Mo) (01060)	Nickel, dissolved (mg/L as Ni) (01065)	Silver, dissolved (mg/L as Ag) (01075)	Strontium, dissolved (mg/L as Sr) (01080)	Vandium, dissolved (mg/L as V) (01085)	Zinc, dissolved (mg/L as Zn) (01090)
D-2	06/06/00	89	<34	<40	<7.0	357	<10	<20
F-7	05/17/00	2.4	<34	<40	<7.0	14	<10	<20
H-10	05/31/00	32	<34	<40	<7.0	354	<10	<20
Pu-1	05/24/00	6.7	e23	<40	<7.0	11200	<10	<20
U-5	06/08/00	6.2	<34	<40	<7.0	16400	<10	54
V-1	07/20/00	3.2	<34	<40	<7.0	88	<10	<20
VW-1	05/24/00	42	<34	<40	<7.0	9250	<10	<20
W-6	06/01/00	265	<34	<40	<7.0	442	<10	<20

Effects of Combined-Sewer Overflows on Recreational Waters and Aquatic Life of the Mahoning River and Tributaries in Youngstown, Ohio

The data described in the following tables were collected as part of the Youngstown, Ohio, sewer-overflow project. The goal of this project is to develop an improved understanding of the effects of combined-sewer overflows on attainment of water-quality standards for both primary-contact recreation and the protection of aquatic life. In order to attain this goal, microbiological and chemical water-quality data of the Mahoning River and its tributaries were collected during two storm events. Water-quality data were collected from 14 sites; 8 sites along Mill Creek and tributaries, 5 sites along the Mahoning River and tributaries, and the Youngstown wastewater-treatment plant outfall. Continuous hydrologic data were collected at selected sites.



[mi², square miles]

Station number	Station name	Drainage area (mi ²)
03098000	Mahoning River at Youngstown, Ohio	898
03098406	Mill Creek at Shields Road at Boardman, Ohio	53.7
03098500	Mill Creek at Youngstown, Ohio	66.3
03098513	Mill Creek at Price Road at Youngstown, Ohio	78.4
03098600	Mahoning River below West Avenue at Youngstown, Ohio	978
03098700	Crab Creek at Youngstown, Ohio	20.1
03099500	Mahoning River at Lowellville, Ohio	1073
405916080412400	Mill Creek Western Reserve Road near Boardman, Ohio	28.4
410048080422700	Indian Run near Canfield, Ohio	14.8
410247080405200	Cranberry Run at Boardman, Ohio	3.66
410440080415900	Ax Factory Run at Youngstown, Ohio	3.21
410447080371900	Mahoning River at Center Street at Youngstown, Ohio	980
410514080404700	Bears Den Run at Youngstown, Ohio	3.89
410526080383000	Youngstown Waste Water Treatment Plant Outfall at Youngstown, Ohio	--

PROJECT DATA
Effects of Combined-Sewer Overflows on Recreational Waters and
Aquatic Life of the Mahoning River and Tributaries in Youngstown, Ohio
 03098000 MAHONING RIVER AT YOUNGSTOWN, OHIO

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

[ft³/s, cubic feet per second; (00061), USGS National Water Information System parameter code; mm of Hg, millimeters of mercury; mg/L, milligrams per liter; µS/cm, microsiemens per centimeter; deg C, degrees Celsius; IT, incremental titration; col/100 mL, colonies per 100 milliliters; µg/L, micrograms per liter; --, no data; <, concentration or value reported is less than that indicated ; mf, membrane filtration; k, value is estimated from a non-ideal colony count]

Date	Time	Discharge, instantaneous (ft ³ /s) (00061)	Barometric pressure (mm of Hg) (00025)	Oxygen, dissolved (percent of saturation) (00301)	Oxygen, dissolved (mg/L) (00300)	pH, whole water, field (standard units) (00400)	Specific conductance, field (µS/cm) (00095)	Air temperature (deg C) (00020)	Water temperature (deg C) (00010)	Hardness, total (mg/L as CaCO ₃) (00900)	
Aug.											
	6	1730	890	737	92	7.1	7.5	465	--	26.1	130
	7	0800	1010	742	75	6.1	7.7	405	--	24.3	--
	8	1100	987	740	--	--	7.8	370	--	24.0	--
Sept.											
	21	1335	395	739	--	--	7.1	385	--	27.4	150
	22	0930	388	743	--	--	7.2	540	--	22.3	--
	23	0855	356	736	--	--	7.5	486	--	22.5	--

Date	Calcium, dissolved (mg/L as Ca) (00915)	Magnesium, dissolved (mg/L as Mg) (00925)	Potassium, dissolved (mg/L as K) (00935)	Sodium, dissolved (mg/L as Na) (00930)	Alkalinity, water, dissolved, IT, field (mg/L as CaCO ₃) (39086)	Bicarbonate, water, dissolved, IT, field (mg/L as HCO ₃) (00453)	Chloride, dissolved (mg/L as Cl) (00940)	Fluoride, dissolved (mg/L as F) (00950)	Silica, dissolved (mg/L as SiO ₂) (00955)
Aug.									
	6	36.3	9.8	5.2	30.7	--	49.0	.4	4.5
	7	--	--	--	--	--	--	--	--
	8	--	--	--	--	--	--	--	--
Sept.									
	21	41.4	10.9	5.8	37.4	87	106	.5	5.7
	22	--	--	--	--	--	--	--	--
	23	--	--	--	--	--	--	--	--

Date	Sulfate, dissolved (mg/L as SO ₄) (00945)	Nitrogen, ammonia, plus organic, dissolved (mg/L as N) (00623)	Nitrogen, ammonia, plus organic, total (mg/L as N) (00625)	Nitrogen, ammonia, dissolved (mg/L as N) (00608)	Nitrogen, nitrite, plus nitrate, dissolved (mg/L as N) (00631)	Nitrogen, nitrite, dissolved (mg/L as N) (00613)	Phosphorus, dissolved (mg/L as P) (00666)	Phosphorus, ortho-phosphate, dissolved (mg/L as P) (00671)	Phosphorus, total (mg/L as P) (00665)
Aug.									
	6	56	.90	1.1	.31	.96	.06	.12	.19
	7	--	.69	.95	.20	.88	.04	.10	.17
	8	--	--	--	--	--	--	--	--
Sept.									
	21	63	.69	.66	.21	1.5	.04	.20	.23
	22	--	.69	.91	.15	1.7	.03	.18	.23
	23	--	--	--	--	--	--	--	--

Date	Oxygen demand, biochemical, 5-day (mg/L) (80082)	Oxygen demand, chemical (high level) (mg/L) (00340)	Residue, total at 105 deg C, suspended (mg/L) (00530)	Dissolved solids, residue at 180 deg C (mg/L) (70300)	<i>E. coli</i> , mTEC mf, water (col/100 mL) (31633)	Iron, dissolved (µg/L as Fe) (01046)	Manganese, dissolved (µg/L as Mn) (01056)	Caffeine, water, unfiltered, recoverable (µg/L) (81436)	Sediment, suspended (mg/L) (80154)
Aug.									
	6	2.0	14	23	262	3300	20	100	24
	7	<2.0	22	23	--	4400	--	--	--
	8	--	--	--	--	310	--	--	--
Sept.									
	21	<2.0	--	8	304	k530	20	104	--
	22	<2.0	--	11	--	220	--	--	--
	23	--	--	--	--	150	--	--	--

PROJECT DATA

Effects of Combined-Sewer Overflows on Recreational Waters and Aquatic Life of the Mahoning River and Tributaries in Youngstown, Ohio

03098406 MILL CREEK AT SHIELDS ROAD AT BOARDMAN, OHIO

LOCATION.—Latitude 41°02'41", longitude 80°41'00", Mahoning County, Hydrologic Unit 05030103, on right bank, upstream from Shields Road bridge at Boardman, and 400 ft upstream from Cranberry Creek.

DRAINAGE AREA.—53.7 mi².

PERIOD OF RECORD.—June 1999 to September 2000 (station discontinued).

GAGE.—Water-stage recorder. Altitude of gage is 1,040 ft above North American Vertical Datum of 1988 (NAVD of 1988), from the Global Positioning System.

REMARKS.—Records fair except for periods of estimated record, which are poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUE

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	14	9.7	17	8.8
2	---	---	---	---	---	---	---	---	14	58	15	8.0
3	---	---	---	---	---	---	---	---	14	25	9.4	8.0
4	---	---	---	---	---	---	---	---	15	12	7.5	7.3
5	---	---	---	---	---	---	---	---	12	9.1	7.5	7.2
6	---	---	---	---	---	---	---	---	12	8.2	8.9	8.3
7	---	---	---	---	---	---	---	---	11	12	6.8	12
8	---	---	---	---	---	---	---	---	10	8.1	26	8.4
9	---	---	---	---	---	---	---	---	9.9	8.6	16	8.0
10	---	---	---	---	---	---	---	---	9.4	20	9.3	8.0
11	---	---	---	---	---	---	---	---	9.3	11	7.9	7.2
12	---	---	---	---	---	---	---	---	8.3	7.4	7.4	5.9
13	---	---	---	---	---	---	---	---	8.1	6.1	11	8.4
14	---	---	---	---	---	---	---	---	9.6	5.8	143	11
15	---	---	---	---	---	---	---	---	14	5.0	92	7.9
16	---	---	---	---	---	---	---	---	11	4.6	24	6.1
17	---	---	---	---	---	---	---	---	8.7	4.8	15	5.9
18	---	---	---	---	---	---	---	---	8.8	4.7	12	5.5
19	---	---	---	---	---	---	---	---	7.7	4.8	10	5.3
20	---	---	---	---	---	---	---	---	7.0	7.5	9.7	5.3
21	---	---	---	---	---	---	---	---	7.1	8.3	9.4	6.6
22	---	---	---	---	---	---	---	---	6.2	11	10	6.9
23	---	---	---	---	---	---	---	---	5.3	5.3	8.8	6.1
24	---	---	---	---	---	---	---	---	7.2	4.5	8.0	11
25	---	---	---	---	---	---	---	---	6.1	4.6	33	11
26	---	---	---	---	---	---	---	---	6.1	4.2	86	9.7
27	---	---	---	---	---	---	---	---	6.7	3.9	28	7.7
28	---	---	---	---	---	---	---	---	13	ee35	15	6.6
29	---	---	---	---	---	---	---	---	9.8	e140	12	21
30	---	---	---	---	---	---	---	---	7.7	38	11	74
31	---	---	---	---	---	---	---	---	---	16	11	---
TOTAL	---	---	---	---	---	---	---	---	289.0	503.2	687.6	313.1
MEAN	---	---	---	---	---	---	---	---	9.63	16.2	22.2	10.4
MAX	---	---	---	---	---	---	---	---	15	140	143	74
MIN	---	---	---	---	---	---	---	---	5.3	3.9	6.8	5.3

e Estimated.

PROJECT DATA
Effects of Combined-Sewer Overflows on Recreational Waters and
Aquatic Life of the Mahoning River and Tributaries in Youngstown, Ohio
 03098406 MILL CREEK AT SHIELDS ROAD AT BOARDMAN, OHIO—Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
 DAILY MEAN VALUE

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	e50	18	15	e14	49	22	23	78	15	12	7.5
2	11	e118	16	16	e14	50	69	62	68	14	11	11
3	9.3	e260	16	59	e14	42	178	36	125	65	14	13
4	9.1	91	16	e600	e13	35	e600	25	e170	60	11	8.8
5	8.9	44	17	e350	e13	32	e500	36	113	28	10	9.4
6	e9.0	26	28	e180	e13	28	e330	31	e140	19	e160	7.8
7	e9.2	19	24	e100	e13	26	e220	24	127	15	e140	7.1
8	e10	16	18	64	e13	25	e1000	22	86	14	60	6.7
9	e28	15	16	51	e13	25	e600	22	52	12	26	6.9
10	e23	15	78	47	e13	22	e330	25	34	18	18	15
11	e16	15	81	47	e150	25	e180	30	26	25	15	24
12	e11	13	42	40	120	56	124	21	25	13	13	21
13	e18	14	31	34	88	46	90	24	39	11	11	38
14	e56	13	82	30	147	35	72	24	28	20	11	15
15	e27	13	87	25	e170	30	60	17	21	55	10	26
16	e16	12	80	26	128	39	51	15	23	42	9.6	30
17	e11	12	74	24	93	90	57	25	40	75	11	16
18	e13	11	50	21	75	59	59	39	38	47	12	12
19	e12	12	37	20	94	40	51	e270	28	23	14	10
20	e10	15	34	e19	83	37	44	128	20	20	9.7	11
21	e10	16	34	e18	69	90	55	74	34	26	8.7	40
22	e9.4	13	26	e18	103	91	52	42	33	28	9.2	14
23	e12	11	22	e17	e200	62	43	87	21	18	16	26
24	e21	12	19	e16	e180	46	36	e330	15	16	54	51
25	e20	12	18	e16	149	41	30	138	17	15	17	23
26	e16	94	15	e15	108	35	25	94	16	13	11	15
27	e13	86	15	e15	81	36	22	57	88	12	17	16
28	e10	43	16	e15	69	40	21	97	44	12	e26	13
29	e10	26	14	e15	54	36	21	e200	21	15	10	11
30	e10	20	14	e14	---	29	19	137	17	16	9.6	10
31	e13	---	15	e14	---	25	---	88	---	12	8.5	---
TOTAL	473.9	1117	1053	1941	2294	1322	4961	2243	1587	774	765.3	515.2
MEAN	15.3	37.2	34.0	62.6	79.1	42.6	165	72.4	52.9	25.0	24.7	17.2
MAX	56	260	87	600	200	91	1000	330	170	75	160	51
MIN	8.9	11	14	14	13	22	19	15	15	11	8.5	6.7

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1999 - 2000, BY WATER YEAR (WY)

	1999	2000	1999	2000	1999	2000	1999	2000	1999	2000	1999	2000
MEAN	15.3	37.2	34.0	62.6	79.1	42.6	165	72.4	31.3	20.6	23.4	13.8
MAX	15.3	37.2	34.0	62.6	79.1	42.6	165	72.4	52.9	25.0	24.7	17.2
(WY)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
MIN	15.3	37.2	34.0	62.6	79.1	42.6	165	72.4	9.63	16.2	22.2	10.4
(WY)	2000	2000	2000	2000	2000	2000	2000	2000	1999	1999	1999	1999

SUMMARY STATISTICS

FOR 2000 WATER YEAR

WATER YEARS 1999 - 2000

ANNUAL TOTAL	19046.4											
ANNUAL MEAN	52.0								52.0			
HIGHEST ANNUAL MEAN									52.0			2000
LOWEST ANNUAL MEAN									52.0			2000
HIGHEST DAILY MEAN	1000					Apr	8		1000		Apr	8 2000
LOWEST DAILY MEAN	6.7					Sep	8		3.9		Jul	27 1999
ANNUAL SEVEN-DAY MINIMUM	8.5					Sep	3		5.1		Jul	13 1999
INSTANTANEOUS PEAK FLOW	1350					Apr	8		1350		Apr	8 2000
INSTANTANEOUS PEAK STAGE	6.80					Apr	8		6.80		Apr	8 2000
INSTANTANEOUS LOW FLOW	5.5					Sep	8		2.2		Jul	27 1999
10 PERCENT EXCEEDS	110								91			
50 PERCENT EXCEEDS	24								17			
90 PERCENT EXCEEDS	11								7.9			

e Estimated.

PROJECT DATA
Effects of Combined-Sewer Overflows on Recreational Waters and
Aquatic Life of the Mahoning River and Tributaries in Youngstown, Ohio
 03098406 MILL CREEK AT SHIELDS ROAD AT BOARDMAN, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

[ft³/s, cubic feet per second; (00061), USGS National Water Information System parameter code; mm of Hg, millimeters of mercury; mg/L, milligrams per liter; μS/cm, microsiemens per centimeter; deg C, degrees Celsius; --, no data; IT, incremental titration; mf, membrane filtration; col/100 mL, colonies per 100 milliliters; <, concentration or value reported is less than that indicated]

Date	Time	Discharge, instantaneous (ft ³ /s) (00061)	Barometric pressure (mm of Hg) (00025)	Oxygen, dissolved (percent of saturation) (00301)	Oxygen, dissolved (mg/L) (00300)	pH, whole water, field (standard units) (00400)	Specific conductance, field (μS/cm) (00095)	Air temperature (deg C) (00020)	Water temperature (deg C) (00010)
Aug.									
	6	123	735	78	7.0	7.7	339	--	18.7
	7	112	737	90	7.9	7.5	499	--	19.6
	8	66	740	76	6.5	7.3	536	21.0	21.0
Sept.									
	21	30	738	72	--	7.5	772	--	17.4
	22	15	--	--	7.6	7.6	812	--	15.0
	23	12	742	66	6.6	7.7	899	--	14.5

Date	Hardness, total (mg/L as CaCO ₃) (00900)	Calcium, dissolved (mg/L as Ca) (00915)	Magnesium, dissolved (mg/L as Mg) (00925)	Potassium, dissolved (mg/L as K) (00935)	Sodium, dissolved (mg/L as Na) (00930)	Alkalinity, water, dissolved, IT, field (mg/L as CaCO ₃) (39086)	Bicarbonate, water, dissolved, IT, field (mg/L as HCO ₃) (00453)	Chloride, dissolved (mg/L as Cl) (00940)
Aug.								
	6	83	25.9	4.4	4.1	26.9	46	56
	7	--	--	--	--	--	--	40.1
	8	--	--	--	--	--	--	--
Sept.								
	21	200	58.6	14	7.2	68.0	88	107
	22	--	--	--	--	--	--	95.2
	23	--	--	--	--	--	--	--

Date	Fluoride, dissolved (mg/L as F) (00950)	Silica, dissolved (mg/L as SiO ₂) (00955)	Sulfate, dissolved (mg/L as SO ₄) (00945)	Nitrogen, ammonia plus organic, dissolved (mg/L as N) (00623)	Nitrogen, ammonia plus organic, total (mg/L as N) (00625)	Nitrogen, ammonia, dissolved (mg/L as N) (00608)	Nitrogen, nitrite, plus nitrate, dissolved (mg/L as N) (00631)	Nitrogen, nitrite, dissolved (mg/L as N) (00613)
Aug.								
	6	.3	4.1	38.5	.50	1.2	.11	2.1
	7	--	--	--	.57	1.1	.071	1.4
	8	--	--	--	--	--	--	.02
Sept.								
	21	.5	7.8	110	.61	.96	.03	5.6
	22	--	--	--	.57	.64	.04	4.9
	23	--	--	--	--	--	--	.01

Date	Phosphorus, dissolved (mg/L as P) (00666)	Phosphorus, ortho- phosphate, dissolved (mg/L as P) (00671)	Phosphorus, total (mg/L as P) (00665)	Oxygen demand, biochemical, carbonaceous, 5-day (mg/L) (80082)	Oxygen demand, chemical (high level) (mg/L) (00340)	Residue, total at 105 deg C, suspended (mg/L) (00530)	Dissolved solids, residue at 180 deg C (mg/L) (70300)	<i>Clostridium</i> <i>perfringens</i> , mf-mCP (col/100 mL) (90915)
Aug.								
	6	.35	.32	.69	3.2	26	145	196
	7	.18	.16	.47	2.2	29	96	--
	8	--	--	--	--	--	--	--
Sept.								
	21	.36	.33	.48	<2.0	--	39	453
	22	.22	.19	.26	<2.0	--	8	--
	23	--	--	--	--	--	--	170

PROJECT DATA
Effects of Combined-Sewer Overflows on Recreational Waters and
Aquatic Life of the Mahoning River and Tributaries in Youngstown, Ohio
 03098406 MILL CREEK AT SHIELDS ROAD AT BOARDMAN, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[col/100 mL, colonies per 100 milliliters; (99765), USGS National Water Information System parameter code; plaq/100 mL, plaques per 100 milliliters; mf, membrane filtration; µg/L, micrograms per liter; mg/L, milligrams per liter; --, no data; <, concentration or value reported is less than that indicated]

Date	<i>Clostridium</i> <i>perfringens</i> , ethanol treated (col/100 mL) (99765)	Coliphage, <i>E. coli</i> C host, 1-agar (plaq/100 mL) (90905)	Coliphage, <i>E. coli</i> F-amp, 1-agar (plaq/100 mL) (90904)	<i>E. coli</i> , mTEC mf, water (col/100 mL) (31633)	Iron, dissolved (µg/L as Fe) (01046)	Manganese, dissolved (µg/L as Mn) (01056)	Caffeine, water, unfiltered, recoverable (µg/L) (81436)	Sediment, suspended (mg/L) (80154)
Aug.								
6	310	8	11	11000	30	86	.15	152
7	--	--	--	23000	--	--	--	--
8	--	--	--	3500	--	--	--	--
Sept.								
21	310	6	<1	6900	20	227	.06	45
22	--	--	--	1000	--	--	--	--
23	--	--	--	560	--	--	--	--

PROJECT DATA
Effects of Combined-Sewer Overflows on Recreational Waters and
Aquatic Life of the Mahoning River and Tributaries in Youngstown, Ohio
 03098500 MILL CREEK AT YOUNGSTOWN, OHIO

LOCATION.—Latitude 41°04'19", longitude 80°41'26", in T.2N., R.2W., Mahoning County, Hydrologic Unit 05030103, on right bank 600 ft upstream from suspension bridge in Mill Creek Park at Youngstown, 1 mi downstream from Newport Dam, and 2.5 mi upstream from mouth.

DRAINAGE AREA.—66.3 mi².

PERIOD OF RECORD.—October 1943 to September 1971, June 1999 to September 2000 (station discontinued). Prior to December 1943, monthly discharge only, published in WSP 1305.

REVISED RECORDS.—WSP 1907: Drainage area.

GAGE.—Water-stage recorder. Altitude of gage is 898.52 ft above National Geodetic Vertical Datum of 1929 (NGVD of 1929).

REMARKS.—Records fair except for periods of estimated record, which are poor. Flow regulated intermittently by Newport Dam.

EXTREMES OUTSIDE PERIOD OF RECORD.—Flood in March 1913 reached a discharge of 7,140 ft³/s at dam 1 mi downstream (computed by Mill Creek Park Association).

EXTREMES.—June 1 to Sept. 30, 1999. Maximum discharge, 254 ft³/s, July 29, gage height 1.88 ft; Minimum daily, 1.7 ft³/s, July 13.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
 DAILY MEAN VALUE

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	e17	15	38	12
2	---	---	---	---	---	---	---	---	e17	47	34	10
3	---	---	---	---	---	---	---	---	e17	54	17	8.7
4	---	---	---	---	---	---	---	---	e18	22	8.7	7.1
5	---	---	---	---	---	---	---	---	17	16	6.9	6.1
6	---	---	---	---	---	---	---	---	16	13	6.0	5.5
7	---	---	---	---	---	---	---	---	13	6.7	5.4	7.2
8	---	---	---	---	---	---	---	---	5.9	13	7.4	15
9	---	---	---	---	---	---	---	---	2.5	13	34	10
10	---	---	---	---	---	---	---	---	7.8	26	17	9.6
11	---	---	---	---	---	---	---	---	9.1	22	5.5	9.2
12	---	---	---	---	---	---	---	---	8.7	9.5	e5.0	6.8
13	---	---	---	---	---	---	---	---	8.7	1.7	e9.0	5.7
14	---	---	---	---	---	---	---	---	7.7	3.1	e15.0	8.0
15	---	---	---	---	---	---	---	---	9.7	8.0	e9.0	10
16	---	---	---	---	---	---	---	---	15	9.5	e45	7.3
17	---	---	---	---	---	---	---	---	12	6.7	e19	4.7
18	---	---	---	---	---	---	---	---	7.1	3.7	e14	e4.4
19	---	---	---	---	---	---	---	---	5.2	3.5	e12	e4.1
20	---	---	---	---	---	---	---	---	6.7	3.7	e10	e4.0
21	---	---	---	---	---	---	---	---	7.9	8.7	e9.6	e5.0
22	---	---	---	---	---	---	---	---	11	27	e10	e5.4
23	---	---	---	---	---	---	---	---	9.9	12	e9.2	e4.8
24	---	---	---	---	---	---	---	---	7.2	5.0	e8.4	e8.6
25	---	---	---	---	---	---	---	---	5.9	4.0	e12	e8.6
26	---	---	---	---	---	---	---	---	5.9	5.6	e78	e7.8
27	---	---	---	---	---	---	---	---	5.6	6.6	69	e6.8
28	---	---	---	---	---	---	---	---	6.6	34	47	e5.2
29	---	---	---	---	---	---	---	---	11	145	27	e20
30	---	---	---	---	---	---	---	---	21	87	14	34
31	---	---	---	---	---	---	---	---	---	53	11	---
TOTAL	---	---	---	---	---	---	---	---	313.1	685.0	829.1	261.6
MEAN	---	---	---	---	---	---	---	---	10.4	22.1	26.7	8.72
MAX	---	---	---	---	---	---	---	---	21	145	150	34
MIN	---	---	---	---	---	---	---	---	2.5	1.7	5.0	4.0

e Estimated.

PROJECT DATA
Effects of Combined-Sewer Overflows on Recreational Waters and
Aquatic Life of the Mahoning River and Tributaries in Youngstown, Ohio
 03098500 MILL CREEK AT YOUNGSTOWN, OHIO—Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
 DAILY MEAN VALUE

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28	8.3	19	14	e15	48	24	43	75	16	11	6.6
2	11	205	e16	14	e15	49	79	107	71	15	9.3	6.5
3	8.0	271	e16	150	e15	43	342	73	146	88	10	14
4	6.9	121	e16	765	e15	37	741	51	216	71	12	8.4
5	6.7	51	e19	425	e15	33	595	65	128	34	8.7	7.8
6	6.3	26	e41	204	e16	30	295	52	175	22	171	7.1
7	7.7	19	e30	106	e17	27	245	33	154	16	141	5.9
8	8.4	15	e24	67	e16	26	1160	27	92	14	69	5.3
9	30	13	e21	51	16	26	753	26	55	12	32	5.1
10	21	11	e90	47	23	23	363	28	37	20	21	11
11	16	11	e102	47	148	24	201	34	29	27	17	32
12	11	9.7	e61	41	123	62	135	25	26	15	14	21
13	21	10	e42	37	95	53	95	25	39	11	11	43
14	66	9.7	e100	32	213	38	74	28	33	24	11	20
15	27	8.9	e110	27	e190	32	62	20	23	66	10	34
16	15	8.7	e100	e25	e112	41	53	16	23	48	8.7	40
17	11	8.1	e95	23	e90	101	59	21	44	72	9.4	21
18	13	8.3	54	22	80	65	67	57	45	53	11	13
19	10	8.6	39	20	98	43	57	346	33	26	14	11
20	9.1	12	34	21	87	40	e49	161	22	20	10	11
21	9.0	13	35	20	70	97	e62	84	38	35	7.9	61
22	8.1	11	26	e18	112	99	e59	47	40	34	7.3	20
23	10	8.9	21	e18	256	69	53	115	25	22	14	29
24	23	9.8	17	e17	247	49	46	405	17	16	79	65
25	20	9.8	15	e17	173	43	42	237	18	15	22	29
26	14	132	13	e16	117	38	39	104	19	13	12	17
27	11	114	13	e16	86	39	37	62	148	11	14	16
28	9.1	52	13	e16	71	44	37	114	57	11	30	14
29	7.5	29	13	e15	55	41	38	259	26	12	12	12
30	8.2	22	13	e15	---	32	39	200	20	17	9.5	10
31	8.2	---	14	e15	---	27	---	99	---	13	8.0	---
TOTAL	461.2	1236.8	1222	2321	2586	1419	5901	2964	1874	869	816.8	596.7
MEAN	14.9	41.2	39.4	74.9	89.2	45.8	197	95.6	62.5	28.0	26.3	19.9
MAX	66	271	110	765	256	101	1160	405	216	88	171	65
MIN	6.3	8.1	13	14	15	23	24	16	17	11	7.3	5.1

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1944 - 2000, BY WATER YEAR (WY)

	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
MEAN	19.9	25.5	47.8	81.8	112	132	114	84.0	30.9	25.4	17.8	9.18															
MAX	187	145	161	299	303	264	262	326	142	220	143	40.9															
(WY)	1955	1971	1951	1952	1956	1964	1957	1946	1956	1958	1958	1958															
MIN	.44	3.13	3.61	9.81	8.43	32.5	14.0	12.5	5.45	1.52	.68	1.03															
(WY)	1964	1950	1961	1954	1954	1969	1946	1965	1944	1954	1962	1946															

SUMMARY STATISTICS

FOR 2000 WATER YEAR

WATER YEARS 1944 - 2000

ANNUAL TOTAL	22267.5		
ANNUAL MEAN	60.8	58.2	
HIGHEST ANNUAL MEAN		114	1956
LOWEST ANNUAL MEAN		28.7	1944
HIGHEST DAILY MEAN	1160	Apr 8	3280
LOWEST DAILY MEAN	5.1	Sep 9	.10
ANNUAL SEVEN-DAY MINIMUM	7.2	Sep 4	.10
INSTANTANEOUS PEAK FLOW	1610	Apr 8	6100
INSTANTANEOUS PEAK STAGE	4.61	Apr 8	9.00
INSTANTANEOUS LOW FLOW	4.8	Sep 8	.10
10 PERCENT EXCEEDS	129		143
50 PERCENT EXCEEDS	26		17
90 PERCENT EXCEEDS	9.6		2.3

e Estimated.

PROJECT DATA
Effects of Combined-Sewer Overflows on Recreational Waters and
Aquatic Life of the Mahoning River and Tributaries in Youngstown, Ohio
 03098500 MILL CREEK AT YOUNGSTOWN, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[col/100 mL, colonies per 100 milliliters; (99765), USGS National Water Information System parameter code; plaq/100 mL, plaques per 100 milliliters; µg/L, micrograms per liter; mg/L, milligrams per liter; --, no data; mf, membrane filtration; k, value is estimated from a non-ideal colony count; e, estimated]

Date	<i>Clostridium perfringens</i> , ethanol treated (col/100 mL) (99765)	Coliphage, <i>E. coli</i> C host, 1-agar (plaq/100 mL) (90905)	Coliphage, <i>E. coli</i> , F-amp, 1-agar (plaq/100 mL) (90904)	<i>E. coli</i> , mTEC mf, water (col/100 mL) (31633)	Iron, dissolved (µg/L as Fe) (01046)	Manganese, dissolved (µg/L as Mn) (01056)	Caffeine water, unfiltered, recoverable (µg/L) (81436)	Sediment, suspended (mg/L) (80154)
Aug.								
6	420	11	16	7800	20	225	.14	44
7	--	--	--	8900	--	--	--	--
8	--	--	--	1300	--	--	--	--
Sept.								
21	130	11	10	k1000	e10	200	.08	17
22	--	--	--	320	--	--	--	--
23	--	--	--	170	--	--	--	--

PROJECT DATA
Effects of Combined-Sewer Overflows on Recreational Waters and
Aquatic Life of the Mahoning River and Tributaries in Youngstown, Ohio
 03098513 MILL CREEK AT PRICE ROAD AT YOUNGSTOWN, OHIO

LOCATION.—Latitude 41°06'05", longitude 80°40'19", Mahoning County, Hydrologic Unit 05030103, on left bank wingwall of Lake Glacier Dam at Price Road, 300 ft upstream from confluence with Mahoning River in Youngstown.

DRAINAGE AREA.—78.4 mi².

PERIOD OF RECORD.—October 1999 to September 2000 (station discontinued).

GAGE.—Water-stage recorder. Altitude of gage is 846 ft above North America Vertical Datum of 1988 (NAVD of 1988), from Global Positioning System.

REMARKS.—Records good except for periods of estimated record, which are poor. Regulation by three low-head dams: Newport Lake, Lake Cohassat, and Glacier Lake.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
 DAILY MEAN VALUE

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e29	e12	e20	17	19	66	34	40	112	e19	e14	9.5
2	e13	e231	e24	25	18	66	92	105	96	e18	e13	8.9
3	e10	e313	23	23	19	59	399	63	137	e103	e13	16
4	e9.4	e149	28	e1100	20	51	1300	45	212	e75	e16	12
5	e7.7	e57	31	e642	20	47	1100	81	134	e39	e15	9.8
6	e9.4	e34	e50	e293	19	42	312	71	190	e26	e370	9.2
7	e12	e22	e34	e124	19	39	289	45	153	e21	169	8.3
8	e13	e18	e28	e78	18	38	e1280	37	97	e18	78	7.9
9	e37	e16	23	e57	18	38	e897	35	62	e15	38	7.7
10	e24	e14	e95	e61	25	36	e565	43	42	e22	24	13
11	e18	e13	e106	e61	147	38	345	46	32	e30	19	39
12	e14	e12	e69	e53	116	86	417	35	32	e17	16	23
13	e23	e13	e52	e45	95	74	501	32	49	e16	14	49
14	e83	e12	e94	e35	211	54	433	39	41	e28	13	24
15	e31	e11	e112	e35	183	46	187	27	27	e74	13	51
16	e19	e14	e102	e37	132	57	75	22	32	e56	11	54
17	e16	e12	e84	e35	95	118	76	24	63	e82	11	26
18	e18	e12	e60	e30	81	83	83	75	68	e58	13	15
19	e14	e11	e44	e28	96	58	67	496	48	e32	15	13
20	e15	e13	e39	24	86	53	58	367	28	e24	13	21
21	e14	e17	e38	22	72	112	73	136	53	e39	10	90
22	e13	e15	e30	18	108	114	72	56	50	e39	9.6	25
23	e15	e11	e25	20	e280	86	61	146	29	e25	28	45
24	e31	e13	e21	20	266	65	51	400	19	e20	105	85
25	e24	22	12	19	193	58	44	236	24	e19	26	35
26	e17	e153	12	19	133	52	39	106	23	e17	15	20
27	e15	e122	12	17	104	54	35	69	263	e14	20	17
28	e11	e59	11	17	88	61	34	123	65	e14	43	15
29	e11	e33	12	15	73	55	34	290	30	e15	15	13
30	e11	e24	15	18	---	43	33	221	e23	e22	12	12
31	e15	---	14	19	---	37	---	111	---	e16	11	---
TOTAL	592.5	1458	1320	3007	2754	1886	8986	3622	2234	1013	1182.6	774.3
MEAN	19.1	48.6	42.6	97.0	95.0	60.8	300	117	74.5	32.7	38.1	25.8
MAX	83	313	112	1100	280	118	1300	496	263	103	370	90
MIN	7.7	11	11	15	18	36	33	22	19	14	9.6	7.7

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2000 - 2000, BY WATER YEAR (WY)

	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
MEAN	19.1	48.6	42.6	97.0	95.0	60.8	300	117	74.5	32.7	38.1	25.8
MAX	19.1	48.6	42.6	97.0	95.0	60.8	300	117	74.5	32.7	38.1	25.8
(WY)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
MIN	19.1	48.6	42.6	97.0	95.0	60.8	300	117	74.5	32.7	38.1	25.8
(WY)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000

SUMMARY STATISTICS FOR 2000 WATER YEAR

ANNUAL TOTAL	28829.4
ANNUAL MEAN	78.8
HIGHEST DAILY MEAN	1300 Apr 4
LOWEST DAILY MEAN	7.7 Oct 5
ANNUAL SEVEN-DAY MINIMUM	9.7 Sep 4
INSTANTANEOUS PEAK FLOW	1740 Apr 4
INSTANTANEOUS PEAK STAGE	6.32 Apr 4
INSTANTANEOUS LOW FLOW	6.9 Sep 9
10 PERCENT EXCEEDS	150
50 PERCENT EXCEEDS	34
90 PERCENT EXCEEDS	13

e Estimated.

PROJECT DATA

Effects of Combined-Sewer Overflows on Recreational Waters and
Aquatic Life of the Mahoning River and Tributaries in Youngstown, Ohio
03098513 MILL CREEK AT PRICE ROAD AT YOUNGSTOWN, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[col/100 mL, colonies per 100 milliliters; (99765), USGS National Water Information System parameter code; plaq/100 mL, plaques per 100 milliliters; mf, membrane filtration; µg/L, micrograms per liter; mg/L, milligrams per liter; --, no data; <, concentration or value reported is less than that indicated]

Date	<i>Clostridium</i> <i>perfringens</i> , ethanol treated (col/100 mL) (99765)	Coliphage, <i>E. coli</i> , C host, 1-agar (90905)	Coliphage, <i>E. coli</i> , F-amp, 1-agar (90904)	<i>E. coli</i> , mTEC mf, water (col/100 mL) (31633)	Iron, dissolved (µg/L as Fe) (01046)	Manganese, dissolved (µg/L as Mn) (01056)	Caffeine, water, unfiltered, recoverable (µg/L) (81436)	Sediment, suspended (mg/L) (80154)
Aug.								
6	--	--	--	13000	20	188	.14	37
7	--	--	--	9300	--	--	--	--
8	--	--	--	790	--	--	--	--
Sept.								
21	290	8	<1	2100	10	54	.08	--
22	--	--	--	2400	--	--	--	--
23	--	--	--	260	--	--	--	--

PROJECT DATA
Effects of Combined-Sewer Overflows on Recreational Waters and
Aquatic Life of the Mahoning River and Tributaries in Youngstown, Ohio
 03098600 MAHONING RIVER BELOW WEST AVENUE AT YOUNGSTOWN, OHIO

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

[ft³/s, cubic feet per second; (00061), USGS National Water Information System parameter code; mm of Hg, millimeters of mercury; mg/L, milligrams per liter; µS/cm, microsiemens per centimeter; deg C, degrees Celsius; --, no data; IT, incremental titration; <, concentration or value reported is less than that indicated; mf, membrane filtration; col/100 mL, colonies per 100 milliliters; µg/L, micrograms per liter; k, value is estimated from a non-ideal colony count]

Date	Time	Discharge, instantaneous (ft ³ /s) (00061)	Barometric pressure (mm of Hg) (00025)	Oxygen, dissolved (percent of saturation) (00301)	Oxygen, dissolved (mg/L) (00300)	pH, whole water, field (standard units) (00400)	Specific conductance, field (µS/cm) (00095)	Air temperature (deg C) (00020)	Water temperature (deg C) (00010)	Hardness, total (mg/L as CaCO ₃) (00900)
Aug.										
6	1600	1420	743	--	--	7.6	340	--	24.9	140
7	1230	1360	743	--	--	7.6	380	--	24.3	--
8	1030	1170	742	--	--	7.7	330	--	23.9	--
Sept.										
21	1630	471	739	--	--	7.5	440	--	25.1	150
22	1040	415	743	--	--	7.5	300	--	21.8	--
23	0930	385	736	--	--	7.5	350	--	22.2	--

Date	Calcium, dissolved (mg/L as Ca) (00915)	Magnesium, dissolved (mg/L as Mg) (00925)	Potassium, dissolved (mg/L as K) (00935)	Sodium, dissolved (mg/L as Na) (00930)	Alkalinity, water, dissolved, IT, field (mg/L as CaCO ₃) (39086)	Bicarbonate, water, dissolved, IT, field (mg/L as HCO ₃) (00453)	Chloride, dissolved (mg/L as Cl) (00940)	Fluoride, dissolved (mg/L as F) (00950)	Silica, dissolved (mg/L as SiO ₂) (00955)
Aug.									
6	38.6	9.79	5.2	33.2	70	85	51.2	.4	4.0
7	--	--	--	--	--	--	--	--	--
8	--	--	--	--	--	--	--	--	--
Sept.									
21	41.9	10.6	5.6	39.3	77	94	58.4	.5	5.4
22	--	--	--	--	--	--	--	--	--
23	--	--	--	--	--	--	--	--	--

Date	Sulfate, dissolved (mg/L as SO ₄) (00945)	Nitrogen, ammonia plus organic, dissolved (mg/L as N) (00623)	Nitrogen, ammonia plus organic, total (mg/L as N) (00625)	Nitrogen, ammonia, dissolved (mg/L as N) (00608)	Nitrogen, nitrite plus nitrate, dissolved (mg/L as N) (00631)	Nitrogen, nitrite, dissolved (mg/L as N) (00613)	Phosphorus, dissolved (mg/L as P) (00666)	Phosphorus, ortho-phosphate, dissolved (mg/L as P) (00671)	Phosphorus, total (mg/L as P) (00665)
Aug.									
6	57.0	.65	1.0	.18	.993	.05	.12	.09	.25
7	--	.76	1.0	.15	.996	.04	.10	.08	.21
8	--	--	--	--	--	--	--	--	--
Sept.									
21	64.3	.57	.82	.10	1.56	.04	.16	.13	.22
22	--	.63	.74	.11	1.44	.04	.16	.14	.23
23	--	--	--	--	--	--	--	--	--

Date	Oxygen demand, biochemical, carbonaceous, 5-day (mg/L) (80082)	Oxygen demand, chemical (high level) (mg/L) (00340)	Residue, total at 105 deg C, suspended (mg/L) (00530)	Dissolved solids, residue at 180 deg C (mg/L) (70300)	<i>E. coli</i> , mTEC mf, water (col/100 mL) (31633)	Iron, dissolved (µg/L as Fe) (01046)	Manganese, dissolved (µg/L as Mn) (01056)	Caffeine, water, unfiltered, recoverable (µg/L) (81436)	Sediment, suspended (mg/L) (80154)
Aug.									
6	2.1	18	34	275	k8900	20	104	--	42
7	<2.0	22	33	--	3200	--	--	--	--
8	--	--	--	--	360	--	--	--	--
Sept.									
21	<2.0	--	14	306	1000	10	104	--	--
22	<2.0	--	12	--	1300	--	--	--	--
23	--	--	--	--	310	--	--	--	--

PROJECT DATA
Effects of Combined-Sewer Overflows on Recreational Waters and
Aquatic Life of the Mahoning River and Tributaries in Youngstown, Ohio
03098700 CRAB CREEK AT YOUNGSTOWN, OHIO

LOCATION.—Latitude 40°06'39", longitude 80°38'09", Mahoning County, Hydrologic Unit 05030102, on right bank upstream from State Route 62 overpass on Logan Avenue, 1.25 mi upstream from the confluence with the Mahoning River.

DRAINAGE AREA.—20.1 mi².

PERIOD OF RECORD.—April 1999 to September 2000 (station discontinued).

GAGE.—Water-stage recorder. Altitude of gage is 816 ft above North America Vertical Datum of 1988 (NAVD of 1988), from Global Positioning System.

REMARKS.—Records fair except for periods of estimated record, which are poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUE

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	6.7	5.9	2.5	4.9	1.3	.69
2	---	---	---	---	---	---	6.8	6.6	2.5	10	1.1	.68
3	---	---	---	---	---	---	6.1	5.7	2.3	3.9	.91	.66
4	---	---	---	---	---	---	8.9	4.9	2.1	2.1	.85	.66
5	---	---	---	---	---	---	10	5.0	1.9	1.5	.90	.66
6	---	---	---	---	---	---	7.7	4.1	1.8	1.5	.88	.69
7	---	---	---	---	---	---	6.2	4.0	1.7	1.7	.84	7.8
8	---	---	---	---	---	---	5.8	4.5	1.5	1.2	3.6	2.4
9	---	---	---	---	---	---	113	5.4	1.4	4.8	1.2	1.7
10	---	---	---	---	---	---	93	4.0	1.4	2.6	.98	1.1
11	---	---	---	---	---	---	134	3.5	1.4	1.4	.92	.93
12	---	---	---	---	---	---	68	3.2	1.4	1.1	.92	.92
13	---	---	---	---	---	---	24	3.2	1.3	1.1	.95	1.3
14	---	---	---	---	---	---	15	3.5	3.4	1.1	10	.99
15	---	---	---	---	---	---	12	3.2	2.7	1.1	2.0	.80
16	---	---	---	---	---	---	21	2.9	1.7	.99	1.1	.70
17	---	---	---	---	---	---	37	2.6	1.5	.97	.91	.76
18	---	---	---	---	---	---	20	2.8	1.4	.96	.90	.89
19	---	---	---	---	---	---	27	4.3	1.3	1.0	.86	.92
20	---	---	---	---	---	---	26	3.2	1.2	1.1	.80	1.1
21	---	---	---	---	---	---	17	3.0	1.2	2.7	2.3	1.2
22	---	---	---	---	---	---	55	3.0	1.2	6.5	1.8	1.2
23	---	---	---	---	---	---	86	3.1	1.2	1.6	.99	1.3
24	---	---	---	---	---	---	41	69	1.4	5.8	.86	1.5
25	---	---	---	---	---	---	20	15	1.3	1.6	1.7	1.4
26	---	---	---	---	---	---	15	7.4	1.2	1.3	3.3	1.2
27	---	---	---	---	---	---	11	5.3	1.2	1.1	1.5	1.1
28	---	---	---	---	---	---	9.4	4.0	1.2	43	1.2	1.2
29	---	---	---	---	---	---	8.0	3.2	1.3	37	1.1	8.3
30	---	---	---	---	---	---	6.6	2.9	1.3	2.5	.84	12
31	---	---	---	---	---	---	---	2.6	---	1.5	.72	---
TOTAL	---	---	---	---	---	---	917.2	201.0	48.9	149.62	48.23	56.75
MEAN	---	---	---	---	---	---	30.6	6.48	1.63	4.83	1.56	1.89
MAX	---	---	---	---	---	---	134	69	3.4	43	10	12
MIN	---	---	---	---	---	---	5.8	2.6	1.2	.96	.72	.66

PROJECT DATA
Effects of Combined-Sewer Overflows on Recreational Waters and
Aquatic Life of the Mahoning River and Tributaries in Youngstown, Ohio
03098700 CRAB CREEK AT YOUNGSTOWN, OHIO—Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUE

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.1	4.7	3.7	2.8	3.0	8.4	5.2	13	11	6.3	1.9	1.0
2	1.5	109	3.4	3.1	2.8	7.8	20	25	9.6	5.2	2.4	1.1
3	1.4	56	4.2	89	2.9	6.5	245	10	6.6	97	1.9	1.0
4	1.9	11	4.8	214	3.1	5.9	389	8.7	5.2	26	1.5	1.1
5	2.1	5.3	4.7	29	2.8	5.6	67	25	11	11	1.4	1.3
6	2.2	4.3	7.0	12	2.7	5.1	29	15	37	7.1	44	1.1
7	2.4	3.9	4.8	8.7	2.8	4.7	207	9.4	11	5.4	52	.93
8	2.6	3.6	3.9	6.8	2.6	4.4	1840	8.0	6.4	4.4	6.2	.89
9	6.9	3.4	3.4	6.1	2.9	4.6	112	7.2	4.7	4.8	3.5	.95
10	2.9	3.4	23	5.9	4.6	4.3	53	9.3	4.0	59	2.8	1.8
11	2.4	3.2	9.5	5.6	41	6.5	33	7.2	3.4	27	2.1	1.4
12	2.1	2.9	5.4	4.5	14	17	24	6.8	47	6.6	1.9	1.5
13	10	2.9	4.9	4.4	12	11	18	6.1	33	5.0	1.6	1.4
14	8.0	3.0	129	3.7	55	8.5	16	5.3	13	324	1.5	1.1
15	2.7	3.1	33	3.6	20	7.2	14	4.7	6.1	106	1.5	4.7
16	2.1	2.9	11	3.7	14	17	12	4.5	30	31	1.5	6.7
17	2.5	2.9	7.1	3.2	10	28	17	4.4	24	21	1.5	2.4
18	e2.3	2.9	5.1	3.0	9.9	10	21	11	25	7.5	1.6	1.5
19	e2.1	2.8	4.5	3.1	14	8.2	15	238	13	5.3	1.5	1.3
20	e2.5	3.2	4.6	3.4	9.5	9.3	13	24	7.0	4.2	1.3	10
21	e3.0	2.9	4.2	3.3	9.6	36	22	11	16	4.9	1.1	18
22	4.2	2.9	3.5	3.1	29	24	17	7.6	9.2	4.7	1.2	2.9
23	5.7	2.8	3.3	3.1	73	14	14	80	4.9	2.9	4.6	18
24	11	2.9	2.8	3.1	45	10	11	54	3.9	2.4	4.8	14
25	6.3	2.9	2.6	3.1	42	9.6	9.1	14	5.3	2.0	1.7	4.3
26	4.8	51	2.6	3.1	21	8.2	8.0	7.9	4.7	1.7	1.4	2.7
27	e4.0	15	2.7	3.1	14	10	7.8	9.0	1620	1.5	1.3	2.1
28	e3.5	5.4	2.7	3.1	11	10	7.8	35	26	1.7	1.4	1.8
29	e3.1	4.0	2.8	3.1	8.1	9.0	7.3	44	12	3.6	1.2	1.7
30	e2.7	4.3	2.8	3.0	---	7.0	6.6	12	8.9	2.6	1.1	1.6
31	e2.5	---	2.9	3.4	---	5.9	---	12	---	2.9	1.0	---
TOTAL	113.5	328.5	309.9	450.1	482.3	323.7	3260.8	729.1	2018.9	794.7	154.4	110.27
MEAN	3.66	10.9	10.0	14.5	16.6	10.4	109	23.5	67.3	25.6	4.98	3.68
MAX	11	109	129	214	73	36	1840	238	1620	324	52	18
MIN	1.4	2.8	2.6	2.8	2.6	4.3	5.2	4.4	3.4	1.5	1.0	.89

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1999 - 2000, BY WATER YEAR (WY)

	1999	2000	2000	2000	1999	2000	1999	1999	1999	1999	1999	1999
MEAN	3.66	10.9	10.0	14.5	16.6	10.4	69.6	15.0	34.5	15.2	3.27	2.78
MAX	3.66	10.9	10.0	14.5	16.6	10.4	109	23.5	67.3	25.6	4.98	3.68
(WY)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
MIN	3.66	10.9	10.0	14.5	16.6	10.4	30.6	6.48	1.63	4.83	1.56	1.89
(WY)	2000	2000	2000	2000	2000	2000	1999	1999	1999	1999	1999	1999

SUMMARY STATISTICS

FOR 2000 WATER YEAR

WATER YEARS 1999 - 2000

ANNUAL TOTAL	9076.17											
ANNUAL MEAN	24.8									24.8		
HIGHEST ANNUAL MEAN										24.8		2000
LOWEST ANNUAL MEAN										24.8		2000
HIGHEST DAILY MEAN	1840					Apr 8				1840		Apr 8 2000
LOWEST DAILY MEAN	.89					Sep 8				.66		Sep 3 1999
ANNUAL SEVEN-DAY MINIMUM	1.0					Sep 3				.68		Aug 31 1999
INSTANTANEOUS PEAK FLOW	10100					Jun 27				10100		Jun 27 2000
INSTANTANEOUS PEAK STAGE	10.70					Jun 27				10.70		Jun 27 2000
INSTANTANEOUS LOW FLOW	.89					Sep 8				.58		Sep 5 1999
10 PERCENT EXCEEDS	32									27		
50 PERCENT EXCEEDS	5.1									4.0		
90 PERCENT EXCEEDS	1.6									1.1		

e Estimated.

PROJECT DATA
Effects of Combined-Sewer Overflows on Recreational Waters and
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 03098700 CRAB CREEK AT YOUNGSTOWN, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

[ft³/s, cubic feet per second; (00061), USGS National Water Information System parameter code; mm of Hg, millimeters of mercury; mg/L, milligrams per liter; µS/cm, microsiemens per centimeter; deg C, degrees Celsius; --, no data; IT, incremental titration; mf, membrane filtration; col/100 mL, colonies per 100 milliliters; µg/L, micrograms per liter; <, concentration or value reported is less than that indicated]

Date	Time	Discharge, instantaneous (ft ³ /s) (00061)	Barometric pressure (mm of Hg) (00025)	Oxygen, dissolved (percent of saturation) (00301)	Oxygen, dissolved (mg/L) (00300)	pH, whole water, field (standard units) (00400)	Specific conductance, field (µS/cm) (00095)	Air temperature (deg C) (00020)	Water temperature (deg C) (00010)
Aug.									
6	1545	33	738	83	7.5	7.8	425	--	19.1
7	0715	51	740	98	8.8	7.7	382	--	19.5
8	1110	6.2	740	105	9.2	7.8	535	--	20.6
Sept.									
21	1200	7.4	738	92	8.5	7.1	452	--	17.5
22	1345	2.4	--	--	9.7	7.9	561	--	19.4
23	1010	1.7	736	105	10.0	7.7	703	--	16.0

Date	Hardness, total (mg/L as CaCO ₃) (00900)	Calcium, dissolved (mg/L as Ca) (00915)	Magnesium, dissolved (mg/L as Mg) (00925)	Potassium, dissolved (mg/L as K) (00935)	Sodium, dissolved (mg/L as Na) (00930)	Alkalinity, water, dissolved, IT, field (mg/L as CaCO ₃) (39086)	Bicarbonate, water, dissolved, IT, field (mg/L as HCO ₃) (00453)	Chloride, dissolved (mg/L as Cl) (00940)	Fluoride, dissolved (mg/L as F) (00950)
Aug.									
6	130	39.3	7.8	4.4	30.8	115	94	45.0	.3
7	--	--	--	--	--	--	--	--	--
8	--	--	--	--	--	--	--	--	--
Sept.									
21	140	42.4	8.2	4.0	33.0	104	127	47.7	.3
22	--	--	--	--	--	--	--	--	--
23	--	--	--	--	--	--	--	--	--

Date	Silica, dissolved (mg/L as SiO ₂) (00955)	Sulfate, dissolved (mg/L as SO ₄) (00945)	Nitrogen, ammonia plus organic, dissolved (mg/L as N) (00623)	Nitrogen, ammonia plus organic, total (mg/L as N) (00625)	Nitrogen, ammonia, dissolved (mg/L as N) (00608)	Nitrogen, nitrite, plus nitrate, dissolved (mg/L as N) (00631)	Nitrogen, nitrite, dissolved (mg/L as N) (00613)	Phosphorus, dissolved (mg/L as P) (00666)	Phosphorus, ortho- phosphate, dissolved (mg/L as P) (00671)
Aug.									
6	8.5	36.4	.52	1.0	.05	.51	.01	.08	.05
7	--	--	.55	.98	.06	.51	.02	.09	.06
8	--	--	--	--	--	--	--	--	--
Sept.									
21	7.8	37.8	.36	.67	<.02	.60	.01	.06	.04
22	--	--	.26	.36	<.02	.46	<.01	.03	.02
23	--	--	--	--	--	--	--	--	--

Date	Oxygen demand, biochemical, carbonaceous, 5-day (mg/L) (80082)	Oxygen demand chemical (high level) (mg/L) (00340)	Residue, total at 105 deg C, suspended (mg/L) (00530)	Dissolved solids, residue at 180 deg C (mg/L) (70300)	<i>E. coli</i> , mTEC mf, water (col/100 mL) (31633)	Iron, dissolved (µg/L as Fe) (01046)	Manganese, dissolved (µg/L as Mn) (01056)	Caffeine, water, unfiltered, recoverable (µg/L) (81436)	Sediment, suspended (mg/L) (80154)
Aug.									
6	3.0	21	21	258	9300	40	27	--	23
7	2.2	29	27	--	26000	--	--	--	--
8	--	--	--	--	2300	--	--	--	--
Sept.									
21	<2.0	17	11	265	6400	30	43	--	17
22	<2.0	--	<5	--	770	--	--	--	--
23	--	--	--	--	1700	--	--	--	--

PROJECT DATA

**Effects of Combined-Sewer Overflows on Recreational Waters and
Aquatic Life of the Mahoning River and Tributaries in Youngstown, Ohio**

03099500 MAHONING RIVER AT LOWELLVILLE, OHIO

LOCATION.—Latitude 40°02'12", longitude 80°32'11", in T.1N., R.1.W., Mahoning County, Hydrologic Unit 05030103, on left bank 100 ft upstream from First Street bridge at Lowellville, 1 mi upstream from Ohio-Pennsylvania State line, and 3 mi downstream from Yellow Creek.

DRAINAGE AREA.—1,073 mi².

PERIOD OF RECORD.—October 1943 to September 1972, October 1973 to September 1991, April 1999 to September 2000 (station discontinued).

Prior to August 1943 monthly discharge only, published in WSP 1305.

REVISED RECORDS.—WSP 1955: 1946(M), 1952(M), 1955(M), 1956. WSP 1907: Drainage area.

GAGE.—Water-stage recorder. Altitude of gage is 796.84 ft above National Geodetic Vertical Datum of 1929 (NGVD of 1929). Prior to Oct. 26, 1944, nonrecording gage at site 300 ft downstream at same datum.

REMARKS.—Records good. Flow regulated by 5 flood control reservoirs at points 21 to 58 mi upstream and by reservoirs on Squaw Creek, 15 mi upstream, on Dry Run, 9 mi upstream, and on Yellow Creek, 5 mi upstream. Water-quality data collected at this site 1949 to 1973. U.S. Army Corps of Engineers satellite telemeter at station.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge 21,000 ft³/s Jan. 21, 1959, gage height, 14.43 ft; minimum daily, 155 ft³/s Feb. 5, 1944.

EXTREMES OUTSIDE PERIOD OF RECORD.—Flood in March 1913 reached a stage of 17.8 ft.

EXTREMES.—Apr. 1, 1999 to Sept. 30, 2000. Maximum discharge, 14,200 ft³/s, Apr. 8, 2000, gage height, 10.83 ft; minimum daily, 212 ft³/s, Nov. 19, 1999.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUE

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	370	556	414	503	532	428
2	---	---	---	---	---	---	379	534	430	694	516	421
3	---	---	---	---	---	---	380	520	448	543	532	407
4	---	---	---	---	---	---	420	509	433	447	528	404
5	---	---	---	---	---	---	488	487	413	381	516	401
6	---	---	---	---	---	---	477	519	401	407	508	401
7	---	---	---	---	---	---	439	507	389	485	492	582
8	---	---	---	---	---	---	380	508	389	465	555	484
9	---	---	---	---	---	---	1260	523	401	488	517	459
10	---	---	---	---	---	---	3480	492	421	609	510	415
11	---	---	---	---	---	---	3590	495	418	524	470	393
12	---	---	---	---	---	---	3290	458	418	492	474	368
13	---	---	---	---	---	---	2220	409	418	475	485	376
14	---	---	---	---	---	---	1200	474	477	470	977	389
15	---	---	---	---	---	---	802	480	544	473	823	358
16	---	---	---	---	---	---	819	479	461	482	537	358
17	---	---	---	---	---	---	1250	481	421	492	494	353
18	---	---	---	---	---	---	1480	467	401	495	462	334
19	---	---	---	---	---	---	1270	631	408	512	442	323
20	---	---	---	---	---	---	1330	587	425	517	443	330
21	---	---	---	---	---	---	1110	430	433	520	454	346
22	---	---	---	---	---	---	1930	385	451	819	524	327
23	---	---	---	---	---	---	2620	431	451	577	487	327
24	---	---	---	---	---	---	2760	1020	458	545	482	333
25	---	---	---	---	---	---	1980	1140	461	523	551	343
26	---	---	---	---	---	---	1270	849	476	515	917	328
27	---	---	---	---	---	---	1040	631	492	519	631	326
28	---	---	---	---	---	---	868	517	500	930	526	329
29	---	---	---	---	---	---	748	468	495	1870	479	451
30	---	---	---	---	---	---	649	432	488	856	439	1100
31	---	---	---	---	---	---	---	410	---	567	428	---
TOTAL	---	---	---	---	---	---	40299	16829	13235	18195	16731	12194
MEAN	---	---	---	---	---	---	1343	543	441	587	540	406
MAX	---	---	---	---	---	---	3590	1140	544	1870	977	1100
MIN	---	---	---	---	---	---	370	385	389	381	428	323

PROJECT DATA

Effects of Combined-Sewer Overflows on Recreational Waters and
Aquatic Life of the Mahoning River and Tributaries in Youngstown, Ohio

03099500 MAHONING RIVER AT LOWELLVILLE, OHIO—Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUE

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	611	259	338	324	325	627	385	483	2500	692	516	425
2	406	1120	301	320	320	596	538	748	2350	667	506	416
3	322	1910	297	723	321	553	1790	658	2220	1290	510	424
4	307	1360	331	4280	330	510	5540	577	2200	1160	505	443
5	302	928	352	3890	334	485	5100	688	2130	789	495	439
6	306	570	467	2970	329	446	2830	677	2050	712	1290	439
7	305	425	486	1880	327	420	2010	589	1800	729	1470	438
8	297	347	442	1580	314	404	10600	518	1650	706	1140	438
9	498	309	365	1450	318	396	10500	493	1300	703	818	430
10	425	293	606	1440	339	379	5540	555	1030	928	638	440
11	369	276	719	1580	1010	369	3550	616	858	958	637	507
12	338	258	629	1190	1130	571	3730	598	1050	707	599	463
13	368	247	504	734	1030	601	3980	511	1290	565	541	480
14	649	244	1580	641	1450	588	3830	472	1150	983	520	392
15	453	234	2180	578	1550	569	3070	420	1040	2060	509	481
16	374	228	1690	553	1390	587	2290	390	1220	1440	498	596
17	319	224	984	525	1020	1040	2190	396	1460	1060	491	475
18	353	216	664	478	863	1050	1990	469	1500	903	498	407
19	299	212	528	407	871	726	1520	3110	1930	723	494	381
20	283	234	503	387	770	606	1250	3620	1760	611	487	376
21	273	247	473	361	704	840	1330	2710	1650	677	476	703
22	271	241	432	331	852	961	1520	1710	1570	664	470	485
23	269	239	389	341	1950	860	1320	1770	1260	586	564	605
24	396	245	346	350	2670	668	1170	2580	959	562	817	1150
25	373	241	300	335	2490	562	1010	1850	818	548	531	960
26	369	653	285	330	1980	509	871	1190	788	540	482	724
27	327	745	288	318	1330	497	805	996	2570	510	483	704
28	299	537	281	308	900	507	693	1150	1620	575	564	641
29	280	423	270	302	710	500	587	2560	934	591	499	586
30	267	364	294	311	---	470	506	2730	747	584	480	564
31	256	---	318	326	---	427	---	1860	---	562	437	---
TOTAL	10964	13829	17642	29543	27927	18324	82045	37694	45404	24785	18965	16012
MEAN	354	461	569	953	963	591	2735	1216	1513	800	612	534
MAX	649	1910	2180	4280	2670	1050	10600	3620	2570	2060	1470	1150
MIN	256	212	270	302	314	369	385	390	747	510	437	376

PROJECT DATA
Effects of Combined-Sewer Overflows on Recreational Waters and
Aquatic Life of the Mahoning River and Tributaries in Youngstown, Ohio
 03099500 MAHONING RIVER AT LOWELLVILLE, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

[ft³/s, cubic feet per second; (00061), USGS National Water Information System parameter code; mm of Hg, millimeters of mercury; mg/L, milligrams per liter; µS/cm, microsiemens per centimeter; deg C, degrees Celsius; --, no data; IT, incremental titration; mf, membrane filtration; col/100 mL, colonies per 100 milliliters; µg/L, micrograms per liter; <, concentration or value reported is less than that indicated]

Date	Time	Discharge, instantaneous (ft ³ /s) (00061)	Barometric pressure (mm of Hg) (00025)	Oxygen, dissolved (percent of saturation) (00301)	Oxygen, dissolved (mg/L) (00300)	pH, whole water, field (standard units) (00400)	Specific conductance, field (µS/cm) (00095)	Air temperature (deg C) (00020)	Water temperature (deg C) (00010)	Hardness, total (mg/L as CaCO ₃) (00900)
Aug.										
6	1945	1480	738	71	5.8	7.8	511	--	24.1	150
7	1415	1380	740	100	8.8	7.7	470	--	24.1	--
8	1130	1140	740	105	8.6	7.8	465	--	23.5	--
Sept.										
21	1840	482	740	84	7.2	7.5	521	18.0	22.5	150
22	1220	465	743	72	6.5	7.5	558	--	22.4	--
23	1120	448	738	99	8.5	7.4	576	--	21.5	--

Date	Calcium, dissolved (mg/L as Ca) (00915)	Magnesium, dissolved (mg/L as Mg) (00925)	Potassium, dissolved (mg/L as K) (00935)	Sodium, dissolved (mg/L as Na) (00930)	Alkalinity, water, dissolved, IT, field (mg/L as CaCO ₃) (39086)	Bicarbonate, water, dissolved, IT, field (mg/L as HCO ₃) (00453)	Chloride, dissolved (mg/L as Cl) (00940)	Fluoride, dissolved (mg/L as F) (00950)	Silica, dissolved (mg/L as SiO ₂) (00955)
Aug.									
6	42.6	11.0	5.5	33.9	81	99	53.3	.4	4.5
7	--	--	--	--	--	--	--	--	--
8	--	--	--	--	--	--	--	--	--
Sept.									
21	42.4	10.7	5.7	42.4	88	107	61.0	.4	5.7
22	--	--	--	--	--	--	--	--	--
23	--	--	--	--	--	--	--	--	--

Date	Sulfate, dissolved (mg/L as SO ₄) (00945)	Nitrogen, ammonia, plus organic, dissolved (mg/L as N) (00623)	Nitrogen, ammonia, plus organic, total (mg/L as N) (00625)	Nitrogen, ammonia, dissolved (mg/L as N) (00608)	Nitrogen, nitrite plus nitrate, dissolved (mg/L as N) (00631)	Nitrogen, nitrite, dissolved (mg/L as N) (00613)	Phosphorus, dissolved (mg/L as P) (00666)	Phosphorus, ortho- phosphate, dissolved (mg/L as P) (00671)	Phosphorus, total (mg/L as P) (00665)
Aug.									
6	70.2	.74	1.1	.18	1.14	.06	.13	.10	.30
7	--	.66	1.2	.18	1.44	.06	.14	.11	.32
8	--	--	--	--	--	--	--	--	--
Sept.									
21	69.7	.74	.97	.27	1.75	.05	.22	.18	.31
22	--	.82	.89	.22	2.22	.05	.25	.21	.31
23	--	--	--	--	--	--	--	--	--

Date	Oxygen demand, biochemical, carbonaceous, 5-day (mg/L) (80082)	Oxygen demand, chemical (high level) (mg/L) (00340)	Residue, total at 105 deg C, suspended (mg/L) (00530)	Dissolved solids, residue at 180 deg C (mg/L) (70300)	<i>E. coli</i> , mTEC mf, water (col/100 mL) (31633)	Iron, dissolved (µg/L as Fe) (01046)	Manganese, dissolved (µg/L as Mn) (01056)	Caffeine, water, unfiltered, recoverable (µg/L) (81436)	Sediment, suspended (mg/L) (80154)
Aug.									
6	<2.0	20	55	294	18000	10	36	--	65
7	<2.0	25	49	--	9700	--	--	--	--
8	--	--	--	--	1400	--	--	--	--
Sept.									
21	<2.0	--	20	319	6500	20	93	--	--
22	<2.0	--	7	--	1600	--	--	--	--
23	--	--	--	--	780	--	--	--	--

PROJECT DATA

**Effects of Combined-Sewer Overflows on Recreational Waters and
Aquatic Life of the Mahoning River and Tributaries in Youngstown, Ohio**

405916080412400 MILL CREEK AT WESTERN RESERVE ROAD NEAR BOARDMAN, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[col/100 mL, colonies per 100 milliliters; (99765), USGS National Water Information System parameter code; plaq/100 mL, plaques per 100 milliliters; mf, membrane filtration; µg/L, micrograms per liter; mg/L, milligrams per liter; --, no data; <, concentration or value reported is less than that indicated; e, estimated]

Date	<i>Clostridium perfringens</i> , ethanol treated (col/100 mL) (99765)	Coliphage, <i>E. coli</i> , C host, 1-agar (plaq/100 mL) (90905)	Coliphage, <i>E. coli</i> , F-amp, 1-agar (plaq/100 mL) (90904)	<i>E. coli</i> , mTEC mf, water (col/100 mL) (31633)	Iron, dissolved (µg/L as Fe) (01046)	Manganese, dissolved (µg/L as Mn) (01056)	Caffeine, water, unfiltered, recoverable (µg/L) (81436)	Sediment, suspended (mg/L) (80154)
Aug.								
6	260	11	16	11000	10	430	.10	137
7	--	--	--	45000	--	--	--	--
8	--	--	--	6900	--	--	--	--
Sept.								
21	110	<1	1	1900	e10	809	.11	38
22	--	--	--	350	--	--	--	--
23	--	--	--	230	--	--	--	--

PROJECT DATA
Effects of Combined-Sewer Overflows on Recreational Waters and
Aquatic Life of the Mahoning River and Tributaries in Youngstown, Ohio
 410048080422700 INDIAN RUN NEAR CANFIELD, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[col/100 mL, colonies per 100 milliliters; (99765), USGS National Water Information System parameter code; plaq/100 mL, plaques per 100 milliliters; mf, membrane filtration; µg/L, micrograms per liter; mg/L, milligrams per liter; --, no data; <, concentration or value reported is less than that indicated]

Date	<i>Clostridium</i> <i>perfringens</i> , ethanol treated (col/100 mL) (99765)	Coliphage, <i>E. coli</i> , C host, 1-agar (plaq/100 mL) (90905)	Coliphage, <i>E. coli</i> , F-amp, 1-agar (plaq/100 mL) (90904)	<i>E. coli</i> , mTEC mf, water (col/100 mL) (31633)	Iron, dissolved (µg/L as Fe) (01046)	Manganese, dissolved (µg/L as Mn) (01056)	Caffeine, water, unfiltered, recoverable (µg/L) (81436)	Sediment, suspended (mg/L) (80154)
Aug.								
6	310	14	29	11000	20	47	.25	107
7	--	--	--	16000	--	--	--	--
8	--	--	--	720	--	--	--	--
Sept.								
21	160	180	<1	3100	10	31	.12	34
22	--	--	--	1400	--	--	--	--
23	--	--	--	200	--	--	--	--

PROJECT DATA
Effects of Combined-Sewer Overflows on Recreational Waters and
Aquatic Life of the Mahoning River and Tributaries in Youngstown, Ohio
 410247080405200 CRANBERRY RUN AT BOARDMAN, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[col/100 mL, colonies per 100 milliliters; (99765), USGS National Water Information System parameter code; plaq/100 mL, plaques per 100 milliliters; mf, membrane filtration; µg/L, micrograms per liter; mg/L, milligrams per liter; --, no data; <, concentration or value reported is less than that indicated; k, value is estimated from a non-ideal colony count]

Date	<i>Clostridium perfringens</i> , ethanol treated (col/100 mL) (99765)	Coliphage, <i>E. coli</i> , C host, 1-agar (plaq/100 mL) (90905)	Coliphage, <i>E. coli</i> , F-amp, 1-agar (plaq/100 mL) (90904)	<i>E. coli</i> , mTEC mf, water (col/100 mL) (31633)	Iron, dissolved (µg/L as Fe) (01046)	Manganese, dissolved (µg/L as Mn) (01056)	Caffeine, water, unfiltered, recoverable (µg/L) (81436)	Sediment, suspended (mg/L) (80154)
Aug.								
6	480	26	58	15000	30	18	.59	23
7	--	--	--	k9200	--	--	--	--
8	--	--	--	12000	--	--	--	--
Sept.								
21	200	<1	1	5300	20	11	.16	10
22	--	--	--	2300	--	--	--	--
23	--	--	--	760	--	--	--	--

PROJECT DATA
Effects of Combined-Sewer Overflows on Recreational Waters and
Aquatic Life of the Mahoning River and Tributaries in Youngstown, Ohio
 410440080415900 AX FACTORY RUN AT YOUNGSTOWN, OHIO

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

[col/100 mL, colonies per 100 milliliters; (99765), USGS National Water Information System parameter code; plaq/100 mL, plaques per 100 milliliters; mf, membrane filtration; µg/L, micrograms per liter; mg/L, milligrams per liter; --, no data]

Date	<i>Clostridium</i> <i>perfringens</i> , ethanol treated (col/100 mL) (99765)	Coliphage, <i>E. coli</i> , C host, 1-agar (plaq/100 mL) (90905)	Coliphage, <i>E. coli</i> , F-amp, 1-agar (plaq/100 mL) (90904)	<i>E. coli</i> , mTEC mf, water (col/100 mL) (31633)	Iron, dissolved (µg/L as Fe) (01046)	Manganese, dissolved (µg/L as Mn) (01056)	Caffeine, water, unfiltered, recoverable (µg/L) (81436)	Sediment, suspended (mg/L) (80154)
Aug.								
6	100	25	21	2100	30	3	.12	11
7	--	--	--	2900	--	--	--	--
8	--	--	--	310	--	--	--	--
Sept.								
21	240	--	--	3300	40	5	.07	9
22	--	--	--	970	--	--	--	--
23	--	--	--	210	--	--	--	--

PROJECT DATA

Effects of Combined-Sewer Overflows on Recreational Waters and Aquatic Life of the Mahoning River and Tributaries in Youngstown, Ohio
410447080371900 MAHONING RIVER AT CENTER STREET AT YOUNGSTOWN, OHIO

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

[ft³/s, cubic feet per second; (00061), USGS National Water Information System parameter code; mm of Hg, millimeters of mercury; mg/L, milligrams per liter; μS/cm, microsiemens per centimeter; deg C, degrees Celsius; --, no data; IT, incremental titration; mf, membrane filtration; col/100 mL, colonies per 100 milliliters; μg/L, micrograms per liter; <, concentration or value reported is less than that indicated]

Date	Time	Discharge, instantaneous (ft ³ /s) (00061)	Barometric pressure (mm of Hg) (00025)	Oxygen, dissolved (percent of saturation) (00301)	Oxygen dissolved (mg/L) (00300)	pH, whole water, field (standard units) (00400)	Specific conductance, field (μS/cm) (00095)	Air temperature (deg C) (00020)	Water temperature (deg C) (00010)	Hardness, total (mg/L as CaCO ₃) (00900)
Aug.										
	6	1845	738	78	6.3	7.9	472	--	24.0	130
	7	1330	745	99	7.8	7.7	447	--	23.9	--
	8	1105	742	91	7.5	7.8	461	--	23.7	--
Sept.										
	21	1820	740	70	5.9	7.5	532	--	22.2	150
	22	1130	743	79	6.7	7.5	566	--	23.3	--
	23	1050	737	78	6.7	7.2	533	--	21.8	--

Date	Calcium, dissolved (mg/L as Ca) (00915)	Magnesium, dissolved (mg/L as Mg) (00925)	Potassium, dissolved (mg/L as K) (00935)	Sodium, dissolved (mg/L as Na) (00930)	Alkalinity, water, dissolved, IT, field (mg/L as CaCO ₃) (39086)	Bicarbonate, water, dissolved, IT, field (mg/L as HCO ₃) (00453)	Chloride, dissolved (mg/L as Cl) (00940)	Fluoride, dissolved (mg/L as F) (00950)	Silica, dissolved (mg/L as SiO ₂) (00955)	
Aug.										
	6	36.2	9.0	5.0	31.9	77	94	52.2	.4	4.2
	7	--	--	--	--	--	--	--	--	--
	8	--	--	--	--	--	--	--	--	--
Sept.										
	21	42.3	10.4	5.6	39.3	82	100	56.9	.5	6.1
	22	--	--	--	--	--	--	--	--	--
	23	--	--	--	--	--	--	--	--	--

Date	Sulfate, dissolved (mg/L as SO ₄) (00945)	Nitrogen, ammonia plus organic, dissolved (mg/L as N) (00623)	Nitrogen, ammonia plus organic, total (mg/L as N) (00625)	Nitrogen, ammonia, dissolved (mg/L as N) (00608)	Nitrogen, nitrite plus nitrate, dissolved (mg/L as N) (00631)	Nitrogen, nitrite, dissolved (mg/L as N) (00613)	Phosphorus, dissolved (mg/L as P) (00666)	Phosphorus, ortho-phosphate, dissolved (mg/L as P) (00671)	Phosphorus, total (mg/L as P) (00665)	
Aug.										
	6	56.5	.65	1.2	.19	1.15	.05	.13	.10	.29
	7	--	.63	1.1	.14	1.31	.05	.13	.10	.28
	8	--	--	--	--	--	--	--	--	--
Sept.										
	21	63.5	.56	.83	.12	1.83	.04	.21	.18	.30
	22	--	.66	.83	.14	1.83	.05	.21	.17	.27
	23	--	--	--	--	--	--	--	--	--

Date	Oxygen demand, biochemical, carbonaceous, 5-day (mg/L) (80082)	Oxygen demand, chemical (high level) (mg/L) (00340)	Residue, total at 105 deg C, suspended (mg/L) (00530)	Dissolved solids, residue at 180 deg C (mg/L) (70300)	<i>E. coli</i> , mTEC mf, water (col/100 mL) (31633)	Iron, dissolved (μg/L as Fe) (01046)	Manganese, dissolved (μg/L as Mn) (01056)	Caffeine, water, unfiltered, recoverable (μg/L) (81436)	Sediment, suspended (mg/L) (80154)	
Aug.										
	6	2.4	22	44	265	k2600	10	67	--	49
	7	<2.0	25	37	--	6500	--	--	--	--
	8	--	--	--	--	1500	--	--	--	--
Sept.										
	21	<2.0	21	22	309	5700	20	98	--	--
	22	<2.0	--	7	--	2800	--	--	--	--
	23	--	--	--	--	1700	--	--	--	--

PROJECT DATA

Effects of Combined-Sewer Overflows on Recreational Waters and Aquatic Life of the Mahoning River and Tributaries in Youngstown, Ohio

410514080404700 BEARS DEN RUN AT YOUNGSTOWN, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[col/100 mL, colonies per 100 milliliters; (99765), USGS National Water Information System parameter code; plaq/100 mL, plaques per 100 milliliters; µg/L, micrograms per liter; mg/L, milligrams per liter; --, no data; e, estimated; k, value is estimated from a non-ideal colony count]

Date	<i>Clostridium perfringens</i> , ethanol treated (col/100 mL) (99765)	Coliphage, <i>E. coli</i> , C host, 1-agar (plaq/100 mL) (90905)	Coliphage, <i>E. coli</i> , F-amp, 1-agar (plaq/100 mL) (90904)	<i>E. coli</i> , mTEC mf, water (col/100 mL) (31633)	Iron, dissolved (µg/L as Fe) (01046)	Manganese, dissolved (µg/L as Mn) (01056)	Caffeine, water, unfiltered, recoverable (µg/L) (81436)	Sediment, suspended (mg/L) (80154)
Aug.								
6	120	73	90	7000	30	27	.13	12
7	--	--	--	12000	--	--	--	--
8	--	--	--	4000	--	--	--	--
Sept.								
21	280	13	4	7300	e10	24	k.04	15
22	--	--	--	1600	--	--	--	--
23	--	--	--	710	--	--	--	--

PROJECT DATA

**Effects of Combined-Sewer Overflows on Recreational Waters and
Aquatic Life of the Mahoning River and Tributaries in Youngstown, Ohio**

410526080383000 YOUNGSTOWN WASTE WATER TREATMENT PLANT OUTFALL AT YOUNGSTOWN, OHIO

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

[ft³/s, cubic feet per second; (00061), USGS National Water Information System parameter code; mm of Hg, millimeters of mercury; mg/L, milligrams per liter; µS/cm, microsiemens per centimeter; deg C, degrees Celsius; --, no data; IT, incremental titration; mf, membrane filtration; col/100 mL, colonies per 100 milliliters; <, concentration or value reported is less than that indicated; k, value is estimated from a non-ideal colony count]

Date	Time	Discharge, instantaneous (ft ³ /s) (00061)	Barometric pressure (mm of Hg) (00025)	Oxygen, dissolved (percent of saturation) (00301)	Oxygen, dissolved (mg/L) (00300)	pH, whole water, field (standard units) (00400)	Specific conductance, field (µS/cm) (00095)	Air temperature (deg C) (00020)	Water temperature (deg C) (00010)
Aug.									
	6	1135	--	--	--	--	--	--	--
	7	1148	--	--	--	--	--	--	--
Sept.									
	21	1140	--	--	--	--	--	--	--
	22	1315	--	--	--	--	--	--	--
	23	1120	--	--	--	--	--	--	--

Date	Hardness, total (mg/L as CaCO ₃) (00900)	Calcium, dissolved (mg/L as Ca) (00915)	Magnesium, dissolved (mg/L as Mg) (00925)	Potassium, dissolved (mg/L as K) (00935)	Sodium, dissolved (mg/L as Na) (00930)	Alkalinity, water, dissolved, IT, field (mg/L as CaCO ₃) (39086)	Bicarbonate, water, dissolved, IT, field (mg/L as HCO ₃) (00453)	Chloride, dissolved (mg/L as Cl) (00940)
Aug.								
	6	140	43.8	8.5	6.2	61.8	72	82.1
	7	--	--	--	--	--	--	--
Sept.								
	21	130	41.5	7.6	7.0	73.9	96	75.0
	22	--	--	--	--	--	--	--
	23	--	--	--	--	--	--	--

Date	Fluoride, dissolved (mg/L as F) (00950)	Silica, dissolved (mg/L as SiO ₂) (00955)	Sulfate, dissolved (mg/L as SO ₄) (00945)	Nitrogen, ammonia plus organic, dissolved (mg/L as N) (00623)	Nitrogen, ammonia plus organic, total (mg/L as N) (00625)	Nitrogen, ammonia, dissolved (mg/L as N) (00608)	Nitrogen, nitrite, plus nitrate, dissolved (mg/L as N) (00631)	Nitrogen, nitrite, dissolved (mg/L as N) (00613)
Aug.								
	6	.7	6.3	61.3	1.2	1.2	6.54	.04
	7	--	--	--	1.1	1.5	4.22	.05
Sept.								
	21	.8	9.3	82.7	.78	1.1	6.49	<.01
	22	--	--	--	.94	1.1	9.94	.01
	23	--	--	--	--	--	--	--

Date	Phosphorus, dissolved (mg/L as P) (00666)	Phosphorus, ortho- phosphate, dissolved (mg/L as P) (00671)	Phosphorus, total (mg/L as P) (00665)	Oxygen demand, biochemical, carbonaceous, 5-day (mg/L) (80082)	Oxygen demand, chemical (high level) (mg/L) (00340)	Residue, total at 105 deg C, suspended (mg/L) (00530)	Dissolved solids, residue at 180 deg C (mg/L) (70300)	<i>Clostridium perfringens</i> , mf-mCP (col/100 mL) (90915)
Aug.								
	6	.54	.47	.54	4.6	34	373	6600
	7	.54	.44	.66	<2.0	31	5	--
Sept.								
	21	1.04	.96	1.17	<2.0	--	396	2700
	22	1.09	1.0	1.15	<2.0	--	<5	--
	23	--	--	--	--	--	--	--

Date	<i>Clostridium perfringens</i> , ethanol treated (col/100 mL) (99765)	Coliphage, <i>E. coli</i> , C host, 1-agar (plaq/100 mL) (90905)	Coliphage, <i>E. coli</i> , F-amp, 1-agar (plaq/100 mL) (90904)	<i>E. coli</i> , mTEC mf, water (col/100 mL) (31633)	Iron, dissolved (µg/L as Fe) (01046)	Manganese, dissolved (µg/L as Mn) (01056)	Caffeine, water, unfiltered, recoverable (µg/L) (81436)	Sediment, suspended (mg/L) (80154)
Aug.								
	6	k10000	450	390	11000	50	32	--
	7	--	--	--	k370	--	--	--
Sept.								
	21	3100	12	9	260	40	e2	--
	22	--	--	--	240	--	--	--
	23	--	--	--	120	--	--	--

PROJECT DATA
Columbus Well Field, Southern Franklin County, Ohio

The following tables contain ground-water-level measurements from a network of wells in southern Franklin County. The data were collected as part of a cooperative study with the City of Columbus.



PROJECT DATA
Columbus Well Field, Southern Franklin County, Ohio

395037082581900. LOCAL NUMBER, FR-36

LOCATION.—Latitude 39°50'37", longitude 82°58'19", Hydrologic Unit 05060001. Owner: J.P. Sand and Gravel
 AQUIFER.—Sand and gravel of Quaternary age.

WELL CHARACTERISTICS.—Drilled observation water well, diameter 4 in., depth 31 ft.

INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.

DATUM.—Elevation of land-surface datum is 715 ft above sea level. Measuring point: Top of casing, 1.3 ft above land-surface datum.

PERIOD OF RECORD.—October 1974 to current year.

EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 10.03 ft below land-surface datum, Oct. 17, 1979; lowest measured, 21.69 ft below land-surface datum, Mar. 16, 1992.

WATER LEVEL
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
03/02/00	18.55

394927082595800. LOCAL NUMBER, FR-70

LOCATION.—Latitude 39°49'27", longitude 82°59'58", Hydrologic Unit 05060001. Owner: St. Joseph Cemetery.

AQUIFER.—Sand and gravel of Quaternary age.

WELL CHARACTERISTICS.—Drilled observation water well, depth 59 ft; 4-in. casing.

INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.

DATUM.—Elevation of land-surface datum is 705 ft above sea level. Measuring point: Top of concrete base, 0.35 ft above land-surface datum.

PERIOD OF RECORD.—April 1975 to current year.

EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 13.24 ft below land-surface datum, Mar. 18, 1991; lowest measured, 27.60 ft below land-surface datum, June 12, 1992.

WATER LEVEL
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
03/02/00	22.60

395217083002300. LOCAL NUMBER FR-72

LOCATION.—Latitude 39°52'17", longitude 83°00'23", Hydrologic Unit 05060001.

AQUIFER.—Sand and gravel of Quaternary age.

WELL CHARACTERISTICS.—Drilled observation water well, depth 34.6 ft, 3-in. casing.

INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.

DATUM.—Elevation of land-surface datum is 715 ft above sea level. Measuring point: Top of casing inside pit, 3.5 ft below land-surface datum.

PERIOD OF RECORD.—May 1975 to current year.

EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 23.01 ft below land-surface datum, June 27, 1990; lowest measured, dry on dates in 1992, 1995, 1996, 1999, and March 2 of this water year.

WATER LEVEL
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
03/02/00	dry

PROJECT DATA
Columbus Well Field, Southern Franklin County, Ohio

395019083003300. LOCAL NUMBER, FR-104

LOCATION.—Latitude 39°50'19", longitude 83°00'33", Hydrologic Unit 05060001. Owner: City of Columbus
 AQUIFER.—Sand and gravel of Quaternary age.
 WELL CHARACTERISTICS.—Drilled observation well, diameter 6 in., depth 79.3 ft.
 INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
 DATUM.—Elevation of land-surface datum is 683 ft above sea level. Measuring point: Top of casing, 3.89 ft above land-surface datum.
 PERIOD OF RECORD.—December 1989 to current year.
 EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 11.51 ft below land-surface datum, Mar. 17, 1995; lowest measured, 53.59 ft below land-surface datum, Dec. 11, 1991.

WATER LEVEL
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
03/02/00	23.73

395157083003500. LOCAL NUMBER, FR-109

LOCATION.—Latitude 39°51'57", longitude 83°00'35", Hydrologic Unit 05060001. Owner: City of Columbus.
 AQUIFER.—Sand and gravel of Quaternary age.
 WELL CHARACTERISTICS.—Drilled observation water well, diameter 6 in., depth 92 ft.
 INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
 DATUM.—Elevation of land-surface datum is 702.2 ft above sea level. Measuring point: Top of outer steel casing, 30.8 ft above land-surface datum.
 PERIOD OF RECORD.—June 1975 to current year.
 EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 3.47 ft above land-surface datum, Sep. 5, 1990; lowest measured, 30.56 ft below land-surface datum, Aug. 5, 1988.

WATER LEVEL
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
03/02/00	22.51

PROJECT DATA
Columbus Well Field, Southern Franklin County, Ohio

395039082585800. LOCAL NUMBER, FR-115

LOCATION.—Latitude 39°50'39", longitude 82°58'58", Hydrologic Unit 05060001, near Hamilton Meadows. Owner: City of Columbus.

AQUIFER.—Sand and gravel of Quaternary age.

WELL CHARACTERISTICS.—Drilled observation well, diameter 6 in., depth 116 ft.

INSTRUMENTATION.—Data logger, 60-minute record.

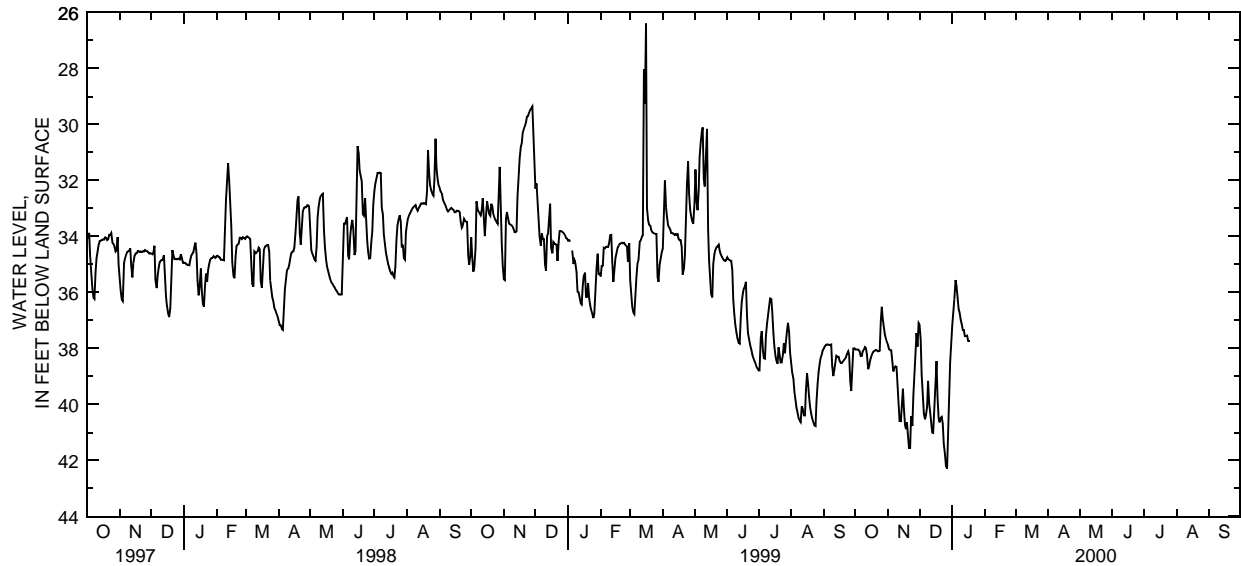
DATUM.—Elevation of land-surface datum is 721 ft above sea level. Measuring point: Floor of instrument shelter, 2.10 ft above land-surface datum.

PERIOD OF RECORD.—August 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily low, 48.15 ft below land-surface datum, Feb. 28 and 29, 1992; minimum daily low, 27.21 ft below land-surface datum, May 3, 1984.

DEPTH BELOW LAND SURFACE (WATER LEVEL), FEET, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
 DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	38.04	37.88	37.16	37.19	---	---	---	---	---	---	---	---
2	38.04	38.02	37.69	36.67	---	---	---	---	---	---	---	---
3	38.04	38.06	38.93	36.26	---	---	---	---	---	---	---	---
4	38.05	38.07	39.70	35.56	---	---	---	---	---	---	---	---
5	38.11	38.45	40.34	35.78	---	---	---	---	---	---	---	---
6	38.27	38.82	40.53	36.25	---	---	---	---	---	---	---	---
7	38.27	38.70	40.38	36.59	---	---	---	---	---	---	---	---
8	38.10	38.64	40.09	36.72	---	---	---	---	---	---	---	---
9	38.04	38.66	39.16	36.97	---	---	---	---	---	---	---	---
10	37.95	39.26	39.96	37.12	---	---	---	---	---	---	---	---
11	38.00	40.06	40.26	37.34	---	---	---	---	---	---	---	---
12	38.22	40.59	40.69	37.34	---	---	---	---	---	---	---	---
13	38.74	40.60	41.00	37.56	---	---	---	---	---	---	---	---
14	38.63	39.99	41.02	37.56	---	---	---	---	---	---	---	---
15	38.41	39.44	39.97	37.54	---	---	---	---	---	---	---	---
16	38.29	40.13	39.34	37.73	---	---	---	---	---	---	---	---
17	38.18	40.72	38.45	37.73	---	---	---	---	---	---	---	---
18	38.12	40.88	39.71	37.73	---	---	---	---	---	---	---	---
19	38.09	40.65	40.49	---	---	---	---	---	---	---	---	---
20	38.06	41.18	40.64	---	---	---	---	---	---	---	---	---
21	38.06	41.56	40.48	---	---	---	---	---	---	---	---	---
22	38.10	41.56	40.45	---	---	---	---	---	---	---	---	---
23	38.10	40.42	40.69	---	---	---	---	---	---	---	---	---
24	38.08	40.77	41.39	---	---	---	---	---	---	---	---	---
25	36.99	39.70	41.80	---	---	---	---	---	---	---	---	---
26	36.51	39.06	42.21	---	---	---	---	---	---	---	---	---
27	36.95	38.30	42.29	---	---	---	---	---	---	---	---	---
28	37.26	37.45	40.84	---	---	---	---	---	---	---	---	---
29	37.50	37.94	39.42	---	---	---	---	---	---	---	---	---
30	37.67	37.10	38.50	---	---	---	---	---	---	---	---	---
31	37.78	---	37.80	---	---	---	---	---	---	---	---	---
MEAN	37.96	39.42	40.04	---	---	---	---	---	---	---	---	---
MAX	38.74	41.56	42.29	---	---	---	---	---	---	---	---	---



PROJECT DATA
Columbus Well Field, Southern Franklin County, Ohio

395

395016083010300. LOCAL NUMBER, FR-117

LOCATION.—Latitude 39°50'16", longitude 83°01'03", Hydrologic Unit 05060001. Owner: Jackson Township.
AQUIFER.—Clay, sand, and gravel of Quaternary age.
WELL CHARACTERISTICS.—Drilled observation water well, diameter 2 in., depth 45 ft.
INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
DATUM.—Elevation of land-surface datum is 700 ft above sea level. Measuring point: Top of 2-inch steel pipe, 3.08 ft above land-surface datum.
PERIOD OF RECORD.—October 1979 to current year.
EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 13.02 ft below land-surface datum, June 17, 1981; lowest measured, 24.15 ft below land-surface datum, Dec. 10, 1991.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM INSTANTANEOUS OBSERVATION	
DATE	WATER LEVEL
03/02/00	24.14

395117083011600. LOCAL NUMBER, FR-120

LOCATION.—Latitude 39°51'17", longitude 83°01'16", Hydrologic Unit 05060001, near Columbus. Owner: Franklin County.
AQUIFER.—Sand and gravel of Quaternary age.
WELL CHARACTERISTICS.—Drilled observation water well, diameter 2 in., depth 72 ft.
INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
DATUM.—Elevation of land-surface datum is 685 ft above sea level. Measuring point: Floor of instrument shelter, 7.14 ft above land-surface datum.
PERIOD OF RECORD.—October 1979 to current year.
EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 3.36 ft below land-surface datum, Mar. 21, 1984; lowest measured, 35.24 ft below land-surface datum, Mar. 16, 1992.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM INSTANTANEOUS OBSERVATION	
DATE	WATER LEVEL
03/02/00	25.12

395123083003301. LOCAL NUMBER, FR-121A

LOCATION.—Latitude 39°51'23", longitude 83°00'33", Hydrologic Unit 05060001. Owner: City of Columbus.
AQUIFER.—Sand and gravel of Quaternary age.
WELL CHARACTERISTICS.—Drilled observation water well, diameter 2 in., depth 60 ft.
INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
DATUM.—Elevation of land-surface datum is 690.99 ft above sea level. Measuring point: Top of outer steel casing, 3.16 ft above land-surface datum.
PERIOD OF RECORD.—March 1993 to current year.
EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 8.53 ft below land-surface datum, Mar. 26, 1993; lowest measured, 40.55 ft below land-surface datum, Mar. 2, 2000.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM INSTANTANEOUS OBSERVATION	
DATE	WATER LEVEL
03/02/00	40.55

PROJECT DATA
Columbus Well Field, Southern Franklin County, Ohio

395131082592400. LOCAL NUMBER, FR-123

LOCATION.—Latitude 39°51'31", longitude 82°59'24", Hydrologic Unit 05060001, near Hamilton Meadows. Owner: Franklin County.

AQUIFER.—Sand and gravel of Quaternary age.

WELL CHARACTERISTICS.—Drilled observation water well, diameter 2 in., depth 36.5 ft.

INSTRUMENTATION.—Data logger, 60-minute record.

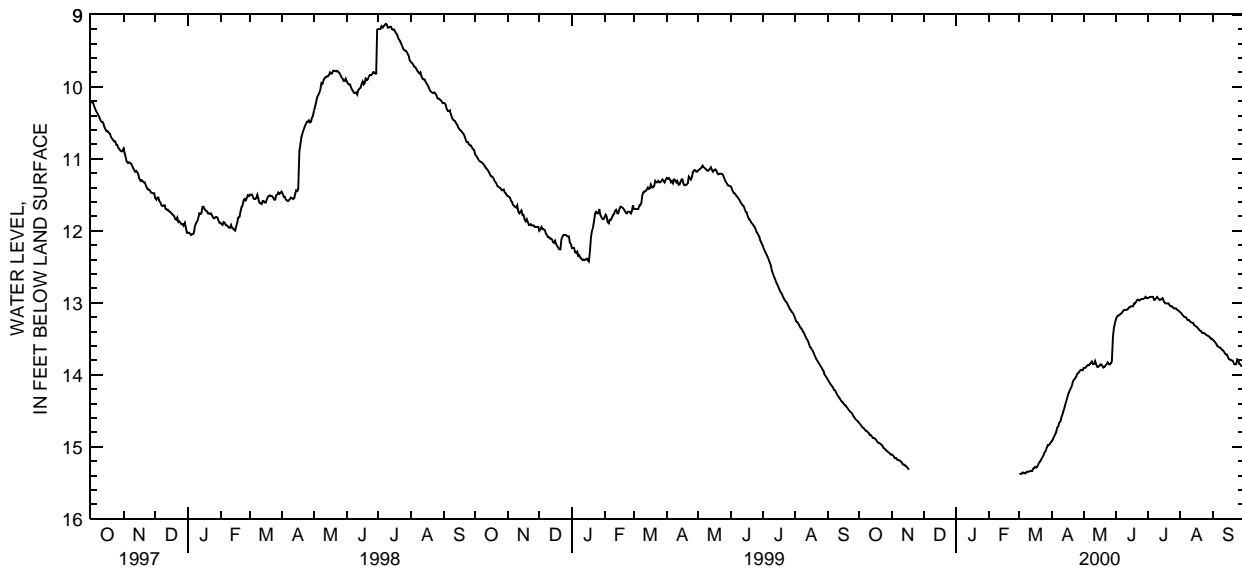
DATUM.—Elevation of land-surface datum is 710 ft above sea level. Measuring point: Floor of shelter, 2.25 ft above land-surface datum.

PERIOD OF RECORD.—April 1982 to current year.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily low, 18.55 ft below land-surface datum, May 12, 1992; minimum daily low, 6.87 ft below land-surface datum, Apr. 1, 1980.

DEPTH BELOW LAND SURFACE (WATER LEVEL), FEET, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
 DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14.67	15.11	---	---	---	15.38	14.92	13.91	13.22	12.94	13.13	13.52
2	14.69	15.12	---	---	---	15.38	14.89	13.91	13.19	12.93	13.15	13.53
3	14.71	15.14	---	---	---	15.38	14.86	13.90	13.18	12.92	13.17	13.55
4	14.73	15.16	---	---	---	15.36	14.83	13.88	13.17	12.92	13.19	13.57
5	14.74	15.16	---	---	---	15.36	14.80	13.87	13.16	12.92	13.20	13.60
6	14.76	15.18	---	---	---	15.37	14.74	13.87	13.15	12.92	13.20	13.61
7	14.78	15.19	---	---	---	15.37	14.72	13.85	13.13	12.96	13.22	13.62
8	14.78	15.19	---	---	---	15.35	14.67	13.84	13.11	12.96	13.24	13.63
9	14.80	15.20	---	---	---	15.35	14.65	13.82	13.10	12.94	13.24	13.64
10	14.81	15.21	---	---	---	15.35	14.59	13.85	13.10	12.92	13.26	13.66
11	14.84	15.24	---	---	---	15.34	14.55	13.85	13.10	12.94	13.27	13.67
12	14.84	15.25	---	---	---	15.34	14.50	13.81	13.09	12.96	13.28	13.69
13	14.86	15.25	---	---	---	15.34	14.46	13.86	13.07	12.96	13.28	13.72
14	14.88	15.27	---	---	---	15.31	14.40	13.89	13.06	12.95	13.31	13.72
15	14.88	15.28	---	---	---	15.30	14.35	13.89	13.05	12.94	13.32	13.75
16	14.89	15.30	---	---	---	15.28	14.30	13.88	13.05	12.97	13.33	13.78
17	14.91	15.32	---	---	---	15.29	14.25	13.86	13.05	13.00	13.34	13.79
18	14.93	---	---	---	---	15.28	14.22	13.86	13.01	13.01	13.36	13.80
19	14.95	---	---	---	---	15.24	14.19	13.88	13.01	13.01	13.38	13.80
20	14.95	---	---	---	---	15.22	14.15	13.90	12.99	13.01	13.39	13.81
21	14.96	---	---	---	---	15.20	14.09	13.89	12.96	13.01	13.40	13.85
22	14.97	---	---	---	---	15.17	14.07	13.87	12.96	13.04	13.42	13.86
23	14.99	---	---	---	---	15.15	14.05	13.85	12.97	13.05	13.42	13.85
24	15.02	---	---	---	---	15.12	14.03	13.83	12.96	13.05	13.43	13.79
25	15.03	---	---	---	---	15.08	13.99	13.85	12.95	13.07	13.44	13.80
26	15.04	---	---	---	---	15.06	13.98	13.86	12.95	13.08	13.45	13.85
27	15.06	---	---	---	---	15.02	13.96	13.84	12.95	13.08	13.46	13.86
28	15.07	---	---	---	---	14.98	13.94	13.81	12.94	13.08	13.47	13.88
29	15.08	---	---	---	---	14.98	13.93	13.47	12.92	13.10	13.48	13.88
30	15.10	---	---	---	---	14.96	13.94	13.35	12.94	13.11	13.50	13.89
31	15.11	---	---	---	---	14.94	---	13.27	---	13.12	13.50	---
MEAN	14.90	---	---	---	---	15.23	14.37	13.82	13.05	13.00	13.33	13.73
MAX	15.11	---	---	---	---	15.38	14.92	13.91	13.22	13.12	13.50	13.89



PROJECT DATA

Columbus Well Field, Southern Franklin County, Ohio

395008082593100. LOCAL NUMBER, FR-126

LOCATION.—Latitude 39°50'08", longitude 82°59'31", Hydrologic Unit 05060001, near Shadeville. Owner: Franklin County.
 AQUIFER.—Sand and gravel of Quaternary age.
 WELL CHARACTERISTICS.—Drilled observation water well, diameter 2 in., depth 122 ft.
 INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
 DATUM.—Elevation of land-surface datum is 703 ft above sea level. Measuring point: Top of PVC casing, 4.2 ft above land-surface datum.
 PERIOD OF RECORD.—October 1979 to current year.
 EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 1.96 ft below land-surface datum, June 17, 1981; lowest measured, 51.42 ft below land-surface datum, Nov. 9, 1977.

WATER LEVEL,
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
03/02/00	14.41

395126083014000. LOCAL NUMBER, FR-131

LOCATION.—Latitude 39°51'26", longitude 83°01'40", Hydrologic Unit 05060001, near Columbus. Owner: Franklin County.
 AQUIFER.—Clay, sand, and gravel of Quaternary age.
 WELL CHARACTERISTICS.—Drilled observation water well, diameter 2 in., depth 53 ft.
 INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
 DATUM.—Elevation of land-surface datum is 728 ft above sea level. Measuring point: Top of plastic coupling, 2.4 ft above land-surface datum.
 PERIOD OF RECORD.—October 1979 to current year.
 EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 37.41 ft below land-surface datum, Sept. 5, 1996; lowest measured, dry on Dec. 10, 1991, Mar. 16, June 12, July 28, 1992, Apr. 11, 1995, and Mar. 2, 2000.

WATER LEVEL,
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
03/02/00	dry

395218083023900. Local number, FR-133

LOCATION.—Latitude 39°52'18", longitude 83°02'39", Hydrologic Unit 05060001, on White Road near Grove City, Ohio. Owner: Franklin County.
 AQUIFER.—Gravel of Quaternary age.
 WELL CHARACTERISTICS.—Drilled observation water well, diameter 2 in., depth 82 ft, cased to 78 ft, finished with 4.0 ft of 0.80-in. well screen.
 INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
 DATUM.—Elevation of land-surface datum is 765 ft above sea level, from topographic map. Measuring point: Top of casing, 0.0 ft above land-surface datum.
 PERIOD OF RECORD.—April 1977 to current year.
 EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 49.05 ft below land-surface datum, Apr. 1, 1981; lowest measured, 79.36 ft below land-surface datum, June 22, 1978.

WATER LEVEL,
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
03/02/00	61.60

395020083014400. LOCAL NUMBER, FR-141

LOCATION.—Latitude 39°50'20", longitude 83°01'44", Hydrologic Unit 05060001. Owner: John Lako.
 AQUIFER.—Sand and gravel of Quaternary age.
 WELL CHARACTERISTICS.—Drilled domestic water well, diameter 4.25 in., depth 64 ft.
 INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
 DATUM.—Elevation of land-surface datum is 720 ft above sea level. Measuring point: Top of casing, 0.6 ft above land-surface datum.
 PERIOD OF RECORD.—September 1987 to current year.
 EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 25.60 ft below land-surface datum, June 3, 1996; lowest measured, 31.72 ft below land-surface datum, Dec. 10, 1991.

WATER LEVEL,
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
03/02/00	30.07

PROJECT DATA
Columbus Well Field, Southern Franklin County, Ohio

395027082592500. LOCAL NUMBER, FR-151

LOCATION.—Latitude 39°50'27", longitude 82°59'25", Hydrologic Unit 05060001, near Shadeville. Owner: City of Columbus.
 AQUIFER.—Sand and gravel of Quaternary age.
 WELL CHARACTERISTICS.—Drilled observation water well, diameter 2 in., depth 60 ft.
 INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
 DATUM.—Elevation of land-surface datum is 718 ft above sea level. Measuring point: Top of plastic pipe, 2.50 ft above land-surface datum.
 PERIOD OF RECORD.—July 1983 to current year.
 EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 23.00 ft below land-surface datum, Mar. 26, 1986; lowest measured, 37.56 ft below land-surface datum, Mar. 16, 1992.

WATER LEVEL
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
12/11/99	30.74

395314083021900. LOCAL NUMBER, FR-202

LOCATION.—Latitude 39°53'14", longitude 83°02'19", Hydrologic Unit 05060001. Owner: Mr. Daniel Himes.
 AQUIFER.—Devonian limestone.
 WELL CHARACTERISTICS.—Drilled domestic water well, diameter 4 in., depth 220 ft, cased to 175 ft.
 INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
 DATUM.—Elevation of land-surface datum is 752 ft above sea level. Measuring point: Top of casing, 1.17 ft above land-surface datum.
 PERIOD OF RECORD.—June 1979 to current year.
 EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 66.17 ft below land-surface datum, June 25, 1979; lowest measured, 96.50 ft below land-surface datum, July 19, 1984.

WATER LEVEL
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
03/02/00	90.04

395206083014501. LOCAL NUMBER, FR-209

LOCATION.—Latitude 39°52'06", longitude 83°01'45", Hydrologic Unit 05060001. Owner: Mr. Martin Davis
 AQUIFER.—Sand and gravel of Quaternary age.
 WELL CHARACTERISTICS.—Drilled domestic water well, diameter 4 in.
 INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
 DATUM.—Elevation of land-surface datum is 704 ft above sea level. Measuring point: Top of casing, 0.72 ft above land-surface datum.
 PERIOD OF RECORD.—June 1979 to current year.
 EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 12.51 ft below land-surface datum, May 23, 1984; lowest measured, 18.11 ft below land-surface datum, Mar. 16, 1992.

WATER LEVEL
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
03/02/00	17.48

395315083020002. LOCAL NUMBER, FR-213

LOCATION.—Latitude 39°53'15", longitude 83°02'00", Hydrologic Unit 05060001. Owner: Tom Cannon Company.
 AQUIFER.—Sand and gravel of Quaternary age.
 WELL CHARACTERISTICS.—Drilled commercial water well, diameter 5 in., depth 97 ft, cased to 97 ft.
 INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
 DATUM.—Elevation of land-surface datum is 730 ft above sea level. Measuring point: Top of casing, 0.80 ft above land-surface datum.
 PERIOD OF RECORD.—June 1982 to current year.
 EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 71.38 ft below land-surface datum, June 8, 1982; lowest measured, 84.83 ft below land-surface datum, Mar. 16, 1992.

WATER LEVEL
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
03/02/00	83.25

PROJECT DATA
Columbus Well Field, Southern Franklin County, Ohio

395323083014000. LOCAL NUMBER, FR-269

LOCATION.—Latitude 39°53'23", longitude 83°01'40", Hydrologic Unit 05060001. Owner: Franklin County Waste to Energy Facility.

AQUIFER.—Devonian limestone.

WELL CHARACTERISTICS.—Drilled commercial water well, depth 90 ft; 75 ft of 6-in. casing.

INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.

DATUM.—Elevation of land-surface datum is 705 ft above sea level. Measuring point: Top of casing, 0.22 ft above land-surface datum.

PERIOD OF RECORD.—August 1988 to current year.

EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 66.84 ft below land-surface datum, June 3 and Sep. 5, 1996; lowest measured, 71.98 ft below land-surface datum, Mar. 2, 2000.

WATER LEVEL
IN FEET BELOW LAND-SURFACE DATUM
INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
03/02/00	71.98

PROJECT DATA
Columbus Well Field, Southern Franklin County, Ohio

395055082592400. LOCAL NUMBER, FR-271

LOCATION.—Latitude 39°50'55", longitude 82°59'24", Hydrologic Unit 05060001, at Parsons Avenue Water Plant. Owner: Franklin County.

AQUIFER.—Sand and gravel of Quaternary age.

WELL CHARACTERISTICS.—Drilled observation water well, depth 91.8 ft; 76 ft of 2-in. casing.

INSTRUMENTATION.—Data logger, 60-minute record.

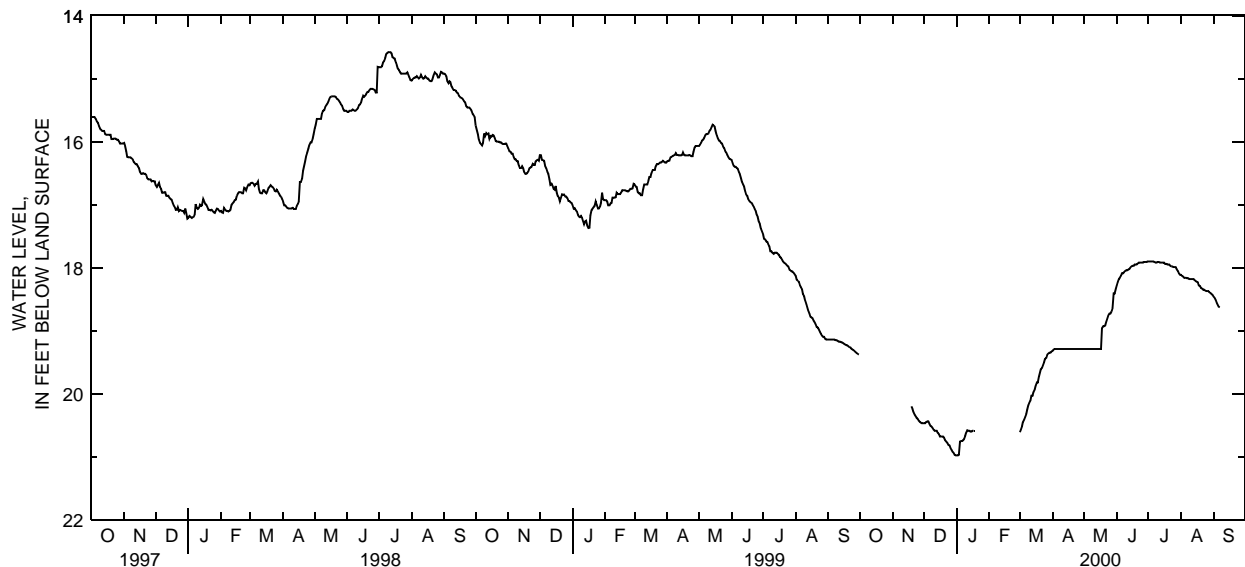
DATUM.—Elevation of land-surface datum is 710 ft above sea level. Measuring point: Top of PVC casing, 2.53 ft above land-surface datum.

PERIOD OF RECORD.—September 1987 to current year.

EXTREMES FOR PERIOD OF RECORD.—Maximum daily low, 25.00 ft below land-surface datum, Apr. 25-May 2, 1992; minimum daily low, 13.92 ft below land-surface datum, Mar. 18, 1991.

DEPTH BELOW LAND SURFACE (WATER LEVEL), FEET, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
 DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	20.47	20.98	---	20.61	19.32	19.29	18.28	17.90	18.11	18.46
2	---	---	20.47	20.98	---	20.57	19.30	19.29	18.23	17.90	18.13	18.48
3	---	---	20.45	20.97	---	20.52	19.29	19.29	18.18	17.90	18.14	18.51
4	---	---	20.44	20.76	---	20.45	19.29	19.29	18.16	17.90	18.16	18.56
5	---	---	20.44	20.75	---	20.41	19.29	19.29	18.13	17.90	18.16	18.59
6	---	---	20.48	20.75	---	20.37	19.29	19.29	18.09	17.90	18.16	18.62
7	---	---	20.51	20.74	---	20.32	19.29	19.29	18.09	17.91	18.17	18.63
8	---	---	20.52	20.72	---	20.25	19.29	19.29	18.07	17.92	18.17	---
9	---	---	20.54	20.67	---	20.18	19.29	19.29	18.05	17.92	18.18	---
10	---	---	20.57	20.62	---	20.14	19.29	19.29	18.04	17.91	18.18	---
11	---	---	20.59	20.58	---	20.11	19.29	19.29	18.04	17.91	18.18	---
12	---	---	20.59	20.59	---	20.03	19.29	19.29	18.03	17.92	18.18	---
13	---	---	20.59	20.59	---	20.03	19.29	19.29	18.02	17.92	18.18	---
14	---	---	20.62	20.60	---	19.97	19.29	19.29	18.00	17.92	18.20	---
15	---	---	20.64	20.60	---	19.93	19.29	19.29	17.98	17.92	18.21	---
16	---	---	20.68	20.59	---	19.87	19.29	19.29	17.97	17.92	18.22	---
17	---	---	20.68	20.59	---	19.82	19.29	19.29	17.97	17.94	18.23	---
18	---	---	20.68	20.59	---	19.82	19.29	18.96	17.95	17.94	18.28	---
19	---	20.20	20.68	---	---	19.73	19.29	18.93	17.95	17.95	18.29	---
20	---	20.24	20.70	---	---	19.67	19.29	18.93	17.95	17.95	18.32	---
21	---	20.29	20.74	---	---	19.61	19.29	18.92	17.93	17.95	18.33	---
22	---	20.33	20.76	---	---	19.59	19.29	18.86	17.92	17.97	18.35	---
23	---	20.35	20.78	---	---	19.55	19.29	18.81	17.92	17.98	18.35	---
24	---	20.39	20.81	---	---	19.50	19.29	18.76	17.92	17.98	18.36	---
25	---	20.40	20.82	---	---	19.45	19.29	18.73	17.92	17.99	18.37	---
26	---	20.43	20.86	---	---	19.43	19.29	18.73	17.92	17.99	18.37	---
27	---	20.45	20.89	---	---	19.38	19.29	18.69	17.91	17.99	18.37	---
28	---	20.46	20.92	---	---	19.36	19.29	18.64	17.91	18.02	18.39	---
29	---	20.47	20.94	---	---	19.35	19.29	18.41	17.91	18.05	18.40	---
30	---	20.47	20.97	---	---	19.35	19.29	18.41	17.90	18.09	18.42	---
31	---	---	20.98	---	---	19.33	---	18.34	---	18.11	18.43	---
MEAN	---	---	20.67	---	---	19.89	19.29	19.03	18.01	17.95	18.26	---
MAX	---	---	20.98	---	---	20.61	19.32	19.29	18.28	18.11	18.43	---



PROJECT DATA
Columbus Well Field, Southern Franklin County, Ohio

394941083004400. LOCAL NUMBER, FR-275

LOCATION.—Latitude 39°49'41", longitude 83°00'44", Hydrologic Unit 05060001, near Shadeville. Owner: Franklin County.
 AQUIFER.—Sand and gravel of Quaternary age.
 WELL CHARACTERISTICS.—Drilled observation water well, depth 25 ft; 2-in. casing.
 INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
 DATUM.—Elevation of land-surface datum is 680 ft above sea level. Measuring point: Top of steel protective casing, 5.00 ft above land-surface datum.
 PERIOD OF RECORD.—April 1990 to current year.
 EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 1.44 ft below land-surface datum, Mar. 26, 1993; lowest measured, 13.12 ft below land-surface datum, Apr. 18, 1991.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM INSTANTANEOUS OBSERVATION	
DATE	WATER LEVEL
03/02/00	9.54

395239083021400. LOCAL NUMBER, FR-276

LOCATION.—Latitude 39°52'39", longitude 83°02'14", Hydrologic Unit 05060001. Owner: Stanley and Betty Wray.
 AQUIFER.—Devonian limestone.
 WELL CHARACTERISTICS.—Drilled domestic water well, depth 155 ft.
 INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel. 1.25 ft above land-surface datum.
 PERIOD OF RECORD.—June 1990 to current year.
 EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 71.46 ft below land-surface datum, Mar. 18, 1991; lowest measured, 76.05 ft below land-surface datum, Mar. 16, 1992.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM INSTANTANEOUS OBSERVATION	
DATE	WATER LEVEL
03/02/00	74.98

394930083013100. LOCAL NUMBER, FR-277

LOCATION.—Latitude 39°49'30", longitude 83°01'31", Hydrologic unit 05060001. Owner: Mr. and Mrs. Steve Doersam.
 AQUIFER.—Sand and gravel of Quaternary age.
 WELL CHARACTERISTICS.—Drilled domestic water well, depth 52 ft.
 INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
 DATUM.—Elevation of land-surface datum is 713 ft above sea level. Measuring point: Top of casing, 1.5 ft above land-surface datum.
 PERIOD OF RECORD.—December 1989 to current year.
 EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 14.79 ft below land-surface datum, Feb 26, 1993; lowest measured, 21.33 ft below land-surface datum, Dec. 10, 1991.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM INSTANTANEOUS OBSERVATION	
DATE	WATER LEVEL
03/02/00	20.13

395115083022600. LOCAL NUMBER, FR-278

LOCATION.—Latitude 39°51'15", longitude 83°02'26", Hydrologic Unit 05060001. Owner: Mr. Brian Davis.
 AQUIFER.—Quaternary sand and gravel-primary; Devonian limestone-secondary.
 WELL CHARACTERISTICS.—Drilled domestic water well, diameter 5 in., depth 114 ft, 10-ft screen.
 INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
 DATUM.—Elevation of land-surface datum is 735 ft above sea level. Measuring point: Top of casing, 0.95 ft above land-surface datum.
 PERIOD OF RECORD.— July 1990 to current year.
 EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 29.07 ft below land-surface datum, Dec. 15, 1993; lowest measured, 35.11 ft below land-surface datum, Dec. 10, 1991.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM INSTANTANEOUS OBSERVATION	
DATE	WATER LEVEL
03/02/00	33.56

PROJECT DATA
Columbus Well Field, Southern Franklin County, Ohio

394932083022700. LOCAL NUMBER, FR-279

LOCATION.—Latitude 39°49'32", longitude 83°02'27", Hydrologic unit 05060001. Owner: Mr. Gerald Boggs.
 AQUIFER.—Devonian limestone.
 WELL CHARACTERISTICS.—Drilled domestic water well, diameter 5 in., depth 145 ft, cased to 102 ft.
 INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
 DATUM.—Elevation of land-surface datum is 735 ft above sea level. Measuring point: Top of casing, 1.35 ft above land-surface datum.
 PERIOD OF RECORD.—September 1990 to current year.
 EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 7.85 ft below land-surface datum, Mar. 18, 1991; lowest measured, 31.54 ft below land-surface datum, Apr. 11, 1994.

WATER LEVEL
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
03/02/00	15.16

395000082581700. LOCAL NUMBER, FR-281

LOCATION.—Latitude 39°50'00", longitude 82°58'17", Hydrologic Unit 05060001. Owner: Hamilton Township Trustees.
 AQUIFER.—Sand and gravel of Quaternary age.
 WELL CHARACTERISTICS.—Drilled domestic water-supply well, depth 83 ft, 4-in. steel casing.
 INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
 DATUM.—Elevation of land-surface datum is 731 ft above sea level. Measuring point: top of casing, 1.40 ft above land-surface datum.
 PERIOD OF RECORD.—December 1991 to current year.
 EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 35.21 ft below land-surface datum, May 31, 1996; lowest measured, 42.42 ft below land-surface datum, Mar. 16, 1992.

WATER LEVEL
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
03/02/00	39.88

394921083004700. LOCAL NUMBER, FR-282

LOCATION.—Latitude 39°49'21", longitude 83°00'47", Hydrologic Unit 05060001. Owner: City of Columbus.
 AQUIFER.—Sand and gravel of Quaternary age.
 WELL CHARACTERISTICS.—Drilled observation water well, depth 56 ft, 2-in. PVC.
 INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
 DATUM.—Elevation of land-surface datum is 673 ft above sea level. Measuring point: top of casing, 3.00 ft above land-surface datum.
 PERIOD OF RECORD.—June 1992 to current year.
 EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 0.75 ft below land-surface datum, Mar. 26, 1993; lowest measured, 10.90 ft below land-surface datum, Sept. 13, 1993.

WATER LEVEL
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
03/02/00	8.32

395131083003801. LOCAL NUMBER FR-301

LOCATION.—Latitude 39°51'31", longitude 83°00'38", Hydrologic Unit 05060001. Owner: City of Columbus.
 AQUIFER.—Sand and gravel of Quaternary age.
 WELL CHARACTERISTICS.—Drilled observation water well, 8 in. diameter, 74 ft deep.
 INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
 DATUM.—Elevation of land-surface datum is 684 ft above sea level. Measuring point: Top of casing, 1.95 ft above land-surface datum.
 PERIOD OF RECORD.—December 15, 1993 to current year.
 EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 4.36 ft below land-surface datum, May 31, 1993; lowest measured, 31.95 ft below land-surface datum, Nov. 14, 1997.

WATER LEVEL
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
03/02/00	31.94

PROJECT DATA
Columbus Well Field, Southern Franklin County, Ohio

395140083003901. LOCAL NUMBER FR-302

LOCATION.—Latitude 39°51'40", longitude 83°00'39", Hydrologic Unit 05060001. Owner: City of Columbus.
 AQUIFER.—Sand and gravel of Quaternary age.
 WELL CHARACTERISTICS.—Drilled observation water well, 8 in. diameter, 56 ft deep.
 INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
 DATUM.—Elevation of land-surface datum is 684 ft above sea level. Measuring point: Top of casing, 1.40 ft above land-surface datum.
 PERIOD OF RECORD.—December 15, 1993 to current year.
 EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 4.92 ft below land-surface datum, May 31, 1996; lowest measured, 31.91 ft below land-surface datum, Mar. 2, 2000.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM INSTANTANEOUS OBSERVATION	
DATE	WATER LEVEL
03/02/00	31.91

395150083004001. LOCAL NUMBER FR-303

LOCATION.—Latitude 39°51'50", longitude 83°00'40", Hydrologic Unit 05060001. Owner: City of Columbus.
 AQUIFER.—Sand and gravel of Quaternary age.
 WELL CHARACTERISTICS.—Drilled observation water well, 8 in. diameter, 57 ft deep.
 INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
 DATUM.—Elevation of land-surface datum is 691 ft above sea level. Measuring point: Top of casing, 1.75 ft above land-surface datum.
 PERIOD OF RECORD.—December 15, 1993 to current year.
 EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 11.32 ft below land-surface datum, May 31, 1996; lowest measured, 35.78 ft below land-surface datum, Mar. 2, 2000.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM INSTANTANEOUS OBSERVATION	
DATE	WATER LEVEL
03/02/00	35.78

395157083004101. LOCAL NUMBER FR-304

LOCATION.—Latitude 39°51'57", longitude 83°00'41", Hydrologic Unit 05060001. Owner: City of Columbus.
 AQUIFER.—Sand and gravel of Quaternary age.
 WELL CHARACTERISTICS.—Drilled observation water well, 8 in. diameter, 43 ft deep.
 INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
 DATUM.—Elevation of land-surface datum is 689 ft above sea level. Measuring point: Top of casing, 2.00 ft above land-surface datum.
 PERIOD OF RECORD.—December 15, 1993 to current year.
 EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 11.03 ft below land-surface datum, May 31, 1996; lowest measured, 32.12 ft below land-surface datum, Nov. 14, 1996.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM INSTANTANEOUS OBSERVATION	
DATE	WATER LEVEL
03/02/00	29.03

PROJECT DATA
Columbus Well Field, Southern Franklin County, Ohio

395158083005401. LOCAL NUMBER FR-305

LOCATION.—Latitude 39°51'58", longitude 83°00'54", Hydrologic Unit 05060001. Owner: City of Columbus.
 AQUIFER.—Sand and gravel of Quaternary age.
 WELL CHARACTERISTICS.—Drilled observation water well, 8 in. diameter, 78.50 ft deep.
 INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
 DATUM.—Elevation of land-surface datum is 688 ft above sea level. Measuring point: Top of casing, 1.70 ft above land-surface datum.
 PERIOD OF RECORD.—December 15, 1993 to current year.
 EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 10.00 ft below land-surface datum, May 31, 1996; lowest measured, 47.75 ft below land-surface datum, Mar. 17, 1997.

WATER LEVEL
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
03/02/00	28.64

395048083004500. LOCAL NUMBER FR-310

LOCATION.—Latitude 39°50'48", longitude 83°00'45", Hydrologic Unit 05060001. Owner: City of Columbus.
 AQUIFER.—Sand and gravel of Quaternary age.
 WELL CHARACTERISTICS.—Drilled observation water well, 2-in. diameter PVC, 61 ft deep.
 INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
 DATUM.—Elevation of land-surface datum is 683.36 ft above sea level. Measuring point: top of outer steel protective casing, 4.25 ft above land-surface datum.
 PERIOD OF RECORD.—March 1993 to current year.
 EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 8.21 ft below land-surface datum, May 31, 1996; lowest measured, 23.66 ft below land-surface datum, Sept. 13, 1993.

WATER LEVEL
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
03/02/00	23.30

395044083010500. LOCAL NUMBER FR-311

LOCATION.—Latitude 39°50'44", longitude 83°01'05", Hydrologic Unit 05060001. Owner: City of Columbus.
 AQUIFER.—Sand and gravel of Quaternary age.
 WELL CHARACTERISTICS.—Drilled observation water well, 2-in. diameter PVC, 42 ft deep.
 INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
 DATUM.—Elevation of land-surface datum is 683.01 ft above sea level. Measuring point: top of outer steel protective casing, 4.10 ft above land-surface datum.
 PERIOD OF RECORD.—March 1993 to current year
 EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 5.86 ft below land-surface datum, May 31, 1996; lowest measured, 17.66 ft below land-surface datum, Mar. 2, 2000.

WATER LEVEL
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
03/02/00	17.66

395151082591700. LOCAL NUMBER FR-312

LOCATION.—Latitude 39°51'51", longitude 83°59'17", Hydrologic Unit 05060001. Owner: Walter Kuhnwein.
 AQUIFER.—Sand and gravel of Quaternary age.
 WELL CHARACTERISTICS.—Drilled observation water well, 4 in. diameter, 54.5 ft deep.
 INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
 DATUM.—Elevation of land-surface datum is 725.57 ft above sea level. Measuring point: Top of PVC casing, 0.20 ft below land-surface datum.
 PERIOD OF RECORD.—September 1995 to current year.
 EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 11.25 ft below land-surface datum, Nov. 19, 1996; lowest measured, 33.24 ft below land-surface datum, Mar. 2, 2000.

WATER LEVEL
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
03/02/00	33.24

PROJECT DATA
Columbus Well Field, Southern Franklin County, Ohio

394948082583400. LOCAL NUMBER FR-313

LOCATION.—Latitude 39°49'48", longitude 83°58'34", Hydrologic Unit 05060001. Owner: Jeanne Badders.

AQUIFER.—Sand and gravel of Quaternary age.

WELL CHARACTERISTICS.—Drilled observation water well, 4 in. diameter, 79 ft deep.

INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.

DATUM.—Elevation of land-surface datum is 744.53 ft above sea level. Measuring point: Top of PVC casing, 0.18 ft below land-surface datum.

PERIOD OF RECORD.—September 1995 to current year.

EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 51.58 ft below land-surface datum, May 31, 1996; lowest measured, 57.48 ft below land-surface datum, Dec. 7, 1995.

WATER LEVEL,
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
11/25/99	55.54

395241082584500. LOCAL NUMBER FR-314

LOCATION.—Latitude 39°52'41", longitude 83°58'45", Hydrologic Unit 05060001. Owner: WTVN.

AQUIFER.—Sand and gravel of Quaternary age.

WELL CHARACTERISTICS.—Drilled observation water well, 4 in. diameter, 72 ft deep.

INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.

DATUM.—Elevation of land-surface datum is 733.40 ft above sea level. Measuring point: Top of PVC casing, 0.17 ft below land-surface datum.

PERIOD OF RECORD.—September 1995 to current year.

EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 16.97 ft below land-surface datum, May 31, 1996; lowest measured, 25.21 ft below land-surface datum, Mar. 2, 2000.

WATER LEVEL,
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
12/09/99	25.21

395100083015700. LOCAL NUMBER FR-315

LOCATION.—Latitude 39°51'00", longitude 83°01'57", Hydrologic Unit 05060001. Owner: SW Conservation Club.

AQUIFER.—Sand and gravel of Quaternary age.

WELL CHARACTERISTICS.—Drilled observation water well, 4 in. diameter, 65 ft deep.

INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.

DATUM.—Elevation of land-surface datum is 729.14 ft above sea level. Measuring point: Top of PVC casing, 0.22 ft below land-surface datum.

PERIOD OF RECORD.—September 1995 to current year.

EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 18.63 ft below land-surface datum, June 3, 1996; lowest measured, 30.89 ft below land-surface datum, Mar. 2, 2000.

WATER LEVEL,
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
03/02/00	30.89

PROJECT DATA
Columbus Well Field, Southern Franklin County, Ohio

395035083014700. LOCAL NUMBER FR-316

LOCATION.—Latitude 39°50'35", longitude 83°01'47", Hydrologic Unit 05060001. Owner: SW Conservation Club.
 AQUIFER.—Sand and gravel of Quaternary age.
 WELL CHARACTERISTICS.—Drilled observation water well, 4 in. diameter, 62 ft deep.
 INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
 DATUM.—Elevation of land-surface datum is 725.72 ft above sea level. Measuring point: Top of PVC casing, 2.61 ft above land-surface datum.
 PERIOD OF RECORD.—September 1995 to current year.
 EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 29.68 ft below land-surface datum, Nov. 20, 1996; lowest measured, 39.41 ft below land-surface datum, Dec. 10, 1997.

WATER LEVEL
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
03/02/00	38.21

395153083014000. LOCAL NUMBER FR-317

LOCATION.—Latitude 39°51'53", longitude 83°01'40", Hydrologic Unit 05060001. Owner: Heimat Haus.
 AQUIFER.—Sand and gravel of Quaternary age.
 WELL CHARACTERISTICS.—Drilled observation water well, 4 in. diameter, 40 ft deep.
 INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
 DATUM.—Elevation of land-surface datum is 689.64 ft above sea level. Measuring point: Top of PVC casing, 0.24 ft below land-surface datum.
 PERIOD OF RECORD.—September 1995 to current year.
 EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 2.44 ft below land-surface datum, Feb. 28, 1996; lowest measured, 7.01 ft below land-surface datum, Mar. 2, 2000.

WATER LEVEL
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
03/02/00	7.01

395042082585900. LOCAL NUMBER FR-318

LOCATION.—Latitude 39°50'42", longitude 82°58'59", Hydrologic Unit 05060001. Owner: City of Columbus.
 AQUIFER.—Sand and gravel of Quaternary age.
 WELL CHARACTERISTICS.—Drilled observation water well, 4 in. diameter, 85 ft deep.
 INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
 DATUM.—Elevation of land-surface datum is 738.68 ft above sea level. Measuring point: Top of PVC casing, 3.11 ft above land-surface datum.
 PERIOD OF RECORD.—September 1995 to current year.
 EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 45.77 ft below land-surface datum, May 15, 1997; lowest measured, 55.19 ft below land-surface datum, Dec. 6, 1995.

WATER LEVEL
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
03/02/00	51.94

395205083001500. LOCAL NUMBER FR-319

LOCATION.—Latitude 39°52'05", longitude 83°00'15", Hydrologic Unit 05060001. Owner: City of Columbus.
 AQUIFER.—Sand and gravel of Quaternary age.
 WELL CHARACTERISTICS.—Drilled observation water well, 4 in. diameter, 55 ft deep.
 INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
 DATUM.—Elevation of land-surface datum is 721.80 ft above sea level. Measuring point: Top of PVC casing, 2.22 ft above land-surface datum.
 PERIOD OF RECORD.—September 1995 to current year.
 EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 29.75 ft below land-surface datum, June 3, 1996; lowest measured, 37.47 ft below land-surface datum, Sept. 14, 1997.

WATER LEVEL
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
03/02/00	36.73

PROJECT DATA
Columbus Well Field, Southern Franklin County, Ohio

394954083002801. LOCAL NUMBER FR-320

LOCATION.—Latitude 39°49'54", longitude 83°00'28", Hydrologic Unit 05060001. Owner: City of Columbus.
 AQUIFER.—Sand and gravel of Quaternary age.
 WELL CHARACTERISTICS.—Drilled observation water well, 4 in. diameter, 70 ft deep.
 INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
 DATUM.—Elevation of land-surface datum is 690.64 ft above sea level. Measuring point: Top of PVC casing, 2.97 ft above land-surface datum.
 PERIOD OF RECORD.—September 1995 to current year.
 EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 12.25 ft below land-surface datum, May 31, 1996; lowest measured, 24.55 ft below land-surface datum, Nov. 20, 1996.

WATER LEVEL,
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
03/02/00	23.44

395038083002100. LOCAL NUMBER FR-321

LOCATION.—Latitude 39°50'38", longitude 83°00'21", Hydrologic Unit 05060001. Owner: City of Columbus.
 AQUIFER.—Sand and gravel of Quaternary age.
 WELL CHARACTERISTICS.—Drilled observation water well, 4 in. diameter, 68 ft deep.
 INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
 DATUM.—Elevation of land-surface datum is 697.05 ft above sea level. Measuring point: Top of PVC casing, 2.50 ft above land-surface datum.
 PERIOD OF RECORD.—September 1995 to current year.
 EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 22.41 ft below land-surface datum, Mar. 17, 1997; lowest measured, 47.13 ft below land-surface datum, Feb. 26, 1996.

WATER LEVEL,
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
03/02/00	44.29

395131083005200. LOCAL NUMBER FR-322

LOCATION.—Latitude 39°51'31", longitude 83°00'52", Hydrologic Unit 05060001. Owner: City of Columbus.
 AQUIFER.—Sand and gravel of Quaternary age.
 WELL CHARACTERISTICS.—Drilled observation water well, 4 in. diameter, 60 ft deep.
 INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
 DATUM.—Elevation of land-surface datum is 686.42 ft above sea level. Measuring point: Top of PVC casing, 2.30 ft above land-surface datum.
 PERIOD OF RECORD.—September 1995 to current year.
 EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 8.23 ft below land-surface datum, May 31, 1996; lowest measured, 29.91 ft below land-surface datum, Mar. 2, 2000.

WATER LEVEL,
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
03/02/00	29.91

PROJECT DATA
Columbus Well Field, Southern Franklin County, Ohio

395146082594300. LOCAL NUMBER FR-323

LOCATION.—Latitude 39°51'45", longitude 82°59'44", Hydrologic Unit 05060001. Owner: City of Columbus.

AQUIFER.—Sand and gravel of Quaternary age.

WELL CHARACTERISTICS.—Drilled observation water well, 4 in. diameter, 59.5 ft deep.

INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.

DATUM.—Elevation of land-surface datum is 714.29 ft above sea level. Measuring point: Top of PVC casing, 2.69 ft above land-surface datum.

PERIOD OF RECORD.—February 1996 to current year.

EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 16.69 ft below land-surface datum, May 31, 1996; lowest measured, 24.49 ft below land-surface datum, Mar. 2, 2000.

WATER LEVEL
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
03/02/00	24.49

395010083000200. LOCAL NUMBER FR-325

LOCATION.—Latitude 39°50'10", longitude 83°50'02", Hydrologic Unit 05060001. Owner: City of Columbus.

AQUIFER.—Sand and gravel of Quaternary age.

WELL CHARACTERISTICS.—Drilled observation water well, 4 in. diameter, 93 ft deep.

INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.

DATUM.—Elevation of land-surface datum is 719.55 ft above sea level. Measuring point: Top of PVC casing, 2.51 ft above land-surface datum.

PERIOD OF RECORD.—February 1996 to current year.

EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 29.49 ft below land-surface datum, May 31, 1996; lowest measured, 36.80 ft below land-surface datum, Mar. 2, 2000.

WATER LEVEL
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
03/02/00	36.80

395254083000900. LOCAL NUMBER FR-326

LOCATION.—Latitude 39°52'54", longitude 83°00'07", Hydrologic Unit 05060001. Owner: City of Columbus.

AQUIFER.—Sand and gravel of Quaternary age.

WELL CHARACTERISTICS.—Drilled observation water well, 4 in. diameter, 68.38 ft deep.

INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.

DATUM.—Elevation of land-surface datum is 718.84 ft above sea level. Measuring point: Top of PVC casing, 2.58 ft above land-surface datum.

PERIOD OF RECORD.—February 1996 to current year.

EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 41.68 ft below land-surface datum, June 3, 1996; lowest measured, 47.81 ft below land-surface datum, Mar. 2, 2000.

WATER LEVEL
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
03/02/00	47.81

PROJECT DATA
Columbus Well Field, Southern Franklin County, Ohio

395133083001800. LOCAL NUMBER FR-327

LOCATION.—Latitude 39°51'33", longitude 83°00'22", Hydrologic Unit 05060001. Owner: City of Columbus.
 AQUIFER.—Sand and gravel of Quaternary age.
 WELL CHARACTERISTICS.—Drilled observation water well, 4 in. diameter, 74.75 ft deep.
 INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
 DATUM.—Elevation of land-surface datum is 740.73 ft above sea level. Measuring point: Top of PVC casing, 2.76 ft above land-surface datum.
 PERIOD OF RECORD.—February 1996 to current year.
 EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 44.71 ft below land-surface datum, Aug. 10, 1996; lowest measured, 57.07 ft below land-surface datum, Mar. 2, 2000.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM INSTANTANEOUS OBSERVATION	
DATE	WATER LEVEL
03/02/00	57.07

395059083000900. LOCAL NUMBER, FR-328

LOCATION.—Latitude 39°50'59", longitude 83°00'09", Hydrologic Unit 05060002, U.S. 23 south of Olen quarry, near Shadeville. Owner: Franklin County.
 AQUIFER.—Clay, sand and gravel of Quaternary age.
 WELL CHARACTERISTICS.—Drilled observation water well, diameter 4 in., depth 70 ft.
 INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
 DATUM.—Elevation of land-surface datum is 730.38 ft above sea level. Measuring point: Top of 4-inch PVC casing, 2.61 ft above land-surface datum.
 PERIOD OF RECORD.—August 1995 to current year.
 EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 40.69 ft below land-surface datum, Sept. 4, 1996; lowest measured, 49.94 ft below land-surface datum, Mar. 2, 2000.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM INSTANTANEOUS OBSERVATION	
DATE	WATER LEVEL
03/02/00	49.94

395108082591100. LOCAL NUMBER FR-329

LOCATION.—Latitude 39°51'08", longitude 83°59'12", Hydrologic Unit 05060001. Owner: City of Columbus.
 AQUIFER.—Sand and gravel of Quaternary age.
 WELL CHARACTERISTICS.—Drilled observation water well, 4 in. diameter, 69.19 ft deep.
 INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
 DATUM.—Elevation of land-surface datum is 733.26 ft above sea level. Measuring point: Top of PVC casing, 2.83 ft above land-surface datum.
 PERIOD OF RECORD.—May 1996 to current year.
 EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 34.38 ft below land-surface datum, Mar. 17, 1997; lowest measured, 44.61 ft below land-surface datum, Mar. 2, 2000.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM INSTANTANEOUS OBSERVATION	
DATE	WATER LEVEL
03/02/00	44.61

PROJECT DATA
Columbus Well Field, Southern Franklin County, Ohio

395054082585300. LOCAL NUMBER FR-331

LOCATION.—Latitude 39°50'54", longitude 83°58'55", Hydrologic Unit 05060001. Owner: City of Columbus.

AQUIFER.—Sand and gravel of Quaternary age.

WELL CHARACTERISTICS.—Drilled observation water well, 4 in. diameter, 74.33 ft deep.

INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.

DATUM.—Elevation of land-surface datum is 738.32 ft above sea level. Measuring point: Top of PVC casing, 2.60 ft above land-surface datum.

PERIOD OF RECORD.—December 1995 to current year.

EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 42.40 ft below land-surface datum, May 31, 1996; lowest measured, 50.44 ft below land-surface datum, Mar. 2, 2000.

WATER LEVEL
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
03/02/00	50.44

395031082590000. LOCAL NUMBER FR-332

LOCATION.—Latitude 39°50'31", longitude 83°59'00", Hydrologic Unit 05060001. Owner: City of Columbus.

AQUIFER.—Sand and gravel of Quaternary age.

WELL CHARACTERISTICS.—Drilled observation water well, 4 in. diameter, 48.03 ft deep.

INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.

DATUM.—Elevation of land-surface datum is 707.13 ft above sea level. Measuring point: Top of PVC casing, 2.81 ft above land-surface datum.

PERIOD OF RECORD.—October 1995 to current year.

EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 15.46 ft below land-surface datum, May 7, 1997; lowest measured, 31.20 ft below land-surface datum, Oct. 25, 1995.

WATER LEVEL
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
03/02/00	21.48

395139082581600. LOCAL NUMBER FR-334

LOCATION.—Latitude 39°51'40", longitude 83°58'15", Hydrologic Unit 05060001. Owner: City of Columbus.

AQUIFER.—Sand and gravel of Quaternary age.

WELL CHARACTERISTICS.—Drilled observation water well, 4 in. diameter, 64.32 ft deep.

INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.

DATUM.—Elevation of land-surface datum is 740.07 ft above sea level. Measuring point: Top of PVC casing, 0.20 ft below land-surface datum.

PERIOD OF RECORD.—March 1996 to current year.

EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 28.45 ft below land-surface datum, May 31, 1996; lowest measured, 36.36 ft below land-surface datum, Mar. 2, 2000.

WATER LEVEL
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
03/02/00	36.36

PROJECT DATA
Columbus Well Field, Southern Franklin County, Ohio

395134082560600. LOCAL NUMBER FR-335

LOCATION.—Latitude 39°51'35", longitude 83°59'05", Hydrologic Unit 05060001. Owner: City of Columbus.
 AQUIFER.—Sand and gravel of Quaternary age.
 WELL CHARACTERISTICS.—Drilled observation water well, 4 in. diameter, 56.86 ft deep.
 INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
 DATUM.—Elevation of land-surface datum is 734.68 ft above sea level. Measuring point: Top of PVC casing, 0.25 ft below land-surface datum.
 PERIOD OF RECORD.—May 1996 to current year.
 EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 33.03 ft below land-surface datum, May 31, 1996; lowest measured, 43.62 ft below land-surface datum, Mar. 2, 2000.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM INSTANTANEOUS OBSERVATION	
DATE	WATER LEVEL
03/02/00	43.62

395108083010601. LOCAL NUMBER FR-336

LOCATION.—Latitude 39°51'05", longitude 83°01'06", Hydrologic Unit 05060001. Owner: City of Columbus.
 AQUIFER.—Sand and gravel of Quaternary age.
 WELL CHARACTERISTICS.—Drilled observation water well, 4 in. diameter, 59 ft deep.
 INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
 DATUM.—Elevation of land-surface datum is 685.90 ft above sea level. Measuring point: Top of PVC casing, 2.75 ft above land-surface datum.
 PERIOD OF RECORD.—December 1995 to current year.
 EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 10.31 ft below land-surface datum, May 31, 1996; lowest measured, 31.75 ft below land-surface datum, Nov. 21, 1996.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM INSTANTANEOUS OBSERVATION	
DATE	WATER LEVEL
03/02/00	29.65

395115083010601. LOCAL NUMBER FR-337

LOCATION.—Latitude 39°51'13", longitude 83°01'05", Hydrologic Unit 05060001. Owner: City of Columbus.
 AQUIFER.—Sand and gravel of Quaternary age.
 WELL CHARACTERISTICS.—Drilled observation water well, 4 in. diameter, 60 ft deep.
 INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
 DATUM.—Elevation of land-surface datum is 687 ft above sea level. Measuring point: Top of PVC casing, 2.40 ft above land-surface datum.
 PERIOD OF RECORD.—September 1995 to current year.
 EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 11.36 ft below land-surface datum, May 31, 1996; lowest measured, 30.82 ft below land-surface datum, Mar. 2, 2000.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM INSTANTANEOUS OBSERVATION	
DATE	WATER LEVEL
03/02/00	30.82

PROJECT DATA
Columbus Well Field, Southern Franklin County, Ohio

395115083010602. LOCAL NUMBER FR-338

LOCATION.—Latitude 39°51'13", longitude 83°01'05", Hydrologic Unit 05060001. Owner: City of Columbus.
 AQUIFER.—Devonian limestone.
 WELL CHARACTERISTICS.—Drilled observation water well, 4 in. diameter, 105 ft deep.
 INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
 DATUM.—Elevation of land-surface datum is 686.83 ft above sea level. Measuring point: Top of PVC casing, 2.48 ft above land-surface datum.
 PERIOD OF RECORD.—February 1996 to current year.
 EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 7.35 ft below land-surface datum, May 31, 1996; lowest measured, 42.71 ft below land-surface datum, Mar. 2, 2000.

WATER LEVEL
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
03/02/00	42.71

395046083003107. LOCAL NUMBER FR-339

LOCATION.—Latitude 39°50'47", longitude 83°00'30", Hydrologic Unit 05060001. Owner: City of Columbus.
 AQUIFER.—Sand and gravel of Quaternary age.
 WELL CHARACTERISTICS.—Drilled observation water well, 4 in. diameter, 70 ft deep.
 INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
 DATUM.—Elevation of land-surface datum is 696.60 ft above sea level. Measuring point: Top of PVC casing, 2.35 ft above land-surface datum.
 PERIOD OF RECORD.—September 1995 to current year.
 EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 21.11 ft below land-surface datum, Mar. 17, 1997; lowest measured, 51.00 ft below land-surface datum, Feb. 26, 1996.

WATER LEVEL
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
03/02/00	45.51

395046083003107. LOCAL NUMBER FR-340

LOCATION.—Latitude 39°50'47", longitude 83°00'30", Hydrologic Unit 05060001. Owner: City of Columbus.
 AQUIFER.—Devonian limestone.
 WELL CHARACTERISTICS.—Drilled observation water well, 4 in. diameter, 138 ft deep.
 INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
 DATUM.—Elevation of land-surface datum is 697 ft above sea level. Measuring point: Top of PVC casing, 2.40 ft above land-surface datum.
 PERIOD OF RECORD.—February 1996 to current year.
 EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 21.95 ft below land-surface datum, Mar. 17, 1997; lowest measured, 50.16 ft below land-surface datum, Feb. 26, 1996.

WATER LEVEL
 IN FEET BELOW LAND-SURFACE DATUM
 INSTANTANEOUS OBSERVATION

DATE	WATER LEVEL
03/02/00	45.75

PROJECT DATA
Columbus Well Field, Southern Franklin County, Ohio

395020083003406. LOCAL NUMBER FR-341

LOCATION.—Latitude 39°50'24", longitude 83°00'28", Hydrologic Unit 05060001. Owner: City of Columbus.
 AQUIFER.—Sand and gravel of Quaternary age.
 WELL CHARACTERISTICS.—Drilled observation water well, 4 in. diameter, 75 ft deep.
 INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
 DATUM.—Elevation of land-surface datum is 683.43 ft above sea level. Measuring point: Top of PVC casing, 2.52 ft above land-surface datum.
 PERIOD OF RECORD.—February 1996 to current year.
 EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 11.79 ft below land-surface datum, May 31, 1996; lowest measured, 32.39 ft below land-surface datum, Feb. 26, 1996.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM INSTANTANEOUS OBSERVATION	
DATE	WATER LEVEL
03/02/00	26.43

395020083003407. LOCAL NUMBER FR-342

LOCATION.—Latitude 39°50'24", longitude 83°00'28", Hydrologic Unit 05060001. Owner: City of Columbus.
 AQUIFER.—Devonian limestone.
 WELL CHARACTERISTICS.—Drilled observation water well, 4 in. diameter, 123 ft deep.
 INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
 DATUM.—Elevation of land-surface datum is 683 ft above sea level. Measuring point: Top of PVC casing, 2.50 ft above land-surface datum.
 PERIOD OF RECORD.—February 1996 to current year.
 EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 11.86 ft below land-surface datum, Mar. 17, 1997; lowest measured, 27.02 ft below land-surface datum, Mar. 2, 2000.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM INSTANTANEOUS OBSERVATION	
DATE	WATER LEVEL
03/02/00	27.02

395236083004201. LOCAL NUMBER FR-345

LOCATION.—Latitude 39°52'36", longitude 83°00'42", Hydrologic Unit 05060001. Owner: City of Columbus.
 AQUIFER.—Sand and gravel of Quaternary age.
 WELL CHARACTERISTICS.—Drilled observation water well, 4 in. diameter, 45 ft deep.
 INSTRUMENTATION.—Periodic measurement with steel or electric tape by USGS personnel.
 DATUM.—Elevation of land-surface datum is 688.90 ft above sea level. Measuring point: Top of PVC casing, 2.53 ft above land-surface datum.
 PERIOD OF RECORD.—August 1996 to current year.
 EXTREMES FOR PERIOD OF RECORD.—Highest water level measured, 20.25 ft below land-surface datum, Sept. 14, 1997; lowest measured, 25.52 ft below land-surface datum, Mar. 2, 2000.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM INSTANTANEOUS OBSERVATION	
DATE	WATER LEVEL
03/02/00	25.52

PROJECT DATA
Bacteriological, Water-Quality, and Sediment-Quality Data at Ohio Beaches

Field studies were done during the recreational season of 2000 (May through September) at five Ohio Lake Erie public beaches and at one inland public beach. Most of the data listed below were collected by local agencies and compiled by the USGS to develop predictive *Escherichia coli* (*E. coli*) models. Water samples for *E. coli* and ancillary environmental and water-quality data were collected and analyzed by local agencies 4 or 5 days each week throughout the summer. In addition, special studies were conducted by the USGS to gather information on the storage of *E. coli* in sediments and sources of *E. coli* contamination of bathing waters; routine analyses of sediment and water quality from these special studies are also listed below.



PROJECT DATA
Bacteriological, Water-Quality, and Sediment-Quality Data at Ohio Beaches

WATER-QUALITY RECORDS

The following tables list the results of bacteriological, water-quality, and physical measurements of water samples collected in the nearshore zone of three Lake Erie beaches in Cuyahoga County, Ohio, two Lake Erie beaches in Lake County, Ohio, and one inland reservoir beach in Trumbull County, Ohio during May through September 2000. Samples were collected as part of a study to develop a predictive model for *Escherichia coli* in recreational waters and investigate the storage of *E. coli* in sediments.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 200

[(00028), USGS National Water Information System parameter code; $\mu\text{S/cm}$, microsiemens per centimeter; deg C, degrees Celsius; NTU, nephelometric turbidity units; col/100 mL, colonies per 100 milliliters; mf, membrane filtration; -- no data; k, value is estimated from a non-ideal colony count; e, estimated; <, concentration or value reported is less than that indicated; a, average value]

Date	Time	Agency analyzing sample (00028)	Agency collecting sample (00027)	Specific conductance, field ($\mu\text{S/cm}$) (00095)	Air temperature (deg C) (00020)	Water temperature (deg C) (00010)	Depth, bottom at sample location (feet) (81903)	Turbidity (NTU) (00076)	<i>E. coli</i> , ONPG-MUG, auto analysis (col/100 mL) (50468)	<i>E. coli</i> , water, MTEC, mf, total (col/100 mL) (31633)	Enterococci, water, mEI, mf, 24 hour (col/100 mL) (90909)	
<u>411812080454610 MOSQUITO CREEK LAKE AT STATE PARK BEACH 1</u>												
July	31	0815	1028	1028	298	23.2	23.4	3.00	14	--	210	--
<u>411812080454620 MOSQUITO CREEK LAKE AT STATE PARK BEACH 2</u>												
May	30	0800	1028	1028	298	16.8	15.3	3.00	9.2	--	k93	--
	31	0815	1028	1028	299	20.2	17.9	3.00	18	--	k14	--
June	1	0820	1028	1028	265	20.6	19.1	3.00	6.2	--	33	--
	5	0915	1028	1028	299	15.8	19.6	3.00	5.6	--	44	22
	6	0745	1028	1028	298	12.0	18.8	3.00	9.6	--	160	73
	6	0750	1028	1028	298	12.0	18.8	6.00	9.6	--	130	73
	6	0840	1028	1028	298	12.0	18.8	8.00	9.6	--	200	--
	7	0745	1028	1028	301	10.2	17.3	3.00	11	--	48	k19
	8	0800	1028	1028	269	16.1	19.5	3.00	--	--	k25	--
	13	0815	1028	1028	288	23.0	21.0	3.00	5.4	--	55	k88
	14	0800	1028	1028	282	26.8	22.9	3.00	9.0	--	590	530
	15	0815	1028	1028	298	25.8	22.3	3.00	6.8	--	130	77
	16	0815	1028	1028	297	25.4	22.9	3.00	3.8	--	67	k42
	19	0800	1028	1028	292	17.1	21.1	3.00	8.9	--	k62	67
	20	0800	1028	1028	292	20.7	23.7	3.00	9.6	--	160	70
	21	0825	1028	1028	294	24.8	22.4	3.00	8.4	--	500	110
	22	0845	1028	1028	294	24.0	22.6	3.00	6.4	--	e67	k15
	26	0830	1028	1028	--	--	--	3.00	6.4	--	21	k3
	27	0815	1028	1028	294	21.2	23.5	3.00	7.0	--	24	k14
	28	0830	1028	1028	294	22.0	24.9	3.00	7.1	--	k6	k1
	29	0815	1028	1028	295	20.2	24.6	3.00	7.6	--	k21	k8
July	3	0745	1028	1028	295	21.5	23.4	3.00	11	--	e93	<1
	5	0845	1028	1028	295	21.9	24.3	3.00	8.8	--	k9	k10
	16	0830	1028	1028	294	21.2	24.9	3.00	9.8	--	36	21
	10	0815	1028	1028	294	24.4	23.8	3.00	9.0	--	120	40
	11	0800	1028	1028	291	22.0	24.6	3.00	11	--	k42	51
	12	0815	1028	1028	297	19.2	23.7	3.00	15	--	800	140
	13	0815	1028	1028	293	22.2	24.4	3.00	13	--	260	320
	17	0800	1028	1028	292	20.5	24.4	3.00	11	--	30	21
	18	0815	1028	1028	293	20.6	23.9	3.00	18	--	200	67
	19	0817	1028	1028	298	17.8	23.5	3.00	14	--	80	77
	20	0830	1028	1028	293	17.0	24.0	3.00	19	--	67	210
	24	0830	1028	1028	293	21.0	24.0	3.00	23	--	a110	20
	25	0830	1028	1028	295	22.0	24.0	3.00	15	--	k910	480
	26	0830	1028	1028	295	21.0	23.0	3.00	19	--	k53	42
	27	0830	1028	1028	297	20.0	24.0	3.00	17	--	90	130
Aug.	7	0800	1028	1028	292	22.1	23.2	3.00	19	--	480	930
	9	0845	1028	1028	297	25.7	23.9	3.00	13	--	97	280
	10	0832	1028	1028	297	22.5	23.6	3.00	16	--	480	210
	14	0805	1028	1028	296	21.1	25.1	3.00	15	--	220	77
	15	0800	1028	1028	304	23.1	25.0	3.00	12	--	1100	220
	16	0830	1028	1028	305	21.5	23.3	3.00	17	--	730	700
	17	0830	1028	1028	297	17.9	24.0	3.00	16	--	k200	k80
	21	0830	1028	1028	310	15.0	22.1	3.00	10	--	130	30
	22	0830	1028	1028	308	17.1	22.1	3.00	10	--	130	100
	23	0845	1028	1028	300	21.2	21.7	3.00	35	--	5400	3300
	24	0830	1028	1028	320	22.6	23.0	3.00	8.2	--	220	160
	28	0730	1028	1028	308	18.7	22.4	3.00	9.9	--	410	320
	29	0915	1028	1028	308	21.3	22.7	3.00	12	--	310	200
	31	0845	1028	1028	309	23.5	23.2	3.00	15	--	400	k65
<u>411812080454630 MOSQUITO CREEK LAKE AT STATE PARK BEACH 3</u>												
Aug.	30	0810	1028	1028	310	21.2	21.5	3.00	11	--	240	--

PROJECT DATA
Bacteriological, Water-Quality, and Sediment-Quality Data at Ohio Beaches

WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[(00028), USGS National Water Information System parameter code; $\mu\text{S}/\text{cm}$, microsiemens per centimeter; deg C, degrees Celsius; NTU, nephelometric turbidity units; col/100 mL, colonies per 100 milliliters; mf, membrane filtration; -- no data; k, value is estimated from a non-ideal colony count; e, estimated; <, concentration or value reported is less than that indicated; a, average value]

Date	Time	Agency analyzing sample (00028)	Agency collecting sample (00027)	Specific conductance, field ($\mu\text{S}/\text{cm}$) (00095)	Air temperature (deg C) (00020)	Water temperature (deg C) (00010)	Depth, bottom at sample location (feet) (81903)	Turbidity (NTU) (00076)	<i>E. coli</i> , ONPG-MUG, auto analysis (col/100 mL) (50468)	<i>E. coli</i> , water, MTEC, mf, total (col/100 mL) (31633)	Enterococci, water, mEI, mf, 24 hour (col/100 mL) (90909)	
<u>411922080460000 MOSQUITO CREEK LAKE AT SOUTH LAKESHORE</u>												
June	6	0955	1028	1028	298	12.0	18.8	10.0	9.6	--	<1	--
July	31	1125	1028	1028	--	23.2	23.4	3.00	27	--	k14	--
<u>411948080460100 MOSQUITO CREEK LAKE AT NORTH LAKESHORE</u>												
June	6	0930	1028	1028	298	12.0	18.8	8.00	9.6	--	k4	--
Aug.	30	1000	1028	1028	--	--	--	2.00	15	--	440	--
<u>412917081442820 LAKE ERIE AT EDGEWATER PARK 2</u>												
May	22	0733	39002	39002	--	16.0	14.0	3.00	1.4	--	220	--
	23	0752	39002	39002	--	16.0	14.0	3.00	13	--	150	--
	24	0740	39002	39002	--	17.0	14.0	3.00	6.9	--	k31	--
	25	0731	39002	39002	--	14.4	13.0	3.00	1.0	--	940	--
	26	0734	39002	39002	--	12.8	13.0	3.00	.7	--	110	--
	30	0722	39002	39002	--	15.0	14.0	3.00	5.9	--	130	--
	31	0733	39002	39002	--	18.3	14.0	3.00	7.2	--	110	--
June	1	0731	39002	39002	--	21.1	15.0	3.00	5.7	--	780	--
	2	0753	39002	39002	--	27.2	18.0	3.00	5.0	--	71	--
	5	0730	39002	39002	--	15.6	17.0	3.00	6.5	--	110	--
	6	0820	39002	39002	--	12.2	16.0	3.00	2.6	--	5000	--
	7	0820	39002	39002	--	13.3	17.0	3.00	.6	--	670	--
	8	0821	39002	39002	--	22.2	18.0	3.00	9.1	--	180	--
	9	0757	39002	39002	--	21.7	18.0	3.00	3.5	--	42	--
	12	0757	39002	39002	--	21.1	20.0	3.00	5.0	--	580	--
	13	0822	39002	39002	--	23.3	21.0	3.00	7.5	--	170	--
	14	0803	39002	39002	--	23.9	21.0	3.00	3.1	--	38	--
	15	0757	39002	39002	--	--	--	3.00	--	--	42	--
	16	0920	39002	39002	--	--	--	3.00	--	--	71	--
	19	0810	39002	39002	--	16.0	18.0	3.00	12	--	71	--
	19	1045	1028	1028	377	18.5	20.8	3.00	17	--	470	--
	20	0739	39002	39002	--	17.0	19.0	3.00	1.2	--	130	--
	21	0815	39002	39002	--	20.0	19.0	3.00	12	--	98	--
	22	0755	39002	39002	--	21.0	19.0	3.00	11	--	100	--
	23	0755	39002	39002	--	22.0	19.0	3.00	14	--	140	--
	26	0815	39002	39002	--	22.0	21.0	3.00	2.8	--	180	--
	27	0817	39002	39002	--	21.0	23.0	3.00	6.9	--	2300	--
	28	0815	39002	39002	--	23.0	22.0	3.00	4.0	--	180	--
	29	0748	39002	39002	--	20.0	21.0	3.00	7.8	--	640	--
	30	0805	39002	39002	--	18.0	22.0	3.00	8.1	--	79	--
July	5	0755	39002	39002	--	20.0	23.0	3.00	1.8	--	42	--
	6	0805	39002	39002	--	--	22.0	3.00	5.5	--	240	--
	7	0800	39002	39002	--	17.0	22.0	3.00	10	--	820	--
	10	0757	39002	39002	--	23.0	22.0	3.00	4.8	--	140	--
	11	0755	39002	39002	--	22.0	22.0	3.00	3.8	--	520	--
	12	0823	39002	39002	--	18.3	21.0	3.00	2.2	--	62	--
	13	0755	39002	39002	--	20.0	21.0	3.00	1.4	--	30	--
	14	0800	39002	39002	--	20.0	21.0	3.00	2.6	--	1600	--
	17	0800	39002	39002	--	23.3	21.0	3.00	7.2	--	250	--
	18	0810	39002	39002	--	20.0	21.0	3.00	6.5	--	670	--
	19	0807	39002	39002	--	19.4	21.0	3.00	3.4	--	100	--
	20	0801	39002	39002	--	13.3	20.0	3.00	4.5	--	120	--
	21	0810	39002	39002	--	24.5	21.0	3.00	6.3	--	210	--
	24	0830	39002	39002	--	20.0	20.0	3.00	1.7	--	17	--
	25	0807	39002	39002	--	20.0	22.0	3.00	2.0	--	67	--
	26	0805	39002	39002	--	28.0	22.0	3.00	3.0	--	100	--
	27	0750	39002	39002	--	21.1	21.0	3.00	2.7	--	340	--
	28	0800	39002	39002	--	21.1	21.0	3.00	2.2	--	180	--
	31	0730	39002	39002	--	21.0	21.0	3.00	1.5	--	12000	--

PROJECT DATA
Bacteriological, Water-Quality, and Sediment-Quality Data at Ohio Beaches

WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[(00028), USGS National Water Information System parameter code; $\mu\text{S}/\text{cm}$, microsiemens per centimeter; deg C, degrees Celsius; NTU, nephelometric turbidity units; col/100 mL, colonies per 100 milliliters; mf, membrane filtration; -- no data; k, value is estimated from a non-ideal colony count; e, estimated; <, concentration or value reported is less than that indicated; a, average value]

Date	Time	Agency analyzing sample (00028)	Agency collecting sample (00027)	Specific conductance, field ($\mu\text{S}/\text{cm}$) (00095)	Air temperature (deg C) (00020)	Water temperature (deg C) (00010)	Depth, bottom at sample location (feet) (81903)	Turbidity (NTU) (00076)	<i>E. coli</i> , ONPG-MUG, auto analysis (col/100 mL) (50468)	<i>E. coli</i> , water, MTEC, mf, total (col/100 mL) (31633)	Enterococci, water, mEI, mf, 24 hour (col/100 mL) (90909)	
<u>412917081442820 LAKE ERIE AT EDGEWATER PARK 2—Continued</u>												
Aug.												
	1	0809	39002	39002	--	23.8	21.0	3.00	2.2	--	1000	--
	2	0800	39002	39002	--	21.1	22.0	3.00	2.6	--	120	--
	3	0807	39002	39002	--	20.0	21.0	3.00	4.5	--	1000	--
	7	0830	39002	39002	--	22.0	18.0	3.00	--	--	4100	--
	8	0807	39002	39002	--	24.0	21.0	3.00	5.0	--	400	--
	9	0810	39002	39002	--	23.0	21.0	3.00	4.5	--	230	--
	10	0805	39002	39002	--	22.0	19.0	3.00	6.6	--	460	--
	11	0805	39002	39002	--	23.0	21.0	3.00	3.3	--	150	--
	14	0805	39002	39002	--	20.0	22.0	3.00	2.3	--	60	--
	15	0810	39002	39002	--	19.0	21.0	3.00	2.6	--	360	--
	16	0815	39002	39002	--	24.0	22.0	3.00	14	--	390	--
	17	0815	39002	39002	--	--	22.0	3.00	5.5	--	31	--
	18	0805	39002	39002	--	--	21.0	3.00	1.5	--	60	--
	21	0805	39002	39002	--	17.0	20.0	3.00	2.6	--	58	--
	22	0802	39002	39002	--	--	19.5	3.00	--	--	140	--
	29	1420	1028	1028	--	--	--	9.50	2.5	--	k2	--
<u>0412917081442830 LAKE ERIE AT EDGEWATER PARK 3</u>												
Aug.	8	0950	1008	1008	288	25.0	25.7	4.00	4.0	--	130	--
<u>412928081560210 LAKE ERIE AT HUNTINGTON RESERVATION 1</u>												
May												
	30	0745	39004	39004	--	22.2	15.6	3.00	150	--	3000	--
	31	0758	39004	39004	--	22.2	15.6	3.00	13	--	83	--
June												
	1	0845	39004	39004	--	23.9	16.1	3.00	8.0	--	k44	--
	5	0740	39004	39004	--	15.0	16.1	3.00	67	--	520	--
	6	0750	39004	39004	--	11.1	15.6	3.00	140	--	6400	--
	7	0840	39004	39004	--	20.0	16.7	3.00	73	--	520	--
	8	0802	39004	39004	--	23.3	16.7	3.00	15	--	k24	--
	12	0831	39004	39004	--	--	20.6	3.00	32	--	590	--
	13	0828	39004	39004	--	22.8	20.6	3.00	42	--	730	--
	14	0821	39004	39004	--	23.9	20.6	3.00	25	--	220	--
	15	0823	39004	39004	--	23.3	20.6	3.00	13	--	200	--
	19	0735	39004	39004	--	21.1	20.6	3.00	49	--	2100	--
	20	0841	39004	39004	--	23.3	20.6	3.00	21	--	150	--
	21	0836	39004	39004	--	25.6	18.9	3.00	20	--	120	--
	22	0740	39004	39004	--	23.9	20.0	3.00	21	--	120	--
	26	0835	39004	39004	--	24.4	21.7	3.00	7.8	--	23	--
	27	0636	39004	39004	--	22.2	21.7	3.00	30	--	330	--
	28	0737	39004	39004	--	20.6	21.7	3.00	16	--	k53	--
	29	0815	39004	39004	--	19.4	21.7	3.00	10	--	190	--
July												
	5	0805	39004	39004	--	23.9	21.7	3.00	4.7	--	65	--
	6	0755	39004	39004	--	22.8	21.7	3.00	11	--	60	--
	10	0825	39004	39004	--	25.6	21.7	3.00	14	--	81	--
	11	0715	39004	39004	--	21.1	21.7	3.00	24	--	290	--
	12	0845	39004	39004	--	20.0	21.7	3.00	23	--	k310	--
	13	0855	39004	39004	--	23.3	22.8	3.00	11	--	50	--
	17	0852	39004	39004	--	20.0	23.3	3.00	12	--	k42	--
	18	0850	39004	39004	--	13.9	21.1	3.00	40	--	250	--
	19	0855	39004	39004	--	16.7	21.7	3.00	20	--	k40	--
	20	0850	39004	39004	--	15.0	21.7	3.00	8.8	--	150	--
	24	0746	39004	39004	--	16.7	21.7	3.00	6.1	--	k15	--
	25	0845	39004	39004	--	18.3	21.7	3.00	5.1	--	k16	--
	26	0852	39004	39004	--	18.3	21.1	3.00	11	--	92	--
	27	0850	39004	39004	--	18.3	21.7	3.00	5.3	--	110	--
	31	0847	39004	39004	--	20.0	21.7	3.00	11	--	k45	--

PROJECT DATA
Bacteriological, Water-Quality, and Sediment-Quality Data at Ohio Beaches

WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

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Date	Time	Agency analyzing sample (00028)	Agency collecting sample (00027)	Specific conductance, field ($\mu\text{S}/\text{cm}$) (00095)	Air temperature (deg C) (00020)	Water temperature (deg C) (00010)	Depth, bottom at sample location (feet) (81903)	Turbidity (NTU) (00076)	<i>E. coli</i> , ONPG-MUG, auto analysis (col/100 mL) (50468)	<i>E. coli</i> , water, MTEC, mf, total (col/100 mL) (31633)	Enterococci, water, mEI, mf, 24 hour (col/100 mL) (90909)	
<u>412928081560210 LAKE ERIE AT HUNTINGTON RESERVATION 1—Continued</u>												
Aug.												
	1	0843	39004	39004	--	21.1	21.7	3.00	2.0	--	k14	--
	2	0850	39004	39004	--	20.6	21.7	3.00	4.4	--	140	--
	3	0855	39004	39004	--	19.4	21.7	3.00	13	--	860	--
	7	0900	39004	39004	--	23.9	22.8	3.00	8.4	--	k170	--
	8	0846	39004	39004	--	20.6	21.7	3.00	4.6	--	k37	--
	9	0851	39004	39004	--	21.7	21.7	3.00	9.7	--	480	--
	10	0850	39004	39004	--	20.0	21.7	3.00	24	--	490	--
	14	0845	39004	39004	--	16.1	22.2	3.00	7.2	--	k7	--
	16	0850	39004	39004	--	21.7	22.2	3.00	30	--	200	--
	17	0937	39004	39004	--	15.6	21.7	3.00	30	--	100	--
	21	0736	39004	39004	--	11.1	22.2	3.00	34	--	130	--
	22	0841	39004	39004	--	16.1	21.1	3.00	4.1	--	k11	--
	23	0846	39004	39004	--	--	21.1	3.00	3.6	--	330	--
	24	0850	39004	39004	--	18.9	21.7	3.00	3.6	--	220	--
	28	0841	39004	39004	--	18.9	21.7	3.00	27	--	130	--
	29	0844	39004	39004	--	18.3	21.1	3.00	17	--	36	--
	30	0846	39004	39004	--	19.4	21.1	3.00	3.8	--	77	--
	31	0847	39004	39004	--	20.0	21.7	3.00	5.2	--	60	--
<u>412928081560220 LAKE ERIE AT HUNTINGTON RESERVATION 2</u>												
May												
	30	0740	39004	39004	--	22.2	15.6	3.00	92	--	2400	--
	31	0751	39004	39004	--	22.2	15.6	3.00	12	--	120	--
June												
	1	0835	39004	39004	--	23.9	16.1	3.00	7.7	--	k27	--
	5	0734	39004	39004	--	15.0	16.1	3.00	55	--	580	--
	6	0745	39004	39004	--	11.1	15.6	3.00	130	--	6800	--
	7	0840	39004	39004	--	20.0	16.7	3.00	99	--	450	--
	8	0757	39004	39004	--	23.3	16.7	3.00	21	--	k12	--
	12	0825	39004	39004	--	--	20.6	3.00	20	--	770	--
	13	0822	39004	39004	--	22.8	20.6	3.00	35	--	670	--
	14	0815	39004	39004	--	23.9	20.6	3.00	14	--	100	--
	15	0818	39004	39004	--	23.3	20.6	3.00	11	--	87	--
	19	0730	39004	39004	--	21.1	20.6	3.00	50	--	2100	--
	19	1215	1028	1028	297	20.5	23.5	5.00	30	--	500	--
	20	0730	39004	39004	--	23.3	20.6	3.00	20	--	210	--
	21	0832	39004	39004	--	25.6	18.9	3.00	20	--	160	--
	22	0735	39004	39004	--	23.9	20.0	3.00	18	--	k260	--
	26	0830	39004	39004	--	24.4	21.7	3.00	5.4	--	k9	--
	27	0631	39004	39004	--	22.2	21.7	3.00	12	--	180	--
	28	0732	39004	39004	--	20.6	21.7	3.00	9.9	--	83	--
	29	0810	39004	39004	--	19.4	21.7	3.00	6.3	--	68	--
July												
	5	0800	39004	39004	--	23.9	21.7	3.00	4.1	--	62	--
	6	0750	39004	39004	--	22.8	21.7	3.00	5.8	--	100	--
	10	0820	39004	39004	--	25.6	21.7	3.00	7.1	--	k35	--
	11	0708	39004	39004	--	21.1	21.7	3.00	13	--	130	--
	12	0837	39004	39004	--	20.0	21.7	3.00	14	--	93	--
	13	0847	39004	39004	--	23.3	22.8	3.00	13	--	k20	--
	17	0847	39004	39004	--	20.0	20.0	3.00	17	--	110	--
	18	0843	39004	39004	--	13.9	21.1	3.00	18	--	260	--
	19	0845	39004	39004	--	16.7	21.7	3.00	14	--	80	--
	20	0840	39004	39004	--	15.0	21.7	3.00	8.1	--	73	--
	24	0741	39004	39004	--	16.7	21.7	3.00	4.7	--	k23	--
	25	0741	39004	39004	--	18.3	21.7	3.00	5.1	--	50	--
	26	0845	39004	39004	--	18.3	21.1	3.00	7.0	--	88	--
	27	0845	39004	39004	--	18.3	21.7	3.00	5.2	--	100	--
	31	0838	39004	39004	--	20.0	21.7	3.00	5.8	--	1200	--

PROJECT DATA
Bacteriological, Water-Quality, and Sediment-Quality Data at Ohio Beaches

WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[(00028), USGS National Water Information System parameter code; $\mu\text{S}/\text{cm}$, microsiemens per centimeter; deg C, degrees Celsius; NTU, nephelometric turbidity units; col/100 mL, colonies per 100 milliliters; mf, membrane filtration; -- no data; k, value is estimated from a non-ideal colony count; e, estimated; <, concentration or value reported is less than that indicated; a, average value]

Date	Time	Agency analyzing sample (00028)	Agency collecting sample (00027)	Specific conductance, field ($\mu\text{S}/\text{cm}$) (00095)	Air temperature (deg C) (00020)	Water temperature (deg C) (00010)	Depth, bottom at sample location (feet) (81903)	Turbidity (NTU) (00076)	<i>E. coli</i> , ONPG-MUG, auto analysis (col/100 mL) (50468)	<i>E. coli</i> , water, MTEC, mf, total (col/100 mL) (31633)	Enterococci, water, mEI, mf, 24 hour (col/100 mL) (90909)	
<u>412928081560220 LAKE ERIE AT HUNTINGTON RESERVATION 2—Continued</u>												
Aug.												
	1	0838	39004	39004	--	21.1	21.7	3.00	2.0	--	k14	--
	2	0845	39004	39004	--	20.6	21.7	3.00	2.3	--	k50	--
	3	0850	39004	39004	--	19.4	21.7	3.00	4.7	--	140	--
	7	0855	39004	39004	--	23.9	22.8	3.00	5.6	--	220	--
	8	0840	39004	39004	--	20.6	21.7	3.00	3.3	--	k43	--
	9	0846	39004	39004	--	21.7	21.7	3.00	2.5	--	40	--
	10	0845	39004	39004	--	20.0	21.7	3.00	22	--	590	--
	14	0840	39004	39004	--	16.1	22.2	3.00	7.0	--	k9	--
	16	0846	39004	39004	--	21.7	22.2	3.00	25	--	250	--
	17	0935	39004	39004	--	15.6	21.7	3.00	16	--	k26	--
	21	0741	39004	39004	--	11.1	22.2	3.00	12	--	k12	--
	22	0837	39004	39004	--	16.1	21.1	3.00	10	--	k27	--
	23	0842	39004	39004	--	--	21.1	3.00	11	--	50	--
	24	0845	39004	39004	--	18.9	21.7	3.00	3.9	--	55	--
	25	0837	39004	39004	--	18.9	21.7	3.00	14	--	240	--
	29	0840	39004	39004	--	18.3	21.1	3.00	13	--	k11	--
	30	0843	39004	39004	--	19.4	21.1	3.00	2.4	--	k9	--
	31	0843	39004	39004	--	20.0	21.7	3.00	5.2	--	78	--
<u>413509081340220 LAKE ERIE AT VILLA ANGELA 2</u>												
May												
	22	0718	39002	39002	--	12.2	13.9	3.00	.5	--	97	--
	23	0723	39002	39002	--	16.1	13.9	3.00	4.9	--	78	--
	24	0720	39002	39002	--	17.2	14.4	3.00	3.4	--	320	--
	25	0725	39002	39002	--	13.3	13.9	3.00	1.5	--	410	--
	26	0714	39002	39002	--	10.6	18.0	3.00	.2	--	480	--
	30	0725	39002	39002	--	11.7	13.3	3.00	4.0	--	100	--
	31	0723	39002	39002	--	13.3	13.9	3.00	3.0	--	29	--
June												
	1	0725	39002	39002	--	13.3	13.9	3.00	2.5	--	230	--
	2	0723	39002	39002	--	21.0	13.0	3.00	5.5	--	790	--
	5	0725	39002	39002	--	12.0	12.0	3.00	7.0	--	4000	--
	6	0728	39002	39002	--	9.0	11.0	3.00	6.4	--	3000	--
	7	0728	39002	39002	--	9.5	12.0	3.00	.2	--	44	--
	8	0718	39002	39002	--	12.0	11.0	3.00	4.5	--	50	--
	9	0727	39002	39002	--	18.0	15.0	3.00	6.1	--	36	--
	12	0728	39002	39002	--	17.0	16.0	3.00	3.1	--	130	--
	13	0728	39002	39002	--	18.0	16.5	3.00	7.0	--	110	--
	14	0730	39002	39002	--	20.0	--	3.00	--	--	190	--
	15	0730	39002	39002	--	--	--	3.00	--	--	640	--
	16	0725	39002	39002	--	--	--	3.00	--	--	66	--
	19	0728	39002	39002	--	12.0	17.0	3.00	10	--	450	--
	20	0728	39002	39002	--	17.0	18.0	3.00	3.4	--	700	--
	21	0728	39002	39002	--	--	18.0	3.00	4.9	--	700	--
	22	0728	39002	39002	--	16.0	18.0	3.00	15	--	360	--
	23	0728	39002	39002	--	17.0	18.0	3.00	5.0	--	62	--
	26	0718	39002	39002	--	18.0	22.0	3.00	2.5	--	190	--
	27	0716	39002	39002	--	18.0	20.0	3.00	6.4	--	320	--
	28	0730	39002	39002	--	20.0	19.0	3.00	1.5	--	--	--
	29	0725	39002	39002	--	17.0	19.0	3.00	3.9	--	87	--
	30	0728	39002	39002	--	18.0	19.0	3.00	7.0	--	180	--
July												
	5	0730	39002	39002	--	19.0	20.0	3.00	1.7	--	220	--
	6	0727	39002	39002	--	15.0	19.0	3.00	2.2	--	51	--
	7	0730	39002	39002	--	19.0	20.0	3.00	15	--	980	--
	10	0728	39002	39002	--	21.0	20.0	3.00	5.0	--	4500	--
	11	0728	39002	39002	--	21.0	21.0	3.00	7.2	--	740	--
	12	0730	39002	39002	--	20.5	21.0	3.00	2.2	--	60	--
	13	0722	39002	39002	--	15.0	18.0	3.00	1.6	--	18	--
	14	0724	39002	39002	--	18.0	19.0	3.00	1.8	--	140	--
	17	0730	39002	39002	--	19.0	21.0	3.00	2.3	--	63	--
	18	0732	39002	39002	--	18.0	21.0	3.00	15	--	2000	--
	19	0716	39002	39002	--	14.0	19.0	3.00	1.6	--	40	--
	20	0727	39002	39002	--	16.0	21.0	3.00	3.0	--	120	--
	21	0721	39002	39002	--	16.0	20.0	3.00	16	--	250	--
	24	0725	39002	39002	--	18.0	22.0	3.00	1.9	--	140	--
	25	0728	39002	39002	--	17.0	22.0	3.00	1.3	--	28	--
	26	0726	39002	39002	--	18.0	19.5	3.00	1.1	--	25	--
	27	0727	39002	39002	--	20.0	22.0	3.00	1.2	--	150	--
	28	0730	39002	39002	--	20.5	22.0	3.00	1.1	--	54	--
	31	0730	39002	39002	--	21.0	23.0	3.00	1.5	--	340	--

PROJECT DATA
Bacteriological, Water-Quality, and Sediment-Quality Data at Ohio Beaches

WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[(00028), USGS National Water Information System parameter code; $\mu\text{S}/\text{cm}$, microsiemens per centimeter; deg C, degrees Celsius; NTU, nephelometric turbidity units; col/100 mL, colonies per 100 milliliters; mf, membrane filtration; -- no data; k, value is estimated from a non-ideal colony count; e, estimated; <, concentration or value reported is less than that indicated; a, average value]

Date	Time	Agency analyzing sample (00028)	Agency collecting sample (00027)	Specific conductance, field ($\mu\text{S}/\text{cm}$) (00095)	Air temperature (deg C) (00020)	Water temperature (deg C) (00010)	Depth, bottom at sample location (feet) (81903)	Turbidity (NTU) (00076)	<i>E. coli</i> , ONPG-MUG, auto analysis (col/100 mL) (50468)	<i>E. coli</i> , water, MTEC, mf, total (col/100 mL) (31633)	Enterococci, water, mEI, mf, 24 hour (col/100 mL) (90909)	
<u>413509081340220 LAKE ERIE AT VILLA ANGELA 2—Continued</u>												
Aug.												
	1	0730	39002	39002	--	21.0	23.0	3.00	2.3	--	260	--
	2	0732	39002	39002	--	21.0	22.0	3.00	1.4	--	2800	--
	3	0730	39002	39002	--	22.0	22.0	3.00	7.7	--	780	--
	4	0722	39002	39002	--	18.0	18.0	3.00	3.6	--	58	--
	7	0727	39002	39002	--	22.0	23.0	3.00	5.6	--	k2400	--
	8	0730	39002	39002	--	23.0	21.0	3.00	3.5	--	240	--
	9	0725	39002	39002	--	22.0	22.0	3.00	10	--	1200	--
	10	0723	39002	39002	--	21.0	18.0	3.00	10	--	2700	--
	11	0730	39002	39002	--	20.0	23.0	3.00	2.6	--	130	--
	14	0725	39002	39002	--	17.0	20.0	3.00	1.2	--	25	--
	15	0724	39002	39002	--	19.0	20.0	3.00	2.6	--	110	--
	16	0720	39002	39002	--	22.0	23.5	3.00	1.4	--	960	--
	17	0733	39002	39002	--	20.0	23.0	3.00	5.5	--	41	--
	18	0728	39002	39002	--	19.0	22.0	3.00	1.5	--	k11	--
	21	0730	39002	39002	--	18.0	22.0	3.00	1.9	--	25	--
<u>413509081340230 LAKE ERIE AT VILLA ANGELA 3</u>												
June	19	1420	1028	1028	288	22.0	22.5	5.00	9.7	--	80	--
<u>414524081173100 LAKE ERIE AT HEADLANDS STATE PARK BEACH WEST</u>												
May	30	1115	9739	9739	--	--	--	3.00	9.8	3	--	--
	31	1245	39003	39003	--	26.7	15.6	3.00	10	<1	--	--
June	1	1125	9739	9739	--	--	12.8	3.00	5.3	11	--	--
	5	1000	39003	39003	--	15.6	14.4	3.00	64	39	--	--
	6	1140	9739	9739	--	--	--	3.00	83	15	--	--
	7	0930	39003	39003	--	21.1	14.4	3.00	43	10	--	--
	8	1210	9739	9739	--	--	16.1	3.00	41	18	--	--
	12	0845	39003	39003	--	15.6	18.3	3.00	11	12	--	--
	13	1220	9739	9739	--	--	16.7	3.00	17	9	--	--
	14	0905	39003	39003	--	26.7	18.3	3.00	5.9	5	--	--
	15	1200	9739	9739	--	--	17.2	3.00	42	310	--	--
	19	0848	39003	39003	--	21.1	17.8	3.00	11	15	--	--
	20	1350	9739	9739	--	--	16.7	3.00	14	--	--	--
	21	0900	39003	39003	--	22.2	17.8	3.00	15	99	--	--
	22	1220	9739	9739	--	--	18.3	3.00	62	78	--	--
	26	0845	39003	39003	--	24.4	20.0	3.00	7.8	12	--	--
	27	1130	9739	9739	--	--	18.3	3.00	10	12	--	--
	28	0920	39003	39003	--	22.2	21.1	3.00	6.8	3	--	--
	29	1115	9739	9739	--	--	19.4	3.00	43	770	--	--
July	5	0903	39003	39003	--	26.7	21.1	3.00	5.7	61	--	--
	6	1215	9739	9739	--	--	22.2	3.00	4.0	3	--	--
	10	0855	39003	39003	--	24.4	21.1	3.00	16	a75	--	--
	11	1130	9739	9739	--	--	18.9	3.00	7.6	5	--	--
	12	0908	39003	39003	--	25.6	21.1	3.00	7.0	9	--	--
	13	1150	9739	9739	--	--	22.8	3.00	5.6	14	--	--
	17	0850	39003	39003	--	24.4	21.7	3.00	29	29	--	--
	18	1130	9739	9739	--	--	21.7	3.00	41	120	--	--
	19	0915	39003	39003	--	19.4	20.6	3.00	6.4	26	--	--
	20	1140	9739	9739	--	--	22.2	3.00	5.7	12	--	--
	24	0900	39003	39003	--	22.8	21.7	3.00	3.2	10	--	--
	25	1215	9739	9739	--	--	22.8	3.00	4.8	2	--	--
	26	0912	39003	39003	--	25.0	--	3.00	3.6	33	--	--
	27	1205	9739	9739	--	--	--	3.00	5.9	10	--	--

PROJECT DATA
Bacteriological, Water-Quality, and Sediment-Quality Data at Ohio Beaches

WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

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Date	Time	Agency analyzing sample (00028)	Agency collecting sample (00027)	Specific conductance, field (μ S/cm) (00095)	Air temperature (deg C) (00020)	Water temperature (deg C) (00010)	Depth, bottom at sample location (feet) (81903)	Turbidity (NTU) (00076)	<i>E. coli</i> , ONPG-MUG, auto analysis (col/100 mL) (50468)	<i>E. coli</i> , water, MTEC, mf, total (col/100 mL) (31633)	Enterococci, water, mEI, mf, 24 hour (col/100 mL) (90909)
414524081173100 LAKE ERIE AT HEADLANDS STATE PARK BEACH WEST—Continued											
Aug.											
	1	1145	9739	9739	--	--	22.8	3.00	18	360	--
	3	1150	9739	9739	--	--	22.8	3.00	--	820	--
	7	1017	39003	39003	--	22.2	21.1	3.00	17	600	--
	8	1200	9739	9739	--	--	23.3	3.00	23	10	--
	9	0917	39003	39003	--	23.3	22.2	3.00	54	100	--
	10	1215	9739	9739	--	--	22.8	3.00	17	12	--
	14	0900	39003	39003	--	21.1	22.2	3.00	3.2	12	--
	15	1145	9739	9739	--	--	18.3	3.00	12	32	--
	16	0908	39003	39003	--	22.2	22.2	3.00	16	56	--
	17	1257	9739	9739	--	--	22.8	3.00	7.7	11	--
	21	1040	39003	39003	--	21.1	19.4	3.00	5.9	11	--
	22	1215	9739	9739	--	--	21.1	3.00	5.3	14	--
	23	0845	39003	39003	--	21.1	20.0	3.00	16	150	--
	24	1240	9739	9739	--	--	22.8	3.00	25	38	--
	29	1330	9739	9739	--	--	22.2	3.00	3.5	2	--
	30	0920	39003	39003	--	22.2	20.6	3.00	1.5	14	--
	31	1220	9739	9739	--	--	22.2	3.00	2.9	6	--
414527081172800 LAKE ERIE AT HEADLANDS STATE PARK BEACH EAST											
May											
	30	1120	9739	9739	--	--	--	3.00	7.4	2	--
	31	1245	39003	39003	--	26.7	15.6	3.00	9.9	9	--
June											
	1	1125	9739	9739	--	--	12.8	3.00	5.1	16	--
	5	1005	39003	39003	--	14.4	13.3	3.00	60	21	--
	6	1140	9739	9739	--	--	--	3.00	91	12	--
	7	0935	39003	39003	--	20.0	14.4	3.00	91	5	--
	8	1210	9739	9739	--	--	16.1	3.00	45	78	--
	12	0855	39003	39003	--	15.6	18.3	3.00	11	13	--
	13	1220	9739	9739	--	--	16.7	3.00	22	16	--
	14	0908	39003	39003	--	26.7	18.3	3.00	9.2	10	--
	15	1200	9739	9739	--	--	17.2	3.00	37	260	--
	19	0855	39003	39003	--	21.1	18.9	3.00	10	12	--
	20	1350	9739	9739	--	--	16.7	3.00	15	9	--
	21	0908	39003	39003	--	22.2	18.3	3.00	17	120	--
	22	1220	9739	9739	--	--	18.3	3.00	64	83	--
	26	0905	39003	39003	--	25.6	20.0	3.00	7.4	15	--
	27	1130	9739	9739	--	--	18.3	3.00	12	15	--
	28	0924	39003	39003	--	23.3	21.1	3.00	3.7	29	--
	29	1115	9739	9739	--	--	19.4	3.00	39	1100	--
July											
	5	0912	39003	39003	--	26.7	22.2	3.00	5.5	6	--
	6	1215	9739	9739	--	--	22.2	3.00	5.0	16	--
	10	0800	39003	39003	--	24.4	21.1	3.00	30	96	--
	11	1130	9739	9739	--	--	18.9	3.00	6.5	3	--
	12	0852	39003	39003	--	23.9	21.7	3.00	4.4	a19	--
	13	1150	9739	9739	--	--	22.8	3.00	5.0	9	--
	17	0905	39003	39003	--	24.4	21.1	3.00	14	18	--
	18	1130	9739	9739	--	--	21.7	3.00	35	38	--
	19	0900	39003	39003	--	18.3	20.6	3.00	5.0	35	--
	20	1135	9739	9739	--	--	22.2	3.00	4.4	5	--
	24	0900	39003	39003	--	22.8	21.1	3.00	3.2	10	--
	25	1215	9739	9739	--	--	22.8	3.00	4.7	11	--
	26	0918	39003	39003	--	25.6	22.2	3.00	2.4	37	--
	27	1205	9739	9739	--	--	--	3.00	3.8	18	--

PROJECT DATA
Bacteriological, Water-Quality, and Sediment-Quality Data at Ohio Beaches

WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

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Date	Time	Agency analyzing sample (00028)	Agency collecting sample (00027)	Specific conductance, field ($\mu\text{S}/\text{cm}$) (00095)	Air temperature (deg C) (00020)	Water temperature (deg C) (00010)	Depth, bottom at sample location (feet) (81903)	Turbidity (NTU) (00076)	<i>E. coli</i> , ONPG-MUG, auto analysis (col/100 mL) (50468)	<i>E. coli</i> , water, MTEC, mf, total (col/100 mL) (31633)	Enterococci, water, mEI, mf, 24 hour (col/100 mL) (90909)
<u>414527081172800 LAKE ERIE AT HEADLANDS STATE PARK BEACH EAST—Continued</u>											
Aug.											
	1	1145	9739	9739	--	--	23.0	3.00	17	650	--
	3	1155	9739	9739	--	--	22.8	3.00	--	650	--
	7	1027	39003	39003	--	22.8	21.1	3.00	23	380	--
	8	1200	9739	9739	--	--	23.3	3.00	27	22	--
	9	0923	39003	39003	--	23.3	22.2	3.00	59	140	--
	10	1215	9739	9739	--	--	22.8	3.00	14	16	--
	14	0910	39003	39003	--	21.1	22.2	3.00	3.1	a12	--
	15	1145	9739	9739	--	--	18.3	3.00	11	78	--
	16	0915	39003	39003	--	22.2	22.2	3.00	17	75	--
	17	1300	9739	9739	--	--	22.8	3.00	8.1	16	--
	21	1040	39003	39003	--	21.1	20.0	3.00	5.9	8	--
	22	1215	9739	9739	--	--	21.1	3.00	6.5	3	--
	23	0850	39003	39003	--	21.1	20.0	3.00	20	300	--
	24	1243	9739	9739	--	--	22.8	3.00	22	53	--
	29	1335	9739	9739	--	--	22.2	3.00	6.1	6	--
	30	0930	39003	39003	--	22.2	20.6	3.00	2.5	25	--
	31	1225	9739	9739	--	--	22.2	3.00	3.3	9	--
<u>414530081163100 LAKE ERIE AT FAIRPORT HARBOR BEACH</u>											
May											
	30	1151	9739	9739	--	--	13.9	3.00	48	8	--
	31	1140	39003	39003	--	26.7	14.4	3.00	8.1	2	--
June											
	1	1215	9739	9739	--	--	13.9	3.00	8.5	3	--
	5	0931	39003	39003	--	15.6	--	3.00	89	40	--
	6	1230	9739	9739	--	--	13.9	3.00	190	27	--
	7	0848	39003	39003	--	24.4	15.6	3.00	45	16	--
	8	1140	9739	9739	--	--	16.1	3.00	25	41	--
	12	0821	39003	39003	--	18.3	16.7	3.00	17	15	--
	13	1200	9739	9739	--	--	17.2	3.00	23	22	--
	14	0845	39003	39003	--	27.2	18.3	3.00	10	7	--
	15	1145	9739	9739	--	--	17.2	3.00	7.5	220	--
	19	0825	39003	39003	--	21.7	18.9	3.00	38	14	--
	20	1144	9739	9739	--	--	21.1	3.00	41	130	--
	21	0835	39003	39003	--	23.3	16.7	3.00	5.4	26	--
	22	0945	9739	9739	--	--	18.3	3.00	14	15	--
	26	0825	39003	39003	--	23.3	20.0	3.00	7.5	15	--
	27	1230	9739	9739	--	--	18.9	3.00	--	--	--
	28	0855	39003	39003	--	23.3	21.1	3.00	4.5	2	--
	29	0915	9739	9739	--	--	--	3.00	--	6	--
July											
	5	0840	39003	39003	--	26.7	21.1	3.00	3.4	52	--
	6	0930	9739	9739	--	--	21.1	3.00	5.4	36	--
	10	0830	39003	39003	--	24.4	21.1	3.00	3.2	13	--
	11	1030	9739	9739	--	--	20.0	3.00	46	66	--
	12	0845	39003	39003	--	24.4	21.1	3.00	11	3	--
	13	1015	9739	9739	--	--	21.7	3.00	9.7	3	--
	17	0822	39003	39003	--	23.9	22.2	3.00	4.2	24	--
	18	1155	9739	9739	--	--	21.7	3.00	25	59	--
	19	0838	39003	39003	--	18.3	20.0	3.00	5.2	240	--
	20	1150	9739	9739	--	--	21.7	3.00	7.9	16	--
	24	0826	39003	39003	--	21.1	21.1	3.00	2.6	3	--
	25	0900	9739	9739	--	--	21.1	3.00	5.8	2	--
	26	0850	39003	39003	--	23.9	22.2	3.00	3.3	240	--
	27	0845	9739	9739	--	--	22.8	3.00	5.5	8	--
Aug.											
	1	1030	9739	9739	--	--	--	3.00	3.6	14	--
	3	1030	9739	9739	--	--	22.8	3.00	--	390	--
	7	0953	39003	39003	--	23.3	21.1	3.00	5.8	a130	--
	8	1200	9739	9739	--	--	22.2	3.00	4.7	11	--
	9	0854	39003	39003	--	23.3	22.2	3.00	8.6	32	--
	10	1015	9739	9739	--	--	22.8	3.00	8.5	43	--
	14	0830	39003	39003	--	21.1	23.3	3.00	10	4	--
	15	1325	9739	9739	--	--	--	3.00	8.9	11	--
	16	0836	39003	39003	--	22.2	22.2	3.00	12	32	--
	17	1230	9739	9739	--	--	23.3	3.00	9.6	12	--
	21	1115	39003	39003	--	21.7	20.0	3.00	18	3	--
	22	1000	9739	9739	--	--	23.3	3.00	13	45	--
	23	0915	39003	39003	--	21.7	20.6	3.00	13	22	--
	24	1045	9739	9739	--	--	22.2	3.00	15	89	--
	29	1305	9739	9739	--	--	22.2	3.00	6.2	5	--
	30	1020	39003	39003	--	23.3	20.6	3.00	2.0	4	--
	31	1220	9739	9739	--	--	22.8	3.00	3.2	170	--

PROJECT DATA
Bacteriological, Water-Quality, and Sediment-Quality Data at Ohio Beaches

SEDIMENT-QUALITY RECORDS

The following tables list the results of bacteriological, sediment-quality, and physical measurements of sediment samples collected in the interstitial zone of three Lake Erie beaches in Cuyahoga County, Ohio, and one inland reservoir beach in Trumbull County, Ohio during May through September 2000. Samples were collected as part of a study to develop a predictive model for *Escherichia coli* in recreational waters and investigate the storage of *E. coli* in sediments.

SEDIMENT-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

[(00028), USGS National Water Information System parameter code; deg C, degrees Celsius; bm, bottom material; ws, wet sieved; mm, millimeters; dw, dry weight; rec, recovered; g/kg, grams per kilograms; mf, membrane filtration method for *E. coli*; col/g, colonies per gram; e, estimated]

Date	Time	Agency analyzing sample (00028)	Agency collecting sample (00027)	Air temperature (deg C) (00020)	Carbon, inorganic, sediment, bm ws, 2mm dw, rec (g/kg) (49270)	Carbon, organic, sediment, bm ws, 2mm dw, rec (g/kg) (49271)	Carbon, organic plus inorganic, sediment, bm ws, 2mm dw, rec (g/kg) (49272)	<i>E. coli</i> , sediment, MTEC, mf (col/g) (50466)	
<u>411812080454610 MOSQUITO CREEK LAKE AT STATE PARK BEACH 1</u>									
July	31	0845	80020	1028	23.2	3.6	0.4	4.0	120
<u>411812080454620 MOSQUITO CREEK LAKE AT STATE PARK BEACH 2</u>									
July	31	0925	80020	1028	23.2	2.7	1.4	4.1	e30000
<u>411812080454630 MOSQUITO CREEK LAKE AT STATE PARK BEACH 3</u>									
July	31	0935	80020	14028	23.2	1.8	0.7	2.5	e14000
<u>412917081442810 LAKE ERIE AT EDGEWATER PARK 1</u>									
June	19	1110	80020	1028	18.5	4.6	0.4	5.0	e50
<u>412928081560220 LAKE ERIE AT HUNTINGON RESERVATION 2</u>									
June	19	1230	80020	1028	20.5	8.3	3.5	12	27
<u>413509081340230 LAKE ERIE AT VILLA ANGELA 3</u>									
June	19	1430	80020	1028	22.0	9.7	1.1	11	82

PROJECT DATA

**Characterization of Microbial Water Quality in Relation to Water-Contact Recreation,
Cuyahoga River, Cuyahoga Valley National Park, Ohio**

The following tables list the results of microbiological, chemical, and physical measurements collected at five locations in the Cuyahoga River in Summit and Cuyahoga Counties, Ohio. Samples were collected and analyzed as part of a study to modify existing USGS models to generate forecasts of instream bacterial concentrations. The data and model results will be used to characterize the occurrence, distribution, and public health significance of microbiological constituents that may contaminate the river during runoff.



PROJECT DATA
Characterization of Microbial Water Quality in Relation to Water-Contact Recreation,
Cuyahoga River, Cuyahoga Valley National Park, Ohio
 04206000 CUYAHOGA RIVER AT OLD PORTAGE, OHIO

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

[(00065), USGS National Water Information System parameter code; ft³/s, cubic feet per second; mm of Hg, millimeters of mercury; mg/L, milligrams per liter; µS/cm, microsiemens per centimeter; --, no data; deg C, degrees Celsius]

Date	Time	Gage height (feet) (00065)	Discharge, instantaneous (ft ³ /s) (00061)	Barometric pressure (mm of Hg) (00025)	Oxygen, dissolved (percent of saturation) (00301)	Oxygen, dissolved (mg/L) (00300)	pH, whole water, field (standard units) (00400)	pH, whole water, lab (standard units) (00403)	Specific conductance, field (µS/cm) (00095)
May									
3	1400	2.46	290	750	128	12.0	8.7	--	630
10	1345	2.47	290	--	81	7.3	7.7	--	615
11	1600	2.28	253	--	103	9.3	8.1	--	639
17	1430	1.87	152	748	100	9.1	8.5	--	694
23	1430	3.85	799	735	111	10.3	7.6	7.7	455
July									
6	1140	1.99	185	--	89	7.9	7.8	--	704
12	1000	1.69	113	--	--	--	--	--	--
18	0830	2.46	290	745	86	7.4	8.0	7.7	581
25	1300	1.69	117	748	119	10.4	7.5	--	656
26	1440	1.66	113	746	103	8.9	7.7	--	733
Sept.									
5	1330	1.68	115	753	112	10.0	7.8	--	762
6	1300	1.65	111	--	100	9.2	7.9	--	775
11	1145	1.93	167	744	108	9.2	7.6	--	701
19	1345	1.75	125	744	130	11.9	8.1	8.0	781
26	0930	2.66	350	745	87	8.7	7.8	--	517

Date	Air temperature (deg C) (00020)	Water temperature (deg C) (00010)	Calcium, dissolved (mg/L as Ca) (00915)	Magnesium, dissolved (mg/L as Mg) (00925)	Potassium, dissolved (mg/L as K) (00935)	Sodium, dissolved (mg/L as Na) (00930)	Alkalinity, water, dissolved, field (mg/L as CaCO ₃) (39086)	Bicarbonate water, dissolved, field (mg/L as HCO ₃) (00453)	Chloride, dissolved (mg/L as Cl) (00940)
May									
3	--	17.5	--	--	--	--	--	--	--
10	--	20.5	--	--	--	--	--	--	--
11	--	20.0	--	--	--	--	--	--	--
17	17.5	18.9	--	--	--	--	--	--	--
23	--	17.2	37.9	8.55	2.4	30.5	92	112	53.1
July									
6	--	21.5	--	--	--	--	--	--	--
12	--	--	--	--	--	--	--	--	--
18	19.0	21.7	50.2	11.1	4.0	40.1	105	128	75.4
25	28.5	21.1	--	--	--	--	--	--	--
26	28.0	22.9	--	--	--	--	--	--	--
Sept.									
5	18.0	20.8	--	--	--	--	--	--	--
6	21.0	19.6	--	--	--	--	--	--	--
11	--	22.2	--	--	--	--	--	--	--
19	--	18.9	65.8	14.5	4.8	54.9	150	173	105
26	--	15.4	--	--	--	--	--	--	--

PROJECT DATA
Characterization of Microbial Water Quality in Relation to Water-Contact Recreation,
Cuyahoga River, Cuyahoga Valley National Park, Ohio
 04206000 CUYAHOGA RIVER AT OLD PORTAGE, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[mg/L, milligrams per liter; (00950), USGS National Water Information System parameter code; --, no data; deg C, degrees Celsius; col/100 mL; colonies per 100 milliliters; µg/L, micrograms per liter; k, value is estimated from a non-ideal colony count]

Date	Fluoride, dissolved (mg/L as F) (00950)	Silica, dissolved (mg/L as SiO ₂) (00955)	Sulfate, dissolved (mg/L as SO ₄) (00945)	Nitrogen, ammonia plus organic, dissolved (mg/L as N) (00623)	Nitrogen, ammonia plus organic, total (mg/L as N) (00625)	Nitrogen, ammonia, dissolved (mg/L as N) (00608)	Nitrogen, nitrite plus nitrate, dissolved (mg/L as N) (00631)	Nitrogen, nitrite, dissolved (mg/L as N) (00613)	Phosphorus, dissolved (mg/L as P) (00666)
May									
3	--	--	--	--	--	--	--	--	--
10	--	--	--	--	--	--	--	--	--
11	--	--	--	--	--	--	--	--	--
17	--	--	--	--	--	--	--	--	--
23	.1	4.1	33.7	.60	.88	.048	.654	.024	.029
July									
6	--	--	--	--	--	--	--	--	--
12	--	--	--	--	--	--	--	--	--
18	.1	7.3	42.3	.54	.69	.071	.979	.027	.051
25	--	--	--	--	--	--	--	--	--
26	--	--	--	--	--	--	--	--	--
Sept.									
5	--	--	--	--	--	--	--	--	--
6	--	--	--	--	--	--	--	--	--
11	--	--	--	--	--	--	--	--	--
19	.2	7.8	61.9	.57	.69	.176	2.02	.074	.040
26	--	--	--	--	--	--	--	--	--

Date	Phosphorus, ortho-phosphate, dissolved (mg/L as P) (00671)	Phosphorus, total (mg/L as P) (00665)	Carbon, organic, dissolved (mg/L as C) (00681)	Carbon, organic, particulate (mg/L as C) (00689)	Dissolved solids, residue at 180 deg C (mg/L) (70300)	Coliphage, <i>E. coli</i> , F-amp, 1-agar (plaques/100 mL) (90904)	<i>E. coli</i> , water, whole, total, (col/100 mL) (31633)	Iron, dissolved (µg/L as Fe) (01046)	Manganese, dissolved (µg/L as Mn) (01056)
May									
3	--	--	--	--	--	--	780	--	--
10	--	--	--	--	--	--	k12000	--	--
11	--	--	--	--	--	--	1000	--	--
17	--	--	--	--	--	--	350	--	--
23	.015	.092	7.6	1.3	260	18	7200	50	13
July									
6	--	--	--	--	--	--	1400	--	--
12	--	--	--	--	--	--	2400	--	--
18	.038	.089	6.7	1.0	350	18	4600	50	27
25	--	--	--	--	--	--	1600	--	--
26	--	--	--	--	--	--	1500	--	--
Sept.									
5	--	--	--	--	--	--	520	--	--
6	--	--	--	--	--	--	k64	--	--
11	--	--	--	--	--	--	18000	--	--
19	.032	.062	4.5	.3	439	2	540	30	26
26	--	--	--	--	--	--	1300	--	--

PROJECT DATA
Characterization of Microbial Water Quality in Relation to Water-Contact Recreation,
Cuyahoga River, Cuyahoga Valley National Park, Ohio
 04206200 CUYAHOGA RIVER AT BOTZUM, OHIO

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

[(00065), USGS National Water Information System parameter code; ft³/s, cubic feet per second; mm of Hg, millimeters of mercury; mg/L, milligrams per liter; µS/cm, microsiemens per centimeter; --, no data; deg C, degrees Celsius]

Date	Time	Gage height (feet) (00065)	Discharge, instantaneous (ft ³ /s) (00061)	Barometric pressure (mm of Hg) (00025)	Oxygen, dissolved (percent of saturation) (00301)	Oxygen, dissolved (mg/L) (00300)	pH, whole water, field (standard units) (00400)	pH, whole water, lab (standard units) (00403)	Specific conductance, field (µS/cm) (00095)
May									
3	1315	--	--	750	106	10.3	7.7	--	779
10	1600	6.92	474	--	79	7.2	7.3	--	767
17	1330	6.20	283	745	100	9.3	7.8	--	930
24	0945	8.25	987	735	104	9.8	7.7	7.1	491
25	0900	7.84	811	740	83	7.7	7.6	--	625
July									
6	1300	6.38	317	--	86	7.9	7.7	--	760
12	0930	5.93	217	--	--	--	--	--	--
18	1145	6.94	486	745	100	8.6	7.8	7.9	739
19	0900	7.02	511	746	99	8.7	7.9	--	750
26	1510	5.98	226	746	101	8.8	7.7	--	945
Sept.									
5	1410	5.97	224	753	114	10.0	7.6	--	845
11	1215	6.34	--	744	100	8.6	7.5	--	742
12	0900	5.98	226	745	96	8.2	7.8	--	866
19	1045	5.99	228	744	109	10.1	7.7	7.9	907
26	1000	7.05	521	745	88	8.6	7.6	--	770

Date	Air temperature (deg C) (00020)	Water temperature (deg C) (00010)	Calcium, dissolved (mg/L as Ca) (00915)	Magnesium, dissolved (mg/L as Mg) (00925)	Potassium, dissolved (mg/L as K) (00935)	Sodium, dissolved (mg/L as Na) (00930)	Alkalinity, water, dissolved, field (mg/L as CaCO ₃) (39086)	Bicarbonate water, dissolved, field (mg/L as HCO ₃) (00453)	Chloride, dissolved (mg/L as Cl) (00940)
May									
3	--	16.0	--	--	--	--	--	--	--
10	--	19.4	--	--	--	--	--	--	--
17	19.0	17.5	--	--	--	--	--	--	--
24	--	16.6	43.9	9.67	3.2	46.8	100	122	75.5
25	--	17.2	--	--	--	--	--	--	--
July									
6	--	21.0	--	--	--	--	--	--	--
12	--	--	--	--	--	--	--	--	--
18	24.0	21.9	59.1	12.5	5.3	62.3	124	151	104
19	17.5	20.4	--	--	--	--	--	--	--
26	27.0	21.9	--	--	--	--	--	--	--
Sept.									
5	19.0	20.8	--	--	--	--	--	--	--
11	25.5	22.2	--	--	--	--	--	--	--
12	--	21.5	--	--	--	--	--	--	--
19	19.0	18.3	68.5	15.2	6.6	84.4	150	183	129
26	--	17.0	--	--	--	--	--	--	--

PROJECT DATA
Characterization of Microbial Water Quality in Relation to Water-Contact Recreation,
Cuyahoga River, Cuyahoga Valley National Park, Ohio
 04206200 CUYAHOGA RIVER AT BOTZUM, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[mg/L, milligrams per liter; (00950), USGS National Water Information System parameter code; --, no data; deg C, degrees Celsius; col/100 mL; colonies per 100 milliliters; µg/L, micrograms per liter; k, value is estimated from a non-ideal colony count]

Date	Fluoride, dissolved (mg/L as F) (00950)	Silica, dissolved (mg/L as SiO ₂) (00955)	Sulfate, dissolved (mg/L as SO ₄) (00945)	Nitrogen, ammonia plus organic, dissolved (mg/L as N) (00623)	Nitrogen, ammonia plus organic, total (mg/L as N) (00625)	Nitrogen, ammonia, dissolved (mg/L as N) (00608)	Nitrogen, nitrite plus nitrate, dissolved (mg/L as N) (00631)	Nitrogen, nitrite, dissolved (mg/L as N) (00613)	Phosphorus, dissolved (mg/L as P) (00666)
May									
3	--	--	--	--	--	--	--	--	--
10	--	--	--	--	--	--	--	--	--
17	--	--	--	--	--	--	--	--	--
24	.2	5.2	42.6	.64	.93	.060	1.63	.024	.114
25	--	--	--	--	--	--	--	--	--
July									
6	--	--	--	--	--	--	--	--	--
12	--	--	--	--	--	--	--	--	--
18	.3	8.8	58.1	.62	.77	.072	2.74	.021	.142
19	--	--	--	--	--	--	--	--	--
26	--	--	--	--	--	--	--	--	--
Sept.									
5	--	--	--	--	--	--	--	--	--
11	--	--	--	--	--	--	--	--	--
12	--	--	--	--	--	--	--	--	--
19	.4	9.0	79.0	.82	.95	.144	5.88	.047	.372
26	--	--	--	--	--	--	--	--	--

Date	Phosphorus, ortho-phosphate, dissolved (mg/L as P) (00671)	Phosphorus, total (mg/L as P) (00665)	Carbon, organic, dissolved (mg/L as C) (00681)	Carbon, organic, particulate (mg/L as C) (00689)	Dissolved solids, residue at 180 deg C (mg/L) (70300)	Coliphage, <i>E. coli</i> , F-amp, 1-agar (plaques/100 mL) (90904)	<i>E. coli</i> , water, whole, total, (col/100 mL) (31633)	Iron, dissolved (µg/L as Fe) (01046)	Manganese, dissolved (µg/L as Mn) (01056)
May									
3	--	--	--	--	--	--	580	--	--
10	--	--	--	--	--	--	k8900	--	--
17	--	--	--	--	--	--	k170	--	--
24	.086	.171	7.4	1.2	320	7	1700	50	12
25	--	--	--	--	--	--	730	--	--
July									
6	--	--	--	--	--	--	2600	--	--
12	--	--	--	--	--	--	2400	--	--
18	.116	.173	6.3	.9	436	6	3200	50	26
19	--	--	--	--	--	--	900	--	--
26	--	--	--	--	--	--	1600	--	--
Sept.									
5	--	--	--	--	--	--	490	--	--
11	--	--	--	--	--	--	12000	--	--
12	--	--	--	--	--	--	2600	--	--
19	.351	.460	5.3	.5	550	3	700	30	30
26	--	--	--	--	--	--	730	--	--

PROJECT DATA
Characterization of Microbial Water Quality in Relation to Water-Contact Recreation,
Cuyahoga River, Cuyahoga Valley National Park, Ohio
04208000 CUYAHOGA RIVER AT INDEPENDENCE, OHIO

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

[(00065), USGS National Water Information System parameter code; ft³/s, cubic feet per second; mm of Hg, millimeters of mercury; mg/L, milligrams per liter; µS/cm, microsiemens per centimeter; --, no data; deg C, degrees Celsius]

Date	Time	Gage height (feet) (00065)	Discharge, instantaneous (ft ³ /s) (00061)	Barometric pressure (mm of Hg) (00025)	Oxygen, dissolved (percent of saturation) (00301)	Oxygen, dissolved (mg/L) (00300)	pH, whole water, field (standard units) (00400)	pH, whole water, lab (standard units) (00403)	Specific conductance, field (µS/cm) (00095)
May									
3	0830	3.90	676	750	82	8.5	7.5	--	745
4	0830	3.58	550	750	83	8.1	7.6	--	819
11	1500	3.45	454	--	77	7.4	7.7	--	892
18	0730	3.07	361	743	82	7.5	7.9	--	995
24	1500	4.74	1070	740	109	10.0	7.9	7.3	606
July									
7	0935	3.12	385	--	91	8.1	8.0	--	888
11	1200	3.34	390	735	99	8.2	7.6	--	914
12	0800	3.04	356	--	--	--	--	--	--
17	1345	3.54	532	745	100	7.5	7.9	7.7	723
25	1520	2.94	315	--	129	10.7	8.4	--	862
Sept.									
6	1000	2.83	284	757	102	9.1	8.1	--	988
11	1445	3.69	592	744	100	8.4	7.8	--	758
18	1415	2.95	340	748	116	10.6	8.2	8.1	862
25	1250	4.31	854	745	95	9.3	7.4	--	598
26	1130	3.74	614	743	93	9.3	7.9	--	665

Date	Air temperature (deg C) (00020)	Water temperature (deg C) (00010)	Calcium, dissolved (mg/L as Ca) (00915)	Magnesium, dissolved (mg/L as Mg) (00925)	Potassium, dissolved (mg/L as K) (00935)	Sodium, dissolved (mg/L as Na) (00930)	Alkalinity, water, dissolved, field (mg/L as CaCO ₃) (39086)	Bicarbonate water, dissolved, field (mg/L as HCO ₃) (00453)	Chloride, dissolved (mg/L as Cl) (00940)
May									
3	--	13.6	--	--	--	--	--	--	--
4	11.5	15.2	--	--	--	--	--	--	--
11	--	16.9	--	--	--	--	--	--	--
18	--	18.2	--	--	--	--	--	--	--
24	20.0	18.5	45.5	10.2	3.2	50.1	106	129	82.5
July									
7	--	21.0	--	--	--	--	--	--	--
11	25.5	22.7	--	--	--	--	--	--	--
12	--	--	--	--	--	--	--	--	--
17	23.5	22.2	58.1	12.1	4.4	61.3	117	143	101
25	27.5	23.0	--	--	--	--	--	--	--
Sept.									
6	17.0	20.4	--	--	--	--	--	--	--
11	--	22.6	--	--	--	--	--	--	--
18	--	18.5	65.0	14.6	5.4	76.7	170	139	126
25	--	16.3	--	--	--	--	--	--	--
26	--	15.2	--	--	--	--	--	--	--

PROJECT DATA
Characterization of Microbial Water Quality in Relation to Water-Contact Recreation,
Cuyahoga River, Cuyahoga Valley National Park, Ohio
 04208000 CUYAHOGA RIVER AT INDEPENDENCE, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[mg/L, milligrams per liter; (00950), USGS National Water Information System parameter code; --, no data; deg C, degrees Celsius; col/100 mL; colonies per 100 milliliters; µg/L, micrograms per liter; k, value is estimated from a non-ideal colony count]

Date	Fluoride, dissolved (mg/L as F) (00950)	Silica, dissolved (mg/L as SiO ₂) (00955)	Sulfate, dissolved (mg/L as SO ₄) (00945)	Nitrogen, ammonia plus organic, dissolved (mg/L as N) (00623)	Nitrogen, ammonia plus organic, total (mg/L as N) (00625)	Nitrogen, ammonia, dissolved (mg/L as N) (00608)	Nitrogen, nitrite plus nitrate dissolved (mg/L as N) (00631)	Nitrogen, nitrite, dissolved (mg/L as N) (00613)	Phosphorus, dissolved (mg/L as P) (00666)
May									
3	--	--	--	--	--	--	--	--	--
4	--	--	--	--	--	--	--	--	--
11	--	--	--	--	--	--	--	--	--
18	--	--	--	--	--	--	--	--	--
24	.2	5.3	47.8	.55	.94	.042	1.53	.021	.061
July									
7	--	--	--	--	--	--	--	--	--
11	--	--	--	--	--	--	--	--	--
12	--	--	--	--	--	--	--	--	--
17	.2	7.5	56.7	.51	.77	.042	2.37	.028	.114
25	--	--	--	--	--	--	--	--	--
Sept.									
6	--	--	--	--	--	--	--	--	--
11	--	--	--	--	--	--	--	--	--
18	.4	7.2	71.0	.48	.58	<.020	3.49	.015	.242
25	--	--	--	--	--	--	--	--	--
26	--	--	--	--	--	--	--	--	--

Date	Phosphorus, ortho-phosphate, dissolved (mg/L as P) (00671)	Phosphorus, total (mg/L as P) (00665)	Carbon, organic, dissolved (mg/L as C) (00681)	Carbon, organic, particulate (mg/L as C) (00689)	Dissolved solids, residue at 180 deg C (mg/L) (70300)	Coliphage, <i>E. coli</i> , F-amp, 1-agar (plaques/100 mL) (90904)	<i>E. coli</i> , water, whole, total (col/100 mL) (31633)	Iron, dissolved (µg/L as Fe) (01046)	Manganese, dissolved (µg/L as Mn) (01056)
May									
3	--	--	--	--	--	--	1800	--	--
4	--	--	--	--	--	--	620	--	--
11	--	--	--	--	--	--	1200	--	--
18	--	--	--	--	--	--	470	--	--
24	.045	.193	7.3	2.1	346	11	1300	30	15
July									
7	--	--	--	--	--	--	260	--	--
11	--	--	--	--	--	--	320	--	--
12	--	--	--	--	--	--	210	--	--
17	.093	.152	5.7	1.2	419	5	5700	10	15
25	--	--	--	--	--	--	220	--	--
Sept.									
6	--	--	--	--	--	--	400	--	--
11	--	--	--	--	--	--	25000	--	--
18	.225	.300	4.5	.4	499	3	k320	10	26
25	--	--	--	--	--	--	4600	--	--
26	--	--	--	--	--	--	2600	--	--

PROJECT DATA
Characterization of Microbial Water Quality in Relation to Water-Contact Recreation,
Cuyahoga River, Cuyahoga Valley National Park, Ohio
 411747081341300 CUYAHOGA RIVER AT JAITE, OHIO

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

[(00065), USGS National Water Information System parameter code; ft³/s, cubic feet per second; mm of Hg, millimeters of mercury; mg/L, milligrams per liter; µS/cm, microsiemens per centimeter; --, no data; deg C, degrees Celsius]

Date	Time	Gage height (feet) (00065)	Discharge, instantaneous (ft ³ /s) (00061)	Barometric pressure (mm of Hg) (00025)	Oxygen, dissolved (percent of saturation) (00301)	Oxygen, dissolved (mg/L) (00300)	pH, whole water, field (standard units) (00400)	pH, whole water, lab (standard units) (00403)	Specific conductance, field (µS/cm) (00095)
May									
3	1100	--	--	750	97	9.9	7.9	--	759
11	1330	7.55	429	--	97	9.2	7.8	--	778
17	1120	6.18	300	746	100	9.5	8.2	--	917
18	0830	6.25	320	740	99	9.3	7.9	--	920
24	1200	7.97	1090	735	111	10.3	7.8	7.6	541
25	0815	7.58	896	740	91	8.6	7.7	--	608
July									
6	1445	6.32	309	--	113	9.7	8.1	--	876
7	1100	6.28	331	--	100	9.0	7.9	--	868
11	1330	6.35	356	735	109	9.0	7.6	--	880
17	1600	6.68	488	745	99	8.3	8.1	8.0	711
25	1415	6.03	248	748	128	11.2	8.1	--	852
Sept.									
6	1120	5.95	243	757	90	8.4	7.7	--	922
11	1315	6.45	396	744	103	8.6	7.8	--	710
18	1045	6.00	240	748	113	10.9	8.0	8.1	890
20	0815	6.05	253	744	102	9.4	8.1	--	933
26	1040	6.77	524	743	96	9.6	7.8	--	657
Date	Air temperature (deg C) (00020)	Water temperature (deg C) (00010)	Calcium, dissolved (mg/L as Ca) (00915)	Magnesium, dissolved (mg/L as Mg) (00925)	Potassium, dissolved (mg/L as K) (00935)	Sodium, dissolved (mg/L as Na) (00930)	Alkalinity, water, dissolved, field (mg/L as CaCO ₃) (39086)	Bicarbonate water, dissolved, field (mg/L as HCO ₃) (00453)	Chloride, dissolved (mg/L as Cl) (00940)
May									
3	--	14.0	--	--	--	--	--	--	--
11	--	17.5	--	--	--	--	--	--	--
17	17.0	16.4	--	--	--	--	--	--	--
18	--	17.7	--	--	--	--	--	--	--
24	--	17.4	44.0	9.84	2.9	43.3	101	123	69.8
25	--	16.6	--	--	--	--	--	--	--
July									
6	--	23.0	--	--	--	--	--	--	--
7	--	20.2	--	--	--	--	--	--	--
11	--	22.5	--	--	--	--	--	--	--
17	26.0	23.3	58.2	12.2	4.1	56.0	124	151	94.9
25	27.5	22.3	--	--	--	--	--	--	--
Sept.									
6	19.0	18.1	--	--	--	--	--	--	--
11	--	22.8	--	--	--	--	--	--	--
18	18.0	16.8	65.8	14.8	5.8	79.6	146	178	126
20	--	17.8	--	--	--	--	--	--	--
26	--	15.2	--	--	--	--	--	--	--

PROJECT DATA
Characterization of Microbial Water Quality in Relation to Water-Contact Recreation,
Cuyahoga River, Cuyahoga Valley National Park, Ohio
 411747081341300 CUYAHOGA RIVER AT JAITE, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000—Continued

[mg/L, milligrams per liter; (00950), USGS National Water Information System parameter code; --, no data; deg C, degrees Celsius; col/100 mL; colonies per 100 milliliters; µg/L, micrograms per liter; k, value is estimated from a non-ideal colony count]

Date	Fluoride, dissolved (mg/L as F) (00950)	Silica, dissolved (mg/L as SiO ₂) (00955)	Sulfate, dissolved (mg/L as SO ₄) (00945)	Nitrogen, ammonia, plus organic, dissolved (mg/L as N) (00623)	Nitrogen, ammonia plus organic, total (mg/L as N) (00625)	Nitrogen, ammonia, dissolved (mg/L as N) (00608)	Nitrogen, nitrite, plus nitrate, dissolved (mg/L as N) (00631)	Nitrogen, nitrite, dissolved (mg/L as N) (00613)	Phosphorus, dissolved (mg/L as P) (00666)
May									
3	--	--	--	--	--	--	--	--	--
11	--	--	--	--	--	--	--	--	--
17	--	--	--	--	--	--	--	--	--
18	--	--	--	--	--	--	--	--	--
24	.2	5.1	43.4	.55	.89	.041	1.27	.020	.062
25	--	--	--	--	--	--	--	--	--
July									
6	--	--	--	--	--	--	--	--	--
7	--	--	--	--	--	--	--	--	--
11	--	--	--	--	--	--	--	--	--
17	.2	7.6	57.8	.53	.64	.041	2.74	.028	.144
25	--	--	--	--	--	--	--	--	--
Sept.									
6	--	--	--	--	--	--	--	--	--
11	--	--	--	--	--	--	--	--	--
18	.4	7.6	74.0	.54	.67	.033	4.28	.028	.335
20	--	--	--	--	--	--	--	--	--
26	--	--	--	--	--	--	--	--	--

Date	Phosphorus, ortho- phosphate, dissolved (mg/L as P) (00671)	Phosphorus, total (mg/L as P) (00665)	Carbon, organic, dissolved (mg/L as C) (00681)	Carbon, organic, particulate (mg/L as C) (00689)	Dissolved solids, residue at 180 deg C (mg/L) (70300)	Coliphage, <i>E. coli</i> , F-amp, 1-agar (plaques/100 mL) (90904)	<i>E. coli</i> , water, whole, total (col/100 mL) (31633)	Iron, dissolved (µg/L as Fe) (01046)	Manganese, dissolved (µg/L as Mn) (01056)
May									
3	--	--	--	--	--	--	900	--	--
11	--	--	--	--	--	--	430	--	--
17	--	--	--	--	--	--	k160	--	--
18	--	--	--	--	--	--	730	--	--
24	.046	.166	7.2	1.8	311	18	2300	40	11
25	--	--	--	--	--	--	1100	--	--
July									
6	--	--	--	--	--	--	710	--	--
7	--	--	--	--	--	--	680	--	--
11	--	--	--	--	--	--	5500	--	--
17	.126	.147	5.5	.8	415	4	4600	10	17
25	--	--	--	--	--	--	270	--	--
Sept.									
6	--	--	--	--	--	--	k250	--	--
11	--	--	--	--	--	--	22000	--	--
18	.310	.388	4.9	.4	522	10	k350	20	20
20	--	--	--	--	--	--	480	--	--
26	--	--	--	--	--	--	1500	--	--

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CONVERSION FACTORS AND VERTICAL DATUM

Multiply	By	To obtain
<i>Length</i>		
inch (in.)	2.54×10^1	millimeter
	2.54×10^{-2}	meter
foot (ft)	3.048×10^{-1}	meter
mile (mi)	1.609×10^0	kilometer
<i>Area</i>		
acre	4.047×10^3	square meter
	4.047×10^{-1}	square hectometer
	4.047×10^{-3}	square kilometer
square mile (mi ²)	2.590×10^0	square kilometer
<i>Volume</i>		
gallon (gal)	3.785×10^0	liter
	3.785×10^0	cubic decimeter
	3.785×10^{-3}	cubic meter
million gallons (Mgal)	3.785×10^3	cubic meter
	3.785×10^{-3}	cubic hectometer
cubic foot (ft ³)	2.832×10^1	cubic decimeter
	2.832×10^{-2}	cubic meter
cubic-foot-per-second day [(ft ³ /s) d]	2.447×10^3	cubic meter
	2.447×10^{-3}	cubic hectometer
acre-foot (acre-ft)	1.233×10^3	cubic meter
	1.233×10^{-3}	cubic hectometer
	1.233×10^{-6}	cubic kilometer
<i>Flow</i>		
cubic foot per second (ft ³ /s)	2.832×10^1	liter per second
	2.832×10^1	cubic decimeter per
second		
	2.832×10^{-2}	cubic meter per second
gallon per minute (gal/min)	6.309×10^{-2}	liter per second
	6.309×10^{-2}	cubic decimeter per
second		
	6.309×10^{-5}	cubic meter per second
million gallons per day (Mgal/d)	4.381×10^1	cubic decimeter per
second		
	4.381×10^{-2}	cubic meter per second
<i>Mass</i>		
ton (short)	9.072×10^{-1}	megagram or metric ton

Sea level: In this report “sea level” refers to the National Geodetic Vertical Datum of 1929 (NGVD of 1929)—a geodetic datum derived from a general adjustment for the first-order level nets of both the United States and Canada, formerly called Sea Level Datum of 1929.

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