

Water Resources Data Ohio Water Year 1999

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

Water-Data Report OH-99-2



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 1999

1998

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	1	2	4	4	5	6	7			1	2	3	4	5
4	5	6	7	8	9	10	8	9	10	11	12	13	14	6	7	8	9	10	11	12
11	12	13	14	15	16	17	15	16	17	18	19	20	21	13	14	15	15	17	18	19
18	19	20	21	22	23	24	22	23	24	25	26	27	28	20	21	22	23	24	25	26
25	26	27	28	29	30	31	29	30						27	28	29	30	31		

1999

JANUARY							FEBRUARY							MARCH						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
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3	4	5	6	7	8	9	7	8	9	10	11	12	13	7	8	9	10	11	12	13
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17	18	19	20	21	22	23	21	22	23	24	25	26	27	21	22	23	24	25	26	27
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31																				

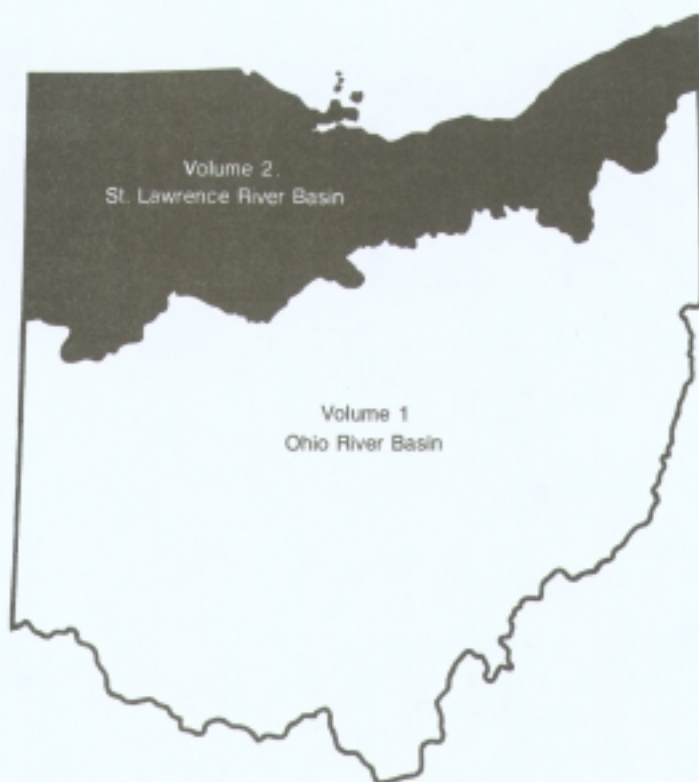
APRIL							MAY							JUNE						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
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25	26	27	28	29	30		23	24	25	26	27	28	29	27	28	29	30			
							30	31												

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	1	2	3	4	5	6	7				1	2	3	4
4	5	6	7	8	9	10	9	9	10	11	12	13	14	5	6	7	8	9	10	11
11	12	13	14	15	16	17	15	16	17	18	19	20	21	12	13	14	15	16	17	18
18	19	20	21	22	23	24	22	23	24	25	26	27	28	19	20	21	22	23	24	25
25	26	27	28	29	30	31	29	30	31					26	27	28	29	30		

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

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



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



U.S. Department of the Interior

Bruce Babbitt, Secretary

U.S. Geological Survey

Charles G. Groat, Director

For additional information write to:

District Chief, Water Resources Division

U.S. Geological Survey

6480 Doubletree Avenue

Columbus, OH 43229-1111

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:

A. W. Coen III	S. D. Janosy	C. W. Schalk
R. A. Darner	A. L. Jones	R. A. Sheets
C. M. Eberle	G. F. Koltun	J. M. Sherwood
T. J. Eaton	B. E. Mailot	D. J. Shifflet
D. P. Finnegan	J. A. McClure	B. N. Sroka
D. S. Francy	K. D. Metzker	D. E. Straub
R. P. Frehs	M.L. Mitchell	R. V. Swisshelm
S. R. Frum	R. N. Bushon	K. H. Shaeffer
S. W. Hatch	C. J. Ostheimer	J. S. Tertuliani
R. J. Haefner	J. M. Parnell	R. J. Velej
J. A. Hambrook	D. C. Reutter	S. A. Vivian
C. A. Hawkins	J. W. Roberts	J. J. Welday
M. L. Jagucki		

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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, (NAWQA) National Water-Quality Assessment Program, (S) daily suspended-sediment data]

	Station Number	Page
Lake Erie Basin		
Ottawa River Basin		
Ottawa River at University of Toledo, Toledo (d)	04177000.....	40
Maumee River Basin		
Tiffin River at Stryker (d)	04185000.....	41
Unnamed tributary to Lost Creek near Farmer (d)	04185440.....	42
Auglaize River near Fort Jennings (d)	04186500.....	43
Ottawa River at Lima (d)	04187100.....	44
Blanchard River near Findlay (d)	04189000.....	45
Auglaize River near Defiance (d)	04191500.....	46
Maumee River near Defiance (dS)	04192500.....	47
Maumee River at Waterville (cdSNAWQA)	04193500.....	51
Portage River Basin		
Portage River at Woodville (d)	04195500.....	59
Portage River at Elmore (d)	04195820.....	60
Sandusky River Basin		
Sandusky River near Bucyrus (d)	04196000.....	62
Tymochtee Creek at Crawford (d)	04196800.....	63
Honey Creek at Melmore (d)	04197100.....	64
Rock Creek at Tiffin (d)	04197170.....	65
Sandusky River near Fremont (cdS)	04198000.....	66
Huron River Basin		
Huron River at Milan (d)	04199000.....	70
Old Woman's Creek Basin		
Old Woman's Creek at Berlin Road near Huron (d)	04199155.....	71
Black River Basin		
Black River at Elyria (d)	04200500.....	72
Rocky River Basin		
Rocky River near Berea (d)	04201500.....	73
Cuyahoga River Basin		
Cuyahoga River at Hiram Rapids (d)	04202000.....	74
Cuyahoga River at Cuyahoga Falls (d)	04203900.....	75
Cuyahoga River at Old Portage (d)	04206000.....	76
Yellow Creek (head of Cuyahoga River):		
North Fork at Bath Center (d)	04206212.....	77
Yellow Creek at Botzum (d)	04206220.....	78
Tinkers Creek at Bedford (d)	04207200.....	79
Cuyahoga River at Independence (cdS)	04208000.....	80
Cuyahoga River at LTV Steel at Cleveland (d)	04208504.....	84
Chagrin River Basin		
Chagrin River at Willoughby (d)	04209000.....	85
Grand River Basin		
Grand River near Painesville (d)	04212100.....	86
Conneaut Creek Basin		
Conneaut Creek at Conneaut (d)	04213000.....	87

GROUND-WATER STATIONS FOR WHICH RECORDS ARE PUBLISHED

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

	Local Number	Well Number	Page
CRAWFORD COUNTY			
Bucyrus (l)	Cr-1	404838082563100.....	90
GEAUGA COUNTY			
Southeast of Chagrin Falls (l)	Ge-3a	412518081221500.....	91
HANCOCK COUNTY			
South of Vanlue (l)	Ha-3	405940083275500.....	92
HARDIN COUNTY			
Southeast of Dola (l)	Hn-2a	404648083412600.....	93
HENRY COUNTY			
Southwest of McClure (l)	Hy-2	412123083574000.....	94
LUCAS COUNTY			
Toledo (l)	Lu-1	413704083362200.....	95
MEDINA COUNTY			
Lodi (l)	Md-1	410142082005900.....	96
OTTAWA COUNTY			
Catawba Island (l)	O-2	413434082494000.....	97
PORTAGE COUNTY			
East of Kent (l)	Po-123.....	410931081192900.....	98
PUTNAM COUNTY			
Columbus Grove (l)	Pu-1	405505084032900.....	99
SANDUSKY COUNTY			
Fremont (l)	S-3	411914083045300.....	100
Woodville (l)	S-2	412703083213600.....	101
SENECA COUNTY			
Tiffin (l)	Se-2	410802083093900.....	102
SUMMIT COUNTY			
Akron (l)	Su-6	410330081282000.....	103
Cuyahoga Falls (l)	Su-7	410846081271600.....	104
VAN WERT COUNTY			
Van Wert (l)	Vw-1	405215084335400.....	105
WILLIAMS COUNTY			
Bryan (l)	Wm-1	412821084313600.....	106
Bryan (l)	Wm-3	412930084320900.....	107
East of Blakeslee (l)	Wm-12	413108084415300.....	108
WYANDOT COUNTY			
Upper Sandusky (l)	Wy-1	405009083172600.....	109



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.

[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 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
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

Discontinued Surface-Water-Discharge Stations—Continued

[a--, not determined for canals.]

STATION NAME	STATION NUMBER	DRAINAGE AREA (MI ²)	PERIOD OF RECORD
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
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.

[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
Black River below Elyria	04200550	412	do, sc, t	1966-82
			pH	1976-82

Discontinued Surface-Water-Quality Stations—Continued

[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
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 Data 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-99-2." 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),
Cortland, Cuyahoga Falls, Delphos, Fremont, Lima, and Warren

Counties of Clermont, Cuyahoga (Board of Health and Sanitary Engineering Division), Geauga, Knox
 Madison, Ross, Summit, and Washington
 Cuyahoga River Community Planning Organization
 Eastgate Development and Transportation Agency
 Federal Emergency Management Agency, Region V, Hazardous Branch
 Miami Conservancy District
 Northeast Ohio Regional Sewer District
 Ohio Departments of Agriculture, Natural Resources (Mines and Reclamation, Oil and Gas, Real Estate
 and Land Management, Water Division, and Wildlife), and Transportation
 Ohio State University Research Foundation
 Ottawa County Soil and Water Conservation District
 State of Ohio Adjutant General's Department
 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 (Drinking Water Standards Division, Great Lakes National
 Project Office, NERL-MICROBIAL and Chemical Exposure Assessment Research Division, and
 Superfund Division, Region V)
 University of Toledo

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. 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

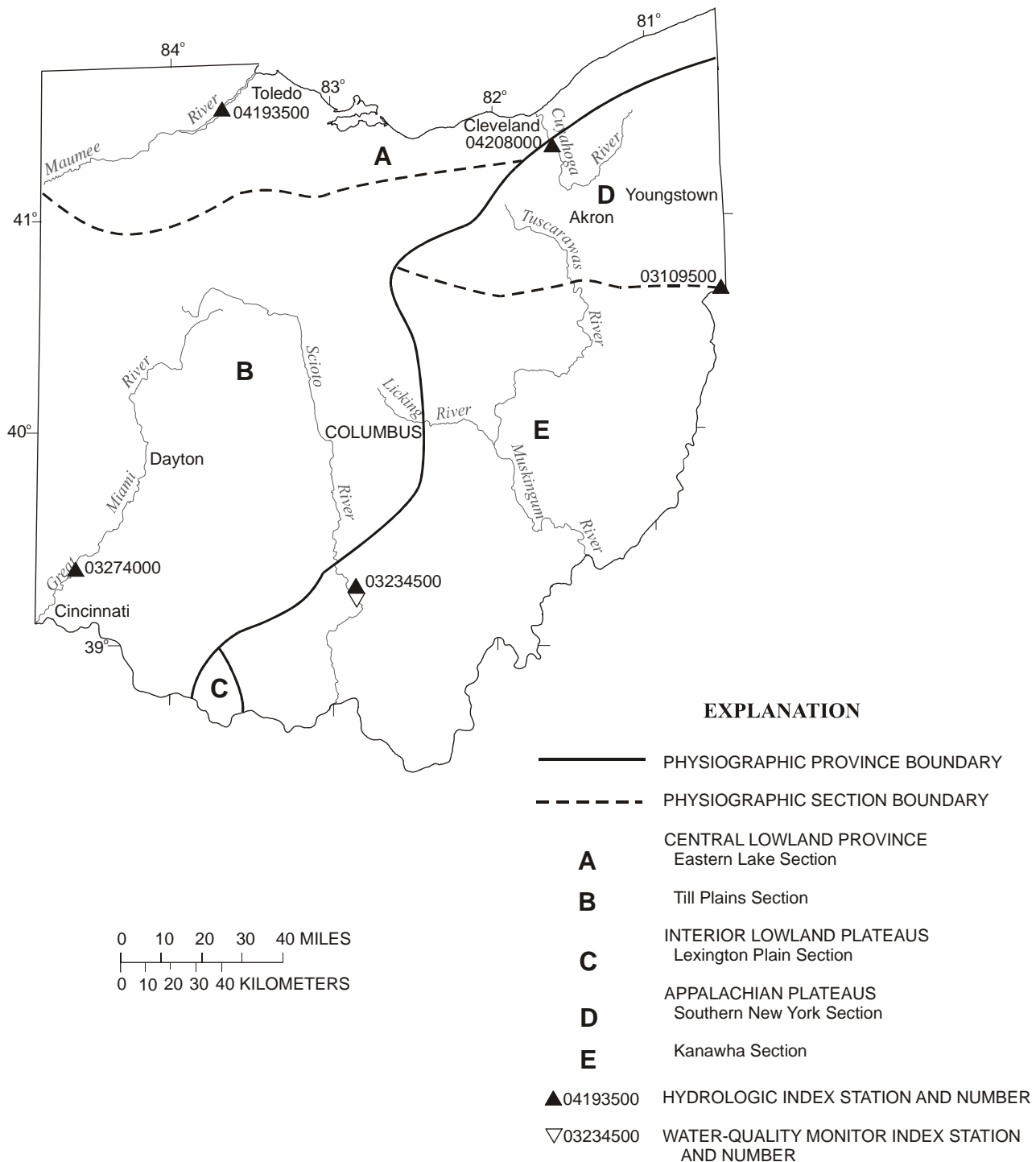


Figure 2. Physiographic divisions and location of hydrologic index stations.

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 7,430 square miles and represent a wide diversity of topography and other physical characteristics. Streamflow ranges from unregulated to highly regulated.

Statewide Streamflow, Water Year 1999. At the beginning of water year 1999, streamflow was in the normal¹ range for most of the State. Flows remained in the normal range in October except for northeast Ohio, where above-normal precipitation produced excessive flows.

In November and December, below-normal precipitation produced normal to below-normal flows throughout the State.

January was the only month in water year 1999 in which excessive flows prevailed statewide. Flows returned the normal range throughout the State in February and remained normal for most of the State through April.

During May through July, streamflow was near normal in northern Ohio and deficient in southern Ohio.

Below-normal precipitation throughout the State in August and September caused streamflow to decline into the deficient range statewide by year's end.

A comparison of streamflows for 1999 with long-term median flows at four representative stations is shown in figure 3.

Water Quality

Water-quality data in Ohio are collected on a short-term basis in conjunction with local or regional studies. On a long-term basis, water-quality data in Ohio are collected at fixed stations. From 1974 to 1995, collection of long-term water-quality data was done as part of the National Stream Quality Accounting Network (NASQAN). With the redesign of the program in 1996 to concentrate on evaluation of large river basins, collection of water-quality data at fixed stations for NASQAN was discontinued in Ohio. 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. Sampling in NAWQA began in Ohio in 1996 at some sites as part of the Lake Erie-Lake St. Clair (LERI) study unit and in 1998 at some sites as part of the Great and Little Miami River Basins (MIAM). One of the LERI fixed stations, the Maumee River at Waterville, was also a fixed station in NASQAN. Whereas water-quality sampling in the NASQAN program was done quarterly, sampling in the NAWQA program is done much more frequently. For example, during 1999, samples were collected monthly at the Maumee River at Waterville. Samples from this site are analyzed for major anions and cations, nutrients, trace elements, suspended sediment, selected physical properties, and *Escherichia coli*.

¹For streamflow, "normal" is defined as being between the 25th and 75th percentiles as measured during the base period, water years 1961-90.

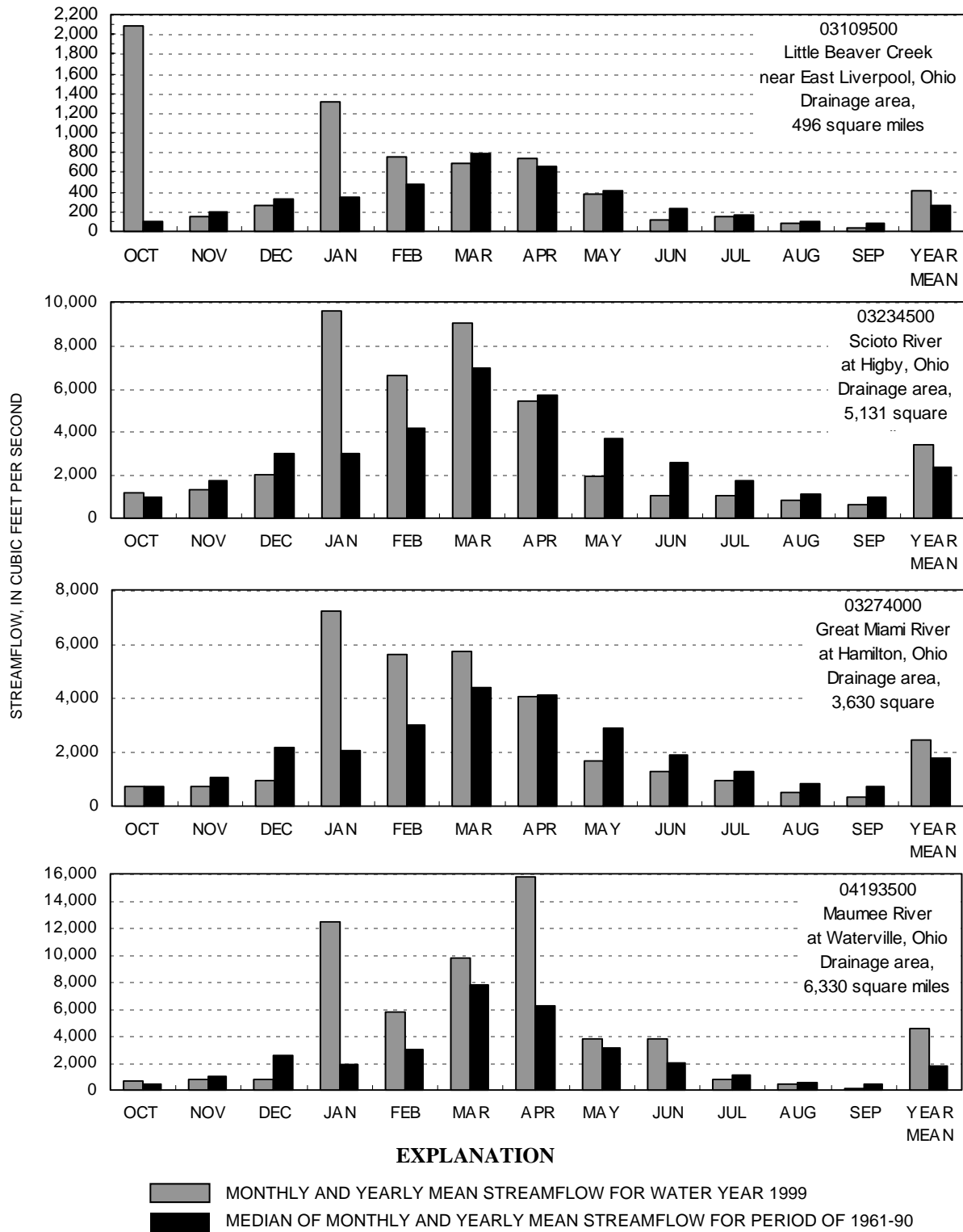


Figure 3. Streamflow during water year 1999 compared with median streamflow for period 1961-90 for four representative gaging stations.

Box plots of streamflow and concentrations of selected constituents measured during the previous 10-year period (1989-95 as part of NASQAN and 1996-98 as part of NAWQA) are shown in figures 4 and 5 for the Maumee River at Waterville. Land use in the basin is mixed and consists of row-crop agriculture upstream and urban and industrial areas downstream. Results of analysis of samples collected in water year 1999 as part of the NAWQA program are superimposed on the box plots and are represented by dark circles.

For the Maumee River, the values for streamflow measured at the time of water-quality sampling were lower during 1999 than for the previous 10-year period. Seven out of twelve samples were collected at low flow; these values were below the 25th percentile, with streamflows ranging from 393 to 976 cubic feet per second.

Fecal-coliform bacteria were monitored as part of the NASQAN program. The LERI replaced monitoring for fecal coliforms with another bacterial indicator, *Escherichia coli* (*E. coli*) in 1997. *Escherichia coli* is the preferred and most useful indicator of the quality of freshwater recreational water for body contact. Because data for only two years of *E. coli* concentrations before 1999 are available for the Maumee River, and fecal-coliform concentrations are no longer determined at this site, a comparison of bacterial indicator concentrations could not be done for data collected during 1999 to the previous 10-year period.

Chloride concentrations, commonly associated with municipal or industrial point sources of wastewater, were higher in 1999 than concentrations measured during the previous 10-year period. Chloride concentrations determined in nine samples collected during 1999 were above the median concentration (28 milligrams per liter) found for the years 1989-98. This reflects the low extremes of streamflow measured during 1999. Similarly, the range of dissolved-solids concentrations in 1999 were higher than those determined during the previous 10-year period.

Out of the 12 samples collected for nitrate plus nitrite during 1999, none 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. Concentrations in the Maumee River in 1999 were generally lower than those found during the previous 10-year period; seven samples collected during 1999 were below the 25th percentile for the years 1989-98. During 1999, concentrations of nitrate plus nitrite ranged from <0.05 to 8.5 milligrams per liter.

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 1999, total phosphorus concentrations ranged from 0.038 to 0.344 milligrams per liter. As with other constituents affected by the low streamflows in 1999, phosphorus concentrations were reduced; 9 out of 12 samples collected during 1999 were below the median concentration of 0.2 milligram per liter found during the previous 10-year period. The extreme high values for total phosphorus found during the previous 10-year period were also not found in 1999.

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 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. 6) 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

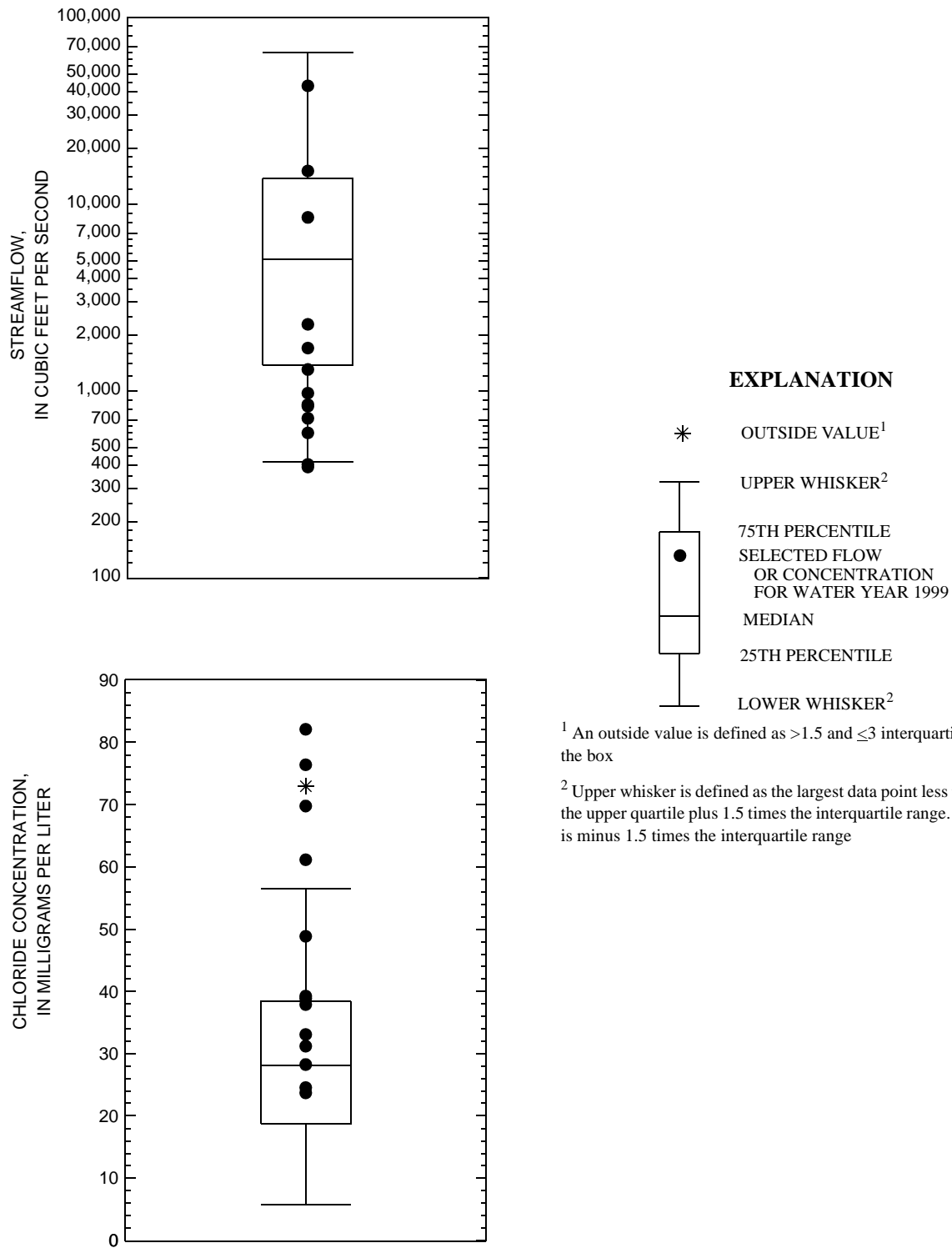


Figure 4. Streamflow and concentration of chloride measured in water year 1999 and the distribution of those characteristics from measurements made during water years 1989-98 for the Maumee River at Waterville.

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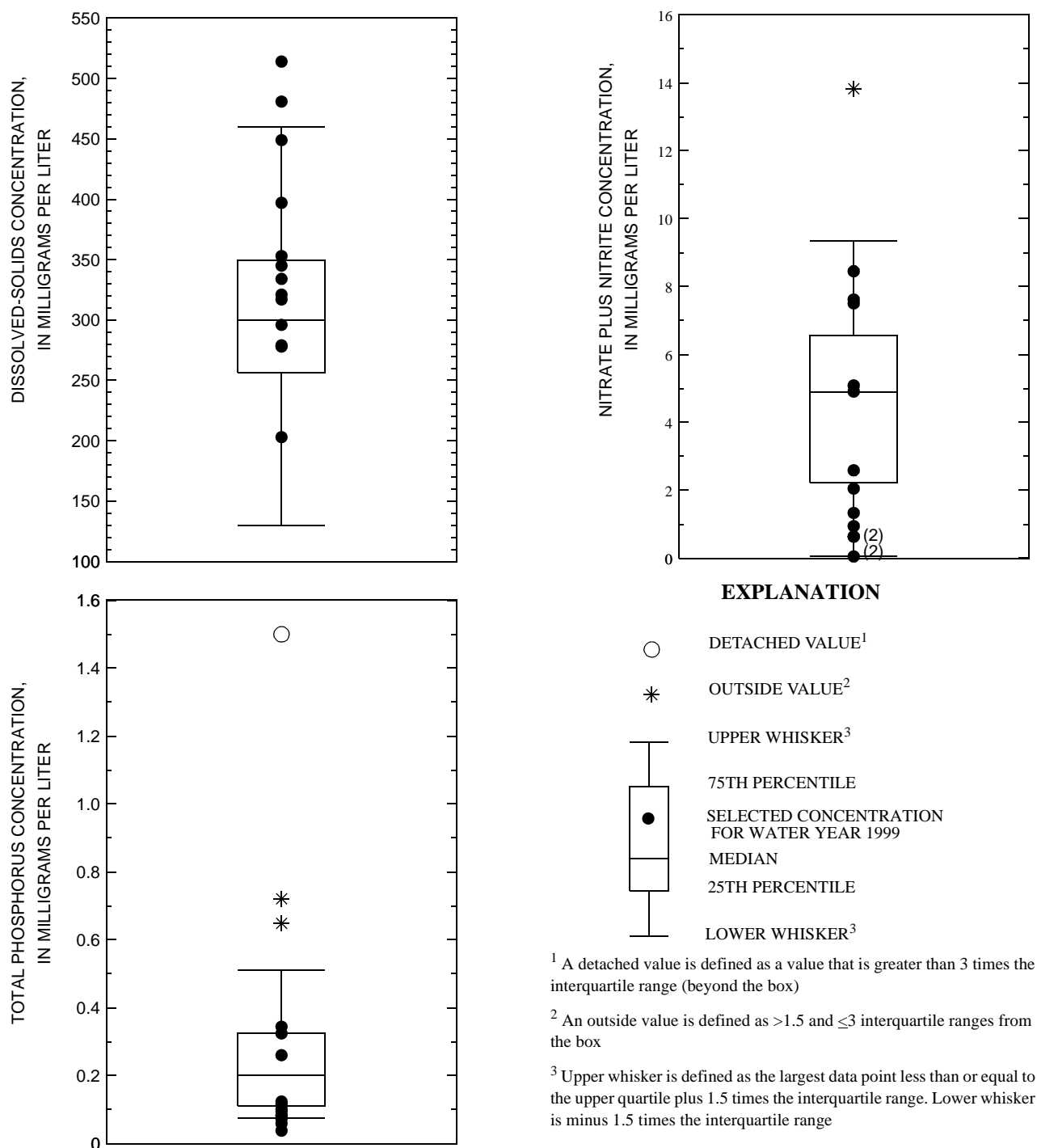


Figure 5. Concentrations of dissolved solids, nitrate plus nitrite, and total phosphorus measured in water year 1999 and the distribution of those characteristics from measurements made during water years 1989-1998 for the Maumee River at Waterville.

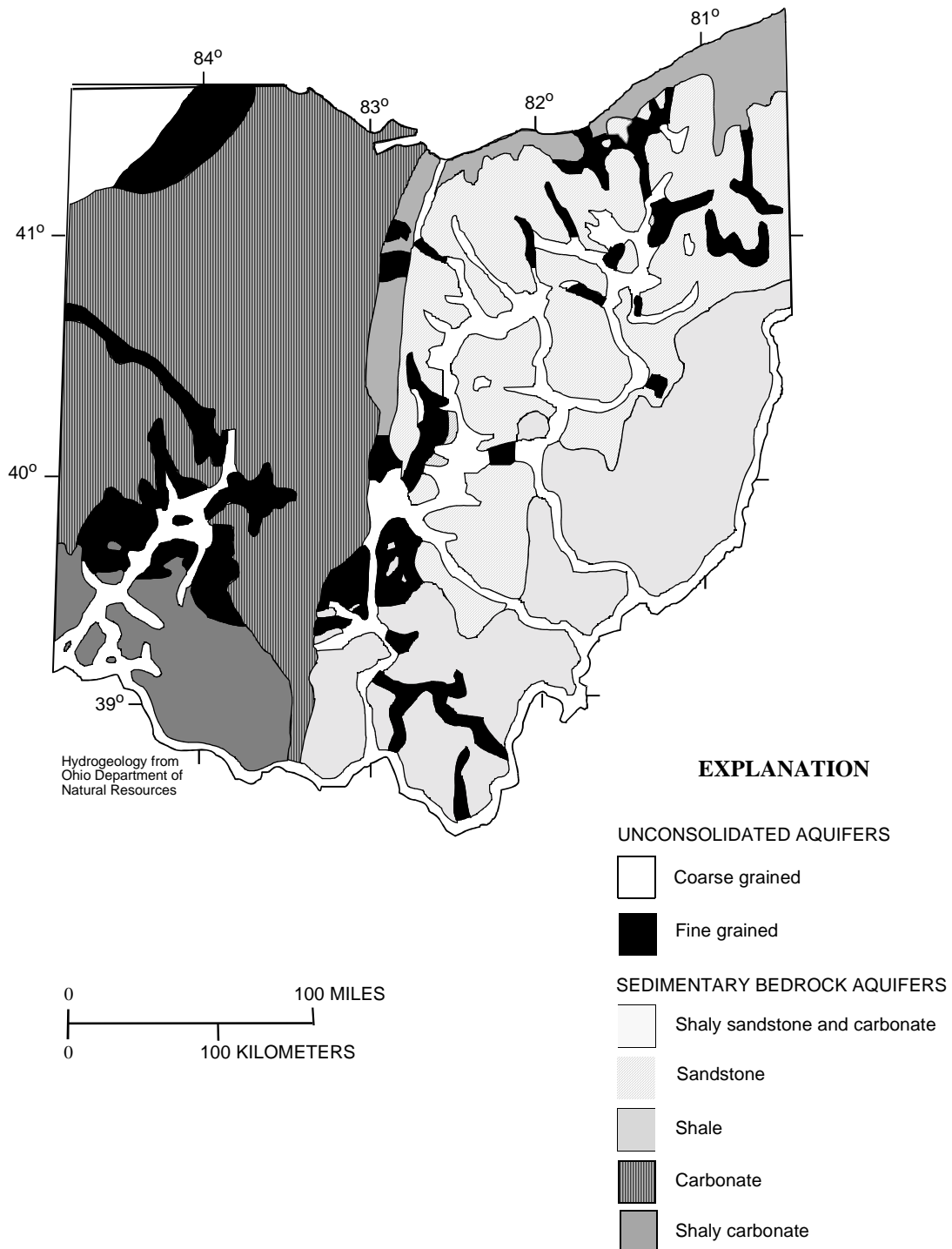


Figure 6. Geographic distribution of principal aquifers in Ohio.

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. 6) that yields only small amounts of water to wells. Silurian-age limestone and dolomite and Devonian limestone comprise the carbonate aquifer system (fig. 6) 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 7. 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 8. 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 1999, ground-water levels were below normal² for most of the State. Levels declined during October to December and generally remained below normal.

In January, water levels rose in response to above-normal precipitation but were still in the below-normal range statewide. Net rises in ground-water levels continued through March, with levels in the near-normal to below-normal range throughout the State.

The remainder of the water year was characterized by declining ground-water levels statewide in response to below-normal precipitation. Levels were in the below-normal range for most of the State from June through September.

²For ground-water levels, "normal" is defined as being between the 25th and 75th percentiles of the range values recorded during the reference period, 1960-75.

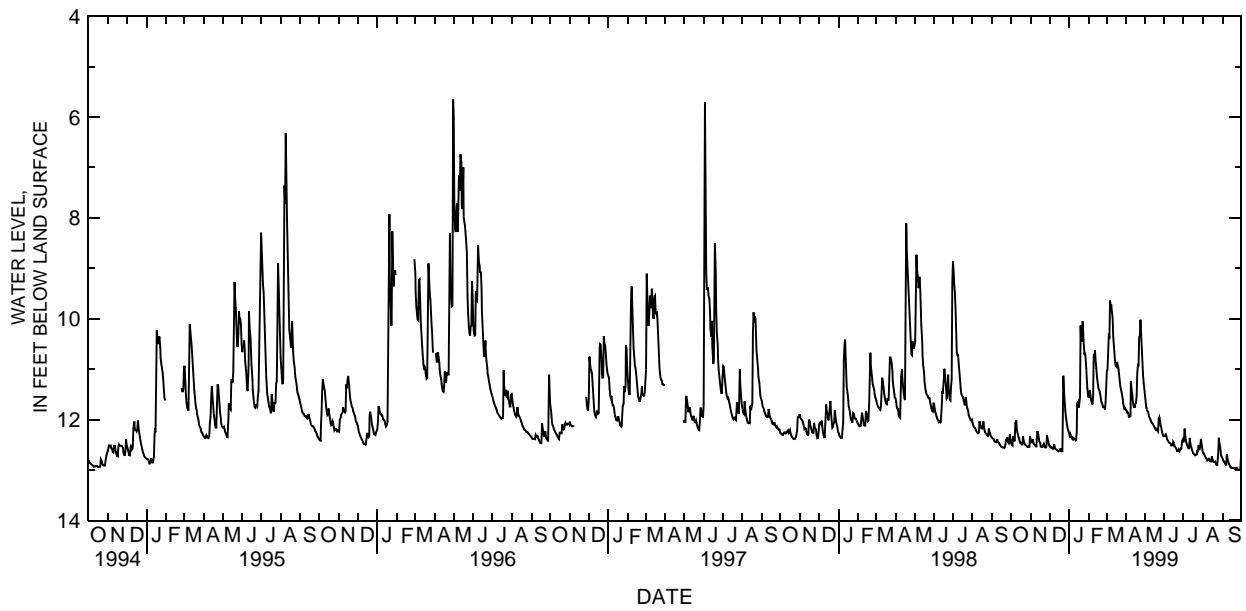
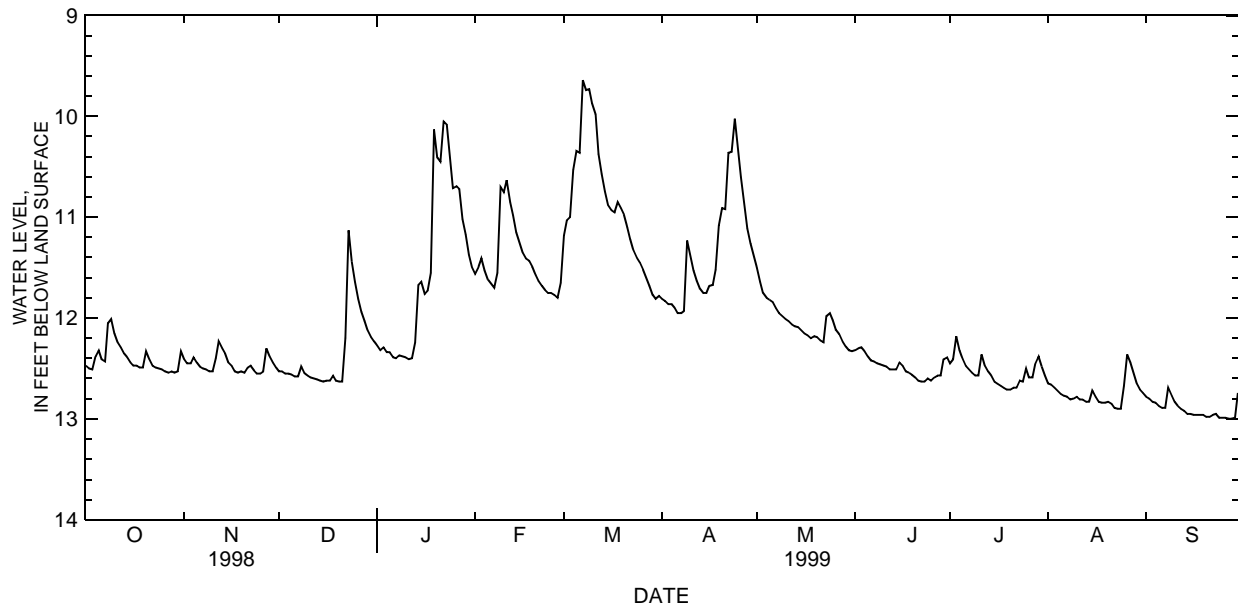


Figure 7. Sample of 1-year and 5-year hydrographs of well Fr-3 (395118082573300), completed in a unconfined unconsolidated aquifer.

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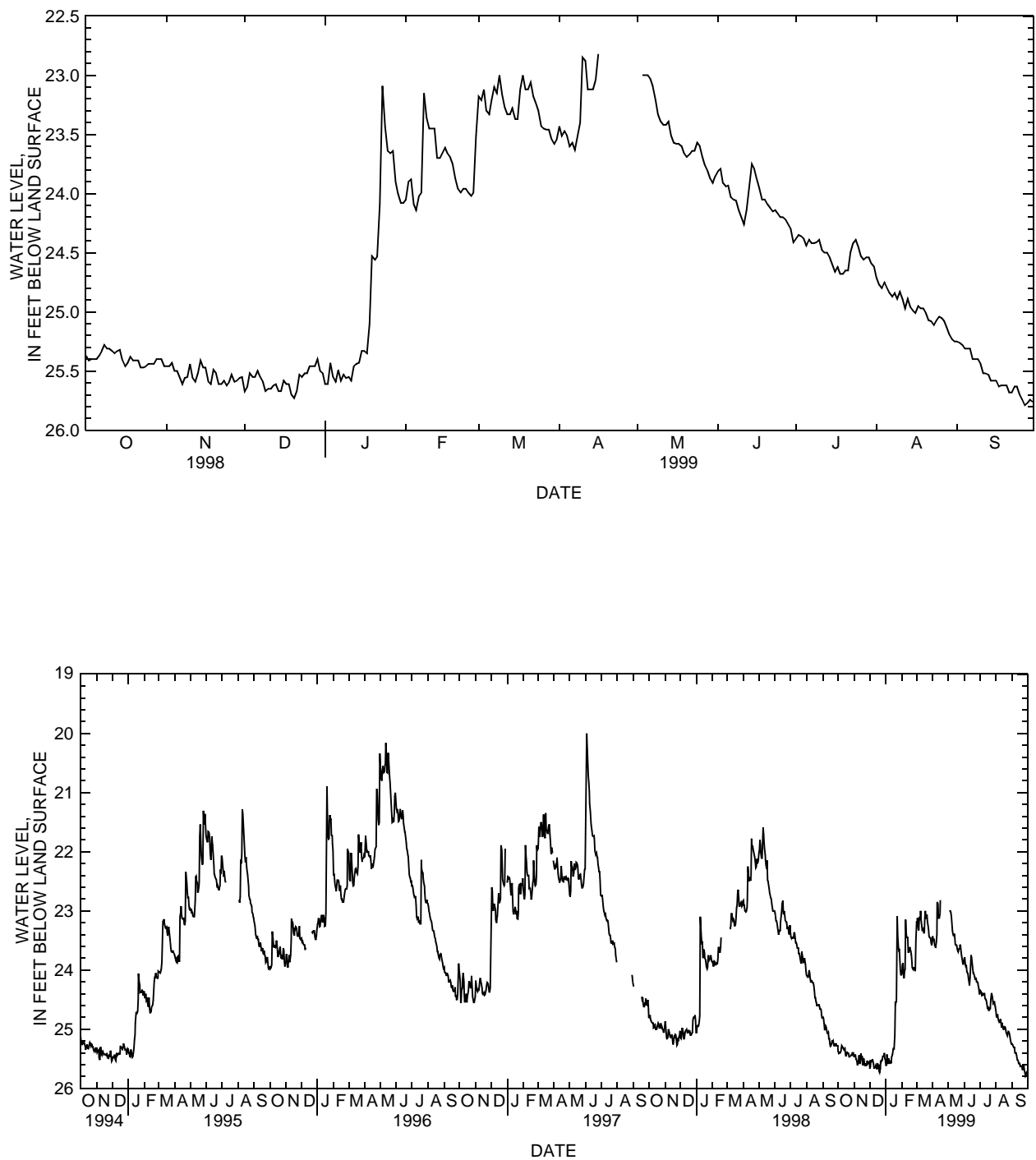


Figure 8. Sample of 1-year and 5-year hydrographs of well U-4 (401826083255200), completed in a confined carbonate-rock aquifer.

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 accomplish the following objectives: (1) provide a long-term, spatial and temporal record of atmospheric deposition generated from a network of 191 precipitation-chemistry monitoring sites, (2) provide the mechanism to evaluate the effectiveness of the significant reduction in SO₂ emissions that began in 1995 as implementation of the Clean Air Act Amendments (CAAA) occurred, and (3) provide the scientific basis and nationwide evaluation mechanism for implementation of the Phase II CAAA emission reductions for SO₂ and NO_x scheduled to begin in 2000.

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 53 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 will be 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 1999 water year that began October 1, 1998, and ended September 30, 1999. 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 9.)

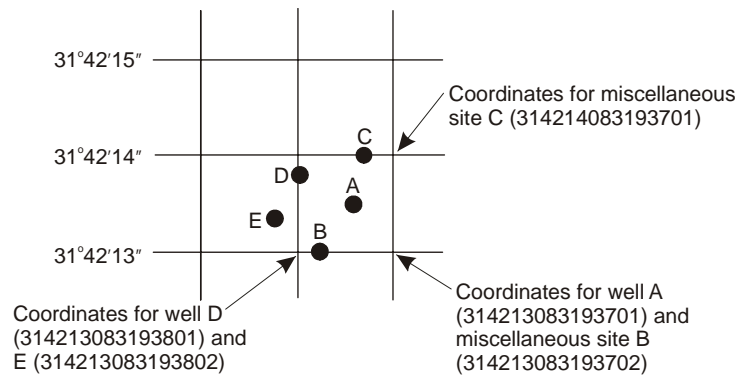


Figure 9. System for numbering wells and miscellaneous sites (latitude and longitude).

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 daily 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 CFSM), 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 situ 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) and in USGS Open-File Report 93-125 "Methods of Analysis by the U.S. Geological Survey National Water Quality Laboratory—Determination of Inorganic and

Organic Constituents in Water and Fluvial Sediments." 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 TWRI, Book 5, Chap. C1. Methods used by the USGS laboratory are given in TWRI, Book 1, Chap. D2; Book 3, Chap. C2; Book 5, Chap. A1, and USGS Open-File Report 93-125 "Methods of Analysis by the U.S. Geological Survey National Water Quality Laboratory—Determination of Inorganic and Organic Constituents in Water and Fluvial Sediments." Methods used by the USGS laboratory for microbiological analyses are given in TWRI, Book 5, Chap. A4.

Historical and current (1999) dissolved trace-element concentrations are reported herein for water that was collected, processed, and analyzed by using either ultraclean or other than ultraclean techniques. If ultraclean techniques were used, then those concentrations are reported in nanograms per liter. If other than ultraclean techniques were used, then those concentrations are reported in micrograms per liter and could reflect contamination introduced during some phase of the procedure.

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.

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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.

PRINTED OUTPUT	REMARK
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	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-MDL's) and laboratory reporting levels (LRL's). 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 water year 1995 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. 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 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 (WWW). These data may be accessed at <http://water.usgs.gov>

Some water-quality and ground-water data also are available through the WWW. 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 feacalis*, *Streptococcus feacium*, *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 bench-mark 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, $\mu\text{g/kg}$) 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, $\mu\text{g/g}$) 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, $\mu\text{g/L}$) 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>

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 (mm)		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 hierarchical 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."

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- 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.
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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 periods of estimated record, which are poor. Water-quality data 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 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	8.1	12	e3.7	107	128	56	82	292	16	5.9	2.9
2	12	8.2	7.1	e3.6	115	114	52	71	433	15	4.6	2.9
3	25	6.8	6.9	e3.5	173	265	48	64	334	13	2.8	2.5
4	15	6.2	6.8	e3.4	168	390	95	57	160	14	21	3.0
5	8.1	5.9	7.0	e3.3	105	e150	309	53	93	14	22	2.6
6	7.7	5.6	6.6	e3.2	83	e100	212	53	76	13	6.6	e5.0
7	52	4.9	12	e3.1	92	e80	132	49	e60	11	11	e3.8
8	16	4.3	7.9	e3.1	95	e56	95	44	e50	10	26	e3.0
9	7.4	6.0	7.0	e3.0	114	e50	314	42	e38	10	6.0	e2.5
10	6.2	62	6.2	e3.0	220	e48	952	37	34	11	7.8	e2.2
11	5.7	31	4.8	e3.0	157	e45	916	34	48	8.9	7.1	e2.0
12	6.4	12	4.3	e2.9	153	e42	973	34	33	8.0	4.7	e2.5
13	6.9	19	4.4	e2.9	128	e41	456	33	121	9.3	11	e3.0
14	5.0	15	e7.0	e2.8	79	e40	263	34	147	8.6	20	e2.5
15	3.9	13	e5.2	e2.8	e56	46	192	33	238	8.6	4.9	e2.3
16	4.1	11	e4.7	e2.7	e45	63	465	31	109	7.8	3.7	e2.2
17	4.8	10	e4.4	e15	e38	210	790	53	57	48	3.7	e2.0
18	15	8.7	e4.1	e70	e33	1010	440	155	39	44	3.0	e2.1
19	14	8.2	e4.0	e30	e29	1050	278	52	31	11	3.4	e2.3
20	8.3	7.0	e4.0	e21	e26	417	196	46	26	8.6	3.6	e3.0
21	14	6.9	e10	e28	e24	265	151	37	22	16	2.7	e2.9
22	20	8.0	23	331	e22	180	255	203	20	36	2.4	e3.2
23	12	8.0	7.1	803	e21	125	918	377	19	14	2.7	e3.1
24	6.7	8.5	6.0	1710	e20	105	1620	548	30	16	4.1	e3.5
25	11	21	e5.2	1790	34	88	1100	444	38	15	28	e3.1
26	13	34	e4.8	1200	24	70	462	207	17	10	29	e3.0
27	13	9.2	e4.5	657	30	62	287	116	38	12	10	e5.0
28	14	8.1	e4.2	518	74	58	188	81	31	7.2	5.4	e8.0
29	13	9.6	e4.1	354	---	54	132	61	22	6.7	4.4	e10
30	37	10	e4.0	212	---	49	103	50	16	5.2	3.3	e8.0
31	18	---	e3.8	138	---	45	---	110	---	6.8	3.3	---
TOTAL	411.2	376.2	203.1	7927.0	2265	5446	12450	3291	2672	434.7	274.1	104.1
MEAN	13.3	12.5	6.55	256	80.9	176	415	106	89.1	14.0	8.84	3.47
MAX	52	62	23	1790	220	1050	1620	548	433	48	29	10
MIN	3.9	4.3	3.8	2.7	20	40	48	31	16	5.2	2.4	2.0
CFSM	.09	.08	.04	1.70	.54	1.17	2.77	.71	.59	.09	.06	.02
IN.	.10	.09	.05	1.97	.56	1.35	3.09	.82	.66	.11	.07	.03

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1945 - 1999, BY WATER YEAR (WY)

	MEAN	59.7	97.5	132	126	172	292	251	137	131	50.9	29.6	40.9
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	56.0	20.4	21.4	7.36	8.46	.82	.13	
(WY)	1947	1947	1947	1977	1978	1989	1946	1988	1988	1984	1946	1946	

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1945 - 1999

ANNUAL TOTAL	52722.8	35854.4	
ANNUAL MEAN	144	98.2	126
HIGHEST ANNUAL MEAN			215
LOWEST ANNUAL MEAN			65.5
HIGHEST DAILY MEAN	2240	Feb 19	1790
LOWEST DAILY MEAN	1.9	Aug 3	e2.0
ANNUAL SEVEN-DAY MINIMUM	2.8	Jul 29	2.3
INSTANTANEOUS PEAK FLOW			1920
INSTANTANEOUS PEAK STAGE			11.26
INSTANTANEOUS LOW FLOW			e2.0
ANNUAL RUNOFF (CFSM)	.96		.65
ANNUAL RUNOFF (INCHES)	13.08		8.89
10 PERCENT EXCEEDS	404		258
50 PERCENT EXCEEDS	29		17
90 PERCENT EXCEEDS	5.8		3.1

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

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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, 0.6 mi upstream from Penn Central bridge, and 1.6 mi downstream from Leatherwood Creek.

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 Sept. 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 Sept. 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 2.79 ft³/s; returned as sewage to Brush Creek, which flows into Tiffin River about 15 mi downstream from station. Water-quality and sediment data 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.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	38	94	113	e24	1420	e250	180	437	662	107	21	7.6
2	36	94	107	e22	1060	467	171	370	628	119	16	6.0
3	36	95	117	e20	852	768	160	332	485	110	13	6.0
4	43	92	132	e19	823	971	160	307	353	102	11	5.2
5	44	93	131	e18	747	954	204	283	275	80	9.9	4.7
6	41	95	133	e17	609	654	298	274	227	63	11	5.2
7	110	90	134	e17	522	430	303	277	191	54	9.6	5.2
8	447	86	124	e16	512	357	260	265	160	46	10	5.2
9	431	83	151	e16	527	346	795	252	133	37	12	e8.0
10	242	87	157	e15	614	339	1440	249	116	35	11	e7.0
11	154	159	136	e15	701	333	1810	227	116	35	14	e6.0
12	108	224	120	e14	764	295	1940	211	130	32	15	e5.6
13	88	213	108	e14	849	276	1830	200	116	28	17	5.4
14	75	185	100	e14	785	262	1610	196	383	25	24	6.9
15	73	161	88	e14	e450	243	1180	189	775	24	26	6.8
16	69	137	80	e13	e350	247	1260	176	791	21	19	6.4
17	62	118	78	e13	e280	547	1450	166	435	19	14	5.6
18	60	105	79	e15	e240	1270	1530	168	313	18	9.1	5.5
19	63	94	89	e20	e210	1470	1420	176	250	20	9.6	4.8
20	68	87	92	e60	e190	1600	1040	241	209	21	14	5.9
21	68	83	91	276	e170	1460	586	238	183	26	14	7.5
22	70	80	103	597	e160	1080	420	231	157	35	12	7.0
23	72	75	e70	2120	e150	631	1240	381	133	29	9.5	7.6
24	69	72	e60	3930	e140	402	1890	616	121	37	8.8	8.4
25	71	72	e50	4940	e130	325	2380	629	104	61	9.1	7.7
26	76	86	e45	4330	e130	279	2450	450	89	47	18	8.7
27	78	113	e40	3470	e120	249	2100	337	89	50	16	7.9
28	80	134	e35	2870	e120	225	1680	271	103	36	13	7.9
29	76	133	e31	2430	---	215	1180	227	114	32	11	16
30	77	122	e28	2110	---	202	662	196	117	30	9.6	24
31	90	---	e26	1780	---	189	---	321	---	27	7.9	---
TOTAL	3115	3362	2848	29229	13625	17336	33629	8893	7958	1406	415.1	221.7
MEAN	100	112	91.9	943	487	559	1121	287	265	45.4	13.4	7.39
MAX	447	224	157	4940	1420	1600	2450	629	791	119	26	24
MIN	36	72	26	13	120	189	160	166	89	18	7.9	4.7

MEAN	108	229	372	403	545	799	664	380	251	150	75.6	67.9
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

ANNUAL TOTAL	170363.0			122037.8				
ANNUAL MEAN	467			334			336	
HIGHEST ANNUAL MEAN							671	1950
LOWEST ANNUAL MEAN							59.6	1964
HIGHEST DAILY MEAN	4620	Aug 26		4940	Jan 25		7640	Mar 15 1982
LOWEST DAILY MEAN	6.1	Aug 3		4.7	Sep 5		2.5	Jul 18 1988
ANNUAL SEVEN-DAY MINIMUM	8.9	Jul 30		5.4	Sep 2		3.6	Jul 7 1988
INSTANTANEOUS PEAK FLOW				5060	Jan 25a		7800	Mar 15 1982
INSTANTANEOUS PEAK STAGE				15.88	Jan 25		18.36	Mar 15 1982
INSTANTANEOUS LOW FLOW				4.7	Sep 5		2.5	Jul 18 1988
10 PERCENT EXCEEDS	1400			893			932	
50 PERCENT EXCEEDS	136			113			125	
90 PERCENT EXCEEDS	38			9.8			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 Rd., 0.5 mi above mouth and 2.0 mi from Farmer.
 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, which are poor.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.07	.21	.23	e.10	2.5	18	.78	1.6	26	.50	e.07	.07
2	.06	.18	.19	e.09	5.1	13	.75	1.5	41	.35	e.05	.05
3	.10	.17	.16	e.09	5.0	40	.73	1.4	10	.22	e.05	.04
4	.10	.16	.15	e.09	3.3	8.5	.80	1.3	4.9	.17	e.04	.03
5	.10	.15	.14	e.08	2.1	4.8	.75	1.2	3.3	.14	e.04	.03
6	.08	.15	.16	e.08	2.1	6.1	.72	1.2	2.3	.13	e.04	.03
7	9.3	.14	.68	e.08	2.3	3.9	.62	.94	1.3	.12	e.04	.03
8	3.7	.14	.39	e.07	2.8	2.6	.77	.62	.62	.10	e.03	.03
9	1.3	.15	.25	e.07	16	1.8	102	.85	.62	.10	e.04	.03
10	.72	4.2	.21	e.07	9.9	1.9	22	.82	.63	.09	e.04	.03
11	.40	4.0	.20	e.07	5.4	1.7	114	.81	e.60	.08	e.05	e.02
12	.24	.98	.17	e.07	17	1.4	16	.92	e.60	.06	e.07	e.02
13	.18	.63	.17	e.07	4.2	1.4	8.8	.91	.54	.05	e.10	e.02
14	.15	.51	.15	e.06	2.4	1.3	6.0	1.1	9.5	.05	e.25	.01
15	.14	.40	.13	e.06	e1.7	1.4	5.9	1.8	1.6	.03	e.15	.01
16	.12	.31	.13	e.06	e1.4	7.2	101	1.8	.77	.03	e.10	.01
17	.10	.25	.15	e.06	e1.2	56	19	1.8	.53	.02	e.06	.01
18	.10	.22	.13	13	e1.0	22	8.8	1.8	.40	.03	e.04	.01
19	.12	.21	.13	9.9	e.90	7.7	7.1	1.7	.34	.02	.08	.01
20	.13	.19	.13	6.1	e.74	4.4	4.5	1.7	.29	.02	.14	.01
21	.13	.18	.19	3.6	e.66	3.1	3.3	1.6	.23	.13	.08	.01
22	.13	.17	.37	118	e.62	2.2	4.8	1.9	.22	.19	.03	.01
23	.16	.18	.23	175	e.58	1.7	143	23	.22	1.0	.01	.01
24	.12	.16	.20	38	e.56	1.4	19	53	.21	10	.01	e.01
25	.11	.21	e.18	17	e.54	1.1	9.5	8.2	.20	.83	.06	e.02
26	.11	.65	e.16	11	e.52	.97	6.5	3.8	.17	.39	.17	e.05
27	.12	.48	e.15	11	19	.88	4.0	2.3	1.1	.22	1.2	e.07
28	.13	.33	e.13	11	35	.86	2.7	1.5	.45	e.12	.71	e.10
29	.13	.29	e.12	6.3	---	.77	2.1	1.2	.26	e.11	.49	e.20
30	.27	.27	e.11	3.8	---	.71	1.8	1.0	.20	e.09	.27	e.30
31	.25	---	e.11	2.8	---	.70	---	53	---	e.08	.13	---
TOTAL	18.87	16.27	6.00	427.77	144.52	219.49	617.54	176.42	109.10	15.47	4.64	1.28
MEAN	.61	.54	.19	13.8	5.16	7.08	20.6	5.69	3.64	.50	.15	.043
MAX	9.3	4.2	.68	175	35	56	143	53	41	10	1.2	.30
MIN	.06	.14	.11	.06	.52	.70	.59	.77	.17	.02	.01	.01
CFSM	.14	.13	.05	3.26	1.22	1.67	4.87	1.35	.86	.12	.04	.01
IN.	.17	.14	.05	3.76	1.27	1.93	5.43	1.55	.96	.14	.04	.01

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1986 - 1999, BY WATER YEAR (WY)

	MEAN	2.72	4.70	6.38	6.22	7.28	7.65	8.28	3.64	2.86	1.77	2.08	.86
MAX	12.6	15.6	23.9	13.9	21.2	14.5	20.6	10.9	9.09	7.75	16.4	5.66	
(WY)	1987	1993	1991	1993	1990	1998	1999	1990	1996	1986	1998	1997	
MIN	.031	.051	.11	1.68	.46	3.13	1.92	.26	.046	.011	.015	.003	
(WY)	1995	1995	1990	1988	1995	1996	1987	1988	1988	1988	1989	1991	

SUMMARY STATISTICS FOR 1998 CALENDAR YEAR FOR 1999 WATER YEAR WATER YEARS 1986 - 1999

ANNUAL TOTAL	2137.53	1757.37	
ANNUAL MEAN	5.86	4.81	4.52
HIGHEST ANNUAL MEAN			6.66
LOWEST ANNUAL MEAN			1.96
HIGHEST DAILY MEAN	322	Aug 25	175
LOWEST DAILY MEAN	.01	Aug 3	.01
ANNUAL SEVEN-DAY MINIMUM	.03	Jul 28	.01
INSTANTANEOUS PEAK FLOW			336
INSTANTANEOUS PEAK STAGE			4.46
INSTANTANEOUS LOW FLOW			.01
ANNUAL RUNOFF (CFSM)	1.38	1.14	1.07
ANNUAL RUNOFF (INCHES)	18.80	15.45	14.52
10 PERCENT EXCEEDS	9.4	9.4	9.4
50 PERCENT EXCEEDS	.53	.30	.67
90 PERCENT EXCEEDS	.11	.04	.05

e Estimated.

SURFACE-WATER RECORDS

Maumee River Basin

43

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, 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 3,532 mil gal, 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. Sediment data collected at this site. Water-quality data collected at this site. National Weather Service gage height telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	23	19	e13	132	3300	63	108	49	28	20	11
2	16	22	18	e12	147	2040	62	84	62	25	17	7.5
3	15	27	19	e11	180	1010	63	75	89	29	11	6.5
4	18	22	22	e11	181	894	62	70	105	40	8.0	5.8
5	19	20	21	e10	143	529	65	67	71	26	7.2	4.9
6	33	21	19	e9.4	107	523	59	66	52	23	6.1	4.3
7	33	21	20	e8.8	148	e1100	54	61	43	24	5.1	3.6
8	42	21	20	e8.6	735	e680	50	73	36	22	5.9	3.5
9	34	21	20	e8.4	836	e380	213	74	30	17	7.4	3.6
10	29	28	18	e8.0	432	296	692	69	34	23	7.1	3.0
11	28	40	17	e7.6	266	217	392	65	38	21	6.9	2.5
12	25	36	16	e7.6	368	164	351	63	47	20	6.4	2.0
13	22	42	16	e7.4	802	154	212	61	65	18	6.7	1.5
14	20	31	19	e7.2	409	139	156	63	206	18	14	.77
15	17	24	24	e7.0	228	128	136	64	227	14	18	1.3
16	16	22	19	e7.0	168	152	689	63	112	11	12	1.4
17	16	21	17	e7.0	e130	890	1670	60	53	10	8.0	1.5
18	16	19	18	e60	e110	1310	1480	58	33	9.6	6.4	1.4
19	16	17	17	501	e94	649	860	59	31	11	6.3	.98
20	17	15	17	1170	e88	360	536	62	34	14	6.4	.85
21	15	15	19	784	e78	265	386	52	30	21	6.5	.86
22	17	15	30	1370	e70	207	321	40	27	35	5.4	1.6
23	19	15	28	6110	e66	159	390	54	25	20	4.8	1.4
24	19	15	36	6020	e62	127	595	176	24	24	5.3	.88
25	17	16	35	3040	e58	107	429	230	23	41	7.1	1.0
26	17	21	33	925	e56	94	278	109	22	21	8.6	1.2
27	17	22	e25	532	e90	92	216	68	23	16	8.2	1.3
28	17	22	e20	368	2150	92	162	58	36	15	7.3	1.9
29	17	24	e17	251	---	52	180	47	40	17	12	3.5
30	18	22	e15	189	---	64	160	40	30	19	18	5.1
31	21	---	e13	139	---	e64	---	38	---	24	15	---
TOTAL	641	680	647	21610.0	8334	16238	10982	2277	1697	656.6	284.1	86.64
MEAN	20.7	22.7	20.9	697	298	524	366	73.5	56.6	21.2	9.16	2.89
MAX	42	42	36	6110	2150	3300	1670	230	227	41	20	11
MIN	15	15	13	7.0	56	52	50	38	22	9.6	4.8	.77
CFSM	.06	.07	.06	2.10	.90	1.58	1.10	.22	.17	.06	.03	.01
IN.	.07	.08	.07	2.42	.93	1.82	1.23	.26	.19	.07	.03	.01

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1921 - 1999, BY WATER YEAR (WY)

	MEAN	74.8	176	304	442	471	602	506	289	251	179	76.8	84.6
MAX	782	1286	1283	2184	1555	2112	1874	1237	1142	1652	477	1090	
(WY)	1927	1973	1991	1950	1978	1957	1943	1981	1992	1979	1926		
MIN	5.44	13.4	11.9	8.23	23.6	81.3	51.3	28.7	13.6	20.4	8.10	2.89	
(WY)	1989	1957	1977	1964	1981	1971	1934	1988	1965	1991	1999		

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1921 - 1999
ANNUAL TOTAL	104662	64133.34	
ANNUAL MEAN	287	176	287
HIGHEST ANNUAL MEAN			537
LOWEST ANNUAL MEAN			65.3
HIGHEST DAILY MEAN	4030	Jan 9	12000
LOWEST DAILY MEAN	13	Dec 31	.50
ANNUAL SEVEN-DAY MINIMUM	15	Sep 13	1.1
INSTANTANEOUS PEAK FLOW			8200
INSTANTANEOUS PEAK STAGE			17.00
INSTANTANEOUS LOW FLOW			.77
ANNUAL RUNOFF (CFSM)	.86	.53	.87
ANNUAL RUNOFF (INCHES)	11.73	7.19	11.76
10 PERCENT EXCEEDS	768	388	692
50 PERCENT EXCEEDS	73	25	74
90 PERCENT EXCEEDS	17	6.4	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**

04187100 OTTAWA RIVER AT LIMA, OHIO

LOCATION.--Latitude 40°43'29", longitude 84°07'35", Allen County, Hydrologic Unit 04100007, on right bank, 70 ft downstream from Erie Lackawanna RR bridge, 300 ft upstream from bridge to Lima STP, 0.7 mi downstream from Collett Street at Lima, Ohio.

DRAINAGE AREA.--128 mi².

PERIOD OF RECORD.--June 1988 to current year (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 820.00 ft above sea level.

REMARKS.--Records fair except for periods of estimated record, which are poor. Water diverted upstream of gage for city of Lima. Water is returned to stream below gage.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.3	7.2	3.2	e4.6	54	820	27	37	e26	e19	e4.2	e1.4
2	4.4	3.9	3.5	e4.4	47	300	28	34	e22	e22	e3.0	e1.3
3	7.9	1.4	2.0	e4.2	53	304	29	29	e19	e20	2.7	e1.1
4	6.5	2.4	3.2	e3.8	40	289	32	27	e16	e16	16	e1.0
5	6.9	3.8	4.7	e3.7	22	134	29	26	e13	e13	14	e.90
6	7.9	4.1	4.8	e3.6	39	391	22	29	e11	e11	13	e.92
7	7.7	2.8	4.7	e3.5	99	401	20	24	e10	e9.0	9.2	e1.0
8	8.1	5.0	2.3	e3.4	226	155	20	23	e9.0	e8.0	14	e1.2
9	6.4	4.8	1.7	e3.3	119	94	95	21	e9.6	e7.0	14	e1.4
10	4.8	20	3.6	e3.2	55	68	131	22	e9.0	e6.8	e6.0	e1.6
11	4.1	6.5	4.5	e3.2	33	48	144	19	e8.8	e6.0	e8.0	e1.2
12	5.3	3.9	4.7	e3.1	254	40	146	19	20	e5.6	e10	e1.0
13	6.8	3.6	2.5	e3.0	152	35	55	20	22	e5.0	17	e1.1
14	8.6	4.8	2.3	e2.9	54	32	28	23	60	e4.6	11	e1.2
15	8.2	4.5	2.4	e2.8	e40	26	31	24	73	e4.0	13	e1.4
16	3.7	2.1	3.8	e2.7	e31	61	388	22	e86	e3.7	6.0	e1.2
17	3.0	3.2	6.8	e20	e25	463	933	25	e70	e3.5	e3.0	e1.1
18	5.2	4.8	5.4	e50	e23	347	637	22	e52	e5.0	e2.2	e.94
19	6.2	4.2	3.1	e120	e20	124	420	17	e43	15	e1.7	e.94
20	4.4	2.3	4.8	e90	e18	65	250	19	e38	14	e2.7	e1.0
21	4.7	5.3	18	e88	e17	48	185	17	e32	101	e2.4	e1.2
22	5.5	4.8	28	1480	e16	31	161	21	e27	80	e2.0	e1.4
23	6.5	2.0	22	2500	e15	21	220	70	e23	19	e1.8	e1.4
24	3.0	1.7	e15	1250	e15	16	272	112	e21	13	e1.9	e1.5
25	2.1	5.6	e10	536	e20	13	145	50	e18	60	e2.2	e1.5
26	2.5	6.9	e8.4	221	29	25	82	21	e17	27	e2.7	e1.5
27	3.9	5.0	e7.0	125	308	29	40	26	e18	e10	10	e1.5
28	5.2	4.8	e6.0	100	1110	27	24	16	e19	16	e2.5	e1.5
29	5.9	3.3	e5.8	70	---	29	32	e30	e21	15	e2.0	e2.0
30	7.0	2.1	e5.4	41	---	27	40	e50	e21	12	e1.8	e4.0
31	6.4	---	e5.0	55	---	25	---	e33	---	5.8	e1.5	---
TOTAL	176.1	136.8	204.6	6801.4	2934	4488	4666	928	834.4	557.0	201.5	40.40
MEAN	5.68	4.56	6.60	219	105	145	156	29.9	27.8	18.0	6.50	1.35
MAX	8.6	20	28	2500	1110	820	933	112	86	101	17	4.0
MIN	2.1	1.4	1.7	2.7	15	13	20	16	8.8	3.5	1.5	.90

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1988 - 1999, BY WATER YEAR (WY)

MEAN	30.1	68.1	118	163	163	154	185	121	97.3	103	58.4	44.3
MAX	192	434	586	327	425	422	291	342	376	444	241	346
(WY)	1991	1993	1991	1993	1990	1993	1995	1996	1997	1992	1998	1992
MIN	2.90	4.56	5.01	12.2	18.9	42.5	32.3	15.5	7.44	7.85	6.50	1.35
(WY)	1995	1999	1992	1992	1989	1992	1997	1994	1988	1991	1999	1999

SUMMARY STATISTICS FOR 1998 CALENDAR YEAR FOR 1999 WATER YEAR WATER YEARS 1988 - 1999

ANNUAL TOTAL	41605.6	21968.20	
ANNUAL MEAN	114	60.2	110
HIGHEST ANNUAL MEAN			179
LOWEST ANNUAL MEAN			56.5
HIGHEST DAILY MEAN	2610	Jan 8	3860
LOWEST DAILY MEAN	1.4	Nov 3	.00
ANNUAL SEVEN-DAY MINIMUM	3.1	Dec 8	.15
INSTANTANEOUS PEAK FLOW			4590
INSTANTANEOUS PEAK STAGE			18.63
INSTANTANEOUS LOW FLOW			.00
10 PERCENT EXCEEDS	279	119	226
50 PERCENT EXCEEDS	27	13	25
90 PERCENT EXCEEDS	4.2	2.0	4.5

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

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04189000 BLANCHARD RIVER NEAR FINDLAY, OHIO

LOCATION.--Latitude 41°03'21", longitude 83°41'17", on east line of sec. 10, T.1 N., R.10 E., Hancock County, Hydrologic Unit 04100008, on left bank at upstream side of county road bridge, 2 mi west of Findlay, 3 mi downstream from Eagle Creek, and 3 mi upstream from Aurand Run.

DRAINAGE AREA.--346 mi².

PERIOD OF RECORD.--October 1923 to December 1935, October 1940 to current year. Monthly discharge only for October 1923, published in WSP 1307.

REVISED RECORDS.--WSP 974: 1942. WSP 1054: 1927-30, 1933(M), 1945. WSP 1387: 1926, 1928(M), 1930(M), 1952. WSP 1912: Drainage area. WRD-OH-81-2: 1959, 1975(M). WRD-OH-97-2: 1996(M).

GAGE.--Water-stage recorder. Datum of gage is 753.65 ft above sea level (North American Vertical Datum of 1988). Prior to July 24, 1930, nonrecording gage at same site and datum.

REMARKS.--Records fair except for periods of estimated record, which are poor. Water is diverted upstream from station into Findlay Reservoir. Storage in Findlay Reservoir used for water supply of city of Findlay and is available for low-flow augmentation. All water returns to stream upstream from station. Water-quality and sediment data collected at this site.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	56	11	29	23	158	1750	e42	152	118	e32	e20	11
2	54	12	30	23	193	1170	e50	143	e130	e37	e17	12
3	56	12	30	24	234	1150	96	138	e80	e32	e16	12
4	58	12	30	23	213	1170	114	137	e54	e29	18	11
5	57	12	30	21	172	496	97	143	e45	e24	17	11
6	58	12	32	20	161	647	68	153	e40	e20	15	10
7	69	11	35	e19	167	1210	62	146	e33	e18	15	10
8	59	12	36	e18	395	607	56	132	e29	e16	25	13
9	58	11	33	e18	530	403	952	129	e25	e15	18	13
10	51	80	31	e18	290	269	1490	122	e23	e14	17	12
11	45	61	30	e17	190	97	1540	89	e22	e13	17	12
12	37	38	31	e17	529	62	1260	77	e23	e13	15	12
13	32	37	29	e17	477	121	475	81	e24	e12	21	13
14	27	35	30	e16	245	100	297	84	e50	e12	53	14
15	26	30	30	e16	185	48	250	80	e100	e12	27	14
16	25	29	32	e16	177	77	785	78	e150	e11	21	14
17	25	28	33	e20	175	2160	1990	79	e80	e11	18	13
18	26	28	32	170	147	2810	1850	92	e66	e11	16	14
19	27	27	27	241	123	995	1240	91	e50	e11	16	15
20	26	27	25	338	e90	269	754	82	e45	e13	17	15
21	23	26	48	273	e74	132	529	76	e35	e16	14	16
22	22	26	65	1720	e70	e96	507	100	e33	e25	13	16
23	19	26	47	4620	e66	e84	926	99	e30	e40	13	15
24	17	26	42	4890	e62	e72	1120	165	e25	e50	16	16
25	16	30	40	2970	e60	e64	549	187	e22	e80	23	18
26	16	42	33	840	68	e60	369	163	e20	e70	17	16
27	15	30	29	483	111	e52	288	99	e25	e66	22	15
28	15	28	27	370	1250	e50	234	77	e30	e56	15	15
29	14	28	28	280	---	e47	195	83	e35	e40	13	54
30	26	29	25	208	---	e45	167	76	e29	e30	13	63
31	14	---	25	169	---	e43	---	100	---	e25	12	---
TOTAL	1069	816	1024	17898	6612	16356	18352	3453	1471	854	570	495
MEAN	34.5	27.2	33.0	577	236	528	612	111	49.0	27.5	18.4	16.5
MAX	69	80	65	4890	1250	2810	1990	187	150	80	53	63
MIN	14	11	25	16	60	43	42	76	20	11	12	10
CFSM	.10	.08	.10	1.67	.68	1.52	1.77	.32	.14	.08	.05	.05
IN.	.11	.09	.11	1.92	.71	1.76	1.97	.37	.16	.09	.06	.05

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1924 - 1999, BY WATER YEAR (WY)

	MEAN	62.6	156	287	377	424	562	463	273	230	133	63.6	87.2
MAX	623	1435	1482	1800	1402	1814	1588	865	1612	1075	474	944	
(WY)	1927	1973	1991	1930	1959	1978	1957	1969	1981	1992	1979	1926	
MIN	2.43	3.67	4.28	6.54	9.86	60.1	33.3	22.1	18.3	4.27	1.24	1.62	
(WY)	1935	1935	1935	1945	1964	1941	1925	1925	1988	1934	1934	1934	

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1924 - 1999

ANNUAL TOTAL	124305	68970	
ANNUAL MEAN	341	189	
HIGHEST ANNUAL MEAN			260
LOWEST ANNUAL MEAN			571
HIGHEST DAILY MEAN	5290	Jan 9	12000
LOWEST DAILY MEAN	11	Nov 1	10
ANNUAL SEVEN-DAY MINIMUM	12	Nov 1	11
INSTANTANEOUS PEAK FLOW			5060
INSTANTANEOUS PEAK STAGE			11.23
INSTANTANEOUS LOW FLOW			10
ANNUAL RUNOFF (CFSM)	.98	.55	.75
ANNUAL RUNOFF (INCHES)	13.36	7.42	10.19
10 PERCENT EXCEEDS	861	432	620
50 PERCENT EXCEEDS	109	35	59
90 PERCENT EXCEEDS	27	13	9.5

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**

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 hydroelectric dam of Greco's Hydro-Corporation, 0.2 mi upstream from Jackson Ditch, and 3 mi south of Defiance.

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. April 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 good except for periods of estimated record, which are poor. 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 Sept. 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 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 1998 TO SEPTEMBER 1999 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	58	67	58	51	1020	12500	452	839	1030	292	105	232
2	224	69	169	53	787	10500	423	665	2030	190	96	168
3	77	70	842	50	1010	8510	482	741	2320	182	97	63
4	81	71	758	154	1650	6390	554	574	1360	191	98	43
5	79	76	78	60	1050	4570	416	542	760	183	146	42
6	72	76	77	171	913	4290	414	610	581	208	89	41
7	130	72	221	165	1130	6000	394	383	459	131	78	40
8	262	67	72	50	1770	4680	409	461	235	214	76	40
9	310	66	154	48	3940	3120	1750	328	410	278	76	154
10	134	284	82	47	3850	2470	8310	442	543	219	78	68
11	225	237	195	176	2500	1740	8370	352	406	120	72	64
12	229	211	74	160	2140	1130	7240	298	291	200	73	221
13	119	384	76	44	3110	1040	5040	286	1510	90	82	61
14	73	281	200	44	3100	952	3430	247	2890	91	76	56
15	166	194	81	161	1440	916	2050	289	2930	98	100	55
16	68	204	71	40	e600	944	5870	302	1760	91	132	43
17	72	149	200	183	e500	4150	12000	319	881	82	231	33
18	82	154	60	250	e460	10100	12500	296	432	76	89	33
19	74	194	59	477	e430	6680	9200	372	378	82	86	33
20	139	53	59	1230	e410	4610	6650	409	246	78	88	33
21	60	58	201	2080	e390	2880	3870	314	320	91	94	33
22	50	69	194	3660	e370	1970	2950	350	222	227	91	33
23	71	169	170	17700	e360	945	7930	510	187	528	85	32
24	70	53	205	35300	e350	880	8860	2010	171	578	82	32
25	68	58	346	33900	e340	738	7040	2780	112	953	82	32
26	310	225	55	21800	430	571	4180	1590	153	512	225	31
27	70	58	347	10700	685	576	2890	1200	119	445	76	31
28	71	236	53	4880	7910	506	1850	517	141	249	77	31
29	68	238	226	2650	---	255	1130	464	183	268	81	31
30	66	145	145	2150	---	379	1130	359	211	90	80	30
31	67	---	93	1780	---	456	---	497	---	109	93	---
TOTAL	3645	4288	5621	140214	42645	105448	127784	19346	23271	7146	3034	1839
MEAN	118	143	181	4523	1523	3402	4259	624	776	231	97.9	61.3
MAX	310	384	842	35300	7910	12500	12500	2780	2930	953	231	232
MIN	50	53	53	40	340	255	394	247	112	76	72	30

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1916 - 1999, BY WATER YEAR (WY)

	MEAN	477	1018	1826	2574	2977	4174	3467	1948	1445	840	349	425
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 1998 CALENDAR YEAR FOR 1999 WATER YEAR WATER YEARS 1916 - 1999

ANNUAL TOTAL	838902	484281	
ANNUAL MEAN	2298	1327	
HIGHEST ANNUAL MEAN			1779
LOWEST ANNUAL MEAN			3337
HIGHEST DAILY MEAN	25400	Apr 11	35300
LOWEST DAILY MEAN	50	Oct 22	30
ANNUAL SEVEN-DAY MINIMUM	68	Oct 27	31
INSTANTANEOUS PEAK FLOW			37200
INSTANTANEOUS PEAK STAGE			22.81
INSTANTANEOUS LOW FLOW			30
10 PERCENT EXCEEDS	7460		3520
50 PERCENT EXCEEDS	632		225
90 PERCENT EXCEEDS	73		57

e Estimated.

SURFACE-WATER RECORDS

Maumee River Basin

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04192500 MAUMEE RIVER NEAR DEFIANCE, OHIO

LOCATION.--Latitude 41°17'31", longitude 84°16'52", in NW 1/4 sec. 22, T.4 N., R.5 E., Defiance County, Hydrologic Unit 04100009, on left bank 40 ft upstream from Independence Dam, 4 mi downstream from mouth of Auglaize River, and 4.5 mi east of Defiance.
DRAINAGE AREA.--5,545 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1924 to December 1935, March 1939 to September 1974, October 1978 to current year.

REVISED RECORDS.--WSP 974: 1926-27, 1930. WSP 1387: 1925-28, 1946. WRD Ohio, 1970: Drainage Area.

GAGE.--Water-stage recorder. Datum of gage is 658.56 ft above sea level. Prior to Nov. 13, 1924, nonrecording gage at same site and datum.

REMARKS.--Records good except for periods estimated record, which are poor. Flow affected by regulation of Auglaize River at hydroelectric plant of the Hydro-Corporation, 7 mi upstream. Operation of hydroelectric plant there was discontinued Jan. 10, 1963, to Sept. 7, 1985. Low flow slightly regulated by powerplant at Ft. Wayne, Indiana. Slight diversion 275 ft upstream into Miami and Erie Canal through a 24-inch conduit, which bypasses station. Two 36-inch diversion pipes installed at dam in 1998 for low-flow augmentation.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e350	571	618	e300	8290	23500	1830	6240	10500	857	404	332
2	e390	459	704	e290	6470	21200	1710	4590	10700	913	345	410
3	e400	384	1250	e280	6050	19300	1720	3900	8870	867	382	311
4	e370	364	1390	e270	6470	18000	1850	3290	6490	679	380	220
5	e350	359	592	e260	5240	14600	1720	2790	4490	461	384	161
6	e340	356	435	e250	4410	11600	1680	2550	3170	548	335	153
7	e1000	346	573	e240	4260	12700	1660	2420	2380	479	282	159
8	e2100	347	608	e230	4920	10700	1740	1900	1850	511	296	164
9	2290	344	761	e230	8770	8050	5100	1720	1740	612	256	233
10	1630	577	674	e220	10500	6040	19600	1760	1840	548	299	184
11	1390	668	751	e220	8200	5130	21700	1630	1620	381	339	174
12	1180	1080	634	e210	7350	4110	20000	1350	1310	450	264	249
13	876	1530	614	e210	8790	3640	15500	1420	2650	364	318	256
14	682	1290	706	e200	8330	3330	11100	1270	4290	372	292	180
15	634	1170	604	e200	5270	2950	8170	1300	5510	334	263	177
16	482	976	575	e200	4770	3000	15600	1410	5020	277	475	182
17	524	852	670	e400	3970	7060	28000	1350	3710	264	540	174
18	470	789	761	609	3290	19300	27800	1390	2660	285	313	173
19	345	808	620	917	2920	17900	22200	1350	1990	292	301	163
20	457	619	544	2420	2610	13300	16800	1400	1390	294	331	158
21	460	566	699	3840	2360	9480	11100	1340	1270	311	285	154
22	389	546	693	7900	2220	7690	8170	1400	1050	539	293	157
23	326	629	581	31100	2030	5800	21100	1690	1070	912	274	150
24	342	506	e520	66200	2010	4480	30000	5960	871	1130	262	147
25	355	502	e480	67600	1520	3610	24500	7400	718	1860	247	149
26	571	656	e440	51900	1600	3010	16600	6510	654	1600	347	162
27	352	594	e400	38400	2150	2590	11900	4270	652	1070	549	161
28	345	827	e370	29100	12600	2340	9620	2880	635	727	423	166
29	330	813	e350	23000	---	1990	8540	2250	688	631	427	221
30	287	828	e330	17700	---	1820	8370	1790	763	418	354	213
31	334	---	e320	11600	---	1910	---	3130	---	463	303	---
TOTAL	20351	20356	19267	356496	147370	270130	375380	83650	90551	19449	10563	5893
MEAN	656	679	622	11500	5263	8714	12510	2698	3018	627	341	196
MAX	2290	1530	1390	67600	12600	23500	30000	7400	10700	1860	549	410
MIN	287	344	320	200	1520	1820	1660	1270	635	264	247	147

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1925 - 1999, BY WATER YEAR (WY)

	MEAN	1314	2743	4557	6130	6917	9566	8584	5117	3596	2082	1045	1090
MAX	8314	16410	18040	30150	22460	33940	23210	27270	20370	10700	7598	11470	
(WY)	1955	1973	1967	1950	1959	1982	1957	1943	1981	1992	1998	1926	
MIN	63.9	110	158	219	363	1455	789	359	214	211	111	88.1	
(WY)	1929	1954	1964	1945	1964	1941	1925	1925	1988	1930	1932	1955	

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1925 - 1999

ANNUAL TOTAL	2082932	1419456	
ANNUAL MEAN	5707	3889	4379
HIGHEST ANNUAL MEAN			8286
LOWEST ANNUAL MEAN			849
HIGHEST DAILY MEAN	48600	Apr 11	67600
LOWEST DAILY MEAN	287	Oct 30	147
ANNUAL SEVEN-DAY MINIMUM	346	Sep 26	154
INSTANTANEOUS PEAK FLOW			71700
INSTANTANEOUS PEAK STAGE			11.73
INSTANTANEOUS LOW FLOW			147
10 PERCENT EXCEEDS	16400	10900	12400
50 PERCENT EXCEEDS	2290	813	1400
90 PERCENT EXCEEDS	400	248	224

e Estimated.

SURFACE-WATER RECORDS

Maumee River Basin

04192500 MAUMEE RIVER NEAR DEFIANCE, OHIO—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--January 1997 to current year.

PERIOD OF DAILY RECORD.--

SUSPENDED SEDIMENT DISCHARGE: January 1997 to current year.

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, 4 mg/L Nov. 19, 1997 and Jan. 16, 1999.

SEDIMENT LOADS: Maximum daily, 201,000 tons Feb. 28, 1997; minimum daily, 2.4 tons, Jan. 16, 1999.

EXTREMES FOR CURRENT YEAR.--

SEDIMENT CONCENTRATIONS: Maximum daily mean, 533 mg/L, Apr. 10; minimum daily mean, 4 mg/L Jan. 16.

SEDIMENT LOADS: Maximum daily, 81,000 tons Jan. 24; minimum daily, 2.4 tons Jan. 16.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	SAM- PLING METHOD, CODES* (82398)
JAN 26...	1430	49800	314	3.5	2.0	100	10
MAY 25...	1430	7290	612	17.0	15.0	129	10
JUN 03...	1315	8780	289	26.0	20.0	163	10

* 10 Stream cross-section sample obtained by equal-width-increment (EWI) sampling method.

SURFACE-WATER RECORDS
Maumee River Basin

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04192500 MAUMEE RIVER NEAR DEFIANCE, OHIO—Continued

WATER-QUALITY RECORDS—CONTINUED

SEDIMENT DISCHARGE, SUSPENDED, TONS PER DAY, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
	OCTOBER			NOVEMBER			DECEMBER		
1	E350	19	18	571	12	18	618	13	22
2	E390	12	13	459	13	15	704	13	25
3	E400	13	14	384	15	15	1250	16	56
4	E370	13	13	364	17	17	1390	21	78
5	E350	16	15	359	19	19	592	14	22
6	E340	19	17	356	23	22	435	11	12
7	E1000	18	49	346	15	14	573	12	19
8	E2100	32	184	347	13	12	608	16	26
9	2290	44	271	344	16	15	761	19	38
10	1630	40	175	577	16	25	674	19	34
11	1390	37	140	668	23	40	751	18	36
12	1180	34	108	1080	32	96	634	15	25
13	876	33	78	1530	28	115	614	14	24
14	682	31	57	1290	20	68	706	12	23
15	634	31	52	1170	20	64	604	11	17
16	482	34	44	976	19	50	575	9	14
17	524	37	52	852	17	38	670	7	13
18	470	21	26	789	16	33	761	6	13
19	345	27	25	808	18	40	620	8	13
20	457	25	31	619	14	23	544	6	8.3
21	460	23	28	566	12	19	699	8	15
22	389	18	19	546	12	18	693	12	23
23	326	17	15	629	12	20	581	12	19
24	342	19	17	506	11	15	E520	8	12
25	355	17	16	502	12	16	E480	9	12
26	571	14	22	656	10	18	E440	12	14
27	352	15	14	594	10	16	E400	8	8.9
28	345	14	13	827	12	26	E370	7	7.1
29	330	12	11	813	11	25	E350	8	8.0
30	287	11	8.6	828	13	28	E330	22	20
31	334	12	11	---	---	---	E320	24	21
TOTAL	20351	---	1556.6	20356	---	940	19267	---	678.3

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
	JANUARY			FEBRUARY			MARCH		
1	E300	22	18	8290	31	695	23500	482	30500
2	E290	20	15	6470	26	445	21200	343	19700
3	E280	18	13	6050	22	367	19300	265	13800
4	E270	16	12	6470	21	369	18000	215	10400
5	E260	14	10	5240	20	287	14600	169	6680
6	E250	13	8.7	4410	17	203	11600	130	4060
7	E240	12	7.5	4260	15	175	12700	113	3880
8	E230	10	6.5	4920	15	202	10700	110	3160
9	E230	9	5.8	8770	38	947	8050	120	2590
10	E220	8	5.0	10500	62	1740	6040	92	1490
11	E220	8	4.5	8200	69	1520	5130	63	879
12	E210	7	3.9	7350	61	1210	4110	51	564
13	E210	6	3.5	8790	99	2370	3640	40	388
14	E200	5	3.0	8330	94	2100	3330	30	269
15	E200	5	2.7	5270	71	1010	2950	21	165
16	E200	4	2.4	4770	55	703	3000	18	143
17	E400	5	4.9	3970	45	478	7060	52	1600
18	609	9	16	3290	35	313	19300	407	21200
19	917	21	55	2920	37	293	17900	264	12900
20	2420	46	322	2610	32	227	13300	189	6800
21	3840	103	1100	2360	23	145	9480	137	3520
22	7900	231	5470	2220	16	95	7690	100	2070
23	31100	518	48400	2030	12	68	5800	75	1180
24	66200	461	81000	2010	11	60	4480	54	652
25	67600	181	33200	1520	10	41	3610	43	417
26	51900	107	15000	1600	9	39	3010	35	283
27	38400	94	9710	2150	14	102	2590	29	205
28	29100	80	6270	12600	250	11400	2340	24	151
29	23000	61	3820	---	---	---	1990	22	116
30	17700	49	2330	---	---	---	1820	20	97
31	11600	39	1230	---	---	---	1910	21	110
TOTAL	356496	---	208049.4	147370	---	27604	270130	---	149969

E Estimated.

SURFACE-WATER RECORDS **Maumee River Basin**

04192500 MAUMEE RIVER NEAR DEFIANCE, OHIO—Continued

WATER-QUALITY RECORDS—CONTINUED

SEDIMENT DISCHARGE, SUSPENDED, TONS PER DAY, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

DAY	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		APRIL			MAY			JUNE	
1	1830	30	150	6240	139	2350	10500	340	10000
2	1710	24	112	4590	84	1040	10700	197	5690
3	1720	20	94	3900	46	485	8870	165	3960
4	1850	21	104	3290	37	330	6490	105	1850
5	1720	24	113	2790	33	247	4490	84	1010
6	1680	25	111	2550	30	204	3170	70	601
7	1660	25	114	2420	31	203	2380	59	381
8	1740	23	110	1900	29	150	1850	50	249
9	5100	71	1460	1720	29	136	1740	39	184
10	19600	533	29900	1760	25	117	1840	42	206
11	21700	375	21900	1630	28	123	1620	48	210
12	20000	296	16000	1350	30	109	1310	36	128
13	15500	210	8740	1420	33	127	2650	56	443
14	11100	172	5120	1270	33	112	4290	132	1570
15	8170	139	3070	1300	28	99	5510	164	2440
16	15600	156	7200	1410	30	116	5020	141	1920
17	28000	290	22100	1350	23	84	3710	96	960
18	27800	224	16900	1390	17	65	2660	79	566
19	22200	166	9940	1350	16	60	1990	62	333
20	16800	140	6360	1400	17	63	1390	57	213
21	11100	104	3110	1340	22	80	1270	57	197
22	8170	87	1920	1400	27	103	1050	53	150
23	21100	397	26600	1690	34	159	1070	41	119
24	30000	431	34900	5960	102	1820	871	30	71
25	24500	267	17700	7400	171	3420	718	37	71
26	16600	192	8640	6510	102	1820	654	46	81
27	11900	151	4830	4270	60	693	652	28	49
28	9620	121	3140	2880	57	445	635	20	34
29	8540	103	2370	2250	49	296	688	23	43
30	8370	112	2510	1790	42	202	763	29	60
31	---	---	---	3130	56	606	---	---	---
TOTAL	375380	---	255318	83650	---	15864	90551	---	33789
		MEAN			MEAN			MEAN	
DAY	DISCHARGE	CONCENTRATION	DISCHARGE	DISCHARGE	CONCENTRATION	DISCHARGE	DISCHARGE	CONCENTRATION	DISCHARGE
	(CFS)	(MG/L)	(TONS/DAY)	(CFS)	(MG/L)	(TONS/DAY)	(CFS)	(MG/L)	(TONS/DAY)
		JULY			AUGUST			SEPTEMBER	
1	857	26	61	404	19	20	332	26	24
2	913	30	74	345	17	16	410	33	36
3	867	29	68	382	19	19	311	23	19
4	679	32	58	380	22	22	220	19	11
5	461	31	38	384	25	26	161	21	9.1
6	548	31	47	335	23	21	153	19	7.8
7	479	42	54	282	22	17	159	20	8.7
8	511	34	47	296	22	18	164	21	9.3
9	612	39	65	256	22	15	233	17	11
10	548	42	62	299	24	20	184	19	9.5
11	381	34	35	339	26	24	174	19	9.0
12	450	30	36	264	21	15	249	28	24
13	364	25	24	318	23	20	256	29	21
14	372	14	14	292	26	20	180	16	7.9
15	334	13	11	263	27	19	177	16	7.6
16	277	13	9.4	475	32	41	182	16	8.1
17	264	15	11	540	32	47	174	15	7.1
18	285	17	13	313	27	22	173	14	6.7
19	292	16	13	301	23	19	163	13	5.7
20	294	19	15	331	26	23	158	16	6.7
21	311	23	19	285	23	17	154	15	6.1
22	539	31	47	293	22	17	157	12	5.2
23	912	44	113	274	24	17	150	13	5.1
24	1130	43	132	262	23	16	147	12	4.8
25	1860	41	209	247	24	16	149	13	5.1
26	1600	45	191	347	25	25	162	15	6.6
27	1070	42	120	549	28	42	161	16	6.8
28	727	36	71	423	25	29	166	16	7.1
29	631	31	54	427	26	30	221	18	11
30	418	30	34	354	27	26	213	13	7.2
31	463	21	26	303	27	22	---	---	---
TOTAL	19449	---	1771.4	10563	---	701	5893	---	314.2
YEAR	1419456		696554.9						

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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, 3 mi downstream from Tontogany Creek, and 20.7 mi upstream from mouth.

DRAINAGE AREA.--6,330 mi².

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.

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.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	456	459	795	e360	10200	23900	1960	8070	10000	921	463	387
2	400	551	774	e350	7730	23800	1930	5800	15100	941	404	434
3	502	485	836	e330	6830	21200	1890	4670	12400	981	357	445
4	477	616	1390	e320	7300	20500	2000	3950	9020	936	418	366
5	388	595	1310	e310	6240	17100	2040	3410	6360	688	380	248
6	470	559	752	e300	5130	13300	2500	2990	4400	576	409	168
7	635	492	584	e290	4690	13400	1790	2720	3310	636	300	148
8	776	510	786	e280	5500	12100	2050	2290	2390	532	352	91
9	1890	519	832	e270	8350	10200	5080	2000	1890	677	311	147
10	2070	713	974	e270	11500	7190	24000	1680	2150	630	318	173
11	1500	1010	844	e260	10100	6100	29700	1860	2740	612	342	105
12	1350	719	934	e260	8230	5020	27600	1580	2370	399	369	71
13	1210	1300	814	e250	8490	4130	21300	1540	2060	514	366	199
14	875	1620	826	e250	9390	4030	15200	1590	4320	408	475	202
15	732	1320	948	e250	6880	3530	11200	1480	5900	429	363	115
16	733	1110	769	e250	5440	3460	17900	1570	5750	340	370	69
17	672	917	848	e250	4720	6070	33500	1620	4800	300	590	71
18	729	873	842	e500	3840	19700	33500	2530	3340	397	520	77
19	564	1110	1040	e900	3370	21300	27400	2640	2430	429	356	82
20	467	719	759	e2500	3020	15800	21900	2010	1880	372	378	99
21	533	616	863	6580	2660	11800	15300	1950	1380	434	384	67
22	580	657	1310	6170	2390	9090	10800	2100	1310	555	334	52
23	518	812	707	26600	2200	7100	23100	4310	1160	729	346	101
24	420	558	e660	71000	2240	5320	39400	12000	1120	1740	317	90
25	429	584	e600	73700	1930	4420	31500	12500	921	2180	346	25
26	439	777	e540	59600	1710	3430	22200	9940	806	2230	323	32
27	645	711	e500	41600	1830	2970	14900	6710	871	1410	423	75
28	490	745	e460	32100	9340	2600	12000	4680	987	1100	605	63
29	408	1070	e430	25200	---	2380	9930	3170	843	823	426	168
30	464	1130	e400	19800	---	1770	9660	2600	766	717	386	342
31	485	---	e380	14300	---	1950	---	2440	---	539	402	---
TOTAL	22307	23857	24507	385400	161250	304660	473230	118400	112774	24175	12133	4712
MEAN	720	795	791	12430	5759	9828	15770	3819	3759	780	391	157
MAX	2070	1620	1390	73700	11500	23900	39400	12500	15100	2230	605	445
MIN	388	459	380	250	1710	1770	1790	1480	766	300	300	25
MED	533	716	795									

MEAN	1421	3061	5385	7039	7895	11030	9778	5985	4232	2445	1212	1110
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

ANNUAL TOTAL	2373641		1667405			
ANNUAL MEAN	6503		4568		5033	
HIGHEST ANNUAL MEAN					9370	1950
LOWEST ANNUAL MEAN					938	1931
HIGHEST DAILY MEAN	51400	Apr 11	73700	Jan 25	113000	Mar 14 1982
LOWEST DAILY MEAN	380	Dec 31	25	Sep 25	17	Jun 30 1988
ANNUAL SEVEN-DAY MINIMUM	441	Sep 29	63	Sep 22	47	Jun 27 1988
INSTANTANEOUS PEAK FLOW			76900	Jan 25	121000	Mar 14 1982
INSTANTANEOUS PEAK STAGE			14.60	Jan 25	17.18	Mar 14 1982
INSTANTANEOUS LOW FLOW			18	Sep 25	17	Jun 30 1988
ANNUAL RUNOFF (CFSM)	1.03		.72		.80	
ANNUAL RUNOFF (INCHES)	13.95		9.80		10.80	
10 PERCENT EXCEEDS	19800		12800		14000	
50 PERCENT EXCEEDS	2360		941		1650	
90 PERCENT EXCEEDS	532		296		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, 300,000 tons Feb. 24, 1990; minimum daily, 0.26 ton Sep. 18, 1955.

EXTREMES FOR CURRENT YEAR.--

SEDIMENT CONCENTRATIONS: Maximum daily mean, 520 mg/L Apr. 11; minimum daily mean, 4 mg/L Dec. 19-21.

SEDIMENT LOADS: Maximum daily, 48,200 tons Apr. 24; minimum daily, .68 ton Sept. 25.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	SEDI- MENT, SUS- PENDED (MG/L (80154)	SAM- PLING METHOD, CODES* (82398)
DEC												
03...	1020	848	8.6	770	13.5	9.5	66	1.0	1.1	.08	11	10
03...	1130	848	--	--	--	--	62	.8	1.2	.06	--	50
JAN												
27...	0855	43100	--	320	3.5	1.0	--	--	--	--	96	10
MAY												
05...	1550	3460	--	--	--	--	25	.9	5.0	.13	--	50
05...	1725	3370	8.2	505	26.0	19.0	23	.8	4.8	.13	42	10

* 10 Stream cross-section sample obtained by equal-width-increment (EWI) sampling method.

* 50 Point sample collected from flow tank.

SURFACE-WATER RECORDS
Maumee River Basin

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04193500 MAUMEE RIVER AT WATERVILLE, OHIO—Continued

WATER-QUALITY RECORDS—CONTINUED

SEDIMENT DISCHARGE, SUSPENDED, TONS PER DAY, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
OCTOBER			NOVEMBER			DECEMBER			
1	456	15	18	459	15	19	795	14	30
2	400	12	13	551	14	21	774	12	25
3	502	18	25	485	10	13	836	10	23
4	477	18	23	616	9	14	1390	13	48
5	388	14	15	595	6	10	1310	16	56
6	470	17	22	559	6	9.2	752	13	26
7	635	25	43	492	7	8.7	584	11	17
8	776	28	59	510	5	7.3	786	11	25
9	1890	37	192	519	6	8.3	832	10	23
10	2070	31	174	713	7	15	974	9	24
11	1500	26	106	1010	11	29	844	9	20
12	1350	25	92	719	11	21	934	8	20
13	1210	24	78	1300	12	43	814	8	17
14	875	17	39	1620	14	60	826	6	14
15	732	16	32	1320	14	49	948	6	15
16	733	21	42	1110	12	37	769	6	12
17	672	24	44	917	11	28	848	5	12
18	729	23	45	873	15	35	842	5	11
19	564	19	29	1110	17	50	1040	4	11
20	467	18	22	719	17	32	759	4	8.2
21	533	20	29	616	14	23	863	4	9.6
22	580	16	25	657	13	24	1310	6	19
23	518	13	18	812	14	30	707	7	14
24	420	14	16	558	14	21	E660	7	13
25	429	14	17	584	12	20	E600	14	22
26	439	16	20	777	14	29	E540	8	12
27	645	16	28	711	15	30	E500	7	8.8
28	490	14	18	745	13	27	E460	9	11
29	408	13	14	1070	18	52	E430	10	11
30	464	14	18	1130	20	61	E400	12	13
31	485	14	18	---	---	---	E380	8	8.1
TOTAL	22307	---	1334	23857	---	826.5	24507	---	578.7
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
JANUARY			FEBRUARY			MARCH			
1	E360	9	8.3	10200	36	994	23900	348	22500
2	E350	9	8.3	7730	27	561	23800	264	16900
3	E330	9	7.7	6830	24	451	21200	270	15500
4	E320	8	7.3	7300	21	419	20500	266	14700
5	E310	8	6.9	6240	19	318	17100	208	9600
6	E300	8	6.5	5130	17	238	13300	160	5780
7	E290	8	6.1	4690	17	213	13400	128	4620
8	E280	8	5.8	5500	16	236	12100	107	3510
9	E270	7	5.4	8350	20	462	10200	122	3350
10	E270	7	5.3	11500	33	1020	7190	103	1990
11	E260	7	5.0	10100	60	1610	6100	92	1520
12	E260	7	4.9	8230	68	1520	5020	73	987
13	E250	7	4.6	8490	56	1290	4130	56	629
14	E250	7	4.5	9390	56	1410	4030	49	529
15	E250	6	4.4	6880	64	1160	3530	36	346
16	E250	6	4.2	5440	66	965	3460	34	320
17	E250	6	4.1	4720	59	753	6070	92	1750
18	E500	6	8.8	3840	49	511	19700	318	17700
19	E900	11	26	3370	42	379	21300	369	21200
20	E2500	18	122	3020	35	282	15800	193	8260
21	6580	29	499	2660	30	219	11800	163	5190
22	6170	36	674	2390	30	190	9090	102	2510
23	26600	141	11200	2200	32	188	7100	89	1690
24	71000	182	35200	2240	27	166	5320	72	1030
25	73700	144	28600	1930	22	116	4420	52	616
26	59600	121	19400	1710	16	75	3430	48	445
27	41600	123	13600	1830	12	58	2970	44	352
28	32100	142	12300	9340	58	2400	2600	39	276
29	25200	137	9310	---	---	---	2380	37	236
30	19800	62	3350	---	---	---	1770	27	130
31	14300	48	1830	---	---	---	1950	26	137
TOTAL	385400	---	136219.1	161250	---	18204	304660	---	16430

E Estimated.

SURFACE-WATER RECORDS **Maumee River Basin**

04193500 MAUMEE RIVER AT WATERVILLE, OHIO—Continued

WATER-QUALITY RECORDS—CONTINUED

SEDIMENT DISCHARGE, SUSPENDED, TONS PER DAY, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued									
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		APRIL			MAY			JUNE	
1	1960	29	152	8070	74	1600	10000	81	2330
2	1930	37	194	5800	59	926	15100	87	3520
3	1890	34	172	4670	60	759	12400	86	2880
4	2000	27	144	3950	59	624	9020	90	2180
5	2040	25	139	3410	48	446	6360	82	1410
6	2500	26	173	2990	45	361	4400	66	782
7	1790	29	139	2720	38	276	3310	58	511
8	2050	29	158	2290	32	194	2390	51	331
9	5080	41	767	2000	34	185	1890	43	221
10	24000	265	19200	1680	31	142	2150	41	238
11	29700	520	41700	1860	33	166	2740	34	254
12	27600	420	31400	1580	27	115	2370	25	159
13	21300	274	15800	1540	16	67	2060	25	149
14	15200	200	8140	1590	20	83	4320	60	724
15	11200	140	4270	1480	27	109	5900	72	1150
16	17900	151	7950	1570	25	106	5750	75	1160
17	33500	293	26800	1620	13	58	4800	75	961
18	33500	288	26000	2530	12	81	3340	75	674
19	27400	214	15800	2640	15	107	2430	73	474
20	21900	173	10200	2010	16	85	1880	69	350
21	15300	150	6180	1950	18	93	1380	59	218
22	10800	132	3840	2100	26	154	1310	60	212
23	23100	177	12800	4310	34	394	1160	48	152
24	39400	454	48200	12000	87	3140	1120	37	111
25	31500	422	35900	12500	179	6030	921	28	69
26	22200	314	18800	9940	142	3800	806	22	47
27	14900	233	9340	6710	80	1460	871	23	54
28	12000	172	5580	4680	60	750	987	34	89
29	9930	127	3420	3170	53	451	843	37	83
30	9660	95	2470	2600	48	337	766	33	68
31	---	---	---	2440	49	330	---	---	---
TOTAL	473230	---	355828	118400	---	23429	112774	---	21561
		JULY			AUGUST			SEPTEMBER	
1	921	33	81	463	17	21	387	19	20
2	941	34	88	404	11	12	434	17	20
3	981	36	96	357	15	15	445	16	19
4	936	38	95	418	18	20	366	15	14
5	688	38	70	380	19	19	248	13	8.8
6	576	38	59	409	20	22	168	12	5.5
7	636	38	65	300	20	16	148	11	4.4
8	532	38	54	352	21	20	91	10	2.5
9	677	38	70	311	15	13	147	12	5.1
10	630	38	64	318	14	12	173	17	7.6
11	612	36	59	342	15	14	105	17	4.8
12	399	36	39	369	15	15	71	17	3.2
13	514	38	53	366	23	23	199	16	8.9
14	408	31	34	475	32	42	202	16	8.4
15	429	27	31	363	26	25	115	15	4.6
16	340	25	23	370	22	23	69	14	2.7
17	300	25	21	590	20	32	71	14	2.7
18	397	26	28	520	18	25	77	14	2.9
19	429	27	31	356	17	16	82	15	3.3
20	372	28	27	378	23	24	99	14	3.7
21	434	28	33	384	25	26	67	13	2.3
22	555	29	44	334	22	20	52	12	1.7
23	729	32	64	346	20	19	101	11	3.2
24	1740	56	265	317	15	13	90	11	2.6
25	2180	44	262	346	11	10	25	10	.68
26	2230	37	226	323	16	14	32	10	.92
27	1410	29	110	423	25	30	75	12	2.3
28	1100	21	62	605	32	53	63	13	2.2
29	823	18	40	426	26	29	168	13	5.9
30	717	18	35	386	23	24	342	12	11
31	539	17	25	402	21	23	---	---	---
TOTAL	24175	---	2254	12133	---	670	4712	---	184.90
YEAR	1667405		725392.20						

SURFACE-WATER RECORDS
Maumee River Basin

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04193500 MAUMEE RIVER AT WATERVILLE, OHIO—Continued
(National Water-Quality Assessment Program—Lake Erie-Lake St. Clair Basin Study Unit)

WATER-QUALITY RECORDS

The data described in the following table were collected and analyzed as part of the NAWQA (National Water-Quality Assessment Program) project in the Lake Erie-Lake St. Clair Basin. 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. This project is one of 59 river basin and aquifer assessment projects being implemented or being planned across the nation from 1991 to 2000. At any one time, 15 to 20 of these projects are actively collecting data. The period of high-intensity data collection for the Lake Erie-Lake St. Clair Basin project was in water years 1996-98.

There is one stream site in Ohio for which data are being reported in this publication as part of the NAWQA study: Maumee River at Waterville (04193500). One site is reported in the 1999 Indiana annual data report: St. Joseph River near Newville, IN (04178000).

These data and historical data can be obtained electronically at: <http://www-oh.er.usgs.gov/nawqa.index.html>.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

[---, no data; <, concentration or value reported is less than that indicated; E, estimated value; K, value is estimated from a non-ideal colony count]

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED SATUR- ATION (00301)	E. COLI WATER WHOLE TOTAL UREASE (COL / 100 ML) (31633)	HARD- NESS TOTAL (MG/L AS CaCO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS Ca) (00915)
OCT 27...	0945	715	600	8.8	11.0	12.5	750	11.5	109	K18	190	45
NOV 24...	1200	848	781	8.6	11.5	7.5	752	14.2	120	--	320	81
DEC 17...	0900	832	871	8.2	2.0	3.0	743	11.8	90	--	310	81
JAN 27...	1000	43100	338	7.7	3.0	3.5	--	--	--	360	130	37
FEB 26...	0930	1700	632	7.9	.0	1.5	750	14.1	102	150	290	80
MAR 29...	1130	2280	533	8.3	13.0	10.0	750	14.1	126	--	230	64
APR 14...	1230	15100	450	7.7	12.0	11.0	747	10.1	93	240	190	53
MAY 19...	0815	1300	597	8.0	16.0	18.5	750	8.1	87	210	230	57
MAY 26...	1030	8520	527	7.7	13.0	15.5	744	9.8	102	310	200	53
JUN 28...	1030	976	467	8.3	26.5	28.0	743	9.9	125	240	180	42
JUL 14...	1045	406	477	8.1	26.0	25.5	750	10.9	137	K50	170	38
AUG 04...	0900	393	541	7.9	23.0	22.0	747	--	--	K60	190	40
SEP 28...	1030	598	785	7.6	21.0	20.0	750	8.0	90	--	240	54

SURFACE-WATER RECORDS

Maumee River Basin

04193500 MAUMEE RIVER AT WATERVILLE, OHIO—Continued
 (National Water-Quality Assessment Program—Lake Erie-Lake St. Clair Basin Study Unit)

WATER-QUALITY RECORDS—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

[---, no data; <, concentration or value reported is less than that indicated; E, estimated value; K, value is estimated from a non-ideal colony count]

DATE	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	CAR- BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	ALKA- LINITY WAT DIS TOT IT FIELD MG/L AS CAC03 (39086)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)
OCT 27...	18	31	5.0	140	12	130	76	49	.5	E.04	334	.02
NOV 24...	28	54	6.2	220	7	192	100	70	.5	<.05	481	.01
DEC 17...	26	45	6.2	244	--	200	110	76	.7	E.07	514	<.01
JAN 27...	9	7	4.7	82	--	67	26	24	.2	5.1	203	.04
FEB 26...	21	18	3.2	212	--	174	68	39	.3	6.6	397	.01
MAR 29...	17	13	2.9	161	--	146	56	28	.2	4.7	321	.03
APR 14...	13	10	3.3	131	--	107	40	25	.2	6.2	296	.05
MAY 19...	20	21	3.4	173	--	142	71	38	.3	.41	345	.04
26...	16	17	3.3	142	--	116	53	31	.3	4.0	317	.07
JUN 28...	19	20	3.8	129	--	106	52	33	.3	.10	278	.04
JUL 14...	18	21	4.4	99	7	93	59	39	.4	.51	279	.03
AUG 04...	21	37	<.10	137	--	112	78	61	.5	.76	353	<.01
SEP 28...	25	50	6.8	173	--	140	110	82	.7	.33	449	<.01
DATE	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C) (00689)	SEDI- MENT, SUS- PENDE (MG/L) (80154)
OCT 27...	.64	.07	1.4	.50	.08	<.05	<.01	<10	E2.0	5.8	4.1	16
NOV 24...	.64	.03	1.4	1.4	.08	.01	<.01	E8.7	<3.0	6.5	4.1	12
DEC 17...	.95	.02	.72	.56	.04	.02	.01	<10	<4.0	6.0	.9	5
JAN 27...	7.62	.16	1.6	.86	.32	.18	.15	51	11	7.6	1.9	98
FEB 26...	1.34	.08	.83	.43	.10	.02	.02	E7.6	11	5.6	.7	16
MAR 29...	4.91	<.02	.77	.50	.12	.05	.03	E7.4	4.7	5.7	.6	16
APR 14...	8.45	.16	1.7	1.0	.34	.11	.08	24	E2.6	7.5	>5.0	185
MAY 19...	2.59	.05	1.1	.65	.09	.01	<.01	13	E2.2	5.8	1.3	16
26...	7.50	.22	1.9	.12	.26	.07	.04	23	E1.7	7.1	4.3	145
JUN 28...	5.09	.02	1.7	.78	.12	.02	<.01	E5.5	<3.0	8.4	3.6	34
JUL 14...	2.05	<.02	1.7	.75	.06	.02	<.01	<10	<3.0	7.6	2.3	26
AUG 04...	<.05	<.02	.98	.69	.07	.03	<.01	E9.3	4.9	7.1	1.3	17
SEP 28...	<.05	<.02	1.1	.65	.11	.04	.02	<10	4.2	6.9	.9	--

SURFACE-WATER RECORDS
Maumee River Basin

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04193500 MAUMEE RIVER AT WATERVILLE, OHIO—Continued
(National Water-Quality Assessment Program—Lake Erie-Lake St. Clair Basin Study Unit)

WATER-QUALITY RECORDS—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

[---, no data; <, concentration or value reported is less than that indicated; E, estimated value; K, value is estimated from a non-ideal colony count]

DATE	ACETO- CHLOR, WATER FLTRD REC (UG/L) (49260)	ALA- CHLOR, WATER, DISS, REC, (UG/L) (46342)	ATRA- ZINE, WATER, DISS, REC (UG/L) (39632)	DEETHYL ATRA- ZINE, WATER, DISS, REC (UG/L) (04040)	METHYL AZIN- PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)	BEN- FLUR- ALIN WAT FLD 0.7 U GF, REC (UG/L) (82673)	BUTYL- ATE, WATER, DISS, REC (UG/L) (04028)	CAR- BARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680)	CARBO- FURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674)	CHLOR- PYRIFOS DIS- SOLVED (UG/L) (38933)	CYANA- ZINE, WATER, DISS, REC (UG/L) (04041)	DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682)
OCT 27...	.011	.016	.175	E.061	<.001	<.002	<.002	<.003	<.003	<.004	.048	<.002
NOV 24...	.013	.011	.165	E.040	<.001	<.002	<.002	<.003	<.003	<.004	.069	<.002
DEC 17...	<.010	.013	.171	E.025	<.001	<.002	<.002	<.003	<.003	<.004	.029	<.002
JAN 27...	<.020	.017	.138	E.052	<.001	<.002	<.002	<.003	<.003	<.004	.025	<.002
FEB 26...	.007	.017	.078	E.033	<.001	<.002	<.002	<.003	<.003	<.004	.016	<.002
MAR 29...	.011	.013	.072	E.023	<.001	<.002	<.002	<.003	<.003	<.004	.013	<.002
APR 14...	.127	.075	.379	E.066	<.001	<.002	<.002	<.003	<.003	<.004	.028	<.002
MAY 19...	.912	.033	2.72	E.200	<.001	<.002	<.002	<.003	E.192	<.004	.588	<.002
26...	4.21	.616	10.8	E.738	<.001	<.002	<.002	<.003	<.003	<.004	2.76	<.002
JUN 28...	.319	.094	7.86	E.913	<.001	<.002	<.002	<.003	<.003	<.004	.945	<.002
JUL 14...	.090	.020	4.01	E.512	<.001	<.002	<.002	<.003	<.003	<.004	.322	<.002
AUG 04...	.020	<.002	1.63	E.202	<.001	<.002	<.002	<.003	<.003	<.004	.127	<.002
SEP 28...	<.002	<.002	.514	E.053	<.001	<.002	<.002	<.003	<.003	<.004	.044	<.002
DATE	P, P' DDE DISSOLV (UG/L) (34653)	DI- AZINON, DIS- SOLVED (UG/L) (39572)	DI- ELDRIN DIS- SOLVED (UG/L) (39381)	2,6-DI- ETHYL ANILINE WAT FLT 0.7 U GF, REC (UG/L) (82660)	DISUL- FOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677)	EPTC WATER FLTRD 0.7 U GF, REC (UG/L) (82668)	ETHAL- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82663)	ETHO- PROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	FONOFOS WATER DISS REC (UG/L) (04095)	ALPHA BHC DIS- SOLVED (UG/L) (34253)	LINDANE DIS- SOLVED (UG/L) (39341)	LIN- URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666)
OCT 27...	<.006	.039	<.001	<.003	<.017	<.002	<.004	<.003	<.003	<.002	<.004	<.002
NOV 24...	<.006	.007	<.001	<.003	<.017	<.002	<.004	<.003	<.003	<.002	<.004	<.002
DEC 17...	<.006	<.002	<.001	<.003	<.017	<.002	<.004	<.003	<.003	<.002	<.004	<.002
JAN 27...	<.006	<.002	<.001	<.003	<.017	<.002	<.004	<.003	<.003	<.002	<.004	<.002
FEB 26...	<.006	<.002	<.001	<.003	<.017	<.002	<.004	<.003	<.003	<.002	<.004	<.002
MAR 29...	<.006	<.002	<.001	<.003	<.017	<.002	<.004	<.003	<.003	<.002	<.004	<.002
APR 14...	<.006	.011	<.001	<.003	<.017	<.002	<.004	<.003	<.003	<.002	<.004	.035
MAY 19...	<.006	E.003	<.001	<.003	<.017	<.002	<.004	<.003	<.003	<.002	<.004	<.002
26...	<.006	<.002	<.001	<.003	<.017	<.002	<.004	<.003	<.003	<.002	<.004	<.002
JUN 28...	<.006	<.002	<.001	<.003	<.017	<.002	<.004	<.003	<.003	<.002	<.004	<.002
JUL 14...	<.006	<.002	<.001	<.003	<.017	<.002	<.004	<.003	<.003	<.002	<.004	<.002
AUG 04...	<.006	<.020	<.001	<.003	<.017	<.002	<.004	<.003	<.003	<.002	<.004	<.002
SEP 28...	<.006	<.002	<.001	<.003	<.017	<.002	<.004	<.003	<.003	<.002	<.004	<.002

SURFACE-WATER RECORDS **Maumee River Basin**

04193500 MAUMEE RIVER AT WATERVILLE, OHIO—Continued
(National Water-Quality Assessment Program—Lake Erie-Lake St. Clair Basin Study Unit)

WATER-QUALITY RECORDS—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

[---, no data; <, concentration or value reported is less than that indicated; e, estimated value; k, value is estimated from a non-ideal colony count]

DATE	MALA- THION, DIS- SOLVED (UG/L) (39532)	METO- LACHLOR WATER DISSOLV (UG/L) (39415)	METRI- BUZIN SENCOR WATER DISSOLV (UG/L) (82630)	MOL- INATE WATER FLTRD 0.7 U (UG/L) (82671)	NAPROP- AMIDE WATER FLTRD 0.7 U (UG/L) (82684)	PARA- THION, DIS- SOLVED (UG/L) (39542)	METHYL PARA- THION WAT FLT 0.7 U (UG/L) (82667)	PEB- ULATE WATER FILTRD 0.7 U (UG/L) (82669)	PENDI- METH- ALIN WAT FLT 0.7 U (UG/L) (82683)	PER- CIS WAT FLT 0.7 U (UG/L) (82687)	PHORATE WATER FLTRD 0.7 U (UG/L) (82664)	PRO- METON, WATER, DISS, REC (UG/L) (04037)
OCT 27...	<.005	.116	<.004	<.004	<.003	<.004	<.006	<.004	<.004	<.005	<.002	.064
NOV 24...	<.005	.168	.009	<.004	<.003	<.004	<.006	<.004	<.004	<.005	<.002	.039
DEC 17...	<.005	.104	<.004	<.004	<.003	<.004	<.006	<.004	<.004	<.005	<.002	.028
JAN 27...	<.005	.230	.079	<.004	<.003	<.004	<.006	<.004	<.004	<.005	<.002	E.006
FEB 26...	<.005	.090	.020	<.004	<.003	<.004	<.006	<.004	<.004	<.005	<.002	<.018
MAR 29...	<.005	.095	.011	<.004	<.003	<.004	<.006	<.004	<.004	<.005	<.002	E.003
APR 14...	<.005	.657	.455	<.004	<.003	<.004	<.006	<.004	<.004	<.005	<.002	E.011
MAY 19...	<.020	1.25	.041	<.004	<.003	<.004	<.006	<.004	<.020	<.005	<.002	.085
26...	<.005	4.38	2.04	<.004	<.003	<.004	<.006	<.004	<.004	<.005	<.002	.052
JUN 28...	<.005	1.65	.107	<.004	<.003	<.004	<.006	<.004	<.004	<.005	<.002	.070
JUL 14...	<.005	.976	.019	<.004	<.003	<.004	<.006	<.004	<.004	<.005	<.002	.042
AUG 04...	<.005	.286	<.010	<.004	<.003	<.004	<.006	<.004	<.004	<.005	<.002	.108
SEP 28...	<.005	.110	<.004	<.004	<.003	<.004	<.006	<.004	<.004	<.005	<.002	.114

DATE	PRON- AMIDE WATER FLTRD 0.7 U (UG/L) (82676)	PROP- CHLOR, WATER, DISS, REC (UG/L) (04024)	PRO- PANIL WATER FLTRD 0.7 U (UG/L) (82679)	PRO- PARGITE WATER FLTRD 0.7 U (UG/L) (82685)	SI- MAZINE, WATER, DISS, REC (UG/L) (04035)	TEBU- THIURON WATER FLTRD 0.7 U (UG/L) (82670)	TER- BACIL WATER FLTRD 0.7 U (UG/L) (82665)	TER- BUFOS WATER FLTRD 0.7 U (UG/L) (82675)	THIO- BENCARB WATER FLTRD 0.7 U (UG/L) (82681)	TRIAL- LATE WATER FLTRD 0.7 U (UG/L) (82678)	TRI- FLUR- ALIN WAT FLT 0.7 U (UG/L) (82661)
OCT 27...	<.003	<.007	<.004	<.013	.022	<.020	<.007	<.013	<.002	<.001	<.002
NOV 24...	<.003	<.007	<.004	<.013	.026	.015	<.007	<.013	<.002	<.001	<.002
DEC 17...	<.003	<.007	<.004	<.013	.023	<.010	<.007	<.013	<.002	<.001	<.002
JAN 27...	<.003	<.007	<.004	<.013	.010	<.020	<.007	<.013	<.002	<.001	<.002
FEB 26...	<.003	<.007	<.004	<.013	.013	<.010	<.007	<.013	<.002	<.001	<.002
MAR 29...	<.003	<.007	<.004	<.013	.011	E.007	<.007	<.013	<.002	<.001	<.002
APR 14...	<.003	<.007	<.004	<.013	.071	E.010	<.007	<.013	<.002	<.001	<.002
MAY 19...	<.003	<.007	<.004	<.013	.315	<.010	<.007	<.013	<.002	<.001	<.002
26...	<.003	<.007	<.004	<.013	1.60	.045	<.007	<.013	<.002	<.001	<.002
JUN 28...	<.003	<.007	<.004	<.013	.840	.014	<.007	<.013	<.002	<.001	<.002
JUL 14...	<.003	<.007	<.004	<.013	.526	<.010	<.007	<.013	<.002	<.001	<.002
AUG 04...	<.003	<.007	<.004	<.013	.373	<.020	<.007	<.013	<.002	<.001	<.002
SEP 28...	<.003	<.007	<.004	<.013	.105	.042	<.007	<.013	<.002	<.001	<.002

SURFACE-WATER RECORDS

Portage River Basin

59

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, 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 collected at this site 800 ft downstream. Sediment data 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 1998 TO SEPTEMBER 1999 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	21	32	e21	256	1710	111	168	460	40	30	11
2	19	23	32	e19	279	992	127	149	1220	33	21	9.7
3	18	22	32	e17	371	1390	124	134	725	27	17	11
4	19	20	34	e16	379	1840	131	127	353	23	15	11
5	19	18	31	e15	298	860	162	123	199	18	11	9.9
6	21	18	31	e14	236	576	157	118	139	13	11	13
7	24	18	30	e13	242	508	134	111	107	14	12	26
8	49	19	29	e13	546	461	117	99	87	27	12	14
9	75	20	27	e12	821	409	1220	88	76	44	13	19
10	63	29	25	e12	718	303	4390	84	65	35	24	14
11	49	46	25	e11	449	282	3180	78	70	37	16	11
12	40	111	23	e11	557	273	2740	74	130	28	13	9.0
13	33	95	21	e11	1040	249	1190	70	278	20	14	8.4
14	27	65	21	e10	487	231	659	68	299	15	20	8.6
15	24	49	21	e10	323	222	462	71	361	13	38	9.2
16	24	42	20	e10	267	255	1930	62	210	12	34	8.7
17	23	37	19	e10	e220	1670	3620	53	121	10	22	8.0
18	19	35	21	e45	e170	2390	2520	47	83	11	17	9.2
19	17	31	20	e200	e150	1040	1250	49	62	39	15	9.4
20	18	30	22	954	e130	563	837	49	49	38	14	9.2
21	18	28	25	769	e120	414	580	46	44	25	13	8.4
22	20	28	30	1090	e105	330	465	45	38	36	12	9.1
23	23	27	44	4760	e98	253	1910	67	34	47	11	8.6
24	20	27	79	8150	e92	209	3500	345	32	128	11	10
25	18	27	66	5470	e90	182	1570	493	30	204	12	10
26	18	28	49	2210	e86	153	804	282	30	123	18	11
27	17	38	42	1250	116	135	520	141	31	65	25	10
28	19	39	e30	863	1200	125	369	94	57	40	25	9.5
29	16	38	e28	599	---	119	274	73	92	49	24	12
30	23	36	e26	408	---	115	209	61	57	60	17	20
31	21	---	e23	304	---	107	---	63	---	44	13	---
TOTAL	814	1065	958	27297	9846	18366	35262	3532	5539	1318	550	337.9
MEAN	26.3	35.5	30.9	881	352	592	1175	114	185	42.5	17.7	11.3
MAX	75	111	79	8150	1200	2390	4390	493	1220	204	38	26
MIN	16	18	19	10	86	107	111	45	30	10	11	8.0
CFSM	.06	.08	.07	2.06	.82	1.38	2.75	.27	.43	.10	.04	.03
IN.	.07	.09	.08	2.37	.86	1.60	3.06	.31	.48	.11	.05	.03

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1928 - 1999, BY WATER YEAR (WY)

MEAN	83.4	198	351	467	520	763	648	404	287	153	82.3	86.5
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
(+)	7.0	6.2	6.0	6.6	7.0	6.4	6.8	7.3	7.9	8.3	7.7	8.5
MEAN#	19.3	29.3	24.9	874	345	586	1168	107	177	34.2	10	2.8
CFSM#	.05	.07	.06	2.04	.81	1.37	2.73	.25	.41	.08	.02	.01
IN#	.05	.08	.07	2.35	.84	1.58	3.05	.29	.46	.09	.03	.01

SUMMARY STATISTICS FOR 1998 CALENDAR YEAR FOR 1999 WATER YEAR WATER YEARS 1928 - 1999

ANNUAL TOTAL	195508	104884.9										
ANNUAL MEAN	536	287(≠280)										
HIGHEST ANNUAL MEAN										≠334		
LOWEST ANNUAL MEAN										628		1973
HIGHEST DAILY MEAN	11100	Aug 27				8150	Jan 24		11100		Aug 27	1998
LOWEST DAILY MEAN	10	Aug 4				8.0	Sep 17			.40	Aug 26	1931
ANNUAL SEVEN-DAY MINIMUM	17	Jul 29				8.7	Sep 12			.93	Oct 12	1934
INSTANTANEOUS PEAK FLOW						8600	Jan 24a		11500		Feb 15	1950
INSTANTANEOUS PEAK STAGE						12.33	Jan 24			14.51	Feb 15	1950
INSTANTANEOUS LOW FLOW						8.0	Sep 17			.40	Aug 16	1931
ANNUAL RUNOFF (CFSM)	1.25					.67				.79		
ANNUAL RUNOFF (INCHES)	16.99					9.12(≠8.89)				≠10.60		
10 PERCENT EXCEEDS	1380					721				849		
50 PERCENT EXCEEDS	111					40				69		
90 PERCENT EXCEEDS	21					12				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 September 1999.

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

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 30 mi upstream. The importation of this water began Sept. 1, 1951.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	---	---	23	668
2	---	---	---	---	---	---	---	---	---	---	18	405
3	---	---	---	---	---	---	---	---	---	---	17	270
4	---	---	---	---	---	---	---	---	---	---	16	185
5	---	---	---	---	---	---	---	---	---	---	47	137
6	---	---	---	---	---	---	---	---	---	---	2380	103
7	---	---	---	---	---	---	---	---	---	---	3080	94
8	---	---	---	---	---	---	---	---	---	---	2410	87
9	---	---	---	---	---	---	---	---	---	---	1410	80
10	---	---	---	---	---	---	---	---	---	---	904	66
11	---	---	---	---	---	---	---	---	---	---	520	57
12	---	---	---	---	---	---	---	---	---	---	327	50
13	---	---	---	---	---	---	---	---	---	---	217	46
14	---	---	---	---	---	---	---	---	---	---	126	42
15	---	---	---	---	---	---	---	---	---	---	83	39
16	---	---	---	---	---	---	---	---	---	---	73	39
17	---	---	---	---	---	---	---	---	---	---	500	35
18	---	---	---	---	---	---	---	---	---	---	379	35
19	---	---	---	---	---	---	---	---	---	---	899	33
20	---	---	---	---	---	---	---	---	---	---	533	31
21	---	---	---	---	---	---	---	---	---	---	271	32
22	---	---	---	---	---	---	---	---	---	---	146	84
23	---	---	---	---	---	---	---	---	---	---	93	256
24	---	---	---	---	---	---	---	---	---	---	94	115
25	---	---	---	---	---	---	---	---	---	---	3520	60
26	---	---	---	---	---	---	---	---	---	---	7390	42
27	---	---	---	---	---	---	---	---	---	---	9940	33
28	---	---	---	---	---	---	---	---	---	---	8640	27
29	---	---	---	---	---	---	---	---	---	---	5310	26
30	---	---	---	---	---	---	---	---	---	---	1810	25
31	---	---	---	---	---	---	---	---	---	---	1090	---
TOTAL	---	---	---	---	---	---	---	---	---	---	52266	3202
MEAN	---	---	---	---	---	---	---	---	---	---	1686	107
MAX	---	---	---	---	---	---	---	---	---	---	9940	668
MIN	---	---	---	---	---	---	---	---	---	---	16	25
CFSM	---	---	---	---	---	---	---	---	---	---	3.41	.22
IN.	---	---	---	---	---	---	---	---	---	---	3.94	.24
(+)	---	---	---	---	---	---	---	---	---	---	7.4	8.0
MEAN#	---	---	---	---	---	---	---	---	---	---	1679	99
CFSM#	---	---	---	---	---	---	---	---	---	---	3.40	.20
IN#	---	---	---	---	---	---	---	---	---	---	3.92	.22

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

61

04195820 PORTAGE RIVER AT ELMORE, OHIO—Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23	30	38	e29	440	2160	166	254	460	58	38	16
2	21	30	36	e27	488	1400	187	193	1550	43	26	13
3	22	32	36	e25	630	1930	192	158	1060	35	e20	12
4	22	29	35	e23	643	2370	204	146	588	30	16	13
5	22	28	37	e21	518	1290	267	147	349	25	12	13
6	23	25	36	e20	419	933	270	143	240	20	10	12
7	32	25	38	e19	428	811	210	129	177	18	13	22
8	39	25	36	e18	878	751	190	107	138	17	15	29
9	90	27	36	e17	1220	681	1400	86	116	47	16	18
10	89	39	33	e17	1090	537	4960	81	99	41	18	23
11	66	55	32	e16	744	487	3820	71	92	34	25	18
12	49	128	31	e15	873	464	3280	60	222	38	17	14
13	40	144	28	e15	1470	426	1660	53	373	24	17	11
14	34	101	27	e14	812	397	1040	51	511	19	19	9.5
15	29	69	27	e14	556	383	777	51	547	15	30	8.9
16	28	54	27	e14	469	437	2400	40	373	14	46	9.5
17	28	46	26	e13	e370	2220	4180	29	214	13	31	8.6
18	27	42	25	e25	e300	3160	3040	22	137	12	22	8.3
19	24	40	26	e100	e250	1550	1730	21	95	17	20	8.7
20	22	36	28	e250	e210	936	1260	21	69	51	17	9.0
21	24	33	34	e400	e180	710	938	20	55	35	16	9.6
22	25	32	e42	e1300	e170	572	784	20	48	33	15	8.5
23	28	31	e50	5910	e158	446	2530	36	41	51	13	8.7
24	33	30	e60	8410	e150	366	4320	582	38	100	14	8.8
25	28	29	e80	6320	e140	313	2110	788	39	309	17	12
26	26	32	e66	2750	e130	260	1240	428	37	199	20	9.8
27	25	33	e50	1710	e120	219	858	147	38	100	27	11
28	24	39	e41	1270	e120	199	619	66	48	53	28	11
29	26	41	e36	938	---	184	459	41	131	37	32	13
30	28	39	e32	675	---	172	345	28	93	74	25	23
31	37	---	e31	512	---	161	---	27	---	56	20	---
TOTAL	1034	1344	1160	30887	13976	26925	45436	4046	7978	1618	655	391.9
MEAN	33.4	44.8	37.4	996	499	869	1515	131	266	52.2	21.1	13.1
MAX	90	144	80	8410	1470	3160	4960	788	1550	309	46	29
MIN	21	25	25	13	120	161	166	20	37	12	10	8.3
CFSM	.07	.09	.08	2.02	1.01	1.76	3.07	.26	.54	.11	.04	.03
IN.	.08	.10	.09	2.33	1.05	2.03	3.42	.30	.60	.12	.05	.03
(+)	7.0	6.2	6.0	6.6	7.0	6.4	6.8	7.3	7.9	8.3	7.7	8.5
MEAN#	26.4	38.6	30.9	989	492	863	1508	124	258	43.9	12.8	2.3
CFSM#	.05	.07	.06	2.00	1.00	1.75	3.05	.25	.52	.09	.08	<.00
IN#	.06	.09	.07	2.31	1.04	2.01	3.41	.29	.58	.10	.03	.01

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1998 - 1999, BY WATER YEAR (WY)

MEAN	33.4	44.8	37.4	996	499	869	1515	131	266	52.2	854	59.9
MAX	33.4	44.8	37.4	996	499	869	1515	131	266	52.2	1686	107
(WY)	1999	1999	1999	1999	1999	1999	1999	1999	1999	1999	1998	1998
MIN	33.4	44.8	37.4	996	499	869	1515	131	266	52.2	21.1	13.1
(WY)	1999	1999	1999	1999	1999	1999	1999	1999	1999	1999	1999	1999

SUMMARY STATISTICS

FOR 1999 WATER YEAR

WATER YEARS 1998 - 1999

ANNUAL TOTAL	135450.9	
ANNUAL MEAN	371	371
HIGHEST ANNUAL MEAN		371 1999
LOWEST ANNUAL MEAN		371 1999
HIGHEST DAILY MEAN	8410	9940 Aug 27 1998
LOWEST DAILY MEAN	8.3	8.3 Sep 18 1999
ANNUAL SEVEN-DAY MINIMUM	8.8	8.8 Sep 17 1999
INSTANTANEOUS PEAK FLOW	8620	10200 Aug 27 1998
INSTANTANEOUS PEAK STAGE	12.52	13.92 Aug 27 1998
INSTANTANEOUS LOW FLOW	6.6	6.6 Sep 15 1999
ANNUAL RUNOFF (CFSM)	.75	.75
ANNUAL RUNOFF (INCHES)	10.20	10.21
10 PERCENT EXCEEDS	938	1130
50 PERCENT EXCEEDS	41	48
90 PERCENT EXCEEDS	15	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, 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, and May 12, 1940, to December 31, 1951.

REMARKS.--Records good 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 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 1998 TO SEPTEMBER 1999 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.8	7.0	10	3.9	38	640	25	36	28	28	5.8	3.9
2	4.3	7.6	8.4	3.5	43	316	24	33	31	28	4.8	3.5
3	14	7.9	8.4	14	48	730	25	31	26	20	4.5	3.4
4	7.6	7.9	8.2	12	46	680	28	25	19	12	5.5	2.8
5	14	7.6	7.5	6.9	41	238	47	16	16	8.4	5.6	2.9
6	9.3	8.1	7.3	3.7	48	788	36	14	13	7.4	4.1	2.8
7	16	7.8	11	3.4	64	823	28	11	12	6.1	6.3	3.3
8	12	8.3	7.5	e1.8	380	281	25	12	11	5.1	12	3.5
9	17	8.3	7.1	e1.8	177	176	386	21	11	8.2	6.4	3.6
10	13	22	7.4	2.9	85	117	1020	20	10	7.5	8.6	3.3
11	8.9	11	7.4	2.7	59	84	754	14	10	5.6	6.5	2.9
12	7.7	21	11	5.2	58	77	418	4.5	27	6.2	5.3	2.9
13	6.7	14	7.8	12	70	75	146	7.5	43	5.9	11	3.5
14	6.0	11	6.3	6.7	52	69	85	10	45	5.2	13	3.0
15	5.6	8.7	6.2	25	44	55	69	20	36	4.8	6.6	2.9
16	5.5	7.5	6.1	35	43	63	328	17	21	4.4	7.5	3.0
17	5.8	7.2	6.7	35	43	198	1120	13	15	3.8	6.3	2.7
18	13	6.8	6.4	568	38	140	833	11	12	3.8	5.1	2.6
19	7.7	6.6	7.2	1180	32	59	741	13	10	5.6	5.0	2.4
20	12	9.5	7.3	342	27	41	659	11	8.8	5.2	4.8	4.9
21	11	7.7	26	275	19	42	427	9.9	7.9	17	4.3	3.5
22	9.9	7.5	171	1640	18	45	549	116	7.1	14	4.0	2.8
23	7.8	7.9	111	1620	16	39	487	331	6.3	13	4.4	2.7
24	7.2	7.8	24	674	18	35	555	592	3.7	40	11	3.4
25	7.3	10	9.0	282	17	32	210	306	2.9	17	6.7	3.1
26	6.9	11	12	146	17	29	114	75	2.6	9.7	5.2	2.9
27	6.6	9.5	13	100	39	27	77	39	9.1	7.6	5.4	2.9
28	7.0	12	12	87	865	26	59	29	10	6.5	5.2	2.9
29	6.7	9.4	e4.4	61	---	25	49	23	13	7.8	5.4	13
30	9.4	9.4	e3.3	48	---	22	41	20	7.3	8.2	4.9	8.7
31	6.9	---	e2.5	40	---	13	---	20	---	6.8	4.6	---
TOTAL	277.6	288.0	543.4	7238.5	2445	5985	9365	1900.9	474.7	328.8	195.8	109.7
MEAN	8.95	9.60	17.5	234	87.3	193	312	61.3	15.8	10.6	6.32	3.66
MAX	17	22	171	1640	865	823	1120	592	45	40	13	13
MIN	4.3	6.6	2.5	1.8	16	13	24	4.5	2.6	3.8	4.0	2.4
CFSM	.10	.11	.20	2.63	.98	2.17	3.52	.69	.18	.12	.07	.04
IN.	.12	.12	.23	3.03	1.02	2.51	3.92	.80	.20	.14	.08	.05

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1925 - 1999, BY WATER YEAR (WY)

	MEAN	23.3	56.4	109	146	144	189	151	93.0	76.1	35.7	24.6	21.7
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 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1925 - 1999

ANNUAL TOTAL	29722.5	29152.4	
ANNUAL MEAN	81.4	79.9	88.6
HIGHEST ANNUAL MEAN			145
LOWEST ANNUAL MEAN			20.4
HIGHEST DAILY MEAN	2720	Jan 8	4600
LOWEST DAILY MEAN	2.5	Dec 31	.34
ANNUAL SEVEN-DAY MINIMUM	4.5	Sep 13	.36
INSTANTANEOUS PEAK FLOW			5800
INSTANTANEOUS PEAK STAGE			9.83
INSTANTANEOUS LOW FLOW			.60
ANNUAL RUNOFF (CFSM)	.92	.90	1.00
ANNUAL RUNOFF (INCHES)	12.45	12.21	13.56
10 PERCENT EXCEEDS	164	185	195
50 PERCENT EXCEEDS	18	11	21
90 PERCENT EXCEEDS	6.4	3.7	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

63

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, 1.5 mi downstream from Lick Run, 2.7 mi upstream from Little Tymochtee Creek, and 3 mi southeast of Carey.

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 151 mil gal, equivalent to a mean annual withdrawal of 0.6 ft³/s. Return flow through Abraham Marsh totaled 174 mil gal, equivalent to a mean annual release of 0.74 ft³/s. Water-quality and sediment data collected at this site.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.9	1.9	3.7	e2.3	81	1160	28	58	19	7.3	1.8	1.3
2	1.5	1.5	4.7	e2.1	83	1610	30	47	19	10	1.9	1.1
3	1.7	1.0	4.3	e2.0	102	934	31	42	21	7.2	1.9	.91
4	1.9	.60	4.0	e1.9	121	677	33	39	22	12	1.7	.75
5	1.5	.54	3.7	e1.8	106	556	27	40	20	21	1.5	.61
6	1.2	1.1	2.8	e1.8	84	471	23	38	18	13	1.0	.87
7	1.6	1.2	3.1	e1.7	73	864	24	34	14	7.8	.82	2.9
8	2.1	1.2	3.0	e1.7	179	964	23	33	12	5.5	1.0	1.5
9	2.0	1.2	3.3	e1.6	488	405	46	30	10	4.5	.88	.68
10	1.6	1.6	3.0	e1.6	325	232	80	27	10	4.1	.81	.47
11	2.0	.80	2.6	e1.5	181	168	354	24	10	3.7	.66	.71
12	2.9	1.5	2.3	e1.5	157	e110	435	21	9.8	3.6	.46	.73
13	3.2	2.8	2.1	e1.4	184	e94	325	20	12	3.2	1.2	.57
14	5.7	3.7	2.1	e1.4	191	e90	178	18	48	2.4	5.0	.39
15	5.5	3.8	2.2	e1.4	125	e90	121	18	110	2.2	2.9	.30
16	4.4	6.7	2.6	e1.4	e80	121	119	18	169	2.0	2.1	.26
17	3.4	7.2	3.0	e2.5	e60	443	360	18	95	1.7	2.8	.22
18	2.6	3.1	3.1	e10	e50	854	728	15	48	1.4	2.8	.20
19	2.2	4.1	3.0	e50	e40	811	969	13	29	1.3	2.6	.19
20	1.8	4.2	2.7	e320	e35	319	971	12	19	1.5	2.5	.20
21	1.4	1.7	4.1	e370	e20	186	618	12	14	1.5	2.0	.23
22	1.5	2.6	5.7	e270	e16	147	471	12	11	1.6	1.6	.23
23	2.0	3.4	5.1	e600	e14	115	456	22	8.3	1.8	1.2	.20
24	2.1	2.4	5.7	3180	e12	89	484	75	8.1	4.8	1.2	.19
25	2.0	2.8	12	1930	e11	73	380	305	7.3	7.7	1.5	.18
26	2.4	3.4	22	855	e10	61	225	227	6.3	7.5	2.2	.17
27	3.8	3.6	e10	347	33	51	163	108	7.2	4.7	2.3	.16
28	3.2	3.5	e3.6	228	510	44	122	62	8.0	3.8	1.5	.15
29	2.4	3.5	e3.3	167	---	39	91	39	6.4	3.9	1.3	.21
30	2.4	3.2	e2.7	123	---	34	70	28	5.3	3.2	1.1	.33
31	2.2	---	e2.5	95	---	29	---	22	---	2.4	1.0	---
TOTAL	76.1	79.84	138.0	8574.6	3371	11841	7985	1477	796.7	158.3	53.23	16.91
MEAN	2.45	2.66	4.45	277	120	382	266	47.6	26.6	5.11	1.72	.56
MAX	5.7	7.2	22	3180	510	1610	971	305	169	21	5.0	2.9
MIN	1.2	.54	2.1	1.4	10	29	23	12	5.3	1.3	.46	.15

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 1999, BY WATER YEAR (WY)

	MEAN	30.9	142	225	242	305	417	332	207	146	112	34.6	31.6
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 1998 CALENDAR YEAR FOR 1999 WATER YEAR WATER YEARS 1964 - 1999

ANNUAL TOTAL	63941.59	34567.68	
ANNUAL MEAN	175	94.7	185
HIGHEST ANNUAL MEAN			330
LOWEST ANNUAL MEAN			72.2
HIGHEST DAILY MEAN	4690	Jan 9	6280
LOWEST DAILY MEAN	.54	Nov 5	.00
ANNUAL SEVEN-DAY MINIMUM	.98	Nov 3	.00
INSTANTANEOUS PEAK FLOW			3450
INSTANTANEOUS PEAK STAGE			7.59
INSTANTANEOUS LOW FLOW			.15
10 PERCENT EXCEEDS	382	284	502
50 PERCENT EXCEEDS	31	5.3	33
90 PERCENT EXCEEDS	1.8	1.0	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, 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 collected at this site.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.6	8.2	6.7	e4.3	58	355	29	41	7.0	34	5.7	1.5
2	4.3	8.7	5.5	e4.0	59	298	29	37	8.0	44	3.3	1.4
3	5.4	8.7	5.7	e3.8	70	418	29	34	7.3	18	2.2	1.2
4	5.6	8.6	6.3	e3.6	67	574	30	30	8.6	12	1.6	1.1
5	4.9	8.9	6.0	e3.5	57	326	31	28	11	9.4	1.3	1.2
6	5.2	8.9	5.6	e3.3	48	e250	29	27	9.1	7.4	1.1	1.4
7	6.9	8.7	6.5	e3.2	47	e380	28	24	7.2	24	1.5	1.4
8	7.5	8.2	5.3	e3.1	71	e160	26	23	5.6	15	2.6	1.4
9	7.0	7.8	4.5	e3.0	136	e130	246	21	4.4	8.6	2.4	1.6
10	7.8	12	5.0	e2.9	104	e105	852	20	3.5	17	2.6	1.5
11	6.8	14	5.0	e2.8	74	e90	803	18	2.8	14	2.8	1.4
12	6.2	11	4.3	e2.7	72	e80	616	17	20	7.0	2.5	1.3
13	5.3	17	4.0	e2.7	69	e72	312	16	60	5.3	2.6	1.3
14	4.7	17	3.7	e2.6	58	e68	164	14	33	4.3	7.0	1.3
15	4.7	14	3.4	e2.6	50	66	112	15	31	3.6	7.5	1.2
16	4.5	11	3.5	e2.6	e44	98	277	15	19	3.3	8.4	1.1
17	4.4	9.4	3.6	e2.6	e38	463	736	14	15	2.9	7.4	1.1
18	4.8	7.9	3.4	e10	e34	552	759	13	12	2.6	4.9	.97
19	5.3	7.2	3.4	e60	e31	236	442	11	9.3	4.3	3.7	.88
20	5.1	7.3	3.4	e320	e29	124	243	9.7	8.1	4.5	3.0	.88
21	5.2	6.8	5.4	e240	e27	95	192	8.2	6.9	3.8	2.3	.96
22	7.3	6.0	14	889	e26	77	144	9.4	6.1	3.6	1.6	.98
23	7.9	5.3	e36	2360	e25	64	212	11	5.2	3.0	1.3	.87
24	8.0	4.7	e45	1950	25	54	327	14	4.6	4.4	2.0	1.0
25	8.1	5.0	e20	961	24	48	217	14	4.1	4.7	4.3	1.0
26	7.5	6.4	e9.4	520	24	42	131	17	3.4	6.0	4.9	.96
27	7.3	5.2	e7.5	296	25	38	95	16	8.5	6.0	4.7	.78
28	7.6	5.3	e6.4	206	126	35	73	13	25	5.0	3.8	.73
29	7.3	6.6	e5.6	141	---	33	59	10	25	12	3.1	2.2
30	9.1	6.6	e5.0	96	---	30	49	8.0	26	8.8	2.3	3.4
31	8.7	---	e4.6	70	---	29	---	7.1	---	8.7	1.8	---
TOTAL	195.0	262.4	253.7	8172.3	1518	5390	7292	555.4	396.7	307.2	106.2	38.01
MEAN	6.29	8.75	8.18	264	54.2	174	243	17.9	13.2	9.91	3.43	1.27
MAX	9.1	17	45	2360	136	574	852	41	60	44	8.4	3.4
MIN	4.3	4.7	3.4	2.6	24	29	26	7.1	2.8	2.6	1.1	.73
CFSM	.04	.06	.05	1.77	.36	1.17	1.63	.12	.09	.07	.02	.01
IN.	.05	.07	.06	2.04	.38	1.35	1.82	.14	.10	.08	.03	.01

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1977 - 1999, BY WATER YEAR (WY)

	MEAN	29.2	104	162	162	224	280	247	117	118	73.3	40.6	34.0
MAX	186	550	518	465	528	765	540	340	740	373	233	242	
(WY)	1991	1993	1978	1993	1990	1978	1979	1997	1981	1992	1998	1981	
MIN	.71	2.51	1.99	1.31	54.2	40.4	77.5	8.69	1.05	.46	1.52	.84	
(WY)	1989	1995	1977	1977	1999	1981	1991	1988	1988	1988	1993	1995	

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1977 - 1999
ANNUAL TOTAL	57521.7	24486.91	
ANNUAL MEAN	158	67.1	132
HIGHEST ANNUAL MEAN			189
LOWEST ANNUAL MEAN			48.1
HIGHEST DAILY MEAN	3200	Jan 8	4000
LOWEST DAILY MEAN	3.4	Dec 15	.07
ANNUAL SEVEN-DAY MINIMUM	3.5	Dec 14	.09
INSTANTANEOUS PEAK FLOW		2680	Jan 23a
INSTANTANEOUS PEAK STAGE		8.94	Jan 23
INSTANTANEOUS LOW FLOW		.73	Sep 28
ANNUAL RUNOFF (CFSM)	1.06	.45	.07
ANNUAL RUNOFF (INCHES)	14.36	6.11	.89
10 PERCENT EXCEEDS	421	142	350
50 PERCENT EXCEEDS	31	8.2	30
90 PERCENT EXCEEDS	5.3	2.1	2.0

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

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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 1998 TO SEPTEMBER 1999 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.0	3.3	2.8	e1.6	9.2	78	7.0	6.7	1.7	1.8	1.8	1.1
2	1.9	2.8	2.9	e1.5	11	37	6.9	6.6	1.8	2.0	4.7	1.1
3	2.2	2.9	3.0	e1.4	14	182	6.7	6.6	1.5	1.7	1.1	1.1
4	2.2	3.1	3.0	e1.4	13	133	7.4	6.2	1.4	1.7	.97	1.0
5	2.0	3.2	3.0	e1.3	11	35	8.0	5.7	1.4	1.7	.90	1.0
6	1.8	3.3	3.0	e1.2	9.4	77	7.8	5.2	1.4	2.7	.88	1.1
7	2.5	3.2	3.1	e1.2	9.3	73	7.2	4.7	1.4	1.9	1.2	1.3
8	2.4	3.4	2.8	e1.2	19	40	6.8	4.4	1.4	2.3	2.1	1.4
9	2.1	3.4	2.7	e1.1	39	24	112	4.1	1.4	7.7	1.2	1.3
10	2.0	5.1	2.7	e1.1	23	18	208	3.8	1.5	12	1.2	1.2
11	2.2	3.8	2.7	e1.1	13	15	146	3.5	3.1	20	1.1	1.2
12	1.9	3.3	2.6	e1.0	21	14	75	3.0	2.3	5.7	1.1	1.3
13	1.9	2.9	2.5	e1.0	21	15	21	2.7	3.8	3.0	1.8	1.4
14	2.1	2.9	2.6	e1.0	13	13	12	2.6	5.1	2.2	4.3	1.5
15	2.3	2.8	2.6	e1.0	10	12	9.4	2.4	9.4	1.8	2.5	1.4
16	2.4	2.7	2.7	e1.0	e9.1	29	124	2.2	4.0	1.5	1.9	1.4
17	2.5	2.9	2.7	e1.0	e8.0	156	281	2.0	3.0	1.4	1.8	1.2
18	2.7	2.8	2.7	27	e7.4	98	119	2.0	2.6	1.3	1.4	1.2
19	2.8	3.3	2.7	81	e7.0	27	47	1.9	2.3	1.5	1.4	.94
20	2.8	2.8	2.7	54	e6.6	16	27	1.8	2.1	1.4	1.3	.97
21	3.0	2.7	4.7	31	e6.1	13	16	1.7	1.9	1.8	1.2	1.1
22	2.8	2.7	8.8	556	e5.9	11	12	2.5	1.8	2.2	1.1	.97
23	3.2	2.7	7.3	468	e5.6	10	45	2.2	1.7	1.7	1.1	.96
24	3.1	2.7	4.3	e200	e5.4	9.2	66	2.2	1.7	1.6	1.8	1.1
25	3.0	3.1	3.2	e62	e5.2	8.7	20	1.9	1.9	1.3	1.9	1.1
26	3.0	3.5	2.9	e40	e5.0	8.0	13	1.9	1.7	1.2	7.6	.98
27	2.8	3.2	2.7	e20	7.0	7.5	10	1.8	2.3	1.2	3.6	.78
28	2.8	3.0	2.7	15	112	7.4	8.2	1.8	2.1	1.5	2.2	.86
29	2.7	2.9	e2.3	13	---	7.2	7.2	1.6	1.8	6.4	1.6	2.1
30	3.8	3.0	e2.0	11	---	7.0	6.9	1.5	1.7	4.7	1.3	1.1
31	3.8	---	e1.8	9.2	---	6.6	---	1.7	---	2.5	1.2	---
TOTAL	78.7	93.4	98.2	1607.3	426.2	1187.6	1443.5	98.9	71.2	101.4	59.25	35.16
MEAN	2.54	3.11	3.17	51.8	15.2	38.3	48.1	3.19	2.37	3.27	1.91	1.17
MAX	3.8	5.1	8.8	556	112	182	281	6.7	9.4	20	7.6	2.1
MIN	1.8	2.7	1.8	1.0	5.0	6.6	6.7	1.5	1.4	1.2	.88	.78
CFSM	.07	.09	.09	1.50	.44	1.11	1.39	.09	.07	.09	.06	.03
IN.	.08	.10	.11	1.73	.46	1.28	1.55	.11	.08	.11	.06	.04

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 1999, BY WATER YEAR (WY)

	MEAN	30.4	37.2	41.7	59.8	51.4	53.7	28.7	22.5	15.3	11.1	10.8
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	1.28	2.09	2.09	10.2	13.0	13.6	17.9	2.29	1.12	.55	1.37	.83
(WY)	1989	1995	1992	1992	1993	1989	1988	1988	1988	1988	1991	1995

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1984 - 1999

ANNUAL TOTAL	15440.0	5300.81	
ANNUAL MEAN	42.3	14.5	30.8
HIGHEST ANNUAL MEAN			48.2
LOWEST ANNUAL MEAN			11.6
HIGHEST DAILY MEAN	1590	556	1590
LOWEST DAILY MEAN	1.5	.78	.32
ANNUAL SEVEN-DAY MINIMUM	1.6	.96	.38
INSTANTANEOUS PEAK FLOW		1300	2640
INSTANTANEOUS PEAK STAGE		7.32	8.96
INSTANTANEOUS LOW FLOW		.78	.32
ANNUAL RUNOFF (CFSM)	1.22	.42	.89
ANNUAL RUNOFF (INCHES)	16.60	5.70	12.11
10 PERCENT EXCEEDS	74	22	60
50 PERCENT EXCEEDS	5.4	2.8	6.2
90 PERCENT EXCEEDS	2.2	1.2	1.4

e Estimated.

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.
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 Sept. 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 1998 TO SEPTEMBER 1999 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	59	81	80	e83	543	3540	270	476	e160	e130	e135	45
2	56	80	78	e76	553	3870	271	420	e150	e120	e46	41
3	57	75	80	e70	653	4380	262	379	e185	e192	e42	41
4	64	71	83	e67	646	4670	278	352	e300	e150	e38	38
5	68	68	84	e63	588	3360	285	332	e240	e122	36	34
6	69	68	84	e60	521	2330	288	327	e180	e105	33	32
7	71	68	87	e58	475	4010	277	305	e135	e120	32	31
8	87	68	90	e56	554	3950	279	286	e125	e140	51	31
9	83	71	84	e54	1250	2630	1330	271	e120	e130	64	38
10	81	82	81	e52	1590	1570	4200	260	e110	e174	45	59
11	82	115	77	e50	1080	1110	4330	252	e100	e166	37	46
12	87	119	75	e48	998	884	4890	252	e160	e105	34	36
13	76	115	73	e47	1010	758	3080	243	217	e90	37	31
14	70	111	71	e46	759	689	1790	249	414	e70	58	29
15	70	114	71	e45	e590	646	1170	255	767	e52	80	26
16	68	104	71	e44	e480	706	1970	256	784	e46	75	24
17	65	95	71	e74	e420	2270	4200	257	579	e43	71	23
18	65	90	73	e200	e370	3150	4650	243	431	e41	64	23
19	66	86	73	e510	e340	2580	4110	238	294	e38	59	23
20	58	84	71	e1100	e300	1770	3210	223	e200	e37	57	22
21	56	81	79	e2500	e260	1060	2670	207	e130	e66	53	21
22	60	79	e100	e6000	e240	767	2130	203	e120	e92	50	21
23	62	75	e130	e14000	e220	624	2500	254	e110	e150	49	21
24	66	73	e170	13100	e210	534	3420	456	e105	e250	54	23
25	68	73	e250	9680	e200	459	2470	739	e92	e150	65	23
26	69	82	e200	6350	e190	400	1680	955	e84	e110	75	23
27	69	82	e150	2820	e185	357	1150	692	e76	e86	155	21
28	67	79	e130	1570	952	330	861	436	e90	e80	112	20
29	66	81	e120	1130	---	307	685	308	e230	e200	89	22
30	68	81	e105	846	---	288	562	236	e170	e150	67	36
31	79	---	e91	649	---	269	---	199	---	e120	54	---
TOTAL	2132	2551	3082	61448	16177	54268	59268	10561	6858	3525	1917	904
MEAN	68.8	85.0	99.4	1982	578	1751	1976	341	229	114	61.8	30.1
MAX	87	119	250	14000	1590	4670	4890	955	784	250	155	59
MIN	56	68	71	44	185	269	262	199	76	37	32	20
CFSM	.05	.07	.08	1.58	.46	1.40	1.58	.27	.18	.09	.05	.02
IN.	.06	.08	.09	1.83	.48	1.61	1.76	.31	.20	.10	.06	.03

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1924 - 1999, BY WATER YEAR (WY)

	MEAN	221	580	1086	1581	1920	2331	1831	1061	812	459	230	252
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 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1924 - 1999
ANNUAL TOTAL	443734	222691	
ANNUAL MEAN	1216	610	1025
HIGHEST ANNUAL MEAN			2167
LOWEST ANNUAL MEAN			275
HIGHEST DAILY MEAN	17300	14000	36000
LOWEST DAILY MEAN	56	20	5.0
ANNUAL SEVEN-DAY MINIMUM	62	22	6.3
INSTANTANEOUS PEAK FLOW		18000	36500
INSTANTANEOUS PEAK STAGE		9.73	16.14
INSTANTANEOUS LOW FLOW		18	4.4
ANNUAL RUNOFF (CFSM)	.97	.49	.82
ANNUAL RUNOFF (INCHES)	13.19	6.62	11.14
10 PERCENT EXCEEDS	2740	1630	2740
50 PERCENT EXCEEDS	350	115	273
90 PERCENT EXCEEDS	71	41	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

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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 1951-1956, 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 Jun. 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 Jun. 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, 287 mg/L Apr. 12; minimum daily mean, 4 mg/L Feb. 25 and 26.

SEDIMENT LOADS: Maximum daily, 10,800 tons Jan. 23; minimum daily, .62 ton Jan. 16.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	NITRO-GEN, AM-MONIA + ORGANIC (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	ALA-CHLOR TOTAL RECOVER (77825)	AME-TRYNE TOTAL (UG/L) (82184)	
DEC													
03...	1350	81	8.4	930	18.0	11.5	62	.5	.56	.03	--	--	
03...	1450	81	--	--	--	--	62	.4	.51	.04	--	--	
JAN													
27...	1135	2710	--	440	13.0	2.5	--	--	--	--	--	--	
MAY													
05...	1250	329	8.3	615	24.0	20.0	40	.8	3.9	.07	--	--	
05...	1400	329	--	--	--	--	40	.8	4.1	.05	--	--	
27...	1015	706	8.3	680	23.5	18.5	--	--	--	--	.1	<.1	
27...	1125	692	--	--	--	--	--	--	--	--	.1	<.1	
DATE		ATRA-ZINE WATER UNFLTRD REC (UG/L) (39630)	BROM-ACIL WATER WHLREC (UG/L) (30234)	BUTA-CHLOR WATER WHLREC (UG/L) (30235)	BUTYL-ATE WATER WHLREC (UG/L) (30236)	CARBOX-IN WATER WHOLE RECOV-ERABLE TOTAL (UG/L) (30245)	CYAN-AZINE TOTAL (UG/L) (81757)	CYCLO-ATE WATER WHOLE RECOV-ERABLE TOTAL (UG/L) (30254)	DEETHYL ATRA-ZINE, WATER, WHOLE, TOTAL (UG/L) (75981)	DE-ISO PROPYL ATRAZIN WATER, WHOLE, RECOV-ERABLE TOTAL (UG/L) (75980)	DIPHEN-AMID WATER WHOLE RECOV-ERABLE TOTAL (UG/L) (30255)	HEXAZI-NONE WATER WHOLE RECOV-ERABLE TOT.REC (UG/L) (30264)	METOLA-CHLOR WATER WHOLE (UG/L) (82612)
DEC													
03...	--	--	--	--	--	--	--	--	--	--	--	--	--
03...	--	--	--	--	--	--	--	--	--	--	--	--	--
JAN													
27...	--	--	--	--	--	--	--	--	--	--	--	--	--
MAY													
05...	--	--	--	--	--	--	--	--	--	--	--	--	--
05...	--	--	--	--	--	--	--	--	--	--	--	--	--
27...	7.3	<.2	<.1	<.1	<.1	<.2	.7	<.1	.73	.29	<.1	<.2	3.2
27...	6.3	<.2	<.1	<.1	<.1	<.2	.6	<.1	.69	.28	<.1	<.2	2.2
DATE		METRI-BUZIN WATER WHOLE TOT.REC (UG/L) (82611)	PROME-TONE TOTAL (UG/L) (39056)	PROME-TRYNE TOTAL (UG/L) (39057)	PROPA-CHLOR WATER WHOLE RECOV. TOTAL (UG/L) (30295)	PRO-PAZINE TOTAL (UG/L) (39024)	SIMA-ZINE TOTAL (UG/L) (39055)	SIME-TRYNE TOTAL (UG/L) (39054)	TER-BACIL WATER WHOLE RECOV. TOTAL (UG/L) (30311)	TRI-FLURA-LIN TOTAL (UG/L) (39030)	VER-NOLATE WATER WHOLE RECOV. TOTAL (UG/L) (30324)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SAM-PLING METHOD, CODES* (82398)
DEC													
03...	--	--	--	--	--	--	--	--	--	--	--	16	10
03...	--	--	--	--	--	--	--	--	--	--	--	--	50
JAN													
27...	--	--	--	--	--	--	--	--	--	--	--	51	10
MAY													
05...	--	--	--	--	--	--	--	--	--	--	--	25	10
05...	--	--	--	--	--	--	--	--	--	--	--	--	50
27...	.1	<.2	<.1	<.1	<.1	.1	.5	<.1	<.2	<.1	<.1	54	10
27...	.2	<.2	<.1	<.1	<.1	.1	.5	<.1	<.2	<.1	<.1	--	50

* 10 Stream corss-section sample collected by equal-width-increment (EWI) sampling method.

* 50 Point sample collected from flow tank.

SURFACE-WATER RECORDS

Sandusky River Basin

04198000 SANDUSKY RIVER NEAR FREMONT, OHIO—Continued

WATER-QUALITY RECORDS—CONTINUED

SEDIMENT DISCHARGE, SUSPENDED, TONS PER DAY, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
OCTOBER			NOVEMBER			DECEMBER			
1	59	11	1.8	81	14	3.1	80	14	3.0
2	56	11	1.6	80	14	3.0	78	14	2.9
3	57	11	1.7	75	14	2.8	80	15	3.2
4	64	10	1.8	71	11	2.2	83	16	3.6
5	68	10	1.8	68	21	3.8	84	16	3.6
6	69	10	1.9	68	25	4.5	84	16	3.6
7	71	10	1.9	68	24	4.3	87	16	3.6
8	87	13	2.9	68	19	3.5	90	15	3.7
9	83	16	3.7	71	13	2.4	84	15	3.5
10	81	14	3.1	82	13	2.8	81	15	3.3
11	82	14	3.0	115	15	4.8	77	15	3.1
12	87	11	2.7	119	18	5.9	75	15	3.0
13	76	9	1.8	115	17	5.2	73	15	2.9
14	70	10	1.9	111	15	4.4	71	15	2.8
15	70	10	1.9	114	19	5.7	71	15	2.8
16	68	8	1.4	104	26	7.2	71	15	2.8
17	65	11	1.8	95	26	6.7	71	14	2.8
18	65	16	2.8	90	16	3.8	73	14	2.8
19	66	15	2.6	86	13	3.0	73	14	2.8
20	58	14	2.2	84	13	3.0	71	14	2.7
21	56	11	1.6	81	13	2.9	79	15	3.1
22	60	7	1.2	79	13	2.8	E100	17	4.5
23	62	6	1.0	75	13	2.7	E130	19	6.6
24	66	7	1.2	73	13	2.6	E170	21	9.9
25	68	8	1.5	73	13	2.7	E250	22	15
26	69	10	1.8	82	14	3.0	E200	19	10
27	69	12	2.2	82	14	3.0	E150	16	6.5
28	67	14	2.6	79	14	2.9	E130	14	5.0
29	66	15	2.6	81	14	3.0	E120	13	4.3
30	68	15	2.7	81	14	3.0	E105	13	3.6
31	79	14	3.1	---	---	---	E91	12	2.9
TOTAL	2132	---	65.8	2551	---	110.7	3082	---	133.9

DAY	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
JANUARY			FEBRUARY			MARCH			
1	E83	11	2.6	543	12	17	3540	284	2830
2	E76	11	2.2	553	11	16	3870	230	2420
3	E70	10	1.9	653	12	22	4380	173	2080
4	E67	10	1.8	646	11	20	4670	146	1870
5	E63	9	1.6	588	9	15	3360	92	843
6	E60	9	1.4	521	8	11	2330	79	509
7	E58	8	1.3	475	7	9.0	4010	286	3130
8	E56	8	1.2	554	9	14	3950	213	2280
9	E54	8	1.1	1250	75	272	2630	140	1010
10	E52	7	1.0	1590	45	196	1570	93	397
11	E50	7	.92	1080	37	108	1110	61	184
12	E48	6	.84	998	48	138	884	40	96
13	E47	6	.78	1010	71	195	758	32	65
14	E46	6	.72	759	48	99	689	26	49
15	E45	6	.67	E590	33	52	646	22	39
16	E44	5	.62	E480	23	29	706	22	43
17	E74	6	1.1	E420	18	20	2270	107	725
18	E200	10	5.5	E370	14	14	3150	128	1080
19	E510	20	28	E340	12	11	2580	112	780
20	E1100	40	120	E300	10	7.8	1770	98	466
21	E2500	80	540	E260	8	5.5	1060	75	215
22	E6000	159	2580	E240	6	4.1	767	52	108
23	E14000	285	10800	E220	5	3.1	624	35	59
24	13100	203	7240	E210	5	2.7	534	25	36
25	9680	139	3640	E200	4	2.4	459	27	34
26	6350	82	1430	E190	4	2.2	400	24	26
27	2820	50	393	E185	5	2.4	357	22	21
28	1570	33	140	952	33	132	330	21	18
29	1130	23	69	---	---	---	307	20	16
30	846	18	40	---	---	---	288	23	18
31	649	14	25	---	---	---	269	27	20
TOTAL	61448	---	27072.25	16177	---	1420.2	54268	---	21467

E Estimated.

SURFACE-WATER RECORDS
Sandusky River Basin

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04198000 SANDUSKY RIVER NEAR FREMONT, OHIO—Continued

WATER-QUALITY RECORDS—CONTINUED

SEDIMENT DISCHARGE, SUSPENDED, TONS PER DAY, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
APRIL			MAY			JUNE			
1	270	24	17	476	36	46	E160	19	8.1
2	271	25	18	420	38	43	E150	19	7.8
3	262	24	17	379	36	37	E185	18	8.8
4	278	23	17	352	27	26	E300	27	22
5	285	22	17	332	25	23	E240	26	17
6	288	23	18	327	20	17	E180	17	8.3
7	277	25	19	305	17	14	E135	11	3.9
8	279	29	22	286	20	16	E125	8	2.6
9	1330	77	407	271	26	19	E120	7	2.3
10	4200	233	2670	260	20	14	E110	8	2.5
11	4330	259	3220	252	19	13	E100	9	2.3
12	4890	287	3870	252	18	12	E160	9	4.1
13	3080	166	1400	243	20	13	217	26	15
14	1790	97	479	249	25	17	414	105	126
15	1170	59	188	255	34	24	767	122	252
16	1970	95	555	256	41	28	784	102	215
17	4200	191	2160	257	30	21	579	89	140
18	4650	137	1720	243	20	13	431	78	91
19	4110	139	1530	238	15	9.5	294	53	43
20	3210	127	1100	223	14	8.6	E200	32	17
21	2670	114	825	207	15	8.3	E130	24	8.3
22	2130	95	549	203	15	8.0	E120	16	5.1
23	2500	110	783	254	19	14	E110	18	5.4
24	3420	157	1460	456	35	43	E105	15	4.1
25	2470	122	816	739	81	168	E92	10	2.4
26	1680	84	385	955	144	374	E84	10	2.2
27	1150	63	196	692	65	123	E76	8	1.7
28	861	54	126	436	64	75	E90	11	2.7
29	685	46	85	308	51	43	E230	29	18
30	562	38	58	236	35	22	E170	23	11
31	---	---	---	199	29	15	---	---	---
TOTAL	59268	---	24727	10561	---	1307.4	6858	---	1049.6
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
JULY			AUGUST			SEPTEMBER			
1	E130	24	8.4	E135	19	6.9	45	14	1.6
2	E120	32	10	E46	19	2.3	41	14	1.6
3	E192	43	22	E42	17	1.9	41	13	1.4
4	E150	43	17	E38	16	1.7	38	12	1.2
5	E122	36	12	36	16	1.6	34	12	1.0
6	E105	28	7.9	33	17	1.5	32	11	.96
7	E120	25	8.2	32	17	1.5	31	11	.93
8	E140	26	9.7	51	17	2.4	31	13	1.1
9	E130	21	7.4	64	17	3.0	38	14	1.5
10	E174	21	10	45	17	2.1	59	14	2.3
11	E166	24	11	37	18	1.7	46	15	1.9
12	E105	18	5.2	34	18	1.6	36	16	1.5
13	E90	15	3.6	37	18	1.8	31	15	1.3
14	E70	15	2.8	58	18	2.8	29	14	1.1
15	E52	16	2.3	80	18	3.9	26	12	.82
16	E46	15	1.9	75	15	3.0	24	12	.74
17	E43	13	1.5	71	14	2.7	23	12	.76
18	E41	12	1.3	64	16	2.8	23	13	.80
19	E38	11	1.1	59	16	2.5	23	13	.83
20	E37	11	1.1	57	14	2.2	22	14	.80
21	E66	12	2.1	53	13	1.8	21	14	.79
22	E92	15	3.8	50	11	1.5	21	15	.81
23	E150	19	7.8	49	10	1.4	21	15	.85
24	E250	22	15	54	13	1.9	23	16	.97
25	E150	26	11	65	12	2.0	23	16	1.0
26	E110	32	9.6	75	12	2.7	23	17	1.1
27	E86	37	8.6	155	97	41	21	18	1.0
28	E80	35	7.5	112	48	15	20	18	.95
29	E200	43	23	89	21	5.0	22	18	1.0
30	E150	34	14	67	15	2.8	36	17	1.7
31	E120	25	8.1	54	14	2.0	---	---	---
TOTAL	3525	---	254.9	1917	---	127.0	904	---	34.31
YEAR	222691		77770.06						

E Estimated.

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 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 collected at this site.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	44	53	e15	173	724	107	141	17	28	30	13
2	18	65	51	e12	190	533	102	137	30	28	23	12
3	24	45	51	e10	234	1390	98	131	34	46	17	12
4	28	40	49	e9.4	235	1680	114	119	27	40	15	13
5	27	39	46	e9.0	187	663	132	114	18	25	14	11
6	32	49	46	e8.6	163	639	120	101	14	209	14	12
7	36	41	50	e8.2	160	1030	99	92	14	839	20	11
8	49	39	52	e8.0	222	440	83	79	9.2	238	34	12
9	43	38	50	e7.6	469	513	1270	71	7.2	153	35	13
10	44	73	48	e7.4	347	406	3400	64	6.6	337	39	11
11	36	78	46	e7.2	235	286	1780	52	16	188	29	11
12	31	80	44	e7.0	214	245	1350	47	215	83	23	9.3
13	33	76	43	e7.0	210	230	635	42	596	43	22	9.8
14	25	63	43	e6.8	151	218	417	42	207	35	23	10
15	38	57	43	e6.8	e120	194	325	43	160	29	44	8.5
16	45	51	43	e6.8	e110	253	1240	39	85	23	52	8.0
17	42	49	45	e6.8	e94	2360	2610	35	57	19	33	13
18	41	47	44	e100	e86	2300	1660	31	30	16	26	11
19	42	46	31	e800	e80	718	886	30	19	24	22	9.6
20	42	47	37	e600	e76	427	596	26	14	30	19	11
21	43	46	74	e1100	e72	332	485	21	12	18	16	33
22	42	46	158	e4500	e70	265	487	31	11	23	15	22
23	42	46	44	e7600	e68	193	1200	32	9.2	67	14	15
24	44	46	89	2990	e64	156	1340	66	9.1	181	18	15
25	45	46	221	1140	e64	134	586	47	8.5	86	21	13
26	53	64	344	663	e62	110	397	40	7.9	51	29	12
27	75	54	336	463	e60	101	294	32	13	27	26	10
28	58	60	406	383	201	102	235	23	16	28	31	9.0
29	59	56	e70	289	---	106	196	18	99	41	38	45
30	46	55	e29	210	---	104	161	15	48	46	25	92
31	38	---	e19	177	---	100	---	15	---	34	18	---
TOTAL	1241	1586	2705	21158.6	4417	16952	22405	1776	1809.7	3035	785	487.2
MEAN	40.0	52.9	87.3	683	158	547	747	57.3	60.3	97.9	25.3	16.2
MAX	75	80	406	7600	469	2360	3400	141	596	839	52	92
MIN	18	38	19	6.8	60	100	83	15	6.6	16	14	8.0
CFSM	.11	.14	.24	1.84	.43	1.47	2.01	.15	.16	.26	.07	.04
IN.	.12	.16	.27	2.12	.44	1.70	2.25	.18	.18	.30	.08	.05

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1951 - 1999, BY WATER YEAR (WY)

	MEAN	54.8	170	346	479	541	700	575	314	234	180	99.6	75.5
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 1998 CALENDAR YEAR FOR 1999 WATER YEAR WATER YEARS 1951 - 1999

ANNUAL TOTAL	174946	78357.5		
ANNUAL MEAN	479	215		
HIGHEST ANNUAL MEAN			313	
LOWEST ANNUAL MEAN			145	1997
HIGHEST DAILY MEAN	12700	Aug 26	7600	Jan 23
LOWEST DAILY MEAN	18	Oct 2	6.6	Jun 10
ANNUAL SEVEN-DAY MINIMUM	22	Sep 27	6.9	Jan 11
INSTANTANEOUS PEAK FLOW			8800	Jan 23a
INSTANTANEOUS PEAK STAGE			20.17	Jan 22b
INSTANTANEOUS LOW FLOW			6.6	Jun 10
ANNUAL RUNOFF (CFSM)	1.29		.58	
ANNUAL RUNOFF (INCHES)	17.54		7.86	
10 PERCENT EXCEEDS	905		475	712
50 PERCENT EXCEEDS	117		46	84
90 PERCENT EXCEEDS	36		11	15

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

b Ice jam.

e Estimated.

SURFACE-WATER RECORDS

Old Womans Creek Basin

71

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.

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 1998 TO SEPTEMBER 1999 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.52	1.7	e.90	6.3	e25	5.7	6.7	1.4	.08	.01	e.00
2	.00	.55	1.6	e.80	9.3	e80	6.1	6.1	2.5	.18	.00	e.00
3	.00	.51	1.5	e.74	10	e50	5.2	5.4	2.6	.02	.00	e.00
4	.00	.50	1.5	e.70	e9.0	e40	6.8	4.8	1.6	.00	.00	e.00
5	.00	.55	1.5	e.64	e8.2	e40	6.9	4.5	1.2	.00	.00	e.00
6	.00	.58	1.5	e.58	e7.6	e50	5.8	4.2	1.1	27	.00	e.00
7	.12	.58	1.5	e.52	e15	e25	5.2	3.6	1.1	53	.00	e.00
8	.81	.58	1.5	e.45	e22	e22	5.1	3.3	.75	5.4	.97	e.00
9	.35	.61	1.4	e.40	e15	e18	69	3.6	.31	4.9	.05	e.00
10	.12	3.1	1.4	e.35	e11	e15	122	3.0	.11	36	.00	e.00
11	.05	5.1	1.3	e.32	e10	e13	89	2.6	.04	4.7	.00	e.00
12	.02	4.3	1.2	e.30	e10	e11	64	2.5	4.3	2.0	.00	e.00
13	.01	3.0	1.2	e.27	e8.0	e11	30	2.4	3.8	1.2	.00	e.00
14	.01	2.5	1.2	e.25	e6.6	e10	20	2.6	3.8	.75	.00	e.00
15	.00	2.2	1.3	e.23	e6.0	e13	15	2.6	2.6	.41	.00	e.00
16	.00	1.8	2.2	e.22	e5.4	e100	52	2.2	1.6	.11	.00	e.00
17	.00	1.5	3.1	e.21	e5.0	e60	71	1.8	1.2	.02	.00	e.00
18	.00	1.3	2.6	e.40	e4.5	e35	59	1.6	.94	.00	.00	e.00
19	.05	1.2	1.7	e1.5	e4.0	e25	32	1.4	.67	.22	.00	e.00
20	.03	1.2	1.6	e100	e3.7	e20	23	1.3	.46	.76	.00	e.00
21	.55	1.1	5.4	e230	e3.5	e16	17	1.1	.28	.35	.00	e.00
22	1.1	1.1	19	e120	e3.2	e13	23	1.9	.12	.04	.00	e.00
23	.50	1.1	7.3	e100	e3.1	e9.0	154	2.4	.06	.10	.00	e.00
24	.34	1.2	3.6	63	e3.0	e6.2	64	4.0	.03	2.7	.00	.00
25	.31	1.2	2.5	28	e2.9	8.5	29	2.5	.02	.64	e.00	.00
26	.19	2.6	e2.0	19	e2.9	7.7	20	1.8	.02	.04	e.00	.00
27	.15	2.3	e1.7	14	e5.0	6.9	14	1.5	.77	.01	e.00	.00
28	.16	2.2	e1.4	12	e10	6.5	11	1.2	1.6	8.2	e.00	.00
29	.28	2.0	e1.2	8.5	---	6.1	8.7	.98	.99	2.5	e.00	.01
30	.32	1.8	e1.1	6.8	---	5.4	7.5	.82	.36	.73	e.00	.00
31	.52	---	e1.0	5.7	---	5.2	---	.90	---	.15	e.00	---
TOTAL	5.99	48.78	78.7	716.78	210.2	753.5	1041.0	85.30	36.33	152.21	1.03	0.01
MEAN	.19	1.63	2.54	23.1	7.51	24.3	34.7	2.75	1.21	4.91	.033	.000
MAX	1.1	5.1	19	230	22	100	154	6.7	4.3	53	.97	.01
MIN	.00	.50	1.0	.21	2.9	5.2	5.1	.82	.02	.00	.00	.00
CFSM	.01	.07	.11	1.05	.34	1.10	1.57	.12	.05	.22	.00	.00
IN.	.01	.08	.13	1.21	.35	1.27	1.75	.14	.06	.26	.00	.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1988 - 1999, BY WATER YEAR (WY)

	MEAN	4.15	13.2	23.4	35.2	32.9	34.6	42.8	18.1	15.3	6.36	5.69	6.42
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 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1988 - 1999

ANNUAL TOTAL	8727.65	3129.83	
ANNUAL MEAN	23.9	8.57	19.8
HIGHEST ANNUAL MEAN			34.1
LOWEST ANNUAL MEAN			8.57
HIGHEST DAILY MEAN	838	Jan 8	838
LOWEST DAILY MEAN	.00	Aug 21	.00
ANNUAL SEVEN-DAY MINIMUM	.00	Sep 24	.00
INSTANTANEOUS PEAK FLOW			800
INSTANTANEOUS PEAK STAGE			11.92
INSTANTANEOUS LOW FLOW			.00
ANNUAL RUNOFF (CFSM)	1.08		.39
ANNUAL RUNOFF (INCHES)	14.69		5.27
10 PERCENT EXCEEDS	40		21
50 PERCENT EXCEEDS	3.2		1.4
90 PERCENT EXCEEDS	.05		.00

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

b Ice jam.

e Estimated.

SURFACE-WATER RECORDS

Black River Basin

04200500 BLACK RIVER AT ELYRIA, OHIO

LOCATION.--Latitude 41°22'49", longitude 82°06'17", in T.6 N., R.17 W., Lorain County, Hydrologic Unit 04110001, on left bank in Cascade Park at Elyria, 0.8 mi downstream from confluence of east and west branches.

DRAINAGE AREA.--396 mi².

PERIOD OF RECORD.--October 1944 to current year. Records for May 1903 to July 1906 (published as "near Elyria") published in WSP 97, 129, and 205, are unreliable and should not be used.

REVISED RECORDS.--WSP 1912: Drainage area. See also PERIOD OF RECORD.

GAGE.--Water-stage recorder. Datum of gage is 620.83 ft above sea level.

REMARKS.--Records good except for periods of estimated record and for discharges greater than 1,000 ft³/s, which are poor. Some regulation at low flow for industrial use. Water-quality and sediment data collected at this site.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	15	31	e29	147	944	66	100	22	14	16	12
2	11	15	24	e31	208	752	62	86	29	15	51	11
3	19	16	23	e40	268	1360	71	77	26	24	36	10
4	17	19	23	e40	256	2420	77	65	20	46	34	8.8
5	20	17	21	e40	212	1100	81	56	17	28	25	8.0
6	14	37	21	e39	172	619	86	54	16	197	17	7.4
7	29	27	22	e37	160	822	80	46	15	434	14	7.2
8	44	17	20	e32	258	687	71	43	13	359	38	6.8
9	33	15	21	e28	515	527	213	42	12	118	18	8.0
10	57	48	20	e25	341	404	1950	38	11	71	16	7.4
11	43	44	18	e24	225	346	1960	35	12	59	15	6.2
12	31	30	18	e23	183	315	1690	36	18	54	14	5.2
13	25	27	18	e22	194	302	769	32	18	37	17	6.5
14	22	38	17	e21	214	272	419	31	25	26	17	8.6
15	18	31	17	e20	181	248	278	30	21	20	15	5.8
16	13	27	17	e20	165	333	526	32	15	15	14	6.0
17	13	24	22	e19	168	1300	1460	35	14	22	17	5.8
18	14	21	20	e100	155	1890	1500	34	12	19	16	5.2
19	16	19	20	e500	139	1000	877	29	11	19	15	5.3
20	11	24	18	e860	119	427	621	25	11	23	13	9.7
21	23	19	55	e500	104	287	473	23	9.6	14	11	8.5
22	28	18	170	e450	85	224	614	40	8.7	12	9.9	7.4
23	25	16	205	e3800	70	177	1090	49	8.9	11	9.2	7.0
24	20	20	167	e5080	81	149	1860	87	9.3	12	14	7.6
25	17	25	e60	1770	83	122	749	77	8.5	15	16	7.5
26	18	34	e40	699	78	105	391	122	8.1	11	47	7.6
27	15	28	e35	466	89	93	258	72	19	12	92	7.2
28	18	23	e30	362	347	87	190	46	24	34	37	7.3
29	17	20	e26	278	---	80	145	34	24	81	20	84
30	16	27	e25	211	---	73	119	28	14	32	13	132
31	16	---	e25	162	---	67	---	24	---	22	12	---
TOTAL	675	741	1249	15728	5217	17532	18746	1528	472.1	1856	699.1	427.0
MEAN	21.8	24.7	40.3	507	186	566	625	49.3	15.7	59.9	22.6	14.2
MAX	57	48	205	5080	515	2420	1960	122	29	434	92	132
MIN	11	15	17	19	70	67	62	23	8.1	11	9.2	5.2
CFSM	.05	.06	.10	1.28	.47	1.43	1.58	.12	.04	.15	.06	.04
IN.	.06	.07	.12	1.48	.49	1.65	1.76	.14	.04	.17	.07	.04

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1945 - 1999, BY WATER YEAR (WY)

	MEAN	62.6	227	395	492	596	790	630	355	209	139	72.8	77.8
MAX	463	1238	1885	1825	1505	1866	1728	1122	1245	1472	529	701	
(WY)	1997	1986	1991	1952	1959	1978	1957	1969	1947	1969	1958	1972	
MIN	2.34	5.78	5.82	8.48	16.6	135	22.0	49.3	10.6	7.42	4.72	2.84	
(WY)	1945	1945	1945	1945	1964	1953	1946	1999	1988	1991	1952	1946	

SUMMARY STATISTICS

FOR 1998 CALENDAR YEAR

FOR 1999 WATER YEAR

WATER YEARS 1945 - 1999

ANNUAL TOTAL	119785.0	64870.2	
ANNUAL MEAN	328	178	336
HIGHEST ANNUAL MEAN			534
LOWEST ANNUAL MEAN			130
HIGHEST DAILY MEAN	9290	Jan 9	24900
LOWEST DAILY MEAN	4.9	Aug 24	1.60
ANNUAL SEVEN-DAY MINIMUM	6.7	Aug 18	1.4
INSTANTANEOUS PEAK FLOW			51700
INSTANTANEOUS PEAK STAGE			26.40
INSTANTANEOUS LOW FLOW			.00
ANNUAL RUNOFF (CFSM)	.83	.45	.85
ANNUAL RUNOFF (INCHES)	11.25	6.09	11.52
10 PERCENT EXCEEDS	667	440	819
50 PERCENT EXCEEDS	50	28	73
90 PERCENT EXCEEDS	15	11	10

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

SURFACE-WATER RECORDS

Rocky River Basin

73

04201500 ROCKY RIVER NEAR BERE A, OHIO

LOCATION.--Latitude 41°24'24", longitude 81°53'14", in T.6 N., R.15 W., Cuyahoga County, Hydrologic Unit 04110001, on right bank at downstream side of Cedar Point Road Bridge in Rocky River Reservation, just downstream from confluence of east and west branches, and 3.0 mi northwest of Berea.

DRAINAGE AREA.--267 mi².

PERIOD OF RECORD.--October 1923 to September 1935, September 1943 to current year. Monthly discharge only for October 1923, published in WSP 1307.

REVISED RECORDS.--WSP 1437: 1924, 1925(M), 1926, 1927(M), 1928-29, 1930-35(M), 1945. WSP 1912: Drainage area. WDR-OH-2-1983: 1978-1982(M).

GAGE.--Water-stage recorder. Datum of gage is 649.90 ft above sea level (Cuyahoga County benchmark). Prior to Sept. 30, 1935, nonrecording gage at same site and datum.

REMARKS.--Records good except for periods of estimated record, which are poor. Some regulation at low flow by small reservoirs on East Branch. Some interbasin transfer of water from Lake Erie for municipal water supply by Cleveland Metro Water District. Water-quality and sediment data collected at this site.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in March 1913 reached a stage of 20.9 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18	46	64	e76	166	836	81	92	39	97	83	21
2	16	42	68	e90	328	494	89	82	45	547	43	18
3	33	40	62	e100	388	2170	84	75	41	127	29	17
4	63	39	56	e96	279	1840	110	68	36	50	25	16
5	52	38	54	e90	223	602	147	65	33	32	26	16
6	35	42	51	e84	176	694	119	63	29	210	23	15
7	114	40	70	e82	179	663	91	60	27	372	22	25
8	470	40	67	e72	430	456	79	59	25	119	92	20
9	205	40	63	e70	311	382	810	67	25	61	102	17
10	91	131	54	e62	224	303	2080	66	26	102	44	16
11	58	235	49	e58	164	263	1440	60	23	80	30	15
12	44	153	45	e54	219	255	1120	56	27	38	32	15
13	38	78	43	e52	329	254	465	49	21	28	27	14
14	36	58	40	e50	229	228	266	49	70	24	33	20
15	37	50	39	e48	223	208	206	66	63	22	71	17
16	36	44	39	e47	240	283	472	58	47	20	44	16
17	33	44	67	e45	224	879	1110	52	32	17	29	16
18	35	45	89	e1200	193	1020	759	53	25	17	24	15
19	80	43	120	1940	146	375	621	69	20	52	22	14
20	90	54	102	788	124	231	565	50	19	32	21	25
21	69	58	203	501	107	187	364	46	18	31	21	27
22	171	58	1180	2520	106	157	654	74	16	31	19	20
23	136	52	376	5320	102	138	1710	65	14	23	17	18
24	72	44	193	2640	89	125	1580	270	14	18	18	19
25	54	43	e120	785	96	115	446	227	15	70	26	29
26	44	165	e100	491	119	98	274	98	15	65	169	21
27	41	180	e80	380	134	89	205	64	19	30	338	18
28	38	98	e70	392	971	84	157	50	236	24	104	18
29	32	75	e62	287	---	81	130	40	166	770	46	91
30	47	62	e56	204	---	77	111	35	51	248	31	647
31	50	---	e60	155	---	71	---	31	---	175	27	---
TOTAL	2338	2137	3742	18779	6519	13658	16345	2259	1237	3532	1638	1256
MEAN	75.4	71.2	121	606	233	441	545	72.9	41.2	114	52.8	41.9
MAX	470	235	1180	5320	971	2170	2080	270	236	770	338	647
MIN	16	38	39	45	89	71	79	31	14	17	17	14
CFSM	.28	.27	.45	2.27	.87	1.65	2.04	.27	.15	.43	.20	.16
IN.	.33	.30	.52	2.62	.91	1.90	2.28	.31	.17	.49	.23	.17

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1924 - 1999, BY WATER YEAR (WY)

	MEAN	94.4	221	344	418	470	595	509	293	175	115	75.8	104
MAX	935	1080	1534	1398	1245	1253	1374	845	911	887	553	820	
(WY)	1927	1986	1991	1930	1959	1984	1961	1984	1947	1992	1935	1924	
MIN	1.25	9.14	8.15	32.4	17.0	141	40.9	17.6	10.1	4.25	.90	.94	
(WY)	1934	1964	1964	1945	1934	1969	1946	1934	1933	1954	1933	1933	

SUMMARY STATISTICS

	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1924 - 1999
ANNUAL TOTAL	108723.4	73440	
ANNUAL MEAN	298	201	284
HIGHEST ANNUAL MEAN			484
LOWEST ANNUAL MEAN			79.5
HIGHEST DAILY MEAN	8100	Jan 8	14300
LOWEST DAILY MEAN	7.0	Aug 25	.20
ANNUAL SEVEN-DAY MINIMUM	8.6	Aug 19	.27
INSTANTANEOUS PEAK FLOW		5960	21400
INSTANTANEOUS PEAK STAGE		5.51	18.60
INSTANTANEOUS LOW FLOW		13	.20
ANNUAL RUNOFF (CFSM)	1.12	.75	1.06
ANNUAL RUNOFF (INCHES)	15.15	10.23	14.43
10 PERCENT EXCEEDS	605	467	659
50 PERCENT EXCEEDS	81	65	83
90 PERCENT EXCEEDS	27	20	11

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**

04202000 CUYAHOGA RIVER AT HIRAM RAPIDS, OHIO

LOCATION.--Latitude 41°20'26", longitude 81°10'01", in T.5 N., R.7 W., Portage County, Hydrologic Unit 04110002, on left bank at downstream side of bridge on Winchell Road at Hiram Rapids, 0.6 mi downstream from Black Brook.

DRAINAGE AREA.--151 mi².

PERIOD OF RECORD.--August 1927 to December 1935 (published as "near Hiram"), October 1944 to current year.

REVISED RECORDS.--WSP 1054: 1945. WSP 1437: 1931. WSP 1912: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,087.46 ft above sea level. Prior to Aug. 26, 1927, nonrecording gage and Aug. 26, 1927, to Dec. 31, 1935, water-stage recorder, at site 2.8 mi downstream at different datum. Oct. 20, 1944, to Oct. 22, 1946, nonrecording gage at present site and datum.

REMARKS.--Records good except for periods estimated record, which are poor. Flow regulated by East Branch Reservoir, usable capacity, 4,140 acre-ft, 14.6 mi upstream since 1939 and by LaDue Reservoir, usable capacity, 18,110 acre-ft, 9.8 mi upstream since 1961. Water-quality data collected at this site.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3670 ft³/s Jan. 23, 1959, gage height 8.11 ft; minimum daily, 6.6 ft³/s Sept. 10, 1933.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	47	34	49	64	325	194	67	110	43	43	83	72
2	45	34	47	80	271	232	72	85	42	48	79	68
3	48	34	44	51	266	322	73	72	48	53	81	65
4	55	34	41	58	278	466	76	65	57	50	85	66
5	56	34	41	60	300	574	92	60	56	45	90	66
6	52	34	41	48	296	608	103	57	49	50	95	68
7	52	36	44	e44	270	544	101	55	43	116	94	83
8	82	37	46	e42	239	470	89	52	39	122	95	110
9	105	38	46	e40	208	382	107	52	36	101	96	111
10	88	41	45	e38	183	305	205	54	36	107	92	96
11	74	59	43	e36	163	245	342	52	38	97	90	84
12	65	71	42	e34	159	215	483	48	36	80	91	77
13	58	64	45	e33	173	220	524	45	34	69	93	73
14	42	53	41	e32	188	214	498	44	35	62	95	72
15	32	47	37	e30	191	208	415	45	47	58	97	71
16	31	42	37	e30	186	204	320	44	76	54	95	61
17	30	40	41	e29	196	231	273	42	78	51	92	54
18	29	38	48	e60	226	338	264	40	78	49	91	51
19	30	37	52	126	249	441	287	44	77	49	89	50
20	32	39	61	170	240	494	313	46	76	54	89	50
21	31	44	70	183	210	466	338	41	75	59	89	54
22	32	46	134	188	175	398	373	40	74	58	89	53
23	34	45	163	259	148	288	453	40	67	55	88	52
24	34	46	148	496	131	246	538	69	42	54	88	51
25	33	44	125	764	125	217	547	120	40	53	90	54
26	33	60	81	890	121	168	498	137	41	51	96	54
27	33	91	60	792	121	137	407	143	40	56	100	52
28	35	78	52	640	146	121	302	133	44	63	97	51
29	34	63	49	547	---	109	216	100	45	82	95	55
30	35	52	49	489	---	90	154	67	44	101	91	96
31	37	---	63	417	---	75	---	50	---	94	80	---
TOTAL	1424	1415	1885	6770	5784	9222	8530	2052	1536	2084	2815	2020
MEAN	45.9	47.2	60.8	218	207	297	284	66.2	51.2	67.2	90.8	67.3
MAX	105	91	163	890	325	608	547	143	78	122	100	111
MIN	29	34	37	29	121	75	67	40	34	43	79	50
CFSM	.30	.31	.40	1.45	1.37	1.97	1.88	.44	.34	.45	.60	.45
IN.	.35	.35	.46	1.67	1.42	2.27	2.10	.51	.38	.51	.69	.50

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 1999, BY WATER YEAR (WY)

	MEAN	110	200	275	278	351	449	354	202	131	99.1	94.2	109
MAX	315	616	816	707	883	835	649	569	542	325	307	374	
(WY)	1991	1986	1978	1993	1976	1963	1961	1984	1989	1969	1992	1975	
MIN	39.0	33.5	45.2	43.5	56.6	174	134	59.8	35.2	48.4	37.1	36.6	
(WY)	1984	1992	1961	1961	1963	1989	1986	1987	1991	1991	1961	1967	

SUMMARY STATISTICS FOR 1998 CALENDAR YEAR FOR 1999 WATER YEAR WATER YEARS 1961 - 1999

	ANNUAL TOTAL	61344	45537	
ANNUAL MEAN	168	125	220	
HIGHEST ANNUAL MEAN			318	1997
LOWEST ANNUAL MEAN			125	1999
HIGHEST DAILY MEAN	1510	Jan 10	890	Jan 26
LOWEST DAILY MEAN	28	Jul 15	29	Oct 18
ANNUAL SEVEN-DAY MINIMUM	31	Oct 15	31	Oct 15
INSTANTANEOUS PEAK FLOW			913	Jan 26
INSTANTANEOUS PEAK STAGE			3.95	Jan 26
INSTANTANEOUS LOW FLOW			27	Oct 18
ANNUAL RUNOFF (CFSM)	1.11		.83	
ANNUAL RUNOFF (INCHES)	15.11		11.22	
10 PERCENT EXCEEDS	397		303	514
50 PERCENT EXCEEDS	76		69	127
90 PERCENT EXCEEDS	34		37	44

e Estimated.

75

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge (estimated) 2590 ft³/s, July 29, 1999, gage height 5.0 ft; minimum daily discharge 24 ft³/s, July 27, 1999.

[illegible]

SURFACE-WATER RECORDS

Cuyahoga River Basin

04206000 CUYAHOGA RIVER AT OLD PORTAGE, OHIO

LOCATION.--Latitude 41°08'08", longitude 81°32'50", Summit County, Hydrologic Unit 04110002, on right bank 230 ft upstream from North Portage Path bridge at Old Portage, Ohio, 1.2 mi downstream from Little Cuyahoga River, and 4 mi northwest of Akron City Hall, Akron, Ohio.

DRAINAGE AREA.--404 mi².

PERIOD OF RECORD.--September 1921 to December 1935, March 1939 to current year.

REVISED RECORDS.--WSP 1307: 1924(M). WSP 1912: Drainage area. WDR OH-79-2: 1974(M), 1976(M).

GAGE.--Water-stage recorder. Datum of gage is 740.11 ft above sea level, unadjusted. Prior to Dec. 21, 1923, nonrecording gage at same site and datum.

REMARKS.--Records good except for periods of estimated record, which are fair. Natural flow of stream affected by diversions, storage reservoirs, and powerplants. At Lake Rockwell, 17.1 mi upstream from gage, and average of 66 ft³/s was diverted for municipal supply of city of Akron. Sewage from city enters river 2.9 mi downstream from station. Some diversions from the Tuscarawas River Basin drainage into this basin at Portage Lakes (see REMARKS from station 0311700 in volume 1 of this report). Sediment data collected at this site. Satellite telemeter at gage.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	68	173	155	131	780	553	371	308	169	210	116	73
2	70	177	128	e200	787	575	307	256	161	232	93	71
3	118	177	121	e250	785	1050	229	222	143	118	76	68
4	126	160	114	e200	717	1330	212	195	126	90	71	72
5	98	156	109	e180	656	1100	169	157	121	76	76	75
6	94	172	103	e180	610	1160	142	150	114	425	65	92
7	372	166	177	e170	645	1150	134	152	111	322	65	231
8	767	167	126	e160	784	985	125	154	102	121	166	139
9	289	169	97	e150	643	877	634	170	90	114	93	112
10	206	354	84	e150	569	731	538	155	92	149	84	99
11	195	365	80	e140	505	616	559	147	92	87	78	86
12	170	242	130	e130	569	543	731	128	79	77	65	80
13	143	226	175	e130	551	493	870	117	72	74	83	84
14	144	204	197	e120	501	463	819	149	147	70	263	79
15	149	190	220	e115	494	439	745	122	105	67	108	74
16	426	175	193	e110	481	437	735	112	79	64	68	73
17	719	154	217	e120	512	535	789	104	82	60	70	70
18	684	124	220	733	499	644	695	114	73	59	71	69
19	362	151	190	626	463	678	685	153	74	68	68	68
20	258	197	200	534	429	703	738	120	78	76	67	91
21	299	176	397	574	397	725	660	109	69	64	66	91
22	375	168	847	1150	358	679	1040	109	64	67	67	61
23	243	172	532	1740	309	608	1070	109	64	62	65	68
24	214	183	408	2260	292	499	1150	465	63	57	65	72
25	196	205	343	2100	293	431	1010	219	110	57	177	70
26	181	441	289	1960	273	395	914	184	102	56	496	63
27	181	261	229	1770	277	329	816	175	84	55	144	65
28	176	220	192	1610	440	290	644	157	127	72	98	66
29	168	220	171	1380	---	263	509	163	98	760	96	470
30	181	206	177	1070	---	241	407	160	79	231	84	416
31	181	---	150	875	---	294	---	135	---	144	74	---
TOTAL	7853	6151	6771	21018	14619	19816	18447	5170	2970	4184	3278	3248
MEAN	253	205	218	678	522	639	615	167	99.0	135	106	108
MAX	767	441	847	2260	787	1330	1150	465	169	760	496	470
MIN	68	124	80	110	273	241	125	104	63	55	65	61
CFSM	.63	.51	.54	1.68	1.29	1.58	1.52	.41	.25	.33	.26	.27
IN.	.72	.57	.62	1.94	1.35	1.82	1.70	.48	.27	.39	.30	.30

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1922 - 1999, BY WATER YEAR (WY)

MEAN	218	326	472	576	661	874	740	471	312	230	182	209
MAX	1205	1307	1516	1807	1592	1416	1520	1253	1371	676	772	1150
(WY)	1927	1986	1928	1952	1976	1927	1940	1996	1989	1976	1992	1926
MIN	50.8	56.5	48.3	83.3	86.1	282	166	77.0	72.4	50.4	56.9	47.1
(WY)	1934	1964	1964	1961	1963	1931	1935	1934	1988	1954	1962	1964

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1922 - 1999
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ANNUAL TOTAL	145738			113525			
ANNUAL MEAN	399			311		438	
HIGHEST ANNUAL MEAN						669	1927
LOWEST ANNUAL MEAN						181	1934
HIGHEST DAILY MEAN	2380	Jan	9	2260	Jan	6040	Jan 22 1959
LOWEST DAILY MEAN	64	Aug	4	55	Jul	24	Sep 24 1964
ANNUAL SEVEN-DAY MINIMUM	72	Aug	2	60	Jul	40	Oct 30 1944
INSTANTANEOUS PEAK FLOW				2320	Jan	6500	Jan 21 1959
INSTANTANEOUS PEAK STAGE				6.95	Jan	13.29	Sep 14 1979
INSTANTANEOUS LOW FLOW				55	Jul	26	Sep 2 1945
ANNUAL RUNOFF (CFSM)	.99			.77		1.09	
ANNUAL RUNOFF (INCHES)	13.42			10.45		14.74	
10 PERCENT EXCEEDS	855			734		1030	
50 PERCENT EXCEEDS	237			172		266	
90 PERCENT EXCEEDS	93			70		77	

e Estimated.

SURFACE-WATER RECORDS

Cuyahoga River Basin

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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, 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 1998 TO SEPTEMBER 1999 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.12	.79	2.6	1.1	5.6	11	3.4	3.1	1.2	3.8	1.8	e.70
2	.10	.78	1.3	2.3	11	11	2.6	2.9	1.1	3.9	.76	e.80
3	1.5	.97	1.2	7.4	8.8	65	2.4	2.4	1.1	1.2	.54	e.90
4	1.0	1.1	1.1	5.1	5.9	18	4.2	2.6	.71	.84	.47	e1.2
5	.33	1.2	1.1	e2.9	4.1	12	3.6	2.4	.64	.66	.59	e1.4
6	.24	1.3	1.1	e2.2	3.6	13	2.6	2.5	.57	5.2	.53	e2.9
7	5.9	1.3	1.7	e1.8	6.5	e9.2	2.0	2.1	.50	3.0	.53	e2.8
8	11	1.2	1.2	1.4	8.1	e8.1	1.8	2.1	.45	.85	6.3	e1.2
9	1.3	1.3	.88	1.5	4.3	6.2	34	3.2	.44	1.9	1.1	e.80
10	.71	7.1	.75	1.4	3.4	5.2	15	1.9	.42	3.0	.57	e.70
11	.46	6.9	.75	1.3	3.3	4.8	30	1.8	.50	.72	.44	e.70
12	.41	1.8	.74	1.3	11	4.7	14	1.5	.43	.53	.39	e.70
13	.39	1.3	.72	e2.9	6.0	4.2	7.2	1.6	.41	.43	.47	e.70
14	.37	1.1	.74	e2.2	4.4	3.8	4.7	1.8	3.3	.39	2.4	e.70
15	.35	.86	.66	e1.8	4.8	4.1	4.2	1.6	.95	.35	1.0	e.70
16	.32	.75	.69	1.5	4.6	9.5	14	1.3	.52	.39	.46	e.70
17	.38	.75	1.7	2.0	4.2	28	23	1.3	.48	.39	.30	e.70
18	1.7	.74	1.7	e61	3.3	15	10	1.3	.43	.34	.29	e.80
19	2.0	.74	1.9	e27	2.8	6.7	11	1.2	.42	.38	.29	e.80
20	.49	1.6	1.9	e9.8	2.1	4.6	9.2	.99	.41	.52	.30	e2.0
21	3.1	1.2	11	e8.1	2.1	3.9	6.3	.75	.38	.43	.29	e2.7
22	5.6	.75	26	79	2.3	3.8	18	1.1	.39	.39	.29	e2.2
23	1.1	.78	4.2	113	1.8	3.3	48	1.4	.35	.39	.25	e2.5
24	.66	.74	1.4	42	1.6	3.1	15	9.5	.30	.46	.26	e3.0
25	.54	1.3	1.0	14	2.4	2.8	9.1	3.3	1.1	.55	.83	e2.9
26	.50	9.1	.70	9.3	2.5	2.4	7.0	1.6	.44	.44	e11	e2.7
27	.50	2.2	.63	10	3.9	2.2	5.2	1.2	3.5	.35	e.80	e2.9
28	.59	1.4	.78	13	25	2.2	4.1	.88	6.7	4.1	e.70	e2.4
29	.66	1.3	.92	6.6	---	2.2	3.7	.75	1.2	14	e.60	e13
30	.90	1.2	1.4	4.3	---	1.9	3.2	.72	.86	1.4	e.60	e3.6
31	1.2	---	1.1	3.3	---	2.8	---	.73	---	2.8	e.60	---
TOTAL	44.42	53.55	73.56	440.5	149.4	274.7	318.5	61.52	30.20	54.10	35.75	59.80
MEAN	1.43	1.78	2.37	14.2	5.34	8.86	10.6	1.98	1.01	1.75	1.15	1.99
MAX	11	9.1	26	113	25	65	48	9.5	6.7	14	11	13
MIN	.10	.74	.63	1.1	1.6	1.9	1.8	.72	.30	.34	.25	.70
CFSM	.26	.32	.43	2.55	.96	1.59	1.90	.36	.18	.31	.21	.36
IN.	.30	.36	.49	2.94	1.00	1.83	2.12	.41	.20	.36	.24	.40

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1992 - 1999, BY WATER YEAR (WY)

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
MEAN	3.30	7.09	7.03	11.6	8.10	11.7	12.1	5.62	4.74	3.83	2.31	2.94
MAX	7.75	15.3	18.3	17.4	12.6	22.3	17.5	12.3	11.7	16.9	6.94	7.21
(WY)	1997	1993	1993	1993	1996	1993	1998	1997	1997	1992	1992	1992
MIN	.66	1.14	1.97	3.76	4.16	7.16	7.84	1.98	1.01	.73	.27	1.24
(WY)	1995	1995	1992	1992	1993	1995	1997	1999	1999	1996	1993	1995

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1992 - 1999
ANNUAL TOTAL	2046.46	1596.00	
ANNUAL MEAN	5.61	4.37	6.68
HIGHEST ANNUAL MEAN			8.97
LOWEST ANNUAL MEAN			4.37
HIGHEST DAILY MEAN	87	113	190
LOWEST DAILY MEAN	.10	.10	.07
ANNUAL SEVEN-DAY MINIMUM	.31	.28	.10
INSTANTANEOUS PEAK FLOW		171	885
INSTANTANEOUS PEAK STAGE		11.49	12.93
INSTANTANEOUS LOW FLOW		.10	.01
ANNUAL RUNOFF (CFSM)	1.00	.78	1.20
ANNUAL RUNOFF (INCHES)	13.64	10.64	16.27
10 PERCENT EXCEEDS	12	9.9	14
50 PERCENT EXCEEDS	1.7	1.5	3.0
90 PERCENT EXCEEDS	.43	.43	.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 1998 TO SEPTEMBER 1999 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.6	e14	29	e17	29	48	20	20	11	10	6.4	e4.9
2	9.5	e14	22	e22	52	44	19	20	12	19	4.2	e5.9
3	16	e13	20	81	48	258	18	19	10	9.3	3.2	e6.9
4	21	e13	20	e59	37	109	22	19	8.8	7.1	3.3	e8.9
5	13	e13	19	e35	30	59	22	18	8.2	6.0	3.4	e9.6
6	12	e12	19	e26	26	68	18	18	8.1	69	3.2	e20
7	39	e12	22	e22	34	e45	16	16	8.1	48	2.9	e19
8	92	e12	20	e21	49	39	15	15	8.0	13	22	e8.9
9	26	e13	19	e20	32	37	141	18	7.3	9.5	8.0	e5.9
10	18	e36	17	e20	26	34	106	16	7.1	14	5.4	e5.3
11	14	37	17	e19	23	31	125	14	7.2	7.5	4.1	e5.0
12	13	21	17	e20	43	30	67	14	7.0	6.0	3.6	e5.3
13	12	18	17	74	37	28	39	14	7.1	5.4	4.0	e5.3
14	10	17	17	e86	30	26	30	16	16	4.9	18	e5.3
15	11	16	16	e46	29	26	27	14	12	4.4	10	e5.3
16	10	16	17	e39	29	38	59	12	7.5	3.9	5.6	e5.3
17	10	15	22	e43	28	91	109	12	6.7	3.6	4.3	e5.3
18	13	15	22	e111	24	75	54	12	6.5	3.5	3.7	e5.9
19	23	15	21	86	21	38	54	11	6.3	3.8	3.7	e5.9
20	17	18	22	52	e19	30	47	11	6.2	6.4	4.2	e15
21	18	18	50	44	e17	27	38	10	6.4	5.3	4.0	e19
22	31	15	127	295	e17	27	161	12	6.9	4.6	3.7	e17
23	17	15	e31	524	e16	23	212	14	6.5	4.2	3.3	e19
24	14	18	e22	286	e16	21	91	63	5.9	3.3	4.1	e21
25	13	23	e19	84	19	20	47	25	6.8	4.6	7.5	e20
26	e13	61	e18	51	19	20	37	17	6.3	3.8	e84	e19
27	e13	33	e16	46	22	19	31	16	13	2.9	e5.7	e20
28	e13	27	e16	58	77	20	27	13	32	7.5	e4.9	e18
29	e13	26	e16	38	---	27	24	10	11	57	e4.4	e81
30	e13	25	e19	29	---	18	21	9.1	7.3	11	e4.2	e25
31	e14	---	e18	25	---	17	---	8.6	---	8.4	e4.2	---
TOTAL	561.1	601	747	2379	849	1393	1697	506.7	273.2	366.9	253.2	417.9
MEAN	18.1	20.0	24.1	76.7	30.3	44.9	56.6	16.3	9.11	11.8	8.17	13.9
MAX	92	61	127	524	77	258	212	63	32	69	84	81
MIN	9.5	12	16	17	16	17	15	8.6	5.9	2.9	2.9	4.9
CFSM	.59	.65	.78	2.50	.99	1.46	1.84	.53	.30	.39	.27	.45
IN.	.68	.73	.91	2.88	1.03	1.69	2.06	.61	.33	.44	.31	.51

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1992 - 1999, BY WATER YEAR (WY)

	MEAN	16.4	35.7	36.7	62.4	43.0	56.4	62.1	34.4	29.7	20.4	15.6	17.3
MAX	40.3	76.2	94.0	98.2	66.8	108	95.4	63.6	70.5	74.8	41.1	48.3	
(WY)	1997	1993	1997	1993	1997	1993	1994	1997	1997	1992	1992	1992	
MIN	6.31	9.23	12.1	17.8	25.4	31.0	35.0	16.3	9.11	10.1	5.68	4.85	
(WY)	1995	1992	1992	1992	1995	1995	1995	1999	1999	1993	1993	1995	

SUMMARY STATISTICS FOR 1998 CALENDAR YEAR FOR 1999 WATER YEAR WATER YEARS 1992 - 1999

ANNUAL TOTAL	12459.9	10045.0	
ANNUAL MEAN	34.1	27.5	35.8
HIGHEST ANNUAL MEAN			50.2
LOWEST ANNUAL MEAN			22.1
HIGHEST DAILY MEAN	470	Jan 8	765
LOWEST DAILY MEAN	4.7	Aug 20	2.9
ANNUAL SEVEN-DAY MINIMUM	5.2	Aug 17	3.8
INSTANTANEOUS PEAK FLOW			696
INSTANTANEOUS PEAK STAGE			13.60
INSTANTANEOUS LOW FLOW			2.4
ANNUAL RUNOFF (CFSM)	1.11	.90	1.17
ANNUAL RUNOFF (INCHES)	15.10	12.17	15.83
10 PERCENT EXCEEDS	63	54	72
50 PERCENT EXCEEDS	18	17	19
90 PERCENT EXCEEDS	8.2	5.3	6.2

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

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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, 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 1998 TO SEPTEMBER 1999 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25	53	43	e32	92	234	57	47	35	264	41	25
2	24	76	39	e30	143	201	48	43	48	113	29	24
3	71	72	35	e28	187	934	44	43	53	46	28	23
4	47	69	33	e45	135	641	77	42	36	32	27	21
5	35	70	33	e36	102	374	69	41	29	26	33	19
6	31	67	32	e32	82	273	57	41	27	609	26	20
7	173	67	49	e28	96	234	48	38	26	234	24	63
8	194	59	35	e27	148	168	44	37	26	64	95	44
9	78	58	e30	e26	116	133	463	46	25	96	38	30
10	45	168	e28	e25	86	115	374	38	183	112	28	25
11	34	108	e26	e24	71	107	557	35	51	49	27	22
12	32	61	e25	e23	158	103	439	32	29	30	25	20
13	32	43	e24	e22	149	97	182	32	23	28	29	34
14	31	36	e23	e22	111	86	105	34	80	29	36	33
15	31	33	e22	e21	111	91	84	31	48	27	29	24
16	31	34	e21	e20	114	156	231	27	31	26	25	22
17	29	50	93	e20	116	256	348	28	24	25	24	21
18	51	58	73	391	96	207	279	29	25	23	23	19
19	52	44	109	195	77	118	383	42	24	42	23	18
20	44	59	89	109	65	87	280	35	24	39	23	67
21	79	45	231	77	60	71	203	28	23	27	35	41
22	95	39	450	523	53	63	188	31	24	29	23	29
23	56	37	201	1110	50	60	550	29	23	26	21	24
24	40	35	98	1280	48	56	410	234	24	29	24	42
25	32	130	e60	823	56	51	169	106	27	26	32	33
26	41	174	e45	379	61	47	131	53	31	22	400	24
27	48	78	e40	233	68	44	108	41	101	24	196	23
28	49	46	e36	270	362	41	70	39	365	28	54	23
29	46	38	e40	165	---	40	60	37	99	498	37	626
30	63	40	e48	102	---	42	53	27	41	81	29	639
31	48	---	e39	78	---	44	---	35	---	51	26	---
TOTAL	1687	1947	2150	6196	3013	5174	6111	1401	1605	2755	1510	2078
MEAN	54.4	64.9	69.4	200	108	167	204	45.2	53.5	88.9	48.7	69.3
MAX	194	174	450	1280	362	934	557	234	365	609	400	639
MIN	24	33	21	20	48	40	44	27	23	22	21	18
CFSM	.01	.01	.01	.02	.01	.02	.02	.01	.01	.01	.01	.01
IN.	.01	.01	.01	.03	.01	.02	.03	.01	.01	.01	.01	.01

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 1999, BY WATER YEAR (WY)

	MEAN	69.6	137	172	155	196	243	193	121	87.8	79.1	63.3	73.1
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	81.2	54.1	33.4	16.5	13.1	11.3	8.73	
(WY)	1964	1965	1964	1977	1963	1990	1971	1965	1964	1967	1963	1964	

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1963 - 1999
ANNUAL TOTAL	42434	35627	
ANNUAL MEAN	116	97.6	133
HIGHEST ANNUAL MEAN			185
LOWEST ANNUAL MEAN			81.7
HIGHEST DAILY MEAN	1800	Jan 8	2920
LOWEST DAILY MEAN	21	Dec 16	18
ANNUAL SEVEN-DAY MINIMUM	24	Dec 10	22
INSTANTANEOUS PEAK FLOW			3110
INSTANTANEOUS PEAK STAGE			7.38
INSTANTANEOUS LOW FLOW			14
ANNUAL RUNOFF (CFSM)	.014	.012	.016
ANNUAL RUNOFF (INCHES)	.19	.16	.22
10 PERCENT EXCEEDS	252	232	320
50 PERCENT EXCEEDS	57	44	61
90 PERCENT EXCEEDS	28	24	21

e Estimated.

SURFACE-WATER RECORDS **Cuyahoga River Basin**

04208000 CUYAHOGA RIVER AT INDEPENDENCE, OHIO

LOCATION.--Latitude 41°23'43", longitude 81°37'48, in T.6 N., R.12 W., Cuyahoga County, Hydrologic Unit 04110002, on left bank 240 ft downstream from bridge on Old Rockside Road, 0.8 mi northeast of Independence, and 3.0 mi downstream from Tinkers Creek.
DRAINAGE AREA.--707 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1903 to December 1905 (fragmentary), January to July 1906 (gage heights and discharge measurements only), September 1921 to May 1923, September 1927 to December 1935, March 1940 to current year.
REVISED RECORDS.--WSP 1307: 1922-23(M), 1928-30(M), 1933(M), 1940(M), 1947(M), 1950(M). WSP 1912: Drainage area.
GAGE.--Water-stage recorder. Datum of gage is 583.57 ft above sea level. Sept. 21, 1903 to July 21, 1906, nonrecording gage at bridge 240 ft upstream at present datum. Sept. 28, 1921 to May 30, 1923, nonrecording gage at bridge 240 ft upstream at datum 2.42 ft higher. Sept. to Oct. 8, 1927, nonrecording gage, and Oct. 9, 1927, to Dec. 31, 1935, Mar. 5, 1940, to June 19, 1969, water-stage recorder, at site 100 ft upstream at present datum.
REMARKS.--Records good except for period of estimated record which are poor. Natural flow of stream affected by diversion, storage reservoirs, and powerplants. Some diversion from the Tuscarawas River Basin drainage into this basin at Portage Lakes (see REMARKS for station 03117000). Water diverted into Ohio Canal at Brecksville, 6 mi upstream from station, bypasses station. These records do not include flow in canal except above about 15,000 ft³/s, when channels merge. Satellite telemeter at gage. Water-quality data collected at this site.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	208	262	356	288	1170	1380	537	566	333	489	252	203
2	201	293	321	307	1440	1270	541	508	358	821	168	203
3	250	292	303	450	1560	3550	461	464	392	298	148	176
4	393	283	280	572	1300	3180	490	444	336	215	134	170
5	288	287	283	432	1140	2180	493	403	312	187	144	172
6	256	288	280	382	1030	2040	404	387	295	954	121	170
7	321	280	333	e350	1000	2010	368	374	287	1560	114	297
8	1810	275	325	e330	1510	1650	345	370	282	388	292	295
9	770	270	287	e320	1200	1410	1710	415	265	255	204	231
10	446	430	269	e300	1030	1190	2260	378	313	443	147	191
11	374	738	259	e290	906	1020	2330	374	323	243	155	182
12	344	433	252	e280	1160	922	1940	354	236	186	146	177
13	305	351	254	e280	1200	856	1480	335	215	184	138	186
14	293	319	255	e270	1010	789	1220	374	314	177	216	212
15	298	301	269	e270	983	762	1050	358	375	163	339	177
16	299	290	271	e260	1010	862	1410	331	236	153	178	169
17	288	285	344	e350	1010	1390	2080	319	207	160	151	167
18	272	286	347	2280	950	1530	1630	299	206	150	153	163
19	447	268	369	1930	864	1100	1660	355	189	160	147	159
20	335	308	366	1230	781	953	1560	338	191	213	148	217
21	323	327	489	1100	740	951	1250	310	187	159	160	251
22	606	288	2200	3190	695	905	1800	300	182	165	155	186
23	399	284	942	5770	642	832	2860	333	176	154	144	163
24	315	288	593	5420	614	736	2520	1100	174	149	151	184
25	284	285	485	3730	623	646	1750	695	174	148	234	205
26	273	794	425	2910	647	598	1390	452	222	139	1390	169
27	278	481	375	2500	620	551	1220	396	224	142	1070	158
28	277	375	342	2430	1650	503	972	351	904	150	296	166
29	269	341	329	2000	---	479	774	334	396	1850	240	1100
30	264	335	342	1560	---	452	671	330	233	513	223	2780
31	291	---	310	1270	---	453	---	311	---	275	202	---
TOTAL	11777	10337	12855	43051	28485	37150	39176	12658	8537	11243	7760	9279
MEAN	380	345	415	1389	1017	1198	1306	408	285	363	250	309
MAX	1810	794	2200	5770	1650	3550	2860	1100	904	1850	1390	2780
MIN	201	262	252	260	614	452	345	299	174	139	114	158

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1922 - 1999, BY WATER YEAR (WY)

	MEAN	378	646	938	1134	1302	1660	1458	938	625	456	360	371
MAX	1747	2713	2889	3585	3217	3008	3175	2396	2450	1543	1363	1866	
(WY)	1955	1986	1978	1952	1959	1963	1957	1984	1989	1992	1992	1979	
MIN	65.8	74.9	115	191	194	584	244	120	111	82.9	62.3	61.0	
(WY)	1934	1931	1964	1945	1934	1931	1946	1934	1934	1954	1933	1933	

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1922 - 1999
ANNUAL TOTAL	301597	232308	
ANNUAL MEAN	826	636	856
HIGHEST ANNUAL MEAN			1393
LOWEST ANNUAL MEAN			278
HIGHEST DAILY MEAN	7510	Apr 17	16700
LOWEST DAILY MEAN	201	Oct 2	21
ANNUAL SEVEN-DAY MINIMUM	218	Sep 26	37
INSTANTANEOUS PEAK FLOW			16700
INSTANTANEOUS PEAK STAGE			22.41
INSTANTANEOUS LOW FLOW			21
10 PERCENT EXCEEDS	1830		2010
50 PERCENT EXCEEDS	468		482
90 PERCENT EXCEEDS	253		130

e Estimated.

SURFACE-WATER RECORDS

Cuyahoga River Basin

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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, 966 mg/L July 29; minimum daily mean, 4 mg/L Dec. 11, Jan. 8, and 11.

SEDIMENT LOADS: Maximum daily, 12,200 tons Jan. 23; minimum daily, 3.0 tons Dec. 11 and Jan. 11.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	SAM- PLING METHOD, CODES* (82398)
DEC												
02...	1325	322	8.3	880	19.5	10.5	120	.5	4.3	.14	9	10
02...	1420	319	--	--	--	--	120	.5	4.3	.11	--	50
JAN												
26...	1245	2830	--	770	4.0	2.0	--	--	--	--	182	10
MAY												
06...	1215	390	8.3	930	26.0	18.5	140	1.0	2.7	.13	20	10
06...	1315	383	--	--	--	--	140	.8	2.6	.13	--	50

* 10 Stream cross-section sample obtained by equal-width-increment (EWI) sampling method.

* 50 Point sample collected from flow tank.

SURFACE-WATER RECORDS **Cuyahoga River Basin**

04208000 CUYAHOGA RIVER AT INDEPENDENCE, OHIO—Continued

WATER-QUALITY RECORDS—CONTINUED

SEDIMENT DISCHARGE, SUSPENDED, TONS PER DAY, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
	OCTOBER			NOVEMBER			DECEMBER		
1	208	15	8.6	262	12	8.8	356	19	19
2	201	12	6.6	293	12	9.5	321	12	10
3	250	22	17	292	12	9.3	303	8	6.5
4	393	32	34	283	11	8.8	280	10	7.4
5	288	18	14	287	11	8.7	283	11	8.6
6	256	17	12	288	11	8.5	280	12	9.4
7	321	58	78	280	11	8.0	333	27	25
8	1810	578	3370	275	10	7.7	325	12	11
9	770	86	192	270	10	7.4	287	7	5.3
10	446	37	45	430	28	41	269	6	4.2
11	374	28	28	738	47	99	259	4	3.0
12	344	25	24	433	22	26	252	5	3.4
13	305	23	19	351	19	18	254	6	3.9
14	293	21	17	319	17	15	255	5	3.5
15	298	19	15	301	16	13	269	5	3.6
16	299	17	14	290	14	11	271	5	3.8
17	288	16	12	285	13	10	344	16	15
18	272	16	12	286	12	9.1	347	9	8.8
19	447	30	38	268	11	7.8	369	9	9.3
20	335	20	18	308	13	11	366	8	7.6
21	323	15	14	327	15	14	489	49	131
22	606	36	61	288	12	9.7	2200	707	4920
23	399	23	24	284	12	8.9	942	89	237
24	315	17	14	288	11	8.5	593	40	65
25	284	15	11	285	11	9.1	485	26	34
26	273	14	11	794	55	129	425	18	21
27	278	14	11	481	24	32	375	15	15
28	277	14	10	375	17	18	342	11	9.9
29	269	13	9.7	341	14	13	329	9	8.0
30	264	13	9.3	335	12	11	342	8	7.3
31	291	13	10	---	---	---	310	6	5.1
TOTAL	11777	---	4159.2	10337	---	590.8	12855	---	5621.6

DAY	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCENTRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
	JANUARY			FEBRUARY			MARCH		
1	288	5	4.2	1170	57	180	1380	58	218
2	307	10	8.8	1440	67	262	1270	40	139
3	450	29	45	1560	72	306	3550	766	9110
4	572	40	65	1300	47	165	3180	399	3680
5	432	14	16	1140	36	112	2180	140	833
6	382	12	12	1030	33	91	2040	87	480
7	E350	11	11	1000	34	95	2010	74	402
8	E330	4	3.8	1510	119	498	1650	49	221
9	E320	7	6.2	1200	41	133	1410	39	149
10	E300	5	3.7	1030	30	83	1190	31	101
11	E290	4	3.0	906	32	79	1020	25	69
12	E280	9	6.6	1160	72	252	922	25	61
13	E280	13	9.6	1200	47	155	856	22	51
14	E270	16	12	1010	22	60	789	18	38
15	E270	19	14	983	18	47	762	16	33
16	E260	20	14	1010	19	53	862	24	63
17	E350	19	18	1010	22	60	1390	79	317
18	2280	378	2770	950	18	45	1530	84	365
19	1930	193	1060	864	22	51	1100	40	118
20	1230	71	240	781	17	36	953	25	64
21	1100	50	150	740	12	24	951	20	51
22	3190	596	7360	695	11	20	905	15	37
23	5770	793	12200	642	10	17	832	13	28
24	5420	482	7160	614	9	15	736	13	25
25	3730	312	3160	623	9	15	646	12	20
26	2910	215	1700	647	7	13	598	10	16
27	2500	170	1150	620	10	16	551	8	12
28	2430	146	958	1650	188	914	503	8	10
29	2000	108	585	---	---	---	479	10	13
30	1560	77	326	---	---	---	452	9	10
31	1270	63	216	---	---	---	453	10	12
TOTAL	43051	---	39287.9	28485	---	3797	37150	---	16746

E Estimated.

SURFACE-WATER RECORDS
Cuyahoga River Basin

83

04208000 CUYAHOGA RIVER AT INDEPENDENCE, OHIO—Continued

WATER-QUALITY RECORDS—CONTINUED

SEDIMENT DISCHARGE, SUSPENDED, TONS PER DAY, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued									
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		APRIL			MAY			JUNE	
1	537	12	17	566	30	46	333	23	21
2	541	10	15	508	23	32	358	23	22
3	461	12	15	464	21	27	392	24	25
4	490	22	28	444	22	26	336	20	18
5	493	11	15	403	21	23	312	17	14
6	404	10	11	387	20	21	295	15	12
7	368	14	14	374	18	18	287	15	12
8	345	15	14	370	14	14	282	17	13
9	1710	275	1990	415	17	19	265	16	12
10	2260	320	2210	378	14	14	313	71	137
11	2330	327	2400	374	13	14	323	171	180
12	1940	163	878	354	12	12	236	37	24
13	1480	61	247	335	11	10	215	31	18
14	1220	43	143	374	10	10	314	129	141
15	1050	39	110	358	9	8.9	375	81	94
16	1410	65	252	331	9	8.1	236	35	22
17	2080	137	806	319	10	8.5	207	27	15
18	1630	54	239	299	12	9.8	206	24	14
19	1660	75	356	355	16	16	189	25	12
20	1560	53	224	338	17	16	191	23	12
21	1250	40	136	310	16	13	187	27	14
22	1800	391	2240	300	18	14	182	23	11
23	2860	716	7440	333	18	16	176	23	11
24	2520	328	2410	1100	248	919	174	26	12
25	1750	89	427	695	97	197	174	20	9.5
26	1390	53	200	452	36	44	222	41	25
27	1220	47	154	396	28	30	224	44	31
28	972	44	115	351	22	21	904	520	1570
29	774	34	72	334	24	21	396	135	150
30	671	29	53	330	28	25	233	68	43
31	---	---	---	311	25	21	---	---	---
TOTAL	39176	---	23231	12658	---	1674.3	8537	---	2694.5
DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN- TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		JULY			AUGUST			SEPTEMBER	
1	489	226	1040	252	115	78	203	27	15
2	821	409	1160	168	57	26	203	27	15
3	298	71	59	148	52	21	176	22	10
4	215	40	23	134	44	16	170	23	11
5	187	37	19	144	31	12	172	24	11
6	954	465	4380	121	25	8.2	170	25	12
7	1560	957	5240	114	26	7.9	297	85	73
8	388	161	181	292	152	134	295	35	29
9	255	114	92	204	67	40	231	21	13
10	443	188	243	147	37	15	191	20	10
11	243	61	41	155	37	15	182	18	8.8
12	186	43	22	146	38	15	177	13	6.4
13	184	37	18	138	36	13	186	18	8.9
14	177	30	14	216	48	40	212	20	11
15	163	23	10	339	81	88	177	16	7.8
16	153	17	7.1	178	27	13	169	14	6.5
17	160	16	6.7	151	24	9.7	167	14	6.5
18	150	18	7.2	153	23	9.7	163	11	4.8
19	160	17	7.5	147	20	7.9	159	9	3.9
20	213	45	27	148	16	6.2	217	55	45
21	159	28	12	160	19	8.3	251	55	40
22	165	19	8.5	155	18	7.4	186	11	5.9
23	154	18	7.3	144	19	7.3	163	12	5.2
24	149	18	7.1	151	21	8.4	184	20	9.7
25	148	21	8.4	234	44	32	205	11	6.2
26	139	16	5.8	1390	737	3530	169	9	4.1
27	142	16	6.3	1070	495	2220	158	9	3.8
28	150	20	8.1	296	98	81	166	8	3.6
29	1850	966	4830	240	51	33	1100	540	5290
30	513	165	229	223	47	29	2780	851	9310
31	275	65	48	202	36	20	---	---	---
TOTAL	11243	---	17768.0	7760	---	6552.0	9279	---	14987.1
YEAR	232308		137109.4						

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.

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 fair except for periods of estimated record, which are 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 discharge, 9,680 ft³/s Jan. 23; minimum daily discharge, 340 ft³/s June 24 and July 16.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	523	618	871	791	e2200	2370	920	920	e530	930	769	384
2	492	669	755	715	e2400	2290	888	e820	e560	1500	536	392
3	799	709	717	1680	e2600	6160	763	e770	e600	659	463	382
4	809	691	663	1300	e2400	4450	959	e700	e560	519	505	406
5	610	770	662	975	e2200	3170	775	e650	e530	438	503	467
6	561	698	691	948	e2000	3270	693	e600	e500	e1500	440	415
7	1680	682	922	900	e1800	3070	639	e580	e480	e2500	429	533
8	2880	673	750	834	e2500	e2700	602	e530	e450	798	876	537
9	1320	680	696	872	1990	e2400	e3500	e600	e430	712	510	495
10	892	1980	646	863	1700	e2200	e3300	e560	e560	788	406	516
11	776	1700	649	819	1540	e2000	e3600	e520	e500	510	383	500
12	723	984	638	895	2290	e1800	e2800	e480	e450	408	387	467
13	656	819	642	977	1950	e1700	e2300	e640	e400	410	430	537
14	652	759	651	1030	1730	e1600	e2100	e600	e500	421	593	587
15	642	732	690	1060	1770	e1500	e2000	e560	e640	395	800	487
16	660	710	757	1170	1730	e1800	e2500	e510	e580	340	520	468
17	644	693	1070	1850	1740	e2200	e2900	e480	e500	368	465	467
18	739	682	994	5720	1570	e2700	e2200	e450	e450	364	492	449
19	947	654	1050	3580	1420	e2000	e2500	e560	e420	470	399	426
20	686	836	931	2580	1280	1400	e2200	e520	e400	562	450	799
21	1070	789	2360	2440	1210	1380	e2100	e480	e380	464	498	645
22	1250	738	3920	6920	1150	1320	e3300	e450	e360	557	471	510
23	845	713	1940	8820	1070	1250	e4500	e600	e350	417	448	360
24	712	701	1400	7290	1010	1150	e3500	e1500	340	393	377	439
25	651	1030	1180	e6200	1150	943	e2800	e1100	357	409	516	415
26	626	1720	1080	e5200	1120	759	e2300	e840	379	418	1930	367
27	624	1030	980	e3800	1360	720	e1800	e740	595	434	1500	379
28	644	852	911	e4100	3100	656	e1500	e640	1420	446	649	435
29	625	798	937	e3500	---	656	e1300	e560	947	3430	547	1850
30	643	824	933	e3000	---	664	e1100	e530	531	1160	466	4080
31	651	---	860	e2500	---	715	---	e500	---	793	406	---
TOTAL	26032	25934	31946	83329	49980	60993	62339	19990	15699	23513	18164	19194
MEAN	840	864	1031	2688	1785	1968	2078	645	523	758	586	640
MAX	2880	1980	3920	8820	3100	6160	4500	1500	1420	3430	1930	4080
MIN	492	618	638	715	1010	656	602	450	340	340	377	360

CAL YR 1998 TOTAL 463065 MEAN 1269 MAX 8270 MIN 458
WTR YR 1999 TOTAL 437113 MEAN 1198 MAX 8820 MIN 340

e Estimated.

SURFACE-WATER RECORDS

Chagrin River Basin

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04209000 CHAGRIN RIVER AT WILLOUGHBY, OHIO

LOCATION.--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.

DRAINAGE AREA.--246 mi².

PERIOD OF RECORD.--July 1925 to November 1935, October 1939 to 1984, March 25, 1988 to September 1994, October 1, 1995 to September 1996. October 1, 1997 to October 1999 (Discontinued). (July 1925 to September 1932 monthly runoff in inches, adjusted for diversion, published in WSP 1307; previously published runoff was unadjusted and should not be used).

REVISED RECORDS.--WSP 1084: 1929(M), 1931(M). WSP 1307: 1926-28(M), 1930(M), 1932-35(M), 1942(M). WSP 1912: Drainage area. See also PERIOD OF RECORD.

GAGE.--Water-stage recorder. Datum of gage is 594.57 ft above sea level. Prior to Dec. 20, 1939, nonrecording gage at site 150 ft upstream at datum 7 ft higher.

REMARKS.--Records fair except for periods of estimated record, which are poor. Water diverted 200 ft upstream from station for municipal supply of city of Willoughby until 1988, when water treatment plant was relocated downstream of gaging station. Water-quality and sediment data collected at this site.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e56	71	71	e60	279	846	102	97	55	76	67	31
2	e50	72	e72	e56	393	451	147	91	56	144	62	27
3	e120	71	e68	e54	657	1760	95	81	60	111	46	24
4	e100	71	e64	e96	445	1880	161	74	65	70	36	22
5	e84	71	e60	e82	370	771	373	71	61	55	47	20
6	e76	71	e56	e72	310	672	257	70	56	48	57	18
7	e250	71	e88	e66	290	490	146	67	53	517	52	57
8	e270	72	e74	e62	329	394	92	64	49	185	48	90
9	e150	75	e66	e60	311	382	521	72	47	81	53	60
10	e110	93	e58	e56	284	317	1410	70	44	313	49	48
11	e96	171	e52	e54	251	312	1230	62	42	136	43	41
12	e92	133	e48	e50	335	302	1330	60	43	72	37	37
13	e88	95	e45	e48	515	293	638	56	42	56	33	36
14	e88	81	e42	e47	351	278	362	56	42	48	44	47
15	88	73	e40	e45	318	270	278	55	52	43	73	49
16	91	66	e37	e43	e410	296	363	54	53	41	64	40
17	92	61	e50	e42	e370	771	920	51	49	39	54	34
18	92	62	65	e120	e300	1300	829	49	44	36	45	32
19	86	63	71	1480	e250	598	1230	49	41	37	37	32
20	71	65	87	746	e235	357	1010	51	38	40	38	50
21	70	70	100	526	219	305	539	49	36	41	38	107
22	63	74	812	1180	129	284	1270	47	34	40	35	77
23	53	72	641	3800	100	273	1390	47	33	40	32	58
24	56	70	216	3080	91	255	1470	132	31	41	29	47
25	64	66	120	1310	81	202	633	482	31	43	28	45
26	67	109	98	741	82	118	391	260	35	42	37	43
27	70	145	e80	495	83	99	284	104	36	36	55	40
28	69	101	e70	665	623	90	235	77	136	33	57	37
29	71	79	e64	549	---	87	171	68	248	345	52	257
30	71	71	e72	379	---	82	111	61	144	220	43	2100
31	73	---	e66	309	---	79	---	55	---	79	36	---
TOTAL	2877	2465	3553	16373	8411	14614	17988	2682	1756	3108	1427	3606
MEAN	92.8	82.2	115	528	300	471	600	86.5	58.5	100	46.0	120
MAX	270	171	812	3800	657	1880	1470	482	248	517	73	2100
MIN	50	61	37	42	81	79	92	47	31	33	28	18
CFSM	.38	.33	.47	2.15	1.22	1.92	2.44	.35	.24	.41	.19	.49
IN.	.44	.37	.54	2.48	1.27	2.21	2.72	.41	.27	.47	.22	.55

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1925 - 1999, BY WATER YEAR (WY)

	MEAN	158	312	415	474	543	685	551	354	214	128	122	128
MAX	976	850	1284	1312	1242	1234	1409	1088	781	698	602	641	
(WY)	1927	1984	1991	1952	1982	1963	1957	1989	1947	1969	1992	1926	
MIN	21.9	44.3	60.4	115	48.1	179	120	53.4	23.1	20.3	16.8	17.6	
(WY)	1954	1965	1964	1977	1934	1990	1946	1934	1934	1934	1930	1933	

SUMMARY STATISTICS

	FOR 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1925 - 1999
ANNUAL TOTAL	108579	78860	
ANNUAL MEAN	297	216	340
HIGHEST ANNUAL MEAN			465
LOWEST ANNUAL MEAN			148
HIGHEST DAILY MEAN	5310	Jan 8	12300
LOWEST DAILY MEAN	28	Sep 19	3.0
ANNUAL SEVEN-DAY MINIMUM	33	Sep 14	7.0
INSTANTANEOUS PEAK FLOW		4480	28000
INSTANTANEOUS PEAK STAGE		7.39	17.95
INSTANTANEOUS LOW FLOW		18	3.0
ANNUAL RUNOFF (CFSM)	1.21	.88	1.38
ANNUAL RUNOFF (INCHES)	16.42	11.93	18.78
10 PERCENT EXCEEDS	664	523	764
50 PERCENT EXCEEDS	96	71	150
90 PERCENT EXCEEDS	47	38	36

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

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 collected at this site.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	72	90	e120	1010	1080	219	327	96	94	130	17
2	8.8	68	79	e110	1000	1320	268	265	94	79	87	18
3	9.6	67	70	e100	1880	3400	290	218	132	56	64	17
4	12	65	65	e130	1990	5390	500	186	284	334	48	15
5	11	64	60	e120	1730	3410	1890	163	210	342	139	13
6	11	75	55	e110	1370	2310	1390	147	154	124	56	12
7	15	77	54	e105	1110	1900	854	132	110	96	39	171
8	66	78	54	e96	938	1460	592	120	85	58	35	57
9	45	76	51	e92	841	1130	688	123	68	111	29	28
10	39	84	47	e90	927	949	2750	112	57	187	24	33
11	73	157	45	e85	887	785	3250	105	48	97	22	25
12	69	107	43	e80	1070	691	3650	96	43	76	25	41
13	50	104	41	e77	1270	631	2840	90	40	69	25	37
14	36	112	40	e75	1100	602	2040	84	38	58	42	49
15	31	106	38	e74	925	566	1480	80	39	43	49	35
16	24	89	38	e72	998	598	1040	75	35	34	33	23
17	18	78	54	e200	1450	1520	981	71	30	27	29	18
18	15	68	69	716	1490	3190	1200	69	28	22	25	15
19	15	61	70	1570	1130	2300	1960	357	26	22	22	13
20	16	59	99	2530	831	1480	2370	672	25	20	48	120
21	28	60	120	2860	605	1070	1800	545	24	19	36	96
22	104	57	575	3180	447	793	1850	481	23	23	31	39
23	90	54	691	6000	462	635	2520	286	20	22	23	30
24	86	52	539	9030	425	554	3330	318	20	25	19	29
25	85	51	395	7210	253	475	2510	1050	26	25	19	28
26	81	97	232	3820	220	405	1830	1180	28	20	245	20
27	77	89	e170	2540	206	344	1380	754	39	16	121	15
28	76	87	e140	2860	528	298	914	436	56	14	43	16
29	76	88	e110	2720	---	267	599	265	135	137	32	954
30	77	92	e100	1980	---	235	427	172	97	48	25	1330
31	74	---	e140	1370	---	208	---	120	---	72	20	---
TOTAL	1429.4	2394	4374	50122	27093	39996	47412	9099	2110	2370	1585	3314
MEAN	46.1	79.8	141	1617	968	1290	1580	294	70.3	76.5	51.1	110
MAX	104	157	691	9030	1990	5390	3650	1180	284	342	245	1330
MIN	8.8	51	38	72	206	208	219	69	20	14	19	12
CFSM	.07	.12	.21	2.36	1.41	1.88	2.31	.43	.10	.11	.07	.16
IN.	.08	.13	.24	2.72	1.47	2.17	2.57	.49	.11	.13	.09	.18

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1975 - 1999, BY WATER YEAR (WY)

MEAN	490	1201	1550	1480	1770	1990	1487	811	660	265	243	416
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 1998 CALENDAR YEAR	FOR 1999 WATER YEAR	WATER YEARS 1975 - 1999
ANNUAL TOTAL	236690.7	191298.4	
ANNUAL MEAN	648	524	1026
HIGHEST ANNUAL MEAN			1406
LOWEST ANNUAL MEAN			524
HIGHEST DAILY MEAN	10900	9030	15300
LOWEST DAILY MEAN	8.6	8.8	5.1
ANNUAL SEVEN-DAY MINIMUM	10	11	5.3
INSTANTANEOUS PEAK FLOW		9430	18700
INSTANTANEOUS PEAK STAGE		8.82	13.16
INSTANTANEOUS LOW FLOW		7.7	5.1
ANNUAL RUNOFF (CFSM)	.95	.77	1.50
ANNUAL RUNOFF (INCHES)	12.85	10.39	20.34
10 PERCENT EXCEEDS	1760	1540	2780
50 PERCENT EXCEEDS	87	94	410
90 PERCENT EXCEEDS	15	22	38

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

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LOCATION.--Latitude 41°55'37", longitude 80°36'15", Ashtabula County, Hydrologic Unit 04120101, on right bank at downstream side of Kefus Road bridge at Conneaut, and 6.4 mi upstream from mouth.

DRAINAGE AREA.--175 mi².

PERIOD OF RECORD.--July 1922 to December 1935, March 1950 to September 1961 (published as "at Amboy"), October 1961 to current year.

REVISED RECORDS.--WSP 714: 1926. WSP 784: 1933. WSP 1437: 1923-25(M), 1926-30, 1931-32(M), 1933, 1935(M). WSP 1912: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 610.30 ft above sea level. Prior to Aug. 17, 1924, nonrecording gage at same site and datum.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e6.2	4.6	25	e80	219	522	77	75	37	e74	e23	e4.5
2	e5.2	4.9	22	e56	273	423	117	66	44	e76	e17	e4.0
3	e5.6	7.5	20	e46	832	831	138	60	56	e40	e14	e3.7
4	e6.4	6.0	20	e60	644	2140	142	55	57	e24	e13	e3.3
5	e5.8	8.5	21	e52	453	795	217	51	53	e90	e26	e3.1
6	e5.8	16	20	e46	341	369	299	47	e40	e50	e15	e3.0
7	e9.0	10	19	e44	272	238	164	50	e27	e30	e12	e28
8	e21	14	20	e40	242	217	121	47	e23	e17	e10	e10
9	e15	11	20	e38	219	229	140	49	e20	e15	e8.8	e5.0
10	e13	13	19	e35	231	196	755	50	e18	e38	e7.0	e4.0
11	e23	22	19	e34	245	144	581	53	e16	e25	e7.6	e3.4
12	e22	18	17	e32	262	141	565	46	e15	e19	e7.6	e3.0
13	e16	42	16	e30	455	128	386	42	e14	e17	e8.6	e2.8
14	e13	29	15	e29	350	115	215	39	e13	e15	e9.8	e9.0
15	e10	21	14	e27	262	110	154	36	e12	e13	e11	e3.6
16	e8.0	17	16	e26	269	118	135	34	e12	e11	e9.0	2.8
17	e7.0	16	21	e150	423	287	189	33	e11	e10	e8.0	2.2
18	e6.2	15	24	350	479	1250	753	41	e11	e9.0	e6.6	1.9
19	e6.2	12	26	687	297	724	612	86	e10	e8.0	e8.0	1.9
20	e7.6	14	35	1410	208	301	805	43	e10	e7.2	e10	5.6
21	7.6	15	61	1650	169	200	404	37	e9.8	e6.6	e7.6	13
22	6.5	14	563	2880	126	172	241	34	e9.6	e7.6	e6.4	6.1
23	6.5	17	769	2910	92	155	449	32	e9.2	e7.2	e5.8	5.8
24	6.6	15	213	5220	111	163	911	57	e9.0	e8.0	e5.6	6.4
25	6.9	15	135	3320	93	170	447	208	e9.6	e8.0	e12	6.2
26	9.1	26	80	756	82	136	230	221	e11	e6.4	e40	4.7
27	8.3	24	e60	467	86	112	168	156	e13	e5.6	e20	4.0
28	5.6	30	e52	555	121	98	132	96	e20	e11	e11	3.8
29	5.0	35	e42	640	---	86	106	64	e28	e25	e8.6	16
30	6.0	27	e35	413	---	75	88	48	e46	e15	e6.2	129
31	5.0	---	e60	280	---	68	---	40	---	e19	e5.0	---
TOTAL	285.1	519.5	2479	22363	7856	10713	9741	1996	664.2	707.6	360.2	299.8
MEAN	9.20	17.3	80.0	721	281	346	325	64.4	22.1	22.8	11.6	9.99
MAX	23	42	769	5220	832	2140	911	221	57	90	40	129
MIN	5.0	4.6	14	26	82	68	77	32	9.0	5.6	5.0	1.9
CFSM	.05	.10	.46	4.12	1.60	1.97	1.86	.37	.13	.13	.07	.06
IN.	.06	.11	.53	4.75	1.67	2.28	2.07	.42	.14	.15	.08	.00

MEAN	136	316	417	427	457	536	391	232	133	75.7	65.0	103
MAX	804	1373	1049	929	1115	987	839	670	1013	415	493	709
(WY)	1927	1986	1928	1990	1981	1972	1957	1953	1986	1969	1980	1990
MIN	4.95	17.1	35.1	81.0	39.6	235	69.9	20.2	5.46	2.79	3.19	3.56
(WY)	1924	1954	1961	1977	1934	1969	1935	1934	1934	1934	1923	1932

ANNUAL TOTAL	75229.8		57984.4				
ANNUAL MEAN	206		159			273	
HIGHEST ANNUAL MEAN						401	1986
LOWEST ANNUAL MEAN						140	1931
HIGHEST DAILY MEAN	4760	Jan 9	5220	Jan 24	11000		Jan 31 1968
LOWEST DAILY MEAN	4.5	Sep 13	1.9	Sep 18		.30	Jul 30 1933
ANNUAL SEVEN-DAY MINIMUM	5.1	Sep 7	3.5	Sep 13		.64	Aug 27 1933
INSTANTANEOUS PEAK FLOW			7200	Jan 24a	17000		Jan 22 1959
INSTANTANEOUS PEAK STAGE			8.79	Jan 24		12.94	Mar 4 1934
INSTANTANEOUS LOW FLOW			1.9	Sep 18		.20	Jul 31 1933
ANNUAL RUNOFF (CFSM)	1.18		.91			1.56	
ANNUAL RUNOFF (INCHES)	15.99		12.33			21.23	
10 PERCENT EXCEEDS	524		408			681	
50 PERCENT EXCEEDS	40		28			96	
90 PERCENT EXCEEDS	6.4		6.1			10	

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 1998 TO SEPTEMBER 1999

[---, no data; b, ice jam; e, estimated.]

DATE	TIME	DISCHARGE (FT ³ /S)	GAGE HEIGHT (FT)	DATE	TIME	DISCHARGE (FT ³ /S)	GAGE HEIGHT (FT)
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LAKE ERIE BASIN

OTTAWA RIVER BASIN

04177000 OTTAWA RIVER AT TOLEDO UNIVERSITY, TOLEDO, OHIO (Base discharge: 1,150 ft³/s)

Jan. 24	2300	*1,920	*11.26	Apr. 10	2100	1,160	9.11
Mar. 19	0230	1,390	9.82	Apr. 24	1600	1,690	10.70

MAUMEE RIVER BASIN

04185000 TIFFIN RIVER AT STRYKER, OHIO (Base discharge: 1,850 ft³/s)

Jan. 25	1200	*5,060	*15.88	Apr. 26	0100	2,560	13.00
Apr. 11	2200	2,010	12.24				

04185440 UNNAMED TRIBUTARY TO LOST CREEK NEAR FARMER, OHIO (Base discharge: 120 ft³/s)

Jan. 23	1045	257	4.13	Apr. 16	0315	231	4.01
Mar. 17	1745	178	3.73	Apr. 23	1015	300	4.32
Apr. 9	0900	*336	4.46	May 23	2330	211	3.91
Apr. 11	0800	328	4.43	May 31	1230	164	3.65

04186500 AUGLAIZE RIVER NEAR FORT JENNINGS, OHIO (Base discharge: 2,700 ft³/s)

Jan. 23	1930	*8,200	17.00	Mar. 1	1130	3,430	12.29
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04187100 OTTAWA RIVER AT LIMA, OHIO (Base discharge: 1,300 ft³/s)

Jan. 23	0830	*2,840	*15.42	No other peaks greater than base discharge			
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04189000 BLANCHARD RIVER NEAR FINDLAY, OHIO (Base discharge: 2,800 ft³/s)

Jan. 24	0600	*5,060	*11.23	Mar. 18	0300	3,330	8.49
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PORTAGE RIVER BASIN

04195500 PORTAGE RIVER AT WOODVILLE, OHIO (Base discharge: 3,500 ft³/s)

Jan. 24	1230	*8,600	*12.33	Apr. 17	1430	3,760	8.59
Apr. 10	1500	4,680	9.48	Apr. 24	0430	4,030	8.86

04195820 PORTAGE RIVER AT ELMORE, OHIO (Base discharge: 3,800 ft³/s)

Jan. 24	1630	*8,620	*12.52	Apr. 17	1330	4,270	8.38
Apr. 10	1400	5,240	9.31	Apr. 24	0600	4,950	9.04

SANDUSKY RIVER BASIN

04196000 SANDUSKY RIVER NEAR BUCYRUS, OHIO (Base discharge: 1,200 ft³/s)

Jan. 19	0500	1,390	6.03	Apr. 10	0530	1,430	6.13
Jan. 23	0030	*2,130	*7.50	Apr. 17	1000	1,330	5.89
Mar. 6	2400	1,470	6.21				

04196800 TYMOCHTEE CREEK AT CRAWFORD, OHIO (Base discharge: 1,800 ft³/s)

Jan. 24	0630	*3,450	*7.59	No other peaks greater than base discharge			
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PEAK DISCHARGE AND STAGE AT CONTINUOUS-RECORD SURFACE DISCHARGE STATIONS

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PEAK DISCHARGES EQUAL TO OR GREATER THAN BASE DISCHARGES, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[---, no data; b, ice jam; e, estimated.]

DATE	TIME	DISCHARGE (FT ³ /S)	GAGE HEIGHT (FT)	DATE	TIME	DISCHARGE (FT ³ /S)	GAGE HEIGHT (FT)
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04197100 HONEY CREEK AT MELMORE, OHIO (Base discharge: 1,500 ft³/s)

Jan. 23	2030	*2,680	*8.94	No other peaks greater than base discharge			
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04198000 SANDUSKY RIVER NEAR FREMONT, OHIO (Base discharge: 10,000 ft³/s)

Jan. 23	0430	*e18,000	*9.73b	No other peaks greater than base discharge			
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HURON RIVER BASIN

04199000 HURON RIVER AT MILAN, OHIO (Base discharge: 4,700 ft³/s)

Jan. 22	1945	---	*20.17b	Apr. 10	0400	4,810	14.32
Jan. 23	0415	*8,800	18.00				

OLD WOMAN'S CREEK BASIN

04199155 OLD WOMAN'S CREEK AT BERLIN ROAD NEAR HURON, OHIO (Base discharge: 400 ft³/s)

Jan. 21	2400	*e800	*11.92b	Apr. 23	1600	458	7.52
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BLACK RIVER BASIN

04200500 BLACK RIVER AT ELYRIA, OHIO (Base discharge: 3,200 ft³/s)

Jan. 24	0700	*6,010	*11.37	No other peaks greater than base discharge			
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ROCKY RIVER BASIN

04201500 ROCKY RIVER NEAR BEREA, OHIO (Base discharge: 4,000 ft³/s)

Jan. 23	0630	*5,960	*5.51	No other peaks greater than base discharge			
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CUYAHOGA RIVER BASIN

04206212 NORTH FORK AT BATH CENTER, OHIO (Base discharge 230 ft³/s)

Apr. 23	1225	*171	*11.44				
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04206220 YELLOW CREEK AT BOTZUM, OHIO (Base discharge: 650 ft³/s)

Jan. 23	1800	*696	*13.60	No other peaks greater than base discharge			
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04207200 TINKERS CREEK AT BEDFORD, OHIO (Base discharge: 1,500 ft³/s)

Jan. 23	2200	1,540	6.09	July 6	1900	*3,110	*7.38
Mar. 3	1300	1,510	6.06	July 29	0400	2,090	6.59
June 10	1900	1,560	6.11	Sept. 29	1900	2,310	6.77

CHAGRIN RIVER BASIN

04209000 CHAGRIN RIVER AT WILLOUGHBY, OHIO (Base discharge: 4,000 ft³/s)

Jan. 23	2200	*4,480	*7.39	No other peaks greater than base discharge			
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GRAND RIVER BASIN

04212100 GRAND RIVER NEAR PAINESVILLE, OHIO (Base discharge: 6,500 ft³/s)

Jan. 24	2300	*9,430	*8.82	No other peaks greater than base discharge			
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CONNEAUT RIVER BASIN

04213000 CONNEAUT CREEK AT CONNEAUT, OHIO (Base discharge: 2,900 ft³/s)

Jan. 23	0230	5,690	7.92	Jan. 24	1830	*7,200	*8.79
Jan. 23	1600	4,480	7.13				

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 Co., U.S. 30 in Bucyrus.

Owner: Timken Roller Bearing Co.

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.

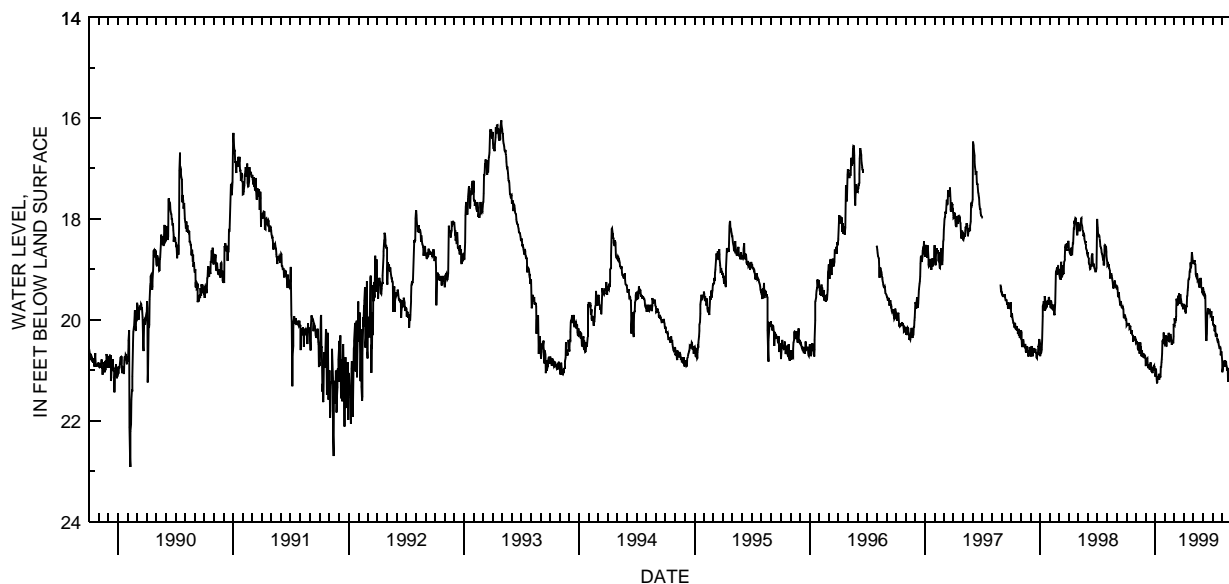
REMARKS.--Station operated by Ohio Department of Natural Resources, Division of water.

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 1998 TO SEPTEMBER 1999 DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20.09	20.43	20.92	21.13	20.36	20.11	19.68	18.86	19.36	19.93	21.04	21.16
2	20.11	20.45	20.80	21.03	20.30	20.12	19.71	18.89	19.40	20.08	21.01	21.18
3	20.09	20.42	20.76	20.97	20.34	19.97	19.71	18.86	19.47	20.10	20.91	21.17
4	20.11	20.47	20.80	21.09	20.52	20.06	19.78	18.84	19.49	20.10	20.81	21.23
5	20.10	20.47	20.77	21.26	20.53	20.02	19.83	18.82	19.48	20.12	20.86	21.21
6	20.09	20.56	20.76	21.23	20.38	19.95	19.83	18.88	19.52	20.12	20.89	21.17
7	20.06	20.60	20.88	21.25	20.37	19.95	19.87	18.90	19.51	20.23	20.82	21.24
8	20.10	20.55	20.89	21.12	20.41	19.83	19.75	19.05	19.52	20.17	20.85	21.24
9	20.10	20.57	20.96	21.14	20.36	19.58	19.73	19.09	19.90	20.11	20.93	21.27
10	20.12	20.45	20.92	21.13	20.40	19.66	19.73	19.14	20.30	20.29	20.80	21.31
11	20.16	20.65	20.95	21.16	20.26	19.68	19.54	19.12	20.42	20.33	20.87	21.34
12	20.14	20.67	20.89	21.07	20.27	19.71	19.52	19.08	20.40	20.26	20.92	21.38
13	20.12	20.57	20.95	21.19	20.44	19.67	19.41	19.11	20.28	20.32	20.83	21.43
14	20.17	20.45	20.99	21.13	20.43	19.52	19.35	19.21	19.90	20.29	20.91	21.46
15	20.24	20.56	20.95	21.08	20.32	19.60	19.22	19.23	19.86	20.35	20.93	21.45
16	20.28	20.53	20.84	21.13	20.31	19.58	19.19	19.22	19.77	20.41	21.00	21.48
17	20.23	20.70	20.92	21.13	20.28	19.48	19.19	19.21	19.87	20.40	20.98	21.56
18	20.23	20.72	20.95	20.92	20.31	19.65	19.16	19.27	19.87	20.40	20.95	21.48
19	20.28	20.60	21.02	20.95	20.34	19.68	19.04	19.33	19.84	20.43	21.23	21.42
20	20.30	20.66	21.03	20.85	20.39	19.62	19.02	19.36	19.81	20.48	21.14	21.46
21	20.32	20.74	20.94	20.78	20.44	19.49	19.03	19.32	19.81	20.49	21.12	21.72
22	20.43	20.72	21.06	20.67	20.49	19.59	18.86	19.30	19.80	20.55	21.10	21.71
23	20.38	20.71	21.01	20.42	20.41	19.60	18.95	19.29	19.83	20.58	21.05	21.55
24	20.36	20.74	20.97	20.41	20.41	19.63	18.94	19.17	19.90	20.57	21.03	21.60
25	20.34	20.67	20.97	20.46	20.43	19.69	18.79	19.25	19.89	20.55	20.99	21.62
26	20.35	20.69	20.92	20.42	20.47	19.72	18.66	19.33	19.88	20.59	21.01	21.61
27	20.37	20.76	20.90	20.25	20.33	19.72	18.71	19.37	19.83	20.70	21.00	21.69
28	20.33	20.73	20.94	20.38	20.08	19.68	18.79	19.39	19.95	20.62	21.08	21.70
29	20.39	20.72	20.92	20.46	---	19.76	18.85	19.44	19.97	20.62	21.15	21.59
30	20.38	20.76	21.01	20.48	---	19.79	18.88	19.46	20.02	20.65	21.17	21.61
31	20.44	---	21.01	20.46	---	19.71	---	19.41	---	20.84	21.14	---
MAX	20.44	20.76	21.06	21.26	20.53	20.12	19.87	19.46	20.42	20.84	21.23	21.72
CAL YR 1998	LOW 21.06											
WTR YR 1999	LOW 21.72											



GROUND-WATER RECORDS

Geauga County

91

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.

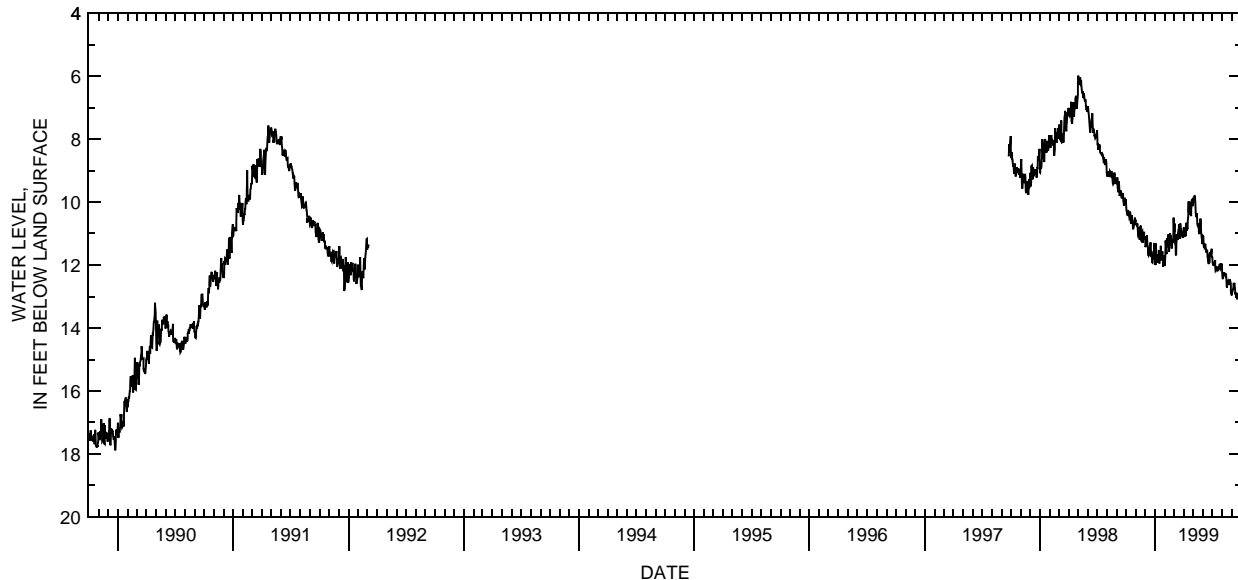
PERIOD OF RECORD.--September 1951 to September 1991 continuous. Discontinued October 1991 to March 1996. Periodic measurements April 1996 to September 1997. Continuous September 1997 to current year.

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 1998 TO SEPTEMBER 1999 DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10.16	10.72	11.43	12.00	11.76	10.79	10.80	10.08	11.07	11.74	12.27	12.89
2	10.27	10.73	11.35	11.97	11.24	10.94	10.86	10.03	11.09	11.93	12.40	12.84
3	10.31	10.67	11.09	11.32	11.22	10.68	10.83	9.98	11.37	11.99	12.45	12.79
4	10.40	10.70	11.20	11.74	11.52	11.21	10.89	9.87	11.45	12.02	12.32	12.78
5	10.42	10.68	11.20	11.87	11.65	11.31	11.08	9.80	11.37	12.00	12.22	12.73
6	10.40	10.88	11.05	11.68	11.22	11.35	10.91	9.81	11.43	11.90	12.29	12.57
7	10.25	11.04	11.34	11.93	11.17	11.67	11.08	9.87	11.41	11.95	12.32	12.59
8	10.37	11.03	11.43	11.90	11.24	11.69	10.80	10.03	11.32	11.95	12.26	12.58
9	10.38	10.98	11.68	11.67	11.24	11.24	10.66	10.31	11.42	11.85	12.32	12.57
10	10.39	10.80	11.66	11.69	11.44	11.03	10.91	10.44	11.48	12.05	12.24	12.68
11	10.50	11.05	11.69	11.82	11.28	11.07	10.72	10.48	11.56	12.16	12.32	12.87
12	10.48	11.19	11.66	11.52	11.03	11.18	10.86	10.40	11.60	12.12	12.39	12.93
13	10.30	11.03	11.44	11.95	11.48	11.19	10.83	10.35	11.55	12.08	12.28	12.87
14	10.35	10.78	11.64	11.93	11.57	10.99	10.64	10.67	11.51	12.07	12.47	12.98
15	10.61	10.76	11.63	11.67	11.36	10.89	10.42	10.75	11.70	12.09	12.67	13.00
16	10.69	10.75	11.37	11.72	11.14	10.88	9.98	10.77	11.68	12.14	12.72	12.91
17	10.61	11.12	11.28	11.87	10.99	10.71	10.29	10.71	11.79	12.12	12.54	13.09
18	10.41	11.26	11.51	11.39	11.06	11.00	10.40	10.67	11.93	12.13	12.50	13.07
19	10.55	10.93	11.63	11.76	11.08	11.16	10.38	10.92	11.97	12.05	12.49	12.96
20	10.56	10.90	11.75	11.77	11.18	11.13	10.30	11.01	11.90	12.12	12.53	12.88
21	10.60	11.27	11.61	11.71	11.31	10.68	10.24	10.92	11.91	12.10	12.57	12.98
22	10.84	11.30	11.92	11.68	11.47	10.79	10.00	10.76	11.86	12.07	12.63	12.96
23	10.84	11.05	11.93	11.56	11.41	10.87	10.34	10.74	11.71	12.08	12.58	12.85
24	10.81	11.21	11.81	11.78	11.29	10.84	10.45	10.52	11.58	11.96	12.49	12.87
25	10.72	11.17	11.84	12.03	11.19	11.01	10.29	10.66	11.63	11.99	12.46	13.03
26	10.71	10.94	11.57	12.03	11.30	11.06	9.94	10.94	11.68	12.04	12.44	13.12
27	10.70	11.18	11.56	11.79	11.17	11.03	9.91	11.04	11.58	12.11	12.55	13.17
28	10.50	11.15	11.52	11.68	10.50	10.92	9.98	11.14	11.48	12.09	12.60	13.17
29	10.62	11.14	11.30	11.91	---	11.02	10.08	11.26	11.71	11.97	12.85	13.04
30	10.56	11.09	11.49	12.03	---	11.13	10.13	11.33	11.76	11.97	12.93	13.00
31	10.69	---	11.49	12.03	---	11.01	---	11.22	---	11.98	12.96	---
MAX	10.84	11.30	11.93	12.03	11.76	11.69	11.08	11.33	11.97	12.16	12.96	13.17

CAL YR 1998 LOW 11.93
WTR YR 1999 LOW 13.17



GROUND-WATER RECORDS

Hancock County

405940083275500. LOCAL NUMBER, HA-3

LOCATION.--Latitude 40°59'40", longitude 83°27'55", Hydrologic Unit 0410008, 2 miles south 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.

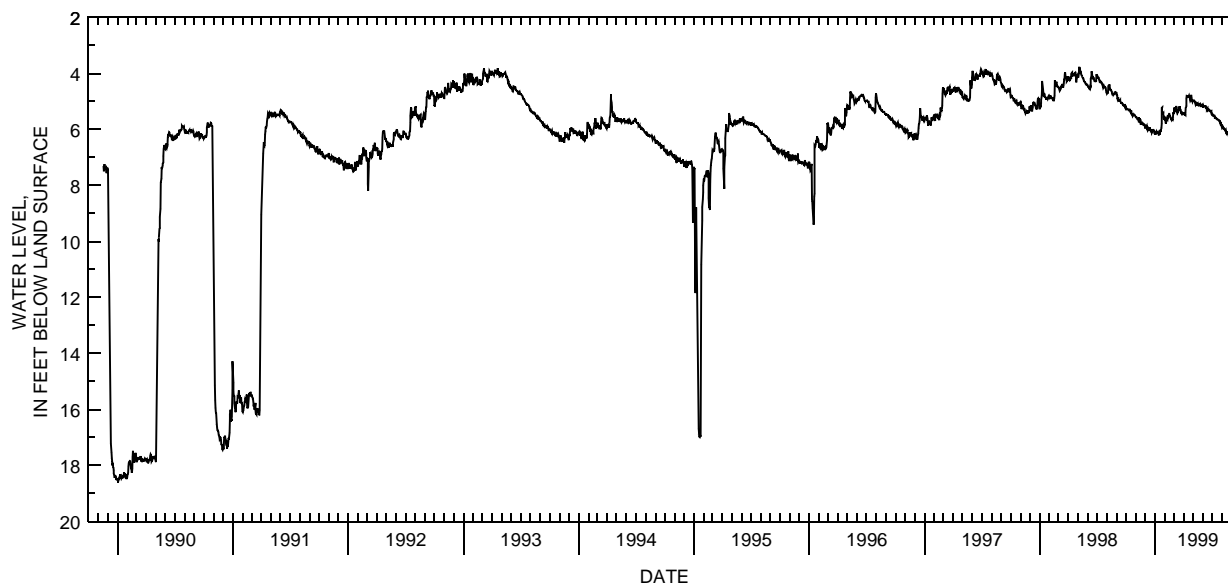
PERIOD OF RECORD.--May 1947 to October 1972 and August 1988 to current year.

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 1998 TO SEPTEMBER 1999 DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.29	5.56	5.96	6.19	5.56	5.42	5.41	4.98	5.10	5.45	5.92	6.46
2	5.29	5.56	5.87	6.14	5.58	5.43	5.45	4.98	5.16	5.49	5.96	6.48
3	5.26	5.56	5.87	6.08	5.60	5.22	5.39	4.97	5.18	5.49	5.95	6.49
4	5.28	5.61	5.89	6.14	5.75	5.30	5.47	4.96	5.18	5.51	5.90	6.45
5	5.28	5.60	5.88	6.14	5.75	5.28	5.49	4.96	5.15	5.51	5.93	6.42
6	5.27	5.64	5.86	6.10	5.62	5.33	5.47	4.99	5.17	5.50	5.96	6.40
7	5.27	5.67	5.97	6.17	5.64	5.34	5.49	5.00	5.17	5.52	5.96	6.47
8	5.30	5.65	5.96	6.09	5.65	5.30	5.40	5.05	5.17	5.52	5.99	6.44
9	5.32	5.63	6.02	6.12	5.61	5.16	5.21	5.08	5.19	5.51	6.01	6.51
10	5.32	5.56	5.99	6.12	5.63	5.28	5.16	5.11	5.22	5.59	5.98	6.57
11	5.31	5.72	6.00	6.14	5.52	5.35	4.89	5.09	5.20	5.60	6.04	6.59
12	5.31	5.74	5.95	6.10	5.51	5.40	4.80	5.05	5.22	5.57	6.06	6.58
13	5.29	5.68	5.96	6.22	5.55	5.37	4.80	5.06	5.20	5.58	6.02	6.61
14	5.30	5.59	6.01	6.18	5.54	5.29	4.85	5.12	5.22	5.60	6.12	6.63
15	5.38	5.68	5.99	6.13	5.45	5.37	4.78	5.12	5.29	5.63	6.13	6.62
16	5.40	5.64	5.93	6.18	5.45	5.34	4.86	5.09	5.26	5.64	6.16	6.63
17	5.32	5.80	5.99	6.18	5.51	5.18	4.81	5.07	5.29	5.64	6.09	6.70
18	5.35	5.80	6.02	6.02	5.53	5.26	4.79	5.11	5.33	5.63	6.13	6.66
19	5.44	5.72	6.08	6.07	5.55	5.30	4.78	5.15	5.31	5.64	6.13	6.60
20	5.46	5.77	6.08	6.00	5.60	5.22	4.83	5.15	5.28	5.66	6.14	6.63
21	5.48	5.82	6.01	5.95	5.64	5.19	4.80	5.10	5.31	5.66	6.18	6.69
22	5.52	5.81	6.11	5.79	5.66	5.30	4.91	5.10	5.33	5.67	6.18	6.69
23	5.50	5.81	6.09	5.23	5.62	5.30	4.96	5.09	5.31	5.68	6.18	6.65
24	5.48	5.82	6.04	5.21	5.62	5.36	4.94	5.08	5.32	5.69	6.18	6.68
25	5.46	5.79	6.03	5.42	5.65	5.41	4.84	5.10	5.36	5.72	6.20	6.74
26	5.48	5.80	6.02	5.42	5.66	5.44	4.76	5.17	5.37	5.76	6.22	6.73
27	5.48	5.87	6.02	5.40	5.57	5.41	4.85	5.17	5.34	5.79	6.28	6.73
28	5.48	5.83	6.05	5.55	5.39	5.37	4.93	5.17	5.33	5.76	6.28	6.72
29	5.50	5.83	6.05	5.62	---	5.46	4.98	5.17	5.45	5.78	6.37	6.69
30	5.50	5.87	6.11	5.64	---	5.48	5.01	5.17	5.46	5.83	6.42	6.72
31	5.55	---	6.10	5.63	---	5.41	---	5.12	---	5.85	6.46	---
MAX	5.55	5.87	6.11	6.22	5.75	5.48	5.49	5.17	5.46	5.85	6.46	6.74

CAL YR 1998 LOW 6.11
WTR YR 1999 LOW 6.74



GROUND-WATER RECORDS
Hardin County

93

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.

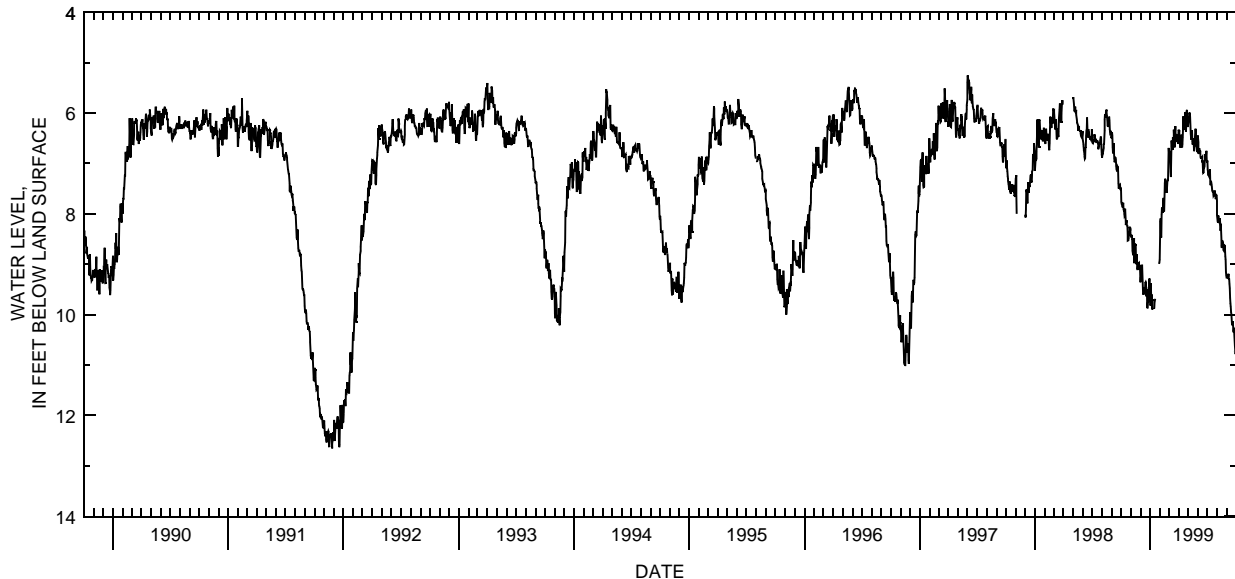
PERIOD OF RECORD.--December 1954 to current year.

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 1998 TO SEPTEMBER 1999
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.76	8.46	9.36	9.82	8.62	6.79	6.33	6.21	6.44	6.94	8.02	9.26
2	7.80	8.46	9.25	9.80	8.15	6.81	6.37	6.16	6.58	7.12	8.14	9.25
3	7.80	8.41	9.07	9.38	8.09	6.75	6.34	6.12	6.75	7.17	8.17	9.24
4	7.85	8.50	9.14	9.73	8.45	6.95	6.50	6.07	6.80	7.23	8.05	9.25
5	7.85	8.50	9.12	9.80	8.47	6.95	6.62	5.99	6.70	7.24	8.05	9.24
6	7.84	8.73	9.01	9.60	8.01	7.17	6.56	6.02	6.76	7.15	8.11	9.19
7	7.78	8.82	9.27	9.90	7.87	7.27	6.69	6.07	6.75	7.22	8.12	9.30
8	7.91	8.81	9.45	9.82	7.93	7.23	6.43	6.28	6.76	7.23	8.16	9.28
9	7.93	8.75	9.58	9.70	7.95	6.55	6.46	6.41	6.83	7.11	8.20	9.39
10	7.95	8.48	9.58	9.70	7.98	6.63	6.56	6.50	6.89	7.36	8.09	9.47
11	8.03	8.91	9.60	9.72	7.75	6.66	6.43	6.53	6.90	7.43	8.27	9.67
12	8.02	8.98	9.55	---	7.68	6.72	6.68	6.43	6.91	7.38	8.34	9.77
13	7.90	8.86	9.45	9.89	7.95	6.72	6.61	6.34	6.88	7.37	8.20	9.84
14	8.02	8.59	9.54	9.88	7.94	6.49	6.48	6.56	6.86	7.41	8.52	9.95
15	8.16	8.63	9.54	9.75	7.65	6.48	6.23	6.62	6.98	7.46	8.63	9.99
16	8.22	8.60	9.36	9.68	7.39	6.47	6.06	6.58	6.94	7.53	8.67	10.08
17	8.15	8.97	9.35	---	7.30	6.33	6.29	6.50	7.10	7.56	8.53	10.21
18	8.13	9.00	9.37	9.45	7.33	6.62	6.33	6.58	7.19	7.56	8.56	10.17
19	8.21	8.80	9.61	---	7.37	6.68	6.29	6.71	7.18	7.56	8.57	10.13
20	8.24	8.91	9.64	---	7.46	6.63	6.21	6.76	7.10	7.63	8.66	10.18
21	8.40	9.10	9.50	---	7.56	6.26	6.08	6.65	7.08	7.62	8.72	10.31
22	8.53	9.10	9.87	---	7.58	6.41	5.98	6.54	7.05	7.64	8.73	10.35
23	8.52	9.02	9.86	---	7.45	6.43	6.31	6.52	6.93	7.64	8.70	10.26
24	8.48	9.10	9.76	---	7.36	6.44	6.37	6.31	6.81	7.54	8.62	10.36
25	8.42	8.98	9.74	---	7.33	6.54	6.23	6.39	6.89	7.59	8.63	10.48
26	8.39	8.97	9.50	---	7.33	6.57	5.95	6.56	6.91	7.63	8.70	10.62
27	8.40	9.09	9.45	---	6.99	6.53	5.94	6.65	6.83	7.71	8.84	10.71
28	8.25	9.08	9.46	---	6.69	6.43	6.06	6.67	6.75	7.66	8.91	10.78
29	8.33	9.01	9.28	8.99	---	6.55	6.21	6.75	6.94	7.62	9.15	10.74
30	8.27	9.15	9.45	8.96	---	6.61	6.27	6.77	6.98	7.63	9.22	10.83
31	8.43	---	9.58	8.91	---	6.50	---	6.62	---	7.75	9.26	---
MAX	8.53	9.15	9.87	9.90	8.62	7.27	6.69	6.77	7.19	7.75	9.26	10.83

CAL YR 1998 LOW 9.87
WTR YR 1999 LOW 10.83



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.

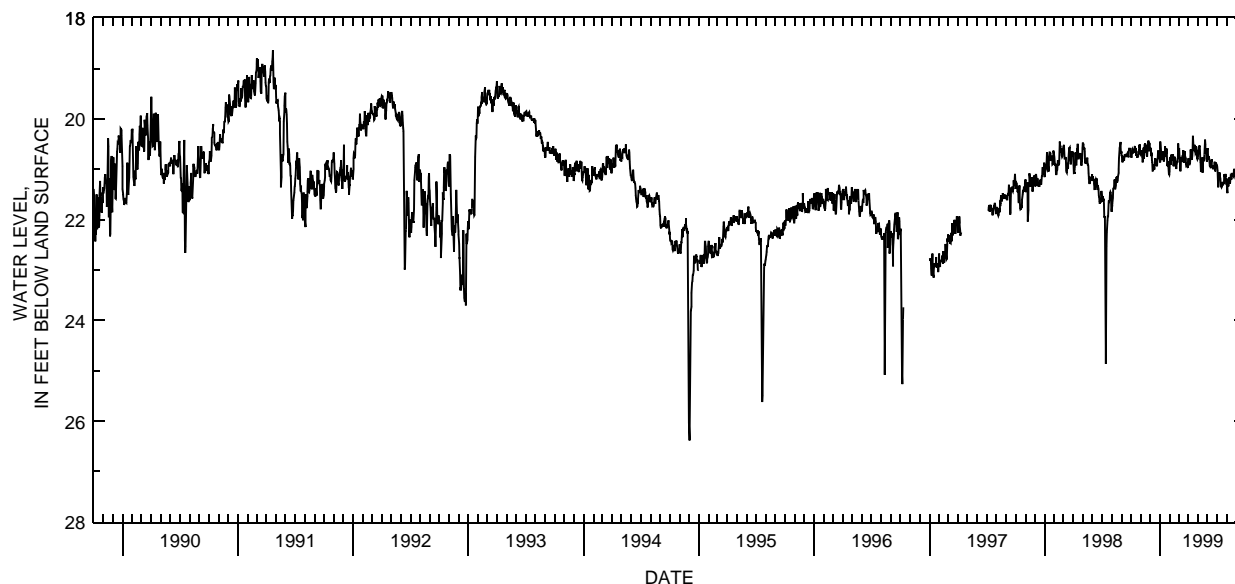
PERIOD OF RECORD.--June 1971 to current year.

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 1998 TO SEPTEMBER 1999 DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20.66	20.72	20.63	20.85	21.04	20.63	20.80	20.78	20.60	20.91	21.18	21.17
2	20.74	20.71	20.63	20.86	20.79	20.65	20.79	20.74	20.60	20.95	21.43	21.17
3	20.77	20.71	20.57	20.45	20.76	20.58	20.78	20.65	20.70	21.02	21.47	21.16
4	20.71	20.64	20.68	20.67	20.87	20.73	20.82	20.61	20.75	21.16	21.32	21.15
5	20.68	20.69	20.74	20.72	20.91	20.78	20.92	20.60	20.75	21.36	21.30	21.19
6	20.68	20.62	20.67	20.66	20.74	20.83	20.81	20.54	20.80	21.24	21.34	21.18
7	20.61	20.81	20.82	20.82	20.71	21.04	20.89	20.54	20.80	21.10	21.34	21.14
8	20.62	20.86	20.87	20.81	20.76	21.01	20.76	20.62	20.94	21.21	21.19	21.11
9	20.68	20.72	21.03	20.70	20.79	20.76	20.61	20.80	20.93	21.06	21.26	21.10
10	20.60	20.57	21.03	20.70	20.83	20.78	20.71	20.87	20.90	21.09	21.16	21.14
11	20.64	20.75	21.01	20.71	20.75	20.81	20.61	21.05	20.98	21.16	21.29	21.28
12	20.67	20.79	20.99	20.64	20.71	20.83	20.78	21.02	20.93	21.19	21.29	21.89
13	20.56	20.69	20.90	20.84	20.94	20.82	20.81	20.77	20.85	21.33	21.14	21.81
14	20.54	20.52	20.99	20.84	20.93	20.73	20.74	20.83	20.80	21.35	21.15	21.44
15	20.62	20.51	20.99	20.81	20.86	20.71	20.63	20.89	20.94	21.36	21.19	21.36
16	20.65	20.49	20.85	20.70	20.77	20.70	20.34	21.05	20.95	21.34	21.19	21.34
17	20.58	20.65	20.78	20.74	20.75	20.62	20.48	21.05	20.93	21.33	21.09	21.41
18	20.68	20.66	20.81	20.55	20.78	20.80	20.58	20.77	20.96	21.25	21.11	21.39
19	20.72	20.52	20.84	20.72	20.79	20.87	20.62	20.84	21.00	21.27	21.07	21.95
20	20.72	20.55	20.92	20.75	20.83	20.85	20.63	20.84	20.96	21.31	21.11	21.74
21	20.72	20.73	20.87	20.70	20.92	20.64	20.55	20.79	20.93	21.30	21.13	21.49
22	20.76	20.75	20.88	20.66	20.99	20.72	20.52	20.71	20.96	21.26	21.15	21.42
23	20.76	20.63	20.94	20.59	20.92	20.76	20.60	20.70	20.97	21.29	21.10	21.34
24	20.74	20.63	20.80	20.77	20.87	20.79	20.68	20.41	20.85	21.10	21.03	21.28
25	20.65	20.59	20.78	20.94	20.85	20.87	20.67	20.51	21.04	21.15	20.99	21.38
26	20.63	20.43	20.65	20.92	20.85	20.92	20.55	20.60	21.03	21.12	20.99	21.93
27	20.64	20.52	20.63	20.84	20.78	20.90	20.57	20.66	20.89	21.15	21.02	22.00
28	20.52	20.50	20.72	20.91	20.49	20.86	20.63	20.67	20.86	21.09	21.06	22.25
29	20.57	20.50	20.70	21.00	---	20.95	20.78	20.79	20.89	21.10	21.10	22.23
30	20.51	20.50	20.71	21.10	---	20.97	20.80	20.85	20.94	21.29	21.19	21.79
31	20.70	---	20.71	21.11	---	20.91	---	20.74	---	21.29	21.19	---
MAX	20.77	20.86	21.03	21.11	21.04	21.04	20.92	21.05	21.04	21.36	21.47	22.25

CAL YR 1998 LOW 24.86
WTR YR 1999 LOW 22.25



GROUND-WATER RECORDS

Lucas County

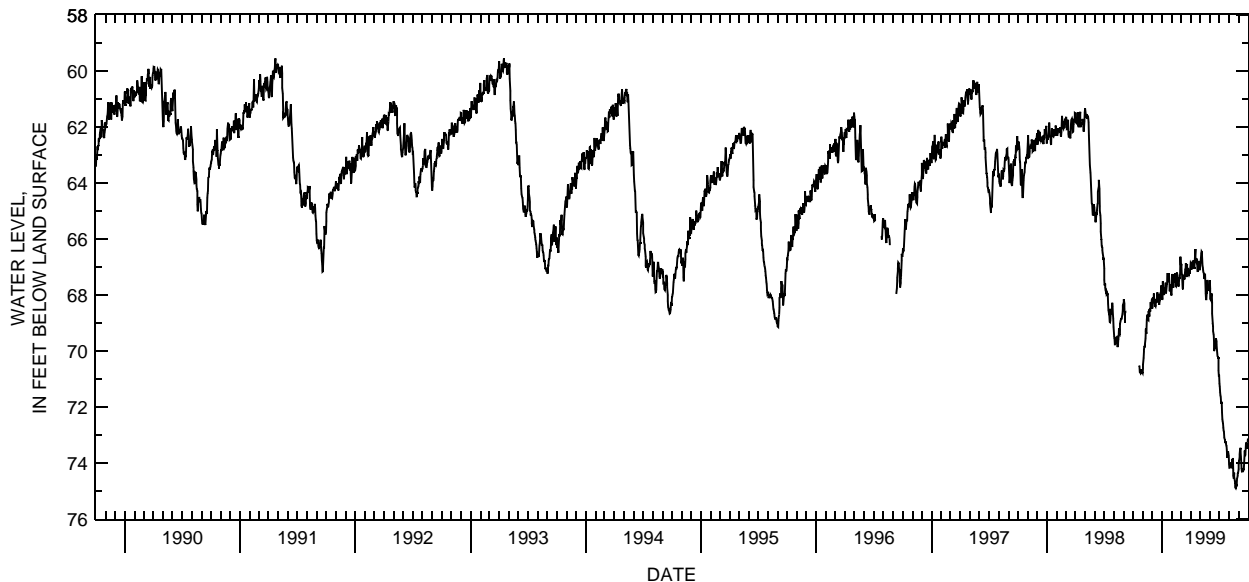
95

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 1998 TO SEPTEMBER 1999 DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	70.63	68.48	68.17	67.77	66.90	66.86	67.03	67.48	70.88	74.05	74.06
2	---	70.48	68.35	68.13	67.29	66.96	66.88	66.92	67.77	71.16	74.18	73.92
3	---	70.24	68.07	67.51	67.25	66.89	66.83	66.80	68.14	71.27	74.20	73.79
4	---	70.03	68.17	67.90	67.67	67.23	66.96	66.69	68.19	71.46	---	73.68
5	---	69.93	68.18	67.99	67.74	67.27	67.09	66.53	68.03	71.58	---	73.55
6	---	69.81	67.95	67.75	67.34	67.57	66.92	66.45	68.01	71.64	74.18	73.45
7	---	69.86	68.18	68.00	67.27	67.78	67.05	66.47	67.94	71.83	74.00	73.61
8	---	69.76	68.23	67.95	67.35	67.80	66.78	66.73	68.27	71.87	74.00	73.76
9	---	69.55	68.41	67.77	67.39	67.34	66.80	66.95	68.67	71.80	74.18	73.99
10	---	69.20	68.38	67.75	67.55	67.27	66.93	67.01	68.99	72.20	73.95	74.17
11	---	69.30	68.40	67.80	67.32	67.31	66.77	67.12	69.12	72.43	73.87	74.29
12	---	69.39	68.31	67.56	67.21	67.42	67.02	67.20	69.28	72.51	73.94	74.27
13	---	69.22	68.14	67.95	67.68	67.42	67.02	67.23	69.42	72.58	73.82	74.30
14	---	68.86	68.27	67.93	67.69	67.22	66.91	67.33	69.66	72.72	74.26	74.30
15	---	68.78	68.23	67.68	67.46	67.09	66.71	67.42	70.01	72.84	74.45	74.28
16	---	68.70	67.98	67.59	67.24	67.07	66.35	67.36	69.93	72.89	74.56	74.19
17	---	68.88	67.90	67.64	67.19	66.86	66.67	67.24	69.84	73.07	74.35	74.25
18	---	68.91	67.97	67.21	67.25	67.22	66.80	67.64	69.84	73.14	74.50	74.02
19	---	68.58	68.08	67.52	67.30	67.35	66.83	67.94	69.74	73.17	74.62	73.76
20	70.52	68.57	68.19	67.54	67.46	67.30	66.85	68.15	69.60	73.28	74.74	73.55
21	70.55	68.76	67.99	67.45	67.62	66.91	66.75	68.15	69.55	73.22	74.87	73.75
22	70.76	68.77	68.33	67.38	67.69	67.05	66.70	67.94	69.65	73.26	74.91	73.69
23	70.77	68.50	68.32	67.21	67.60	67.06	67.08	67.92	69.76	73.37	74.86	73.45
24	70.79	68.59	68.22	67.62	67.45	67.08	67.17	67.46	69.94	73.39	74.75	73.27
25	70.76	68.50	68.18	67.87	67.37	67.25	67.09	67.50	70.19	73.54	74.84	73.44
26	70.79	68.26	67.94	67.85	67.42	67.30	66.82	67.66	70.25	73.81	74.72	73.46
27	70.79	68.43	67.90	67.62	67.21	67.26	66.81	67.71	70.25	73.76	74.55	73.46
28	70.65	68.33	67.88	67.70	66.63	67.15	66.94	67.78	70.24	73.65	74.45	73.46
29	70.81	68.23	67.66	67.87	---	67.19	67.07	67.82	70.70	73.58	74.37	73.26
30	70.75	68.13	67.82	68.01	---	67.24	67.11	67.83	70.88	73.67	74.36	73.12
31	70.79	---	67.82	68.02	---	67.11	---	67.69	---	73.74	74.22	---
MAX	70.81	70.63	68.48	68.17	67.77	67.80	67.17	68.15	70.88	73.81	74.91	74.30
CAL YR 1998	LOW 70.81											
WTR YR 1999	LOW 74.91											



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 Dept.

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.

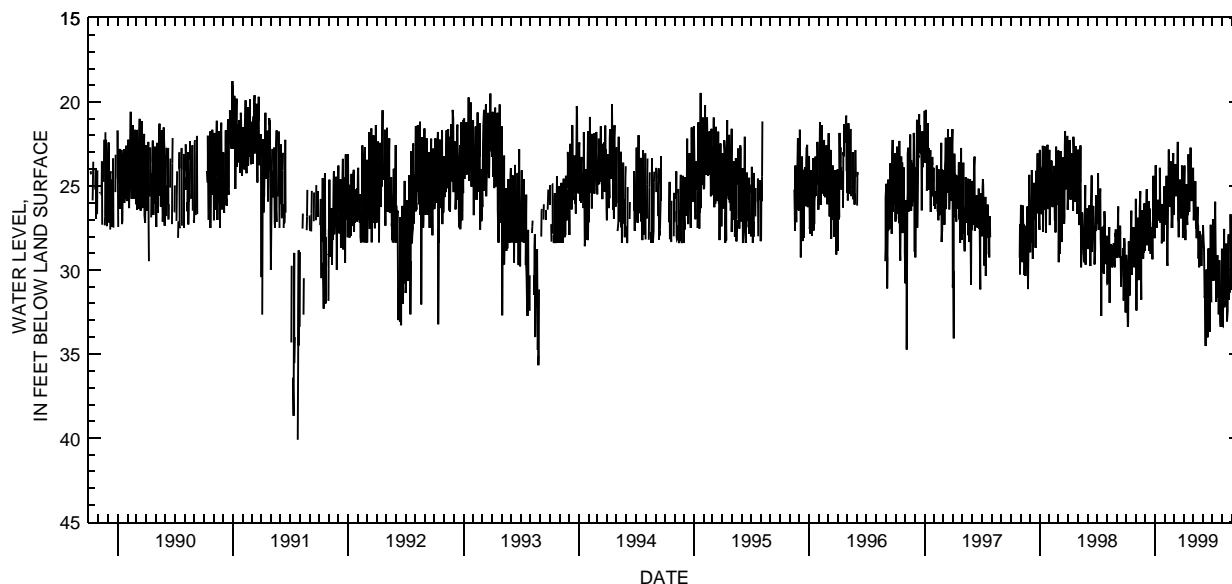
PERIOD OF RECORD.--September 1946 to current year.

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 1998 TO SEPTEMBER 1999 DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30.63	25.75	26.95	26.26	25.35	26.71	26.82	25.77	28.69	30.65	28.72	31.17
2	29.09	29.24	27.55	25.43	27.29	25.29	25.81	23.91	27.77	29.16	31.46	31.02
3	29.43	32.42	27.20	23.76	25.51	24.72	26.08	26.08	27.33	27.89	33.33	30.14
4	30.92	30.60	27.59	25.57	26.19	25.59	23.79	27.04	28.35	26.97	33.34	28.87
5	31.63	29.35	26.01	27.50	25.06	24.10	26.42	26.49	28.64	28.98	32.40	28.79
6	32.57	29.77	25.18	26.45	25.76	23.79	27.42	26.48	29.32	30.64	31.71	29.05
7	33.38	27.24	28.53	27.46	24.38	23.69	27.67	25.68	31.65	29.44	29.83	29.50
8	33.16	26.89	26.47	26.20	25.35	25.62	28.21	26.12	31.52	29.37	27.55	29.59
9	29.72	29.16	27.57	26.87	29.54	24.93	26.21	24.71	31.11	27.06	32.22	30.51
10	28.29	28.06	27.84	25.81	29.74	25.46	25.08	26.29	34.52	27.26	31.92	29.60
11	29.66	30.60	27.34	26.60	27.64	25.18	24.89	27.55	30.88	25.94	31.66	28.17
12	28.82	28.97	27.14	26.93	25.36	25.47	26.89	27.25	30.63	28.57	31.33	28.77
13	31.51	28.66	25.90	27.03	24.71	23.28	27.30	28.10	29.97	29.53	31.04	31.13
14	30.99	26.43	28.84	26.68	22.84	22.38	26.54	27.27	31.56	31.89	28.43	31.48
15	28.60	25.31	26.33	26.06	25.65	26.97	26.74	26.87	30.95	30.73	29.19	32.95
16	28.28	29.53	27.06	25.80	25.67	27.04	24.81	26.24	31.08	31.18	31.01	32.09
17	27.24	28.56	27.21	23.92	25.62	28.04	23.13	27.33	34.02	29.91	32.05	33.17
18	26.46	31.75	29.04	27.18	26.23	27.13	23.17	27.39	31.20	29.11	33.06	30.83
19	30.29	28.73	28.61	26.90	26.03	24.66	25.22	29.33	29.18	31.63	32.43	29.45
20	27.50	28.05	27.53	26.96	23.52	25.40	26.52	28.13	28.71	30.97	30.58	31.18
21	29.31	26.45	27.80	26.65	24.03	24.61	25.64	29.83	32.70	30.73	29.22	30.60
22	28.14	26.82	27.45	26.52	25.95	25.41	25.73	29.18	31.58	32.63	27.88	31.34
23	28.48	28.13	28.19	28.42	27.50	25.98	24.90	27.71	32.02	30.91	31.79	32.69
24	28.29	29.09	29.37	27.79	26.90	25.48	22.72	28.53	33.68	29.41	31.71	31.60
25	27.43	29.33	27.09	26.07	27.49	26.93	23.32	27.88	30.19	30.19	30.52	30.65
26	29.19	28.16	25.83	27.40	26.77	26.16	24.56	28.33	29.61	31.21	31.34	28.30
27	29.84	28.95	24.38	27.16	23.82	26.80	25.90	28.81	27.30	33.01	31.02	30.07
28	29.59	26.34	26.56	26.25	23.03	23.78	25.60	29.75	31.91	33.39	29.47	32.15
29	28.76	26.03	27.39	28.30	---	26.23	24.83	28.99	29.68	32.21	26.67	31.19
30	28.39	28.87	27.82	25.47	---	26.84	25.71	28.24	29.68	32.57	29.73	32.01
31	29.13	---	28.10	25.01	---	28.08	---	28.29	---	32.12	29.16	---
MAX	33.38	32.42	29.37	28.42	29.74	28.08	28.21	29.83	34.52	33.39	33.34	33.17

CAL YR 1998 LOW 33.38
WTR YR 1999 LOW 34.52



GROUND-WATER RECORDS

Ottawa County

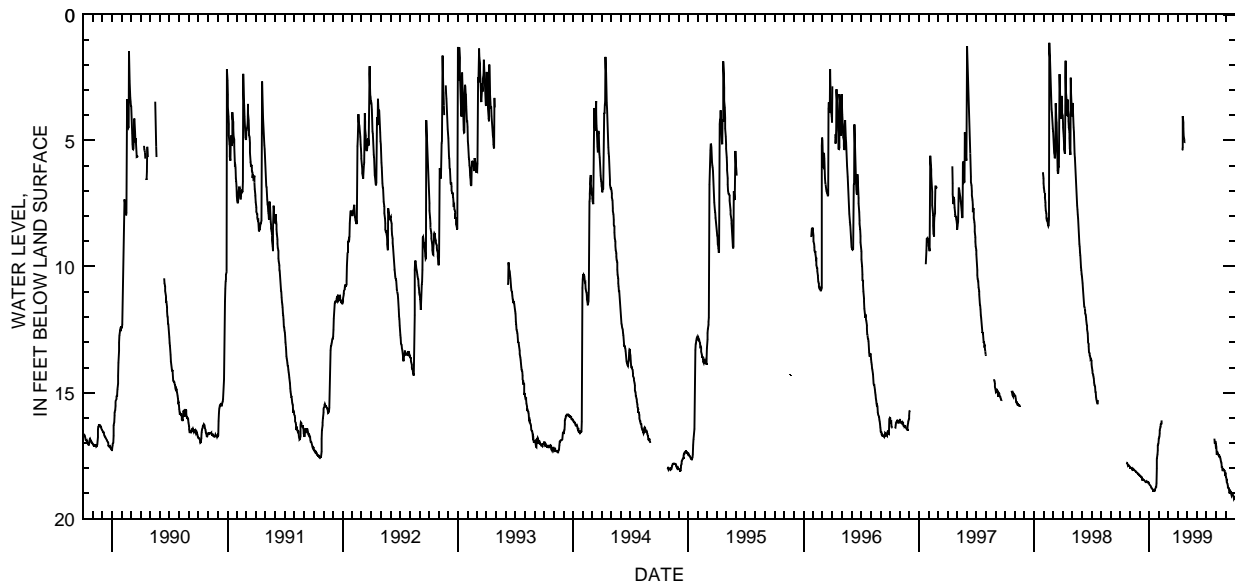
97

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, 19.21 ft below land-surface datum, Sept. 29, 1999; minimum daily low, 1.12 ft below land-surface datum, Feb. 18, 1998.

DEPTH BELOW LAND SURFACE (WATER LEVEL), FEET, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999 DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	17.97	18.29	18.65	16.75	---	---	---	---	---	17.14	18.31
2	---	17.98	18.29	18.67	16.62	---	---	---	---	---	17.43	18.45
3	---	17.98	18.31	18.68	16.49	---	---	---	---	---	17.43	18.43
4	---	18.00	18.32	18.70	16.38	---	---	---	---	---	17.42	18.58
5	---	18.00	18.33	18.72	16.35	---	---	---	---	---	17.39	18.61
6	---	18.02	18.35	18.74	16.26	---	---	---	---	---	17.43	18.69
7	---	18.04	18.36	18.77	16.23	---	---	---	---	---	17.48	18.76
8	---	18.06	18.37	18.78	16.25	---	---	---	---	---	17.50	18.78
9	---	18.07	18.48	18.82	16.11	---	---	---	---	---	17.48	18.81
10	---	18.06	18.42	18.82	---	---	---	---	---	---	17.47	18.82
11	---	18.02	18.43	18.83	---	---	---	---	---	---	17.53	18.87
12	---	18.04	18.44	18.84	---	---	---	---	---	---	17.57	19.00
13	---	18.04	18.46	18.86	---	---	---	---	---	---	17.58	18.88
14	---	18.06	18.47	18.89	---	---	5.34	---	---	---	17.63	18.94
15	---	18.10	18.48	18.88	---	---	5.35	---	---	---	17.71	18.90
16	---	18.10	18.49	18.90	---	---	5.27	---	---	---	17.75	18.95
17	---	18.11	18.50	18.90	---	---	4.03	---	---	---	17.80	19.04
18	---	18.12	18.52	18.88	---	---	4.28	---	---	---	17.99	19.03
19	---	18.13	18.54	18.80	---	---	4.51	---	---	---	17.93	19.09
20	17.78	18.14	18.56	18.77	---	---	4.82	---	---	---	18.05	19.04
21	17.78	18.16	18.55	18.76	---	---	4.97	---	---	---	18.11	19.05
22	17.80	18.18	18.53	18.73	---	---	5.08	---	---	---	18.05	19.05
23	17.83	18.19	18.52	18.60	---	---	5.06	---	---	---	18.05	19.07
24	17.86	18.22	18.54	18.01	---	---	---	---	---	---	18.07	19.07
25	17.91	18.21	18.55	17.62	---	---	---	---	---	---	18.07	19.12
26	17.90	18.22	18.55	17.45	---	---	---	---	---	16.83	18.09	19.20
27	17.89	18.23	18.57	17.30	---	---	---	---	---	17.02	18.10	19.18
28	17.90	18.24	18.58	17.10	---	---	---	---	---	16.97	18.20	19.20
29	17.92	18.27	18.57	17.02	---	---	---	---	---	16.92	18.24	19.21
30	17.92	18.27	18.60	16.87	---	---	---	---	---	17.10	18.22	19.18
31	17.96	---	18.63	16.83	---	---	---	---	---	17.07	18.37	---
MAX	17.96	18.27	18.63	18.90	16.75	---	5.35	---	---	17.10	18.37	19.21
CAL YR 1998 LOW 18.63												
WTR YR 1999 LOW 19.21												



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.

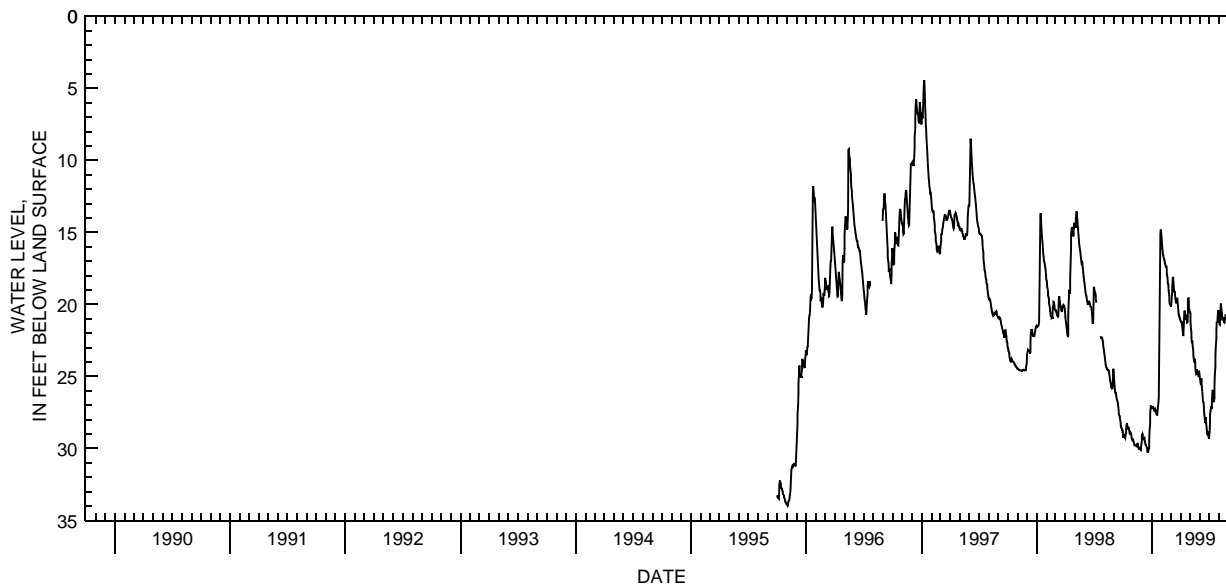
REMARKS.--Station operated by Ohio Department of Natural Resources, Division of Water.

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 1998 TO SEPTEMBER 1999
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29.02	29.45	29.00	27.18	15.70	20.09	21.14	20.53	24.99	29.35	20.84	---
2	29.17	29.40	29.12	27.18	16.10	20.10	21.23	20.61	25.20	28.81	21.15	---
3	29.17	29.49	29.25	27.11	16.29	20.01	21.23	21.11	25.35	28.25	21.40	---
4	29.11	29.57	29.34	27.11	16.55	19.73	21.20	21.53	25.49	27.68	21.42	---
5	29.11	29.68	29.36	27.13	16.61	19.13	21.22	21.95	25.47	27.34	21.02	---
6	29.22	29.77	29.35	27.25	16.75	18.78	21.47	22.29	25.15	27.24	20.35	---
7	29.30	29.79	29.28	27.33	16.78	18.46	21.65	22.60	25.57	27.06	19.95	---
8	29.30	29.78	29.43	27.37	16.83	18.10	21.89	22.59	25.80	27.18	20.14	---
9	29.06	29.70	29.53	27.41	16.97	18.16	22.14	22.58	26.06	27.17	20.36	---
10	28.90	29.79	29.62	27.41	17.06	18.54	22.13	22.89	26.42	26.62	20.58	---
11	28.64	29.83	29.73	27.32	17.13	18.79	21.55	23.24	26.74	25.98	20.89	---
12	28.40	29.85	29.77	27.37	17.27	19.07	20.93	23.56	26.78	25.99	21.04	---
13	28.25	29.86	29.77	27.52	17.37	19.15	20.53	23.72	26.81	26.19	21.04	---
14	28.31	29.86	29.81	27.56	17.37	19.15	20.43	24.01	27.23	26.44	20.93	---
15	28.45	29.81	29.90	27.65	17.38	19.38	20.70	24.00	27.58	26.69	20.94	---
16	28.63	29.61	30.01	27.68	17.59	19.58	21.01	23.76	27.81	26.78	21.09	---
17	28.63	29.72	30.15	27.68	17.87	19.75	21.00	24.06	28.01	26.50	21.25	---
18	28.52	29.86	30.24	27.43	18.10	19.86	20.72	24.35	28.18	25.75	21.28	---
19	28.59	29.96	30.25	27.17	18.39	19.86	20.89	24.60	28.18	24.91	21.11	---
20	28.70	30.05	30.23	26.99	18.54	19.85	21.05	24.68	27.86	24.29	20.93	---
21	28.82	30.06	30.06	26.77	18.61	19.61	21.21	24.85	28.20	23.66	20.82	---
22	28.92	30.03	30.02	26.48	18.79	19.61	21.25	24.83	28.47	22.99	20.67	---
23	29.01	29.91	29.49	25.61	19.08	19.89	21.23	24.52	28.70	22.36	---	---
24	29.01	30.03	28.85	23.65	19.38	20.19	20.58	24.61	29.00	21.80	---	---
25	28.94	30.10	28.25	20.49	19.72	20.43	19.59	24.70	29.05	21.24	---	---
26	29.01	30.12	27.65	17.51	19.99	20.68	19.56	24.82	29.04	21.24	---	---
27	29.08	29.93	27.32	15.13	20.05	20.79	19.80	24.85	28.83	21.27	---	---
28	29.22	29.68	27.07	14.81	20.05	20.79	20.15	24.96	29.13	20.86	---	---
29	29.34	29.40	27.08	14.87	---	20.91	20.46	24.94	29.21	20.54	---	---
30	29.43	29.12	27.12	15.20	---	20.97	20.54	24.62	29.35	20.39	---	---
31	29.45	---	27.16	15.41	---	21.02	---	24.78	---	20.61	---	---
MAX	29.45	30.12	30.25	27.68	20.05	21.02	22.14	24.96	29.35	29.35	21.42	---
CAL YR 1998	LOW 30.25											
WTR YR 1999	LOW 30.25											



GROUND-WATER RECORDS
Putnam County

99

405505084032900. LOCAL NUMBER, PU-1

LOCATION.--Latitude 40°55'05", longitude 84°03'29", Hydrologic Unit 04100007, Center and Broadway Streets, 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 Resource, Division of Water.

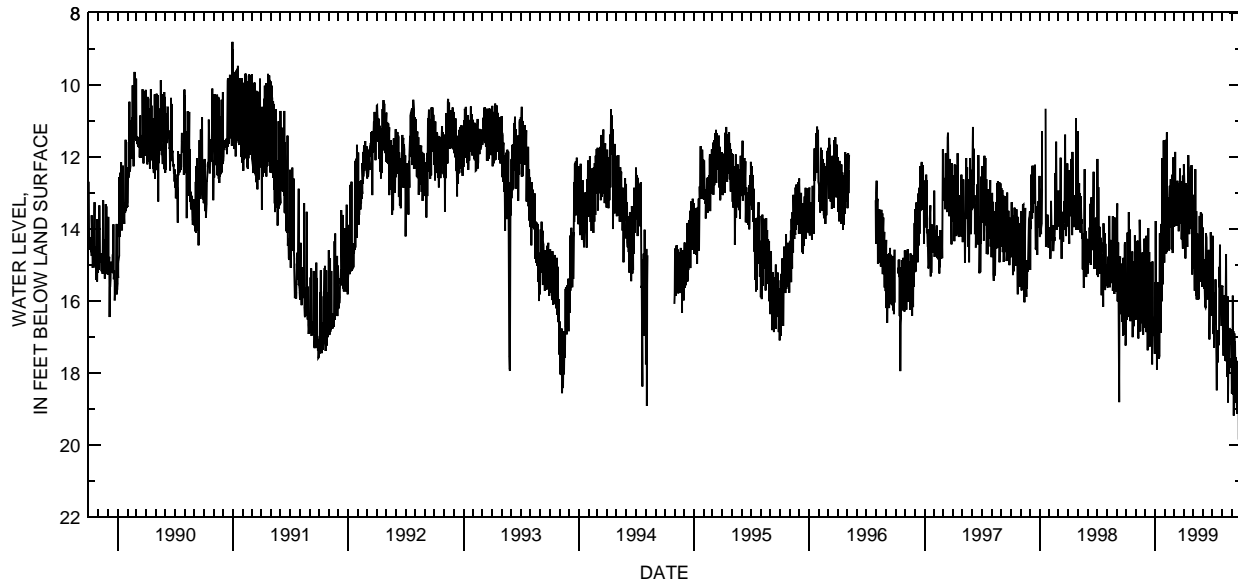
PERIOD OF RECORD.--July 1946 to current year.

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 1998 TO SEPTEMBER 1999
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16.93	16.52	16.75	15.48	11.54	12.19	14.31	14.26	13.96	15.64	15.60	17.59
2	16.00	14.34	14.61	17.28	12.61	13.20	13.84	13.05	15.18	15.90	15.60	18.57
3	16.32	15.80	16.23	13.78	13.50	13.94	12.21	13.46	14.37	14.19	15.58	17.82
4	16.53	15.19	16.87	17.02	14.51	13.02	12.80	15.11	15.29	15.71	16.75	17.04
5	15.80	16.18	14.19	17.07	14.68	13.21	14.21	14.16	15.67	16.88	16.74	15.85
6	14.10	15.74	15.50	15.58	11.52	11.86	12.98	15.06	14.84	16.92	17.52	18.61
7	15.03	14.32	15.35	17.91	14.64	13.64	13.09	15.72	15.59	16.29	15.86	16.84
8	16.45	16.16	15.59	15.65	11.32	13.39	14.82	14.45	15.95	17.30	15.97	19.19
9	15.58	17.04	17.37	17.57	14.29	13.91	12.73	12.34	16.14	16.23	15.85	17.84
10	13.53	15.22	16.02	17.15	13.60	12.69	14.03	14.80	16.18	15.76	16.88	16.90
11	14.80	16.35	13.98	15.48	14.51	13.91	12.84	15.84	16.14	16.64	17.16	18.83
12	16.14	16.72	17.17	17.61	14.39	13.31	12.79	13.51	14.12	15.40	17.67	17.12
13	14.03	15.96	16.30	17.23	13.13	12.66	14.50	15.96	14.24	15.81	16.71	18.27
14	14.04	13.75	14.64	17.60	13.78	13.42	13.35	14.40	15.13	16.94	15.58	18.70
15	16.56	14.58	15.70	17.52	14.60	12.83	13.64	14.13	14.81	17.93	14.70	17.57
16	15.82	16.85	17.27	14.12	13.06	12.74	13.86	14.28	15.96	18.48	17.69	18.21
17	15.35	16.20	14.92	16.63	12.80	14.07	11.95	15.46	14.97	16.94	17.06	18.75
18	16.04	16.37	15.64	16.52	13.97	12.76	12.60	15.96	15.26	17.20	18.10	19.13
19	16.14	14.76	16.56	14.98	13.40	12.85	13.31	14.45	14.91	17.71	17.66	17.67
20	15.75	16.62	15.21	16.88	12.62	13.85	14.15	15.95	15.39	16.82	15.88	17.91
21	14.63	15.73	15.36	13.86	13.82	12.96	13.28	15.07	14.58	17.16	18.82	19.01
22	17.01	16.12	17.26	14.72	13.12	12.32	14.00	13.65	16.79	16.87	17.02	18.41
23	15.40	14.65	17.76	16.01	14.56	13.84	13.12	14.31	17.07	17.23	17.30	18.26
24	14.90	16.94	14.90	12.03	13.74	13.38	12.72	15.46	16.00	15.05	18.03	19.85
25	16.71	14.96	16.83	14.22	12.49	13.01	12.27	15.37	15.14	15.62	16.85	17.71
26	15.45	16.23	16.56	15.54	14.67	14.29	13.57	13.54	16.07	14.44	17.17	18.60
27	16.36	15.80	16.97	12.72	13.71	14.01	12.23	14.87	14.09	16.21	16.76	19.16
28	14.90	16.40	16.44	14.24	12.01	12.67	12.59	14.77	15.09	16.33	17.21	17.16
29	15.90	14.27	16.58	11.54	---	14.30	15.27	13.58	16.41	15.79	16.79	17.40
30	14.18	14.93	16.89	12.86	---	14.55	13.70	15.60	15.99	16.12	16.99	17.92
31	15.05	---	17.47	14.94	---	12.52	---	14.14	---	16.70	17.86	---
MAX	17.01	17.04	17.76	17.91	14.68	14.55	15.27	15.96	17.07	18.48	18.82	19.85

CAL YR 1998 LOW 18.81
WTR YR 1999 LOW 19.85



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.

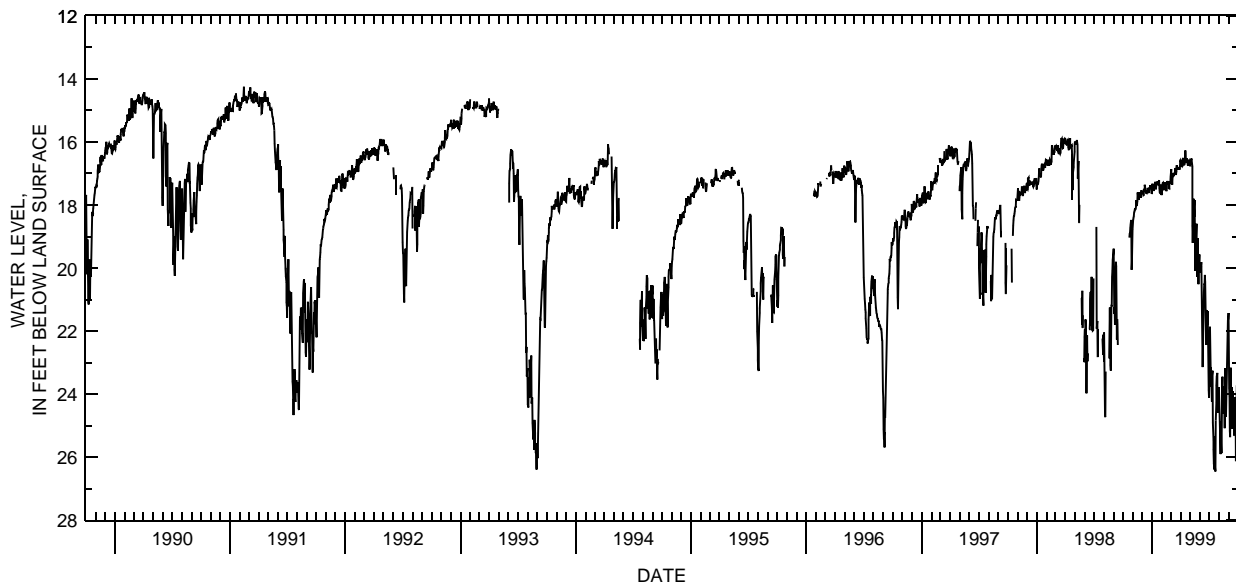
PERIOD OF RECORD.--December 1974 to current year.

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 1998 TO SEPTEMBER 1999 DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	18.62	17.60	17.54	17.61	17.09	16.62	16.74	20.05	23.23	23.78	23.09
2	---	18.46	17.56	17.33	17.42	16.86	16.58	16.70	20.03	22.23	24.31	23.82
3	22.36	18.40	17.56	17.49	17.30	17.01	16.60	16.65	20.15	21.87	25.01	24.07
4	---	18.35	17.69	17.53	17.29	17.02	16.74	16.61	20.03	21.92	25.35	25.17
5	---	18.22	17.68	17.46	17.52	17.36	16.74	16.54	19.93	23.30	25.59	25.37
6	---	18.19	17.51	17.53	17.51	17.35	16.76	16.52	19.81	23.77	25.91	23.73
7	---	18.14	17.47	17.53	17.36	17.13	16.75	16.60	21.41	23.15	24.86	23.16
8	---	18.14	17.45	17.32	17.27	17.03	16.60	16.77	22.35	23.99	25.60	24.19
9	---	18.13	17.36	17.41	17.35	17.04	16.50	18.67	22.78	24.24	25.88	24.81
10	---	18.10	17.46	17.42	17.42	17.04	16.63	19.20	23.14	23.44	24.43	23.79
11	---	18.02	17.52	17.26	17.49	17.08	16.56	18.31	22.34	23.25	23.75	24.85
12	---	17.84	17.59	17.43	17.37	17.02	16.72	18.00	21.69	24.63	23.45	25.10
13	---	18.02	17.63	17.49	17.27	16.97	16.72	17.80	21.22	24.91	24.36	23.91
14	---	17.98	17.61	17.39	17.49	17.02	16.67	18.37	20.76	25.46	24.62	24.37
15	---	17.87	17.62	17.29	17.56	16.82	16.58	18.04	20.53	25.77	23.91	24.70
16	---	17.60	17.52	17.35	17.46	16.85	16.27	17.84	20.52	26.20	23.91	24.62
17	---	17.70	17.62	17.29	17.36	17.02	16.49	19.15	20.22	26.40	23.75	24.94
18	---	17.61	17.48	17.24	17.23	17.02	16.65	20.08	20.44	25.35	24.59	25.32
19	---	17.81	17.46	17.34	17.27	16.93	16.63	19.33	21.23	26.24	25.08	24.11
20	---	17.81	17.62	17.34	17.27	16.73	16.62	19.03	21.94	26.45	23.89	24.29
21	19.03	17.65	17.59	17.28	17.27	16.82	16.57	18.77	22.44	25.67	23.17	25.08
22	18.92	17.60	17.60	17.23	17.34	16.82	16.52	18.59	21.36	24.84	24.32	24.67
23	18.89	17.72	17.61	17.21	17.46	16.82	16.68	19.89	21.33	24.26	24.73	25.84
24	18.73	17.72	17.54	17.48	17.48	16.86	16.75	20.28	21.61	23.72	23.51	26.13
25	18.61	17.62	17.47	17.61	17.35	16.86	16.73	19.50	21.80	23.44	22.79	24.88
26	18.52	17.77	17.42	17.62	17.29	16.82	16.59	19.05	21.37	23.33	22.40	24.10
27	18.47	17.71	17.41	17.52	17.30	16.79	16.58	19.77	21.77	24.10	22.07	23.73
28	20.05	17.53	17.37	17.35	17.31	16.86	16.65	20.51	22.66	24.22	21.83	24.76
29	19.85	17.65	17.46	17.54	---	16.86	16.73	19.88	23.88	24.60	21.65	25.10
30	19.19	17.64	17.46	17.63	---	16.79	16.75	19.75	24.12	24.14	21.61	24.13
31	18.78	---	17.65	17.68	---	16.61	---	19.57	---	23.92	21.43	---
MAX	22.36	18.62	17.69	17.68	17.61	17.36	16.76	20.51	24.12	26.45	25.91	26.13

CAL YR 1998 LOW 24.73
WTR YR 1999 LOW 26.45



GROUND-WATER RECORDS Sandusky County

101

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.

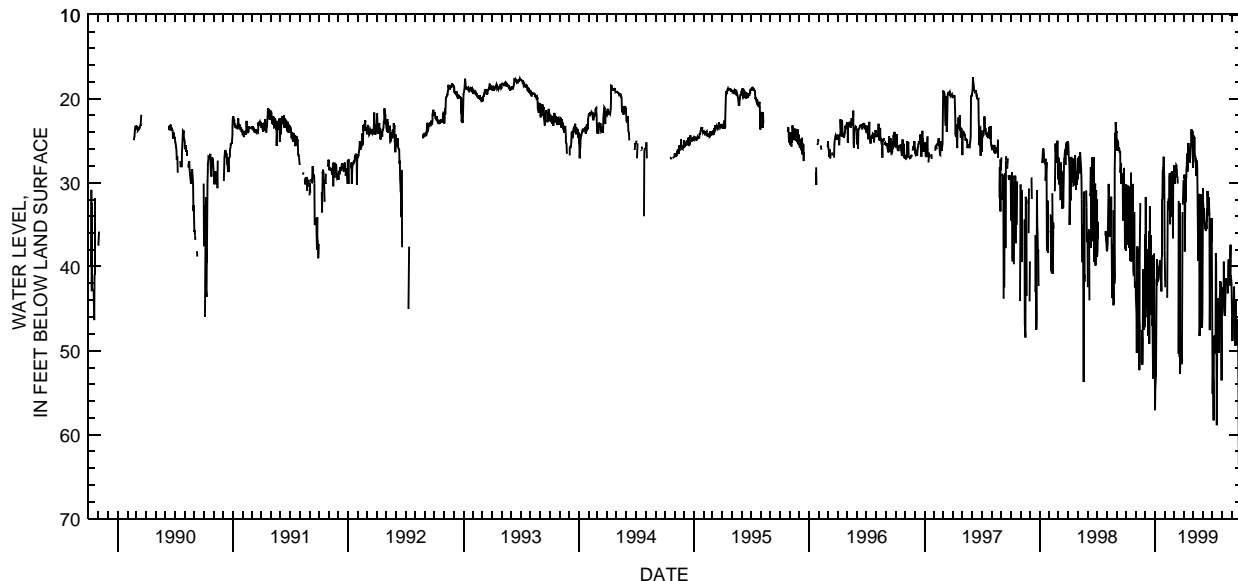
PERIOD OF RECORD.--June 1976 to current year.

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 1998 TO SEPTEMBER 1999 DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	38.14	42.97	36.15	57.10	38.12	29.64	29.71	25.85	33.07	38.52	43.87	42.02
2	30.25	43.65	46.05	54.40	42.46	28.72	---	28.25	30.67	43.49	45.48	44.55
3	37.39	45.49	31.73	53.61	---	28.11	29.51	26.26	32.18	55.14	44.27	48.87
4	30.66	50.27	44.15	53.04	---	27.91	29.33	24.42	33.36	52.61	43.15	48.22
5	30.95	45.76	43.88	43.76	42.47	30.13	29.05	26.21	33.88	53.66	42.44	45.94
6	37.13	37.59	44.27	41.51	---	28.25	38.19	24.57	33.05	58.29	44.33	45.79
7	30.36	42.18	37.94	42.26	---	28.38	29.74	26.49	34.57	48.63	39.42	45.77
8	37.35	38.45	44.93	39.11	---	28.42	32.33	26.75	35.01	48.42	43.27	43.75
9	30.42	44.09	41.25	39.97	43.74	27.91	29.60	26.90	35.36	48.22	45.62	42.39
10	30.68	38.03	48.24	40.83	37.31	28.00	29.36	27.63	35.56	49.76	45.86	45.63
11	37.78	44.96	40.14	41.82	32.17	28.45	28.43	27.14	35.75	48.68	45.44	45.74
12	31.05	47.16	43.08	41.47	---	29.38	28.09	29.20	34.68	50.32	45.34	49.23
13	34.10	52.33	35.83	41.18	32.37	29.26	26.53	28.38	35.54	38.43	41.50	49.40
14	31.61	39.15	49.19	39.96	31.85	30.13	28.69	27.40	34.70	39.53	41.52	43.90
15	39.35	32.44	46.78	40.18	33.29	---	28.53	28.38	33.15	46.71	41.89	45.98
16	32.48	---	32.81	40.57	29.28	50.38	26.74	32.17	33.18	58.88	41.95	49.36
17	28.82	---	37.64	40.27	28.88	32.16	25.29	35.92	30.99	56.90	42.25	48.35
18	37.84	51.53	45.75	39.23	34.97	---	26.92	39.31	33.67	43.87	41.89	46.26
19	39.46	49.77	36.25	40.03	29.15	50.75	26.82	31.81	33.74	43.88	43.20	47.28
20	33.07	47.55	45.48	40.58	29.09	32.44	26.91	33.75	33.46	44.36	42.69	49.17
21	31.95	48.61	42.67	42.97	28.84	50.34	26.78	31.32	31.72	48.06	42.22	48.70
22	39.41	51.67	38.66	38.84	29.86	52.74	27.61	48.24	33.70	43.82	39.17	49.64
23	30.16	51.42	47.05	31.95	28.93	50.04	27.00	47.21	42.85	50.26	41.88	56.56
24	40.22	40.29	46.29	---	28.66	48.81	26.07	33.25	47.55	43.78	39.85	63.60
25	40.95	47.49	51.57	32.02	34.09	48.03	25.29	34.64	37.37	43.88	41.46	51.77
26	40.91	45.78	53.34	28.60	30.31	50.02	25.52	31.94	41.19	43.25	42.23	48.18
27	33.51	47.49	49.44	28.18	36.62	50.08	23.65	31.39	36.83	41.76	41.95	46.34
28	35.43	45.75	40.43	28.22	29.79	51.59	25.05	37.58	36.15	42.42	37.38	52.22
29	42.16	45.75	38.45	26.92	---	33.51	25.53	40.91	37.09	41.94	41.23	47.66
30	42.48	47.23	47.87	29.66	---	---	23.84	47.25	34.23	43.73	41.03	47.11
31	41.77	---	48.08	29.80	---	32.66	---	45.69	---	53.54	41.96	---
MAX	42.48	52.33	53.34	57.10	43.74	52.74	38.19	48.24	47.55	58.88	45.86	63.60

CAL YR 1998 LOW 53.76
WTR YR 1999 LOW 63.60



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.

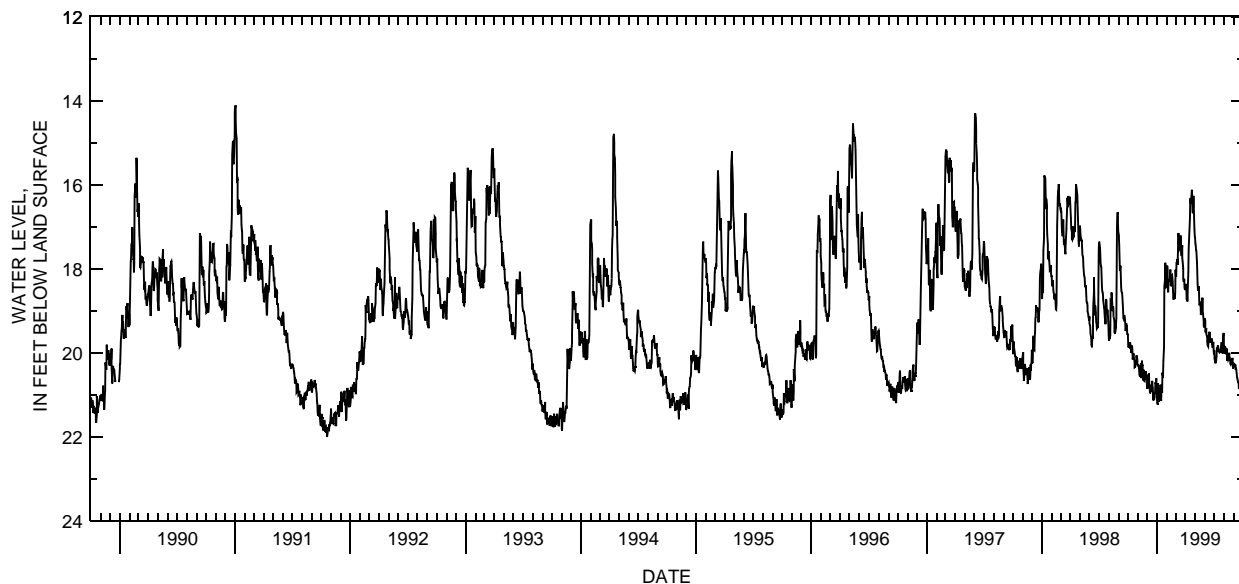
REMARKS.--Station operated by Ohio Department of Natural Resources, Division of Water.

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 1998 TO SEPTEMBER 1999												
DAILY MAXIMUM VALUES												
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19.79	20.32	20.86	21.21	18.30	18.17	18.36	17.26	19.18	19.95	19.86	20.27
2	19.87	20.31	20.74	21.21	17.93	18.17	18.42	17.39	19.24	20.14	20.00	20.24
3	19.83	20.28	20.55	20.72	18.02	17.85	18.40	17.44	19.47	20.18	20.00	20.28
4	19.86	20.37	20.62	21.10	18.49	17.84	18.59	17.55	19.51	20.23	19.86	20.32
5	19.87	20.38	20.63	21.16	18.56	17.87	18.74	17.57	19.41	20.25	19.87	20.33
6	19.86	20.51	20.49	20.93	18.28	17.77	18.61	17.71	19.53	20.17	19.97	20.28
7	19.75	20.57	20.77	21.16	18.26	17.90	18.78	17.84	19.59	20.18	20.03	20.41
8	19.81	20.56	20.82	21.09	18.30	17.74	18.52	18.15	19.62	20.09	19.95	20.36
9	19.84	20.47	20.97	20.88	18.24	17.15	18.27	18.38	19.73	19.88	20.05	20.42
10	19.91	20.25	20.95	20.87	18.31	17.28	18.08	18.48	19.82	19.89	19.90	20.48
11	20.01	20.53	20.93	20.96	18.07	17.39	17.53	18.52	19.86	19.96	20.11	20.59
12	19.96	20.60	20.85	20.76	18.02	17.53	17.39	18.42	19.86	19.82	20.20	20.60
13	19.83	20.45	20.76	21.15	18.42	17.52	17.21	18.47	19.74	19.84	20.03	20.65
14	19.92	20.19	20.92	21.13	18.40	17.34	16.98	18.76	19.50	19.90	20.16	20.69
15	20.10	20.31	20.91	20.90	18.19	17.46	16.80	18.87	19.66	19.93	20.16	20.71
16	20.16	20.28	20.67	20.92	18.15	17.44	16.33	18.82	19.50	19.97	20.14	20.71
17	20.04	20.64	20.80	20.95	18.14	17.21	16.42	18.78	19.61	19.97	20.00	20.86
18	20.02	20.64	20.83	20.47	18.21	17.59	16.44	18.85	19.76	19.99	20.10	20.80
19	20.11	20.40	21.07	20.59	18.29	17.70	16.31	19.06	19.74	19.98	20.11	20.72
20	20.16	20.49	21.14	20.52	18.52	17.62	16.24	19.10	19.68	19.98	20.18	20.74
21	20.20	20.67	20.97	20.19	18.67	17.44	16.12	18.99	19.73	19.95	20.27	20.92
22	20.35	20.68	21.05	19.88	18.74	17.74	16.26	18.87	19.75	19.87	20.28	20.92
23	20.34	20.51	21.07	18.99	18.63	17.81	16.61	18.85	19.68	19.83	20.25	20.78
24	20.27	20.60	20.97	18.42	18.60	17.99	16.68	18.69	19.68	19.75	20.19	20.92
25	20.20	20.56	20.94	18.34	18.66	18.24	16.53	18.79	19.82	19.89	20.18	21.02
26	20.19	20.44	20.73	18.27	18.71	18.29	16.27	19.01	19.88	19.95	20.20	21.04
27	20.22	20.64	20.70	17.86	18.55	18.29	16.53	19.17	19.82	20.02	20.16	21.08
28	20.06	20.58	20.74	18.12	18.03	18.24	16.81	19.24	19.74	19.93	20.12	21.10
29	20.22	20.54	20.61	18.32	---	18.45	17.06	19.36	19.94	19.61	20.32	21.03
30	20.13	20.54	20.92	18.44	---	18.51	17.21	19.40	20.04	19.53	20.37	21.01
31	20.29	---	20.93	18.43	---	18.41	---	19.26	---	19.56	20.33	---
MAX	20.35	20.68	21.14	21.21	18.74	18.51	18.78	19.40	20.04	20.25	20.37	21.10

CAL YR 1998 LOW 21.14
WTR YR 1999 LOW 21.21



GROUND-WATER RECORDS

Summit County

103

410330081282000. LOCAL NUMBER, SU-6

LOCATION.--Latitude 41°03'30", longitude 81°28'20", Hydrologic Unit 04110002, Seiberling St, Akron, Ohio.

Owner: Goodyear Tire and Rubber Co.

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.

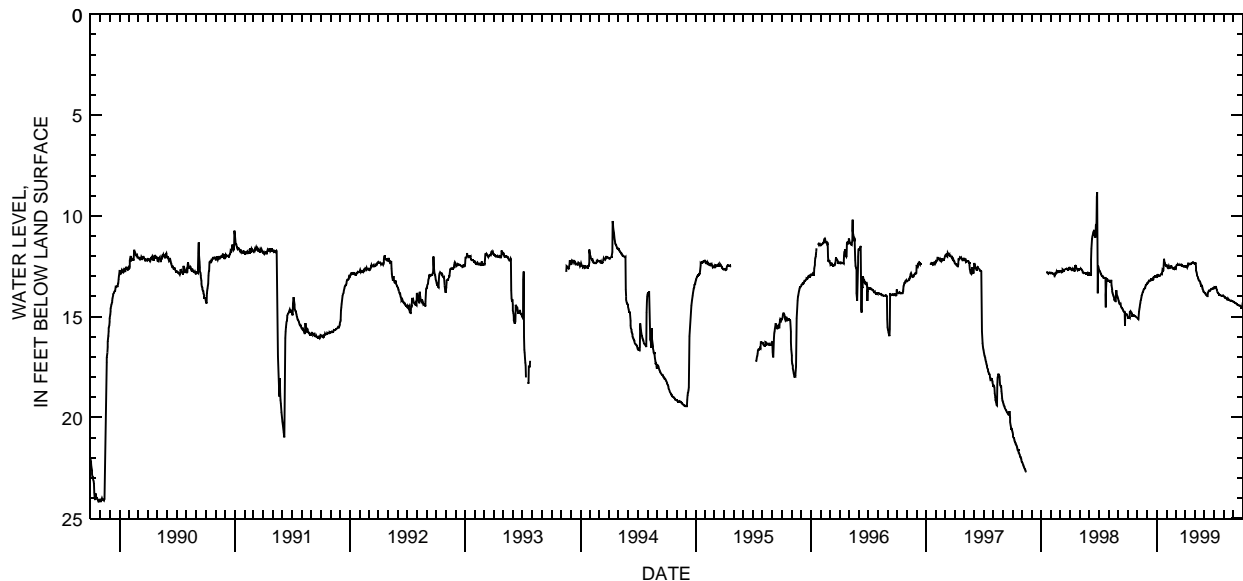
PERIOD OF RECORD.--March 1944 to current year. Records for May 14-Sept. 30, 1980, published in USGS-WDR-OH-80-1, are unreliable and should not be used.

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 1998 TO SEPTEMBER 1999 DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15.01	15.08	13.37	13.03	12.48	12.58	12.50	12.37	13.80	13.61	13.97	14.26
2	15.03	15.08	13.33	13.01	12.47	12.60	12.51	12.36	13.82	13.56	13.99	14.27
3	15.03	15.11	13.32	12.90	12.50	12.54	12.52	12.35	13.84	13.57	14.00	14.28
4	15.03	15.13	13.31	12.92	12.57	12.46	12.51	12.35	13.85	13.56	14.01	14.30
5	15.03	14.91	13.30	12.94	12.58	12.47	12.53	12.55	13.88	13.55	14.07	14.31
6	15.05	14.73	13.25	12.94	12.55	12.46	12.53	12.71	13.92	13.54	14.07	14.31
7	15.06	14.62	13.21	12.99	12.53	12.47	12.57	12.81	13.93	13.48	14.07	14.31
8	14.76	14.52	13.21	12.99	12.49	12.44	12.52	12.89	13.95	13.56	14.07	14.33
9	14.73	14.40	13.22	12.98	12.54	12.39	12.51	12.96	13.96	13.63	14.09	14.34
10	14.78	14.31	13.22	12.98	12.57	12.43	12.36	13.01	13.98	13.67	14.11	14.35
11	14.79	14.17	13.22	12.95	12.55	12.44	12.36	13.05	13.98	13.75	14.14	14.37
12	14.80	14.14	13.21	12.93	12.54	12.45	12.40	13.08	13.83	13.79	14.15	14.39
13	14.82	14.06	13.18	12.92	12.57	12.45	12.42	13.15	13.77	13.81	14.15	14.40
14	14.85	13.97	13.16	12.89	12.57	12.42	12.41	13.20	13.72	13.83	14.15	14.42
15	14.91	13.92	13.15	12.87	12.50	12.44	12.40	13.21	13.70	13.84	14.11	14.42
16	14.93	13.86	13.14	12.88	12.50	12.44	12.37	13.23	13.71	13.86	14.14	14.43
17	14.93	13.79	13.16	12.89	12.52	12.43	12.38	13.24	13.71	13.88	14.15	14.44
18	14.93	13.78	13.18	12.82	12.55	12.45	12.39	13.26	13.72	13.91	14.16	14.45
19	14.87	13.73	13.17	12.70	12.58	12.46	12.38	13.33	13.71	13.92	14.18	14.45
20	14.93	13.69	13.17	12.72	12.60	12.47	12.36	13.37	13.67	13.94	14.19	14.45
21	14.95	13.63	13.13	12.72	12.60	12.43	12.36	13.41	13.64	13.94	14.20	14.46
22	14.96	13.62	13.00	12.71	12.62	12.47	12.35	13.44	13.64	13.94	14.21	14.47
23	14.97	13.59	13.01	12.40	12.63	12.47	12.32	13.47	13.63	13.95	14.21	14.47
24	14.99	13.58	13.01	12.12	12.63	12.49	12.33	13.47	13.62	13.95	14.22	14.48
25	14.99	13.56	13.01	12.25	12.64	12.50	12.32	13.56	13.62	13.96	14.22	14.51
26	14.98	13.50	12.96	12.32	12.65	12.51	12.30	13.61	13.62	13.97	14.20	14.53
27	15.01	13.43	12.96	12.34	12.64	12.51	12.32	13.65	13.61	13.98	14.22	14.53
28	15.02	13.41	12.98	12.41	12.57	12.51	12.34	13.71	13.61	13.98	14.23	14.53
29	15.04	13.38	12.98	12.45	---	12.52	12.37	13.76	13.59	13.97	14.24	14.53
30	15.05	13.34	13.02	12.49	---	12.52	12.37	13.77	13.61	13.93	14.25	14.29
31	15.07	---	13.02	12.50	---	12.50	---	13.79	---	13.96	14.26	---
MAX	15.07	15.13	13.37	13.03	12.65	12.60	12.57	13.79	13.98	13.98	14.26	14.53

CAL YR 1998 LOW 15.44
WTR YR 1999 LOW 15.13



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.

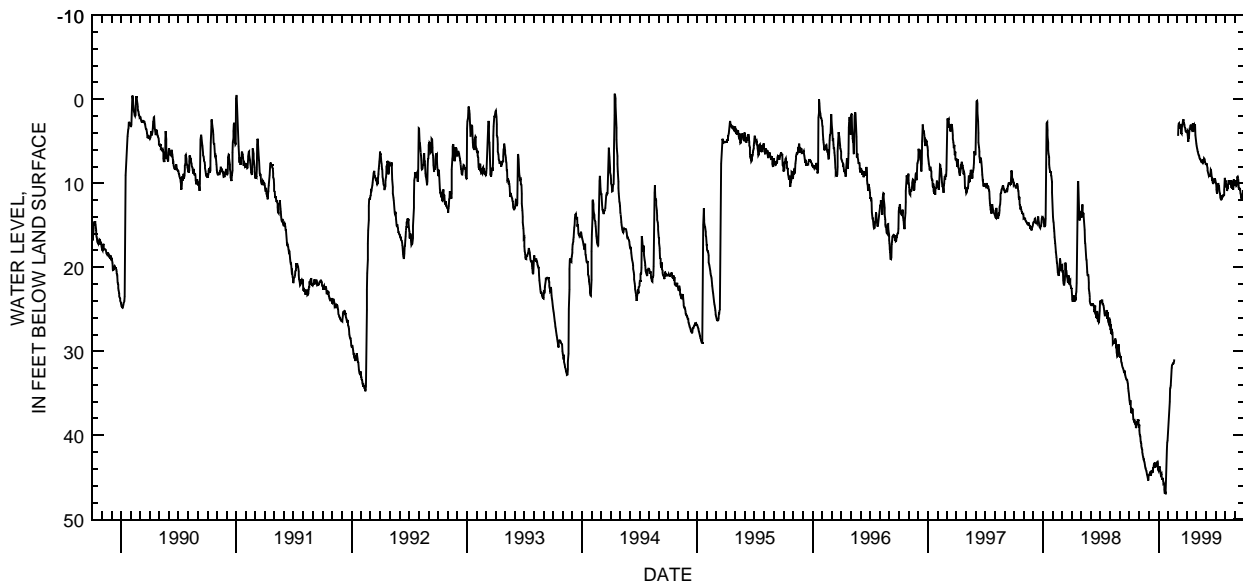
PERIOD OF RECORD.--August 1968 to current year.

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 1998 TO SEPTEMBER 1999 DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	35.79	38.70	44.73	44.20	39.53	---	3.76	5.25	7.81	9.71	9.71	9.61
2	36.05	39.44	44.64	44.00	38.91	---	3.65	5.53	7.60	9.97	9.70	10.10
3	36.34	39.90	44.57	44.00	38.31	---	3.95	5.76	7.79	10.02	10.04	10.10
4	35.83	40.10	44.57	43.67	37.59	4.35	4.21	5.91	7.84	10.71	10.28	10.20
5	36.51	40.20	44.49	43.86	36.90	3.16	4.81	6.17	8.16	11.11	10.23	10.13
6	37.20	40.71	44.42	44.08	36.00	2.87	5.05	6.30	8.44	11.18	10.25	10.24
7	37.33	40.99	44.27	44.31	34.37	2.82	4.56	6.46	8.60	10.46	10.89	9.76
8	36.75	41.22	44.80	44.44	34.28	2.86	4.57	6.64	8.90	10.16	10.38	9.23
9	37.37	41.47	44.32	44.70	34.06	3.18	3.81	6.67	8.91	10.05	10.43	9.19
10	36.79	41.72	44.17	44.55	33.45	3.47	3.57	6.77	9.06	10.05	10.16	9.43
11	36.98	42.08	44.32	44.61	32.82	3.00	3.50	7.03	8.89	10.32	9.62	9.53
12	37.56	42.18	44.19	45.03	31.97	3.06	3.20	7.06	9.08	10.32	9.61	10.02
13	38.05	42.47	44.12	45.24	31.61	3.16	3.10	7.07	9.12	10.90	9.74	10.73
14	38.19	42.58	44.42	45.09	31.52	4.02	3.09	7.18	9.12	11.08	9.89	10.62
15	38.25	42.84	43.78	45.19	31.42	4.13	3.37	7.18	8.78	11.24	9.99	10.68
16	38.30	42.88	43.90	45.49	31.40	3.29	3.43	7.42	8.40	11.72	10.06	10.50
17	38.23	43.13	43.50	45.77	31.42	3.20	3.38	7.46	8.44	11.80	10.12	10.81
18	38.40	43.21	43.34	45.73	31.34	2.85	3.70	7.41	8.79	11.93	10.04	11.17
19	38.59	43.41	43.55	45.87	31.31	2.63	3.65	7.42	9.21	11.94	9.58	11.31
20	38.61	43.69	43.18	46.45	30.94	2.62	2.84	7.48	9.47	11.83	10.42	11.69
21	38.88	43.87	43.55	46.84	---	2.36	3.90	7.59	9.45	11.45	10.54	11.63
22	39.12	44.00	43.82	46.90	---	2.55	3.29	7.45	9.88	11.62	9.67	11.61
23	38.64	44.14	43.55	46.75	---	2.77	3.05	7.19	10.00	11.53	10.52	11.68
24	38.27	44.23	43.54	46.78	---	3.06	2.96	7.21	10.01	11.51	10.67	11.30
25	38.63	44.46	43.38	45.87	---	3.21	3.25	7.03	9.89	11.42	10.06	11.29
26	38.52	44.69	43.54	44.66	---	3.38	3.41	7.02	9.77	11.28	10.72	10.82
27	38.07	44.80	43.52	43.20	---	3.51	2.95	7.12	9.75	11.44	10.35	11.56
28	38.13	45.00	43.20	41.65	---	3.75	4.21	7.45	9.36	11.39	9.53	11.71
29	38.27	45.26	43.11	40.82	---	3.85	4.60	7.52	9.52	10.81	10.07	11.39
30	38.10	45.38	43.40	40.62	---	3.88	4.98	7.66	9.52	9.34	10.25	10.86
31	39.10	---	43.99	40.11	---	3.76	---	7.79	---	9.72	10.06	---
MAX	39.12	45.38	44.80	46.90	39.53	4.35	5.05	7.79	10.01	11.94	10.89	11.71

CAL YR 1998 LOW 45.38
WTR YR 1999 LOW 46.90



GROUND-WATER RECORDS

Van Wert County

105

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.

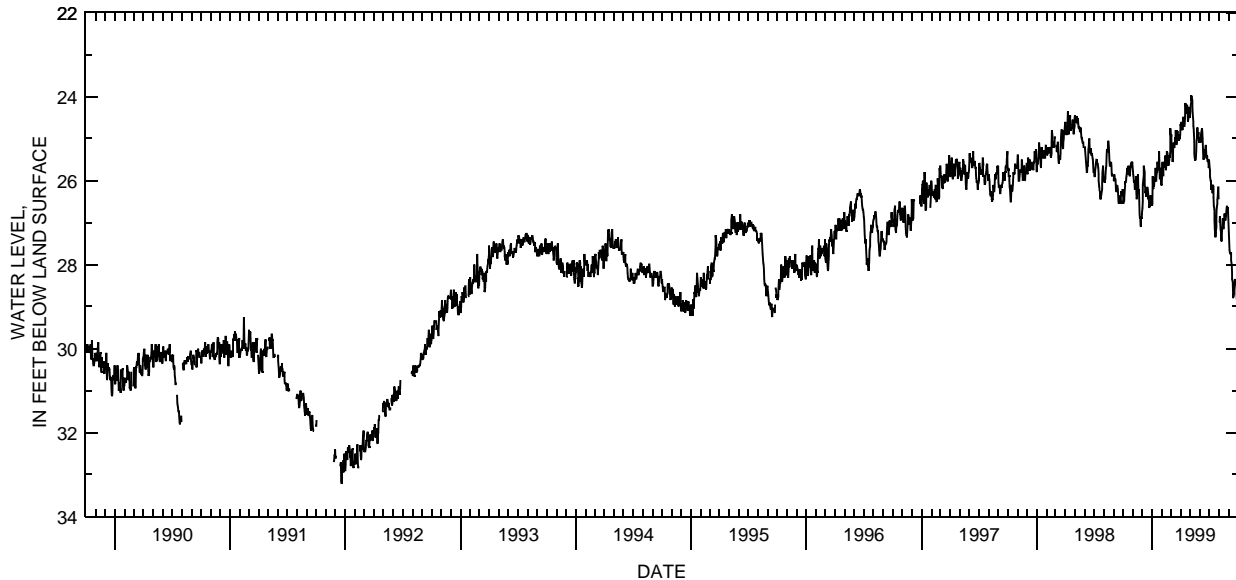
PERIOD OF RECORD.--August 1957 to current year.

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 1998 TO SEPTEMBER 1999 DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26.45	25.75	26.65	26.60	25.95	24.90	24.65	24.45	25.00	25.50	---	27.15
2	26.55	25.85	26.50	26.55	25.60	24.95	24.70	24.35	25.00	25.70	---	27.40
3	26.50	25.90	26.10	25.90	25.55	24.90	24.65	24.25	25.10	25.75	27.00	27.65
4	26.50	26.00	25.95	26.15	25.80	25.15	24.60	24.20	25.05	25.90	26.85	27.70
5	26.45	26.05	25.90	26.20	25.90	25.20	24.80	24.10	24.90	26.00	27.00	27.75
6	26.30	26.00	25.65	25.95	25.60	25.35	24.70	24.00	24.85	26.00	27.15	27.70
7	26.10	26.20	25.75	26.15	25.60	25.55	24.80	24.00	24.80	26.20	27.20	27.75
8	26.05	26.20	25.80	26.05	25.55	25.50	24.65	24.10	24.75	26.20	27.35	27.70
9	26.05	26.20	26.10	25.95	25.60	25.25	24.50	24.25	24.85	26.10	27.45	27.90
10	26.00	26.15	26.20	25.95	25.70	25.10	24.50	24.40	25.00	26.10	27.30	28.00
11	25.95	25.90	26.30	25.95	25.55	25.15	24.50	24.60	25.25	26.30	27.15	28.20
12	25.90	26.30	26.25	25.70	25.40	25.20	24.70	24.70	25.45	26.20	27.10	28.35
13	25.75	26.45	26.20	26.00	25.70	25.20	24.70	24.75	25.50	26.10	26.90	28.40
14	25.70	26.35	26.35	26.00	25.75	25.10	24.65	25.10	25.45	26.15	27.10	28.65
15	25.80	26.00	26.35	25.85	25.60	25.00	24.50	25.35	25.45	26.40	27.15	28.80
16	25.85	25.90	26.20	25.80	25.40	25.00	24.15	25.45	25.40	26.60	27.10	28.75
17	25.80	25.85	26.15	25.80	25.30	24.80	24.20	25.45	25.25	26.70	27.00	28.70
18	25.65	26.15	26.20	25.55	25.35	25.00	24.40	25.50	25.30	26.95	26.80	28.60
19	25.70	26.30	26.30	25.70	25.40	25.15	24.40	25.50	25.20	27.15	26.80	28.45
20	25.75	26.20	26.45	25.75	25.50	25.10	24.35	25.45	25.15	27.30	26.90	28.35
21	25.70	26.45	26.35	25.65	25.55	24.80	24.40	25.30	25.30	27.35	26.95	28.45
22	25.90	26.80	26.60	25.60	25.65	24.85	24.20	25.05	25.45	27.25	26.90	28.45
23	25.85	26.90	26.65	25.30	25.60	24.85	24.25	25.00	25.45	27.10	26.85	28.40
24	25.75	26.85	26.60	25.60	25.50	24.90	24.60	24.75	25.40	26.85	26.75	28.40
25	25.65	27.05	26.60	25.95	25.40	25.00	24.60	24.75	25.50	26.65	26.65	28.60
26	25.60	27.10	26.50	25.95	25.45	25.05	24.50	24.85	25.55	26.55	26.60	28.70
27	25.70	26.90	26.45	25.70	25.30	25.00	24.25	24.90	25.50	26.45	26.65	28.85
28	25.55	26.90	26.45	25.90	24.75	24.90	24.25	24.85	25.55	26.40	26.65	28.90
29	25.65	26.90	26.35	26.05	---	25.00	24.40	25.00	25.70	26.25	26.65	28.95
30	25.55	26.80	26.50	26.10	---	25.00	24.50	25.10	25.65	26.15	26.80	29.15
31	25.65	---	26.50	26.10	---	24.90	---	25.05	---	26.45	26.95	---
MAX	26.55	27.10	26.65	26.60	25.95	25.55	24.80	25.50	25.70	27.35	27.45	29.15

CAL YR 1998 LOW 27.10
WTR YR 1999 LOW 29.15



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.

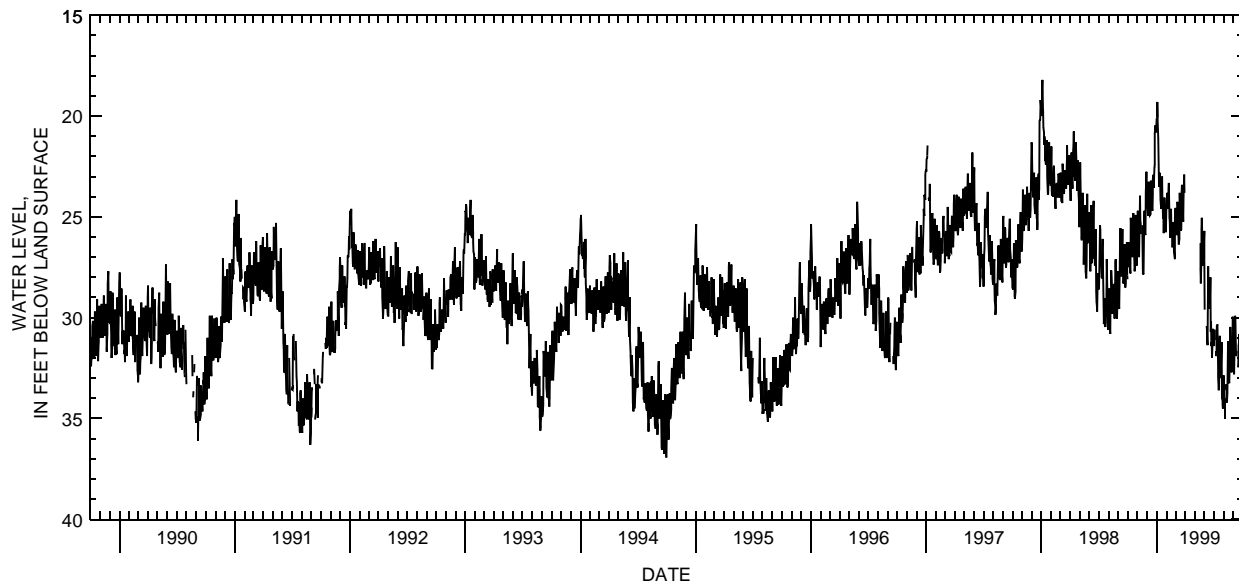
PERIOD OF RECORD.--May 1951 to May 1957, discontinued June 1957 to September 1984, reactivated October 1984 to current year.

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 1998 TO SEPTEMBER 1999 DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	25.55	24.35	20.10	24.40	24.55	---	---	27.15	31.35	32.85	32.30
2	---	24.70	24.55	20.05	24.00	25.50	---	---	29.60	31.35	33.45	32.60
3	27.45	25.80	24.60	19.30	23.80	25.30	---	---	---	30.60	34.00	32.80
4	26.25	26.60	24.95	20.20	24.25	25.90	---	---	---	31.10	35.00	31.40
5	26.40	26.80	24.40	21.10	24.50	25.85	---	---	---	---	---	30.45
6	27.15	27.00	23.25	21.20	24.60	25.45	---	---	---	---	---	29.90
7	27.55	26.25	23.35	22.60	23.65	24.50	---	---	---	31.65	---	30.00
8	27.40	25.20	23.75	23.20	23.30	24.25	---	---	30.40	31.75	---	31.25
9	27.80	23.95	24.55	23.50	24.10	24.60	---	---	30.55	31.90	33.60	31.90
10	26.70	25.20	24.80	22.80	25.05	25.30	---	---	31.10	30.40	33.30	31.85
11	25.05	25.30	24.90	23.05	25.25	25.90	---	---	31.35	30.35	34.20	31.65
12	25.70	25.85	24.85	23.30	26.05	26.35	---	---	29.60	30.35	34.10	---
13	26.45	---	23.60	24.15	25.80	26.10	---	---	27.45	31.80	33.75	---
14	26.55	---	23.20	24.35	25.40	25.00	---	---	29.20	32.50	32.45	---
15	26.65	---	24.50	24.45	24.60	23.80	---	---	29.30	32.95	31.15	32.45
16	27.00	25.40	24.40	24.60	25.80	25.30	---	---	29.20	33.60	31.40	32.30
17	26.80	26.60	24.60	23.90	25.70	25.40	---	---	29.50	33.20	32.90	31.35
18	25.85	27.85	24.70	23.00	25.65	25.65	---	---	29.55	31.75	33.20	31.25
19	24.80	27.80	23.85	24.35	26.50	25.65	---	26.30	28.80	30.90	33.25	30.80
20	26.00	27.80	23.10	24.55	26.25	25.60	---	27.60	28.00	31.85	32.50	31.60
21	26.35	26.10	22.90	25.10	25.25	23.75	---	28.30	30.70	32.50	31.10	31.80
22	27.05	25.15	23.00	24.80	26.00	23.40	---	26.95	30.20	32.50	30.45	32.10
23	27.70	24.70	23.55	25.80	26.30	24.20	---	25.60	31.40	33.00	31.30	32.00
24	27.40	25.55	22.55	24.75	26.65	24.80	---	25.05	31.20	32.35	31.45	31.95
25	26.00	25.85	22.40	24.05	26.70	24.70	---	26.15	32.00	31.20	31.80	30.70
26	24.90	25.90	20.85	25.05	26.95	25.25	---	27.30	31.40	33.00	32.70	30.30
27	26.60	23.75	20.45	25.50	27.10	24.00	---	27.40	30.95	34.00	32.50	31.75
28	26.80	23.20	20.70	25.20	25.05	23.55	---	27.30	30.55	34.10	31.60	32.40
29	26.85	22.75	20.80	25.55	---	22.90	---	27.20	30.90	34.30	30.95	32.05
30	27.40	23.40	20.70	25.75	---	23.80	---	26.65	31.20	34.50	29.95	31.40
31	26.25	---	20.45	24.70	---	---	---	25.70	---	33.50	31.65	---
MAX	27.80	27.85	24.95	25.80	27.10	26.35	---	28.30	32.00	34.50	35.00	32.80

CAL YR 1998 LOW 30.80
WTR YR 1999 LOW 35.00



GROUND-WATER RECORDS

Williams County

107

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.

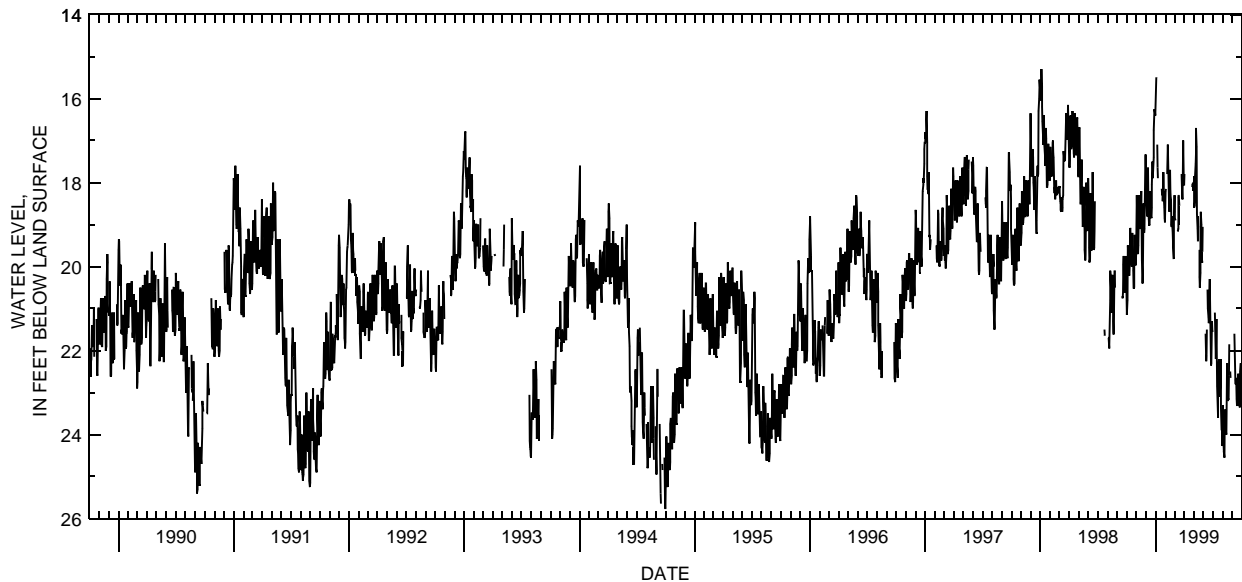
PERIOD OF RECORD.--October 1984 to current year.

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 1998 TO SEPTEMBER 1999 DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21.15	19.00	18.00	15.95	18.20	18.30	18.05	18.10	---	---	23.45	---
2	21.15	18.30	18.40	15.50	18.15	18.70	17.80	17.85	20.45	---	23.30	---
3	20.80	18.95	18.55	15.50	---	18.85	---	18.60	---	---	23.95	---
4	19.90	19.35	18.80	---	---	18.90	---	18.55	---	---	24.20	---
5	19.50	19.65	18.75	---	---	---	---	18.45	---	---	24.40	---
6	19.85	19.70	18.10	17.10	17.80	---	---	17.85	---	---	24.55	---
7	19.90	19.50	17.65	17.65	17.50	---	---	17.55	---	21.10	24.55	21.60
8	20.20	18.70	18.00	17.90	17.10	---	---	17.30	21.60	21.65	23.50	22.10
9	20.20	18.30	18.80	---	17.35	---	---	16.70	21.90	22.00	23.40	22.40
10	19.95	18.45	18.95	---	17.80	---	---	17.15	22.25	22.20	23.40	22.70
11	19.10	18.85	19.00	---	18.15	19.15	---	18.20	22.10	21.65	23.80	22.80
12	19.10	19.05	19.00	---	18.60	19.15	---	18.75	21.50	21.25	23.95	22.65
13	19.50	19.10	18.25	---	18.70	19.10	---	19.10	---	21.80	24.00	22.80
14	19.60	19.05	18.20	---	18.20	18.35	---	19.40	20.55	22.30	23.40	23.15
15	19.90	18.65	18.50	---	17.70	18.30	---	18.80	21.00	22.85	22.40	23.30
16	19.95	18.20	18.55	---	18.20	18.55	---	---	21.10	23.35	22.30	23.30
17	20.00	18.90	18.80	---	18.35	19.00	---	---	21.20	23.60	22.80	23.30
18	19.40	19.85	18.85	---	18.40	---	---	---	21.35	23.00	23.20	23.00
19	19.20	20.10	18.60	---	19.00	---	---	19.60	21.25	22.30	23.15	22.55
20	19.45	20.40	18.05	18.15	19.05	---	---	20.25	20.55	22.20	23.15	22.75
21	19.75	20.20	17.50	18.30	18.80	---	---	20.50	20.30	22.65	22.60	23.05
22	20.10	19.40	17.70	18.20	18.95	---	---	20.15	21.10	22.80	21.85	23.30
23	20.50	18.50	17.90	18.45	19.15	---	---	19.05	21.60	23.10	---	23.30
24	20.50	18.95	17.60	18.30	19.40	17.80	---	18.70	22.00	23.00	---	23.35
25	19.60	19.20	17.40	17.75	19.55	18.10	---	19.00	22.35	22.55	22.50	23.20
26	19.25	19.10	16.75	18.10	19.80	18.35	18.10	19.50	22.30	22.20	22.65	22.50
27	19.60	18.50	16.30	18.45	19.80	18.40	18.05	19.80	21.90	23.35	---	22.30
28	19.70	17.80	16.25	18.60	18.85	17.80	18.05	19.90	21.30	23.90	---	22.90
29	19.95	17.35	16.30	18.85	---	17.00	18.00	19.65	21.50	24.25	---	22.90
30	19.95	17.35	16.40	18.95	---	17.60	18.20	19.05	21.55	24.25	---	22.85
31	19.70	---	16.35	18.60	---	18.05	---	---	---	24.00	---	---
MAX	21.15	20.40	19.00	18.95	19.80	19.15	18.20	20.50	22.35	24.25	24.55	23.35

CAL YR 1998 LOW 21.95
WTR YR 1999 LOW 24.55



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, 10.66 ft below land-surface datum, Oct. 24, 1994; minimum daily low, 3.83 ft below land-surface datum, Mar. 17, 1982.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM INSTANTANEOUS OBSERVATIONS

DATE	WATER LEVEL
Nov. 23, 1998	9.58
Apr. 27, 1999	5.75
May 19, 1999	8.72

GROUND-WATER RECORDS
Wyandot County

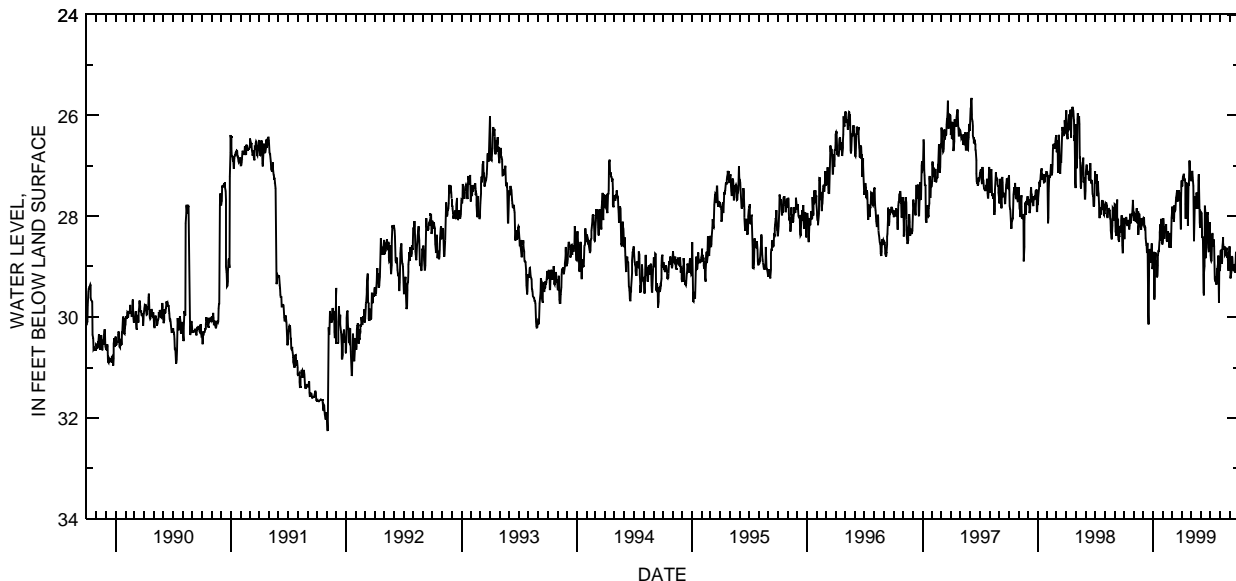
109

405009083172600. LOCAL NUMBER, WY-1

LOCATION.--Latitude 40°50'09", longitude 83°17'26", Hydrologic Unit 04100011, State Rt 199, Upper Sandusky, Ohio.
Owner: Karg Supply Co.
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 1998 TO SEPTEMBER 1999
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28.03	28.09	28.03	28.96	28.51	28.03	27.31	27.22	28.02	28.31	29.06	28.60
2	28.44	28.09	28.05	28.94	28.29	27.95	27.29	27.29	27.98	28.65	28.99	28.71
3	28.44	27.96	28.03	28.71	28.04	27.81	27.40	27.29	27.92	28.78	28.69	29.06
4	28.13	27.97	28.04	28.73	28.15	27.96	27.39	27.20	27.94	28.87	28.68	29.23
5	28.07	28.00	28.21	29.65	28.43	28.05	27.35	27.12	28.25	28.89	28.71	29.18
6	28.11	28.03	28.23	29.59	28.45	27.94	27.25	27.12	28.41	28.87	28.86	29.10
7	28.09	28.10	28.21	28.85	28.28	27.91	27.28	27.23	28.41	28.64	28.94	29.06
8	28.01	28.12	28.22	28.83	28.23	28.12	27.29	27.31	28.49	28.35	28.89	28.87
9	28.04	28.06	28.43	28.72	28.20	28.03	27.16	27.40	28.62	28.35	28.59	28.79
10	28.15	27.84	28.50	28.81	28.24	27.78	27.29	28.09	29.51	28.60	28.53	28.82
11	28.18	27.98	28.57	28.96	28.24	27.85	27.29	28.50	29.57	28.51	28.42	28.98
12	28.18	28.14	28.58	28.87	28.16	27.88	27.25	28.10	29.15	28.46	28.53	29.06
13	28.15	28.10	28.73	28.96	28.39	27.87	27.35	27.80	28.99	28.48	28.64	29.07
14	28.10	27.97	28.55	29.21	28.50	27.76	27.76	27.60	28.36	28.60	28.66	29.04
15	28.07	27.91	28.55	29.18	28.44	27.63	28.05	27.76	27.79	28.90	28.61	28.98
16	28.13	28.37	29.30	28.98	28.51	27.60	27.42	27.83	27.96	29.25	28.61	28.98
17	28.25	28.21	29.93	28.78	28.33	27.55	27.33	27.83	28.16	29.26	28.76	28.97
18	28.25	28.08	30.15	28.70	28.30	27.49	27.50	27.75	28.83	29.30	28.77	29.11
19	28.18	27.95	29.54	28.67	28.39	27.65	27.68	27.53	28.53	29.31	28.75	29.11
20	28.01	28.07	28.88	28.71	28.47	27.71	27.89	27.63	28.17	29.20	28.73	28.91
21	27.95	28.20	28.69	28.52	28.53	27.61	27.83	27.81	28.01	29.36	28.69	28.74
22	28.06	28.20	28.65	28.45	28.62	27.57	28.19	27.85	27.92	29.28	28.62	28.71
23	28.14	28.15	28.91	28.32	28.60	27.61	27.78	27.82	27.96	29.05	28.71	28.88
24	28.02	28.27	28.91	28.16	28.44	27.48	27.34	27.67	27.92	29.05	28.80	28.90
25	27.99	28.27	28.83	28.36	28.33	27.58	27.39	27.29	28.33	28.99	28.80	28.94
26	27.96	28.04	28.78	28.48	28.61	27.69	27.19	27.17	28.62	28.94	28.71	28.98
27	27.96	28.13	28.65	28.31	28.61	27.63	26.90	27.38	28.70	28.78	28.89	28.98
28	27.84	28.15	28.54	28.05	28.22	27.54	27.02	27.76	28.70	29.39	29.09	28.98
29	27.72	28.16	28.72	28.42	---	27.99	27.16	28.13	28.51	29.72	29.04	29.02
30	27.68	28.10	29.05	28.45	---	28.26	27.18	28.23	28.12	29.10	28.79	28.90
31	27.97	---	29.01	28.56	---	27.77	---	28.14	---	29.06	28.61	---
MAX	28.44	28.37	30.15	29.65	28.62	28.26	28.19	28.50	29.57	29.72	29.09	29.23
CAL YR 1998	LOW 30.15											
WTR YR 1999	LOW 30.15											



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 near 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.

on



PROJECT DATA
City of Akron Water Diversion

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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 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 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e17	23	22	22	23	25	22	22	e19	e21	e21	e17
2	17	23	23	22	24	25	22	22	18	e22	e21	e17
3	17	23	23	23	24	25	21	e21	e18	e22	e20	e17
4	17	23	23	24	23	27	21	e21	e18	e22	e20	e17
5	18	23	23	24	e24	25	e22	e21	e18	21	e20	17
6	18	23	23	25	e24	25	e22	e21	e18	e21	e19	e17
7	e18	23	23	e24	e25	25	e30	e21	e29	21	e19	e17
8	e18	23	23	e24	e25	25	21	e21	e22	21	e19	e17
9	e18	23	22	24	25	25	e21	e22	e22	e21	19	e17
10	e18	22	e22	24	25	25	e21	22	e22	e22	e20	e17
11	e18	22	e22	24	24	24	e21	22	e22	e22	e21	e17
12	e18	23	22	24	23	25	e21	22	e22	22	21	e17
13	e50	23	22	24	25	25	e21	e21	e22	22	e21	e17
14	69	23	22	25	24	25	e21	e21	e21	e21	e20	e17
15	70	23	23	e25	24	25	e20	e21	e21	e21	e20	e17
16	73	23	23	e25	24	24	e20	e21	e21	e21	e20	e17
17	40	22	23	e24	23	25	e20	e21	e21	e20	e20	e16
18	23	22	23	e24	24	25	e20	e21	e20	e20	e20	e16
19	24	21	24	25	23	24	e20	e21	e20	e20	e20	e16
20	24	21	24	23	23	23	e20	e21	e20	e19	e19	e17
21	23	21	23	22	23	22	e21	e21	e20	e19	e19	e18
22	24	21	24	22	23	22	e21	e21	20	e19	e18	17
23	24	21	25	25	23	23	e21	e21	20	e19	e18	17
24	23	20	23	25	28	24	e21	e20	e20	e20	e17	16
25	23	20	24	23	33	23	21	20	e20	e20	e17	e16
26	22	21	24	22	25	22	21	e20	e20	e20	e18	e16
27	23	23	24	22	25	22	e21	20	e21	e20	e18	16
28	22	23	24	24	26	23	e21	20	e21	e21	e18	17
29	23	22	24	24	---	23	e21	19	e21	21	e18	e17
30	23	22	23	23	---	23	22	19	e21	e22	e18	e17
31	23	---	23	23	---	23	---	e19	---	e21	e17	---
TOTAL	838	666	716	734	685	747	638	646	618	644	596	504
MEAN	27.0	22.2	23.1	23.7	24.5	24.1	21.3	20.8	20.6	20.8	19.2	16.8
MAX	73	23	25	25	33	27	30	22	29	22	21	18
MIN	17	20	22	22	23	22	20	19	18	19	17	16

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1998 - 1999, BY WATER YEAR (WY)

	1998	1999	1998	1999	1998	1999	1998	1999	1998	1999	1998	1999
MEAN	27.0	22.2	23.1	23.7	24.5	24.1	21.3	20.8	20.6	20.5	18.9	19.8
MAX	27.0	22.2	23.1	23.7	24.5	24.1	21.3	20.8	20.6	20.8	19.2	22.9
(WY)	1999	1999	1999	1999	1999	1999	1999	1999	1999	1999	1999	1998
MIN	27.0	22.2	23.1	23.7	24.5	24.1	21.3	20.8	20.6	20.2	18.5	16.8
(WY)	1999	1999	1999	1999	1999	1999	1999	1999	1999	1998	1998	1999

SUMMARY STATISTICS

FOR 1999 WATER YEAR

WATER YEARS 1998 - 1999

ANNUAL TOTAL	8032		
ANNUAL MEAN	22.0	22.0	
HIGHEST ANNUAL MEAN		22.0	1999
LOWEST ANNUAL MEAN			
HIGHEST DAILY MEAN	73	Oct 16	1998
LOWEST DAILY MEAN	16	Sep 17	1998
ANNUAL SEVEN-DAY MINIMUM	16	Sep 22	1998
INSTANTANEOUS PEAK FLOW	76	Oct 17	1998
INSTANTANEOUS LOW FLOW	16	Sep 17	1999
10 PERCENT EXCEEDS	25		
50 PERCENT EXCEEDS	22		
90 PERCENT EXCEEDS	18		

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 mean sea level.
 REMARKS. -- Record is fair. Flow is completely regulated by operation of gate in Lock 1.
 REVISIONS. -- The maximum discharge for water year 1998 has been revised to 119 ft³/s, Aug. 25, 1998, gage height, 3.44 ft; revised daily discharges, in cubic feet per second, for a period in August 1998 are given below. These figures supercede those published in the report for 1998.

Aug. 24 66	Aug. 25 89		
	Total	Mean	Max
August 1998	548.2	17.7	89
			Min
			3.0

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.1	13	12	e12	15	20	12	14	e20	25	21	27
2	11	13	12	e12	17	19	11	14	e16	25	26	26
3	19	13	11	e16	17	29	12	23	e5.6	15	23	27
4	20	7.9	11	e21	13	30	22	20	e8.1	16	25	29
5	25	8.2	11	e12	8.7	19	20	12	e18	14	27	32
6	20	13	11	e9.4	8.3	14	14	11	e18	24	27	32
7	26	12	18	e5.0	14	19	14	19	e18	43	27	30
8	58	12	20	e12	24	24	14	19	e14	15	30	26
9	17	11	6.9	e19	13	18	37	19	11	12	30	27
10	2.9	15	3.6	e19	13	18	21	22	14	25	34	26
11	4.6	21	3.7	e16	13	18	14	20	17	15	32	25
12	6.7	19	4.5	e12	15	18	19	11	17	15	13	24
13	28	12	4.6	e21	14	18	14	10	17	14	27	26
14	42	10	15	e25	14	18	8.8	20	26	13	50	24
15	46	10	20	e22	14	15	13	13	19	13	31	25
16	47	11	14	e19	14	13	25	13	14	14	12	25
17	33	10	11	e19	14	12	26	13	26	15	20	25
18	25	9.8	10	e36	13	13	21	15	15	16	27	24
19	26	9.5	9.3	e34	13	13	14	19	13	18	28	25
20	19	9.9	8.8	e19	14	13	18	18	13	22	e27	33
21	17	9.6	22	e15	14	13	22	13	13	21	e27	26
22	18	9.4	36	e34	18	15	24	11	16	21	e27	11
23	12	9.5	13	e47	20	19	26	13	17	21	e27	26
24	12	8.6	12	e28	18	18	21	41	17	21	e27	26
25	12	11	11	e9.6	24	16	14	14	17	22	e40	26
26	9.9	13	12	e12	23	13	20	11	17	22	67	25
27	11	19	12	e19	20	14	25	11	20	23	14	26
28	11	12	12	e19	20	12	14	11	34	26	18	25
29	11	12	12	e16	---	18	16	e10	23	41	32	39
30	14	12	12	13	---	20	17	e10	17	19	22	44
31	14	---	e12	13	---	16	---	e10	---	21	22	---
TOTAL	623.2	356.4	383.4	586.0	438.0	535	548.8	480	510.7	627	860	812
MEAN	20.1	11.9	12.4	18.9	15.6	17.3	18.3	15.5	17.0	20.2	27.7	27.1
MAX	58	21	36	47	24	30	37	41	34	43	67	44
MIN	2.9	7.9	3.6	5.0	8.3	12	8.8	10	5.6	12	12	11

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1998 - 1999, BY WATER YEAR (WY)

	1998	1999	1998	1999	1998	1999	1998	1999	1998	1999	1998	1999
MEAN	20.1	11.9	12.4	18.9	15.6	17.3	18.3	15.5	16.2	19.1	22.7	21.6
MAX	20.1	11.9	12.4	18.9	15.6	17.3	18.3	15.5	17.0	20.2	27.7	27.1
(WY)	1999	1999	1999	1999	1999	1999	1999	1999	1999	1999	1999	1999
MIN	20.1	11.9	12.4	18.9	15.6	17.3	18.3	15.5	15.4	18.0	17.7	16.2
(WY)	1999	1999	1999	1999	1999	1999	1999	1999	1998	1998	1998	1998

SUMMARY STATISTICS

FOR 1999 WATER YEAR

WATER YEARS 1998 - 1999

ANNUAL TOTAL	6760.5	
ANNUAL MEAN	18.5	18.5
HIGHEST ANNUAL MEAN		18.5
LOWEST ANNUAL MEAN		18.5
HIGHEST DAILY MEAN	67	89
LOWEST DAILY MEAN	2.9	2.9
ANNUAL SEVEN-DAY MINIMUM	8.3	7.3
INSTANTANEOUS PEAK FLOW	93	119
INSTANTANEOUS PEAK STAGE	2.91	3.44
INSTANTANEOUS LOW FLOW	2.2	1.4
10 PERCENT EXCEEDS	27	28
50 PERCENT EXCEEDS	17	15
90 PERCENT EXCEEDS	10	9.9

e Estimated.

PROJECT DATA
City of Akron Water Diversion

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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 mean sea level.

REMARKS.--Record is fair. Flow is completely regulated by operation of gate at outlet structure.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.3	6.4	8.5	8.0	6.9	3.7	4.0	3.6	3.0	2.1	5.0	3.7
2	6.5	6.5	8.1	8.0	7.2	3.6	4.2	4.1	2.2	2.1	4.6	3.6
3	6.7	7.1	8.1	9.2	6.9	5.3	5.0	4.1	2.5	1.6	4.3	3.7
4	7.1	7.6	8.4	6.9	6.6	4.4	5.1	2.6	3.2	1.9	4.6	3.6
5	6.3	8.4	8.8	6.6	7.4	3.2	3.6	2.6	3.4	2.2	4.5	3.1
6	5.7	7.6	9.0	6.8	8.1	4.5	2.6	3.3	3.2	3.4	4.2	2.3
7	7.7	6.8	11	8.5	9.5	5.4	3.3	4.0	3.6	4.5	4.2	2.2
8	13	6.4	7.5	9.6	8.2	4.7	3.6	3.1	3.9	1.9	5.0	2.1
9	6.8	6.3	6.5	8.9	7.3	4.5	6.4	2.9	3.9	2.9	4.1	2.1
10	7.4	7.6	7.3	7.9	7.5	4.4	3.2	2.7	4.3	3.9	3.4	2.0
11	8.6	7.5	8.3	7.1	7.3	4.2	4.3	2.0	4.1	3.2	2.4	2.2
12	9.2	6.4	9.3	7.2	8.5	4.1	4.2	1.7	3.9	3.3	2.2	2.3
13	10	5.7	10	9.1	9.2	3.9	3.9	2.5	3.8	3.0	2.7	2.4
14	11	5.5	10	8.1	9.3	3.8	4.1	2.8	4.6	2.7	7.1	2.2
15	12	5.7	7.7	6.6	9.0	3.5	5.0	2.3	4.4	2.8	2.6	2.3
16	12	5.8	6.6	6.1	8.8	3.5	4.4	2.5	3.6	2.9	1.7	2.6
17	9.7	6.1	7.0	5.8	9.0	4.2	4.1	2.9	3.6	3.0	2.6	2.8
18	7.6	6.3	7.2	9.5	6.8	4.2	3.0	3.2	3.4	3.0	3.6	2.9
19	8.1	6.4	7.5	7.0	4.5	4.6	3.5	3.1	3.7	2.9	3.8	3.1
20	6.6	7.4	8.3	6.2	4.5	4.1	3.5	2.6	2.6	4.8	3.9	3.4
21	6.2	7.4	9.8	6.3	4.5	4.2	1.3	2.2	2.6	4.4	3.8	2.6
22	7.2	7.3	11	10	4.5	4.6	1.2	3.0	2.3	4.2	3.6	3.0
23	7.2	7.0	7.6	9.5	3.9	4.3	3.1	3.5	1.9	3.9	3.3	3.6
24	7.2	6.8	8.1	7.4	3.6	4.0	3.2	4.8	1.6	3.8	3.4	3.9
25	7.3	7.1	7.9	6.7	4.1	3.1	3.2	1.9	1.9	4.6	4.7	4.1
26	7.3	11	7.9	8.1	3.3	2.5	3.4	2.2	2.0	4.0	12	3.8
27	7.3	9.8	7.9	7.5	2.9	3.2	2.2	2.5	2.2	3.9	3.8	3.8
28	7.5	8.9	8.2	6.9	3.3	3.9	2.0	2.8	2.8	4.5	4.4	3.8
29	7.6	8.7	8.3	6.8	---	4.2	2.4	3.1	1.3	5.7	3.9	6.3
30	7.4	8.2	8.2	6.9	---	3.7	2.7	3.2	1.2	4.0	3.1	6.6
31	6.8	---	8.3	6.8	---	3.4	---	3.2	---	4.4	3.3	---
TOTAL	247.3	215.7	258.3	236.0	182.6	124.9	105.7	91.0	90.7	105.5	125.8	96.1
MEAN	7.98	7.19	8.33	7.61	6.52	4.03	3.52	2.94	3.02	3.40	4.06	3.20
MAX	13	11	11	10	9.5	5.4	6.4	4.8	4.6	5.7	12	6.6
MIN	5.7	5.5	6.5	5.8	2.9	2.5	1.2	1.7	1.2	1.6	1.7	2.0

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1998 - 1999, BY WATER YEAR (WY)

	1998	1999	1998	1999	1998	1999	1998	1999	1998	1999	1998	1999
MEAN	7.98	7.19	8.33	7.61	6.52	4.03	3.52	2.94	3.02	3.40	4.28	4.43
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	7.98	7.19	8.33	7.61	6.52	4.03	3.52	2.94	3.02	3.40	4.06	3.20
(WY)	1999	1999	1999	1999	1999	1999	1999	1999	1999	1999	1999	1999

SUMMARY STATISTICS

FOR 1999 WATER YEAR

WATER YEARS 1998 - 1999

ANNUAL TOTAL	1879.6		
ANNUAL MEAN	5.15	5.15	
HIGHEST ANNUAL MEAN		5.15	1999
LOWEST ANNUAL MEAN		5.15	1999
HIGHEST DAILY MEAN	13	Oct 8	13
LOWEST DAILY MEAN	1.2	Apr 22	1.2
ANNUAL SEVEN-DAY MINIMUM	1.8	Jun 29	1.8
INSTANTANEOUS PEAK FLOW	34	Mar 17	34
INSTANTANEOUS PEAK STAGE	5.73	Jan 23	5.73
INSTANTANEOUS LOW FLOW	.90	Apr 22	.90
10 PERCENT EXCEEDS	8.5		8.3
50 PERCENT EXCEEDS	4.3		4.4
90 PERCENT EXCEEDS	2.4		2.5

Macroinvertebrate Survey in Little Raccoon Creek, Jackson and Gallia Counties, Ohio

The following table lists macroinvertebrate taxa collected in Little Raccoon Creek. The survey results supplement previous work there and create baseline data for future studies. The data will be used to interpret water quality. The table is arranged in phylogenetic order as assigned by the USGS Biological Unit.



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Macroinvertebrate Survey in Little Raccoon Creek, Jackson and Gallia Counties, Ohio

[*, Phylum; **, Class; --, not sampled at site; Quant., Quantitative number representing organisms in 5 sq. ft.; Qual., Qualitative.]

STATION			1	2	3
Latitude			39°05'51"	39°04'13"	39°03'39"
Longitude			82°28'57"	82°28'16"	82°27'20"
Collection Date			7/27/99	7/28/99	7/28/99
Sample Type			Quant.	Quant.	Quant.
ORDER	FAMILY	TAXON			
Turbellaria**		Turbellaria	27	--	--
Nemertea*		<i>Prostoma</i> sp.	3	6	1
Gastropoda**	Physidae	<i>Physella</i> sp.	6	--	--
Bivalvia**	Sphaeriidae	<i>Pisidium</i> sp.	3	2	--
Oligochaeta**	Naididae	Naididae	97	2	--
	Tubificidae	Tubificidae	3	--	--
	Enchytraeidae	Enchytraeidae	--	2	--
Acari		Hydrachnidia	3	2	--
Isopoda	Asellidae	<i>Caecidotea</i> sp.	3	--	--
Amphipoda	Hyalellidae	<i>Hyalella azteca</i> (Saussure)	--	2	--
Odonata	Coenagrionidae	Coenagrionidae	--	--	1
Megaloptera	Corydalidae	<i>Nigronia serricornis</i> (Say)	4	--	--
		<i>Corydalus cornutus</i> (Linnaeus)	--	--	--
	Sialidae	<i>Sialis</i> sp.	15	4	3
Trichoptera	Hydroptilidae	<i>Hydroptila</i> sp.	6	--	--
		<i>Hydroptila waubesiana</i> Betten	16	--	--
		<i>Neotrichia</i> sp.	--	--	1
	Hydropsychidae	Hydropsychidae	117	26	5
		<i>Cheumatopsyche</i> sp.	615	231	11
		<i>Cheumatopsyche pettiti</i> (Banks)	3	--	--
		<i>Hydropsyche</i> sp.	18	6	2
		<i>Hydropsyche betteni</i> Ross/depravata Hagen	29	2	1
	Polycentropodidae	<i>Neureclipsis</i> sp.	--	--	1
Coleoptera	Gyrinidae	<i>Dineutus</i> sp.	9	--	1
	Dryopidae	<i>Helichus basalis</i> LeConte	--	2	--
	Elmidae	<i>Ancyronyx variegata</i> (Germar)	123	18	21
Diptera	Ceratopogonidae	Ceratopogonidae	--	2	--
		<i>Bezzia/Palpomyia</i> sp.	--	8	1
		<i>Forcipomyia</i> sp.	--	--	1
	Chironomidae	Chironomidae	1	--	--
		Chironominae	3	--	--
		<i>Phaenopsectra/Tribelos</i> sp.	3	--	--
		<i>Dicrotendipes</i> sp.	21	--	--
		<i>Parachironomus</i> sp.	9	--	--
		<i>Phaenopsectra</i> sp.	--	6	3
		<i>Polypedilum</i> sp.	87	54	35
		<i>Stenochironomus</i> sp.	--	8	--
		<i>Tribelos</i> sp.	39	2	1
		<i>Paratanytarsus</i> sp.	3	--	--
		<i>Rheotanytarsus</i> sp.	--	6	--
		<i>Tanytarsus</i> sp.	6	38	23
		<i>Cricotopus/Orthocladus</i> sp.	--	6	--
		<i>Cricotopus</i> sp.	--	52	12
		<i>Cricotopus bicinctus</i> group	3	--	--
		<i>Limnophyes</i> sp.	--	2	--
		<i>Rheocricotopus</i> sp.	21	6	2
		Tanypodinae	--	--	1
		<i>Thienemannimyia</i> group sp.	189	70	96
		<i>Ablabesmyia</i> sp.	27	6	2
		<i>Conchapelopia</i> sp.	3	6	--
	Tipulidae	<i>Hexatoma</i> sp.	--	2	--
	Empididae	Hemerodromiinae	6	--	--
		<i>Hemerodromia</i> sp.	9	--	1
Total			1530	579	226

Macroinvertebrate Survey in Little Raccoon Creek, Jackson and Gallia Counties, Ohio

[*, Phylum; **, Class; --, not sampled at site; Quant., Quantitative number representing organisms in 5 sq. ft.; Qual., Qualitative.]

STATION			1	2	3
Latitude			39°05'51"	39°04'13"	39°03'39"
Longitude			82°28'57"	82°28'16"	82°27'20"
Collection Date			7/27/99	7/28/99	7/28/99
Sample Type			Qual.	Qual.	Qual.
ORDER	FAMILY	TAXON			
Nemertea*		<i>Prostoma</i> sp.	+	--	+
Gastropoda**	Physidae	<i>Physella</i> sp.	+	--	--
Bivalvia**	Sphaeriidae	<i>Sphaerium</i> sp.	+	--	--
Oligochaeta**	Tubificidae	Tubificidae	+	+	+
Decapoda	Cambaridae	Cambarinae	+	+	+
Isopoda	Asellidae	<i>Caecidotea</i> sp.	+	+	--
Amphipoda	Crangonyctidae	<i>Crangonyx</i> sp.	+	--	--
Ephemeroptera	Hyaletellidae	<i>Hyaletella azteca</i> (Saussure)	+	+	--
		<i>Caenis</i> sp.	+	--	--
	Caenidae	<i>Caenis punctata</i> McDunnough	+	--	--
		<i>Centroptilum/Procloeon</i> sp.	--	+	--
	Baetidae	<i>Baetis intercalaris</i> McDunnough	+	+	+
		Heptageniidae	+	--	--
	Heptageniidae	<i>Stenacron interpunctatum</i> (Say)	+	--	--
		<i>Calopteryx</i> sp.	+	+	--
	Calopterygidae	<i>Calopteryx maculata</i> (Beauvois)	+	+	+
		Coenagrionidae	--	+	+
Odonata	Coenagrionidae	<i>Ischnura</i> sp.	+	+	--
		<i>Basiaeschna janata</i> (Say)	+	+	--
	Cordulegastriidae	<i>Cordulegaster</i> sp.	--	--	+
		Gomphidae	+	+	+
	Macromiidae	<i>Macromia</i> sp.	--	+	+
		Corixidae	+	+	--
	Corixidae	<i>Sigara</i> sp.	+	--	--
		<i>Trichocorixa</i> sp.	+	--	--
	Gerridae	<i>Trepobates</i> sp.	--	+	--
		<i>Mesovelia</i> sp.	--	+	--
Megaloptera	Mesoveliidae	<i>Mesovelia mulsanti</i> White	--	+	+
		<i>Chauliodes</i> sp.	--	+	--
	Corydalidae	<i>Chauliodes rastricornis</i> Rambur	+	--	--
		<i>Nigronia serricornis</i> (Say)	+	--	--
	Sialidae	<i>Sialis</i> sp.	+	+	+
Trichoptera	Hydroptilidae	<i>Hydroptila</i> sp.	+	--	--
		<i>Hydroptila waubesiana</i> Betten	+	--	--
	Philopotamidae	<i>Chimarra</i> sp.	--	--	+
		<i>Cheumatopsyche</i> sp.	+	+	+
	Hydropsychidae	<i>Hydropsyche betteni</i> Ross/depravata Hagen	+	+	+
Lepidoptera	Polycentropodidae	<i>Polycentropus</i> sp.	--	+	+
	Pyrilidae	Nymphulinae	--	+	--
		<i>Parapoynx</i> sp.	--	+	--
Coleoptera	Dytiscidae	Hydroporini	--	+	+
		<i>Dineutus</i> sp.	+	--	+
	Gyrinidae	<i>Dineutus discolor</i> Aub	+	--	--
		<i>Tropisternus</i> sp.	--	+	--
	Hydrophilidae	<i>Helichus basalis</i> LeConte	--	+	--
		<i>Ancyronyx variegata</i> (Germar)	+	--	--
	Dryopidae	<i>Dubiraphia</i> sp.	+	+	--
		<i>Dubiraphia minima</i> Hilsenhoff	+	--	--
	Elmidae	<i>Macronychus glabratus</i> Say	+	--	--
		Ceratopogonidae	--	+	--
Diptera	Ceratopogonidae	<i>Forcipomyia</i> sp.	--	--	--
		Chironomidae	+	--	--
	Chironomidae	Chironominae	--	--	+
		<i>Chironomus</i> sp.	--	+	--
	Chironomidae	<i>Cryptochironomus</i> sp.	+	--	--
		<i>Cryptotendipes</i> sp.	--	+	--
	Chironomidae	<i>Glyptotendipes</i> sp.	+	--	--
		<i>Parachironomus</i> sp.	+	--	--
	Chironomidae	<i>Phaenopsectra</i> sp.	+	--	--
		<i>Polypedilum</i> sp.	+	+	+
Diptera	Chironomidae	<i>Stenochironomus</i> sp.	--	+	+
		<i>Tanytarsus</i> sp.	--	+	--
	Chironomidae	Orthocladinae	--	+	--
		<i>Cricotopus</i> sp.	+	+	--
	Chironomidae	<i>Cricotopus bicinctus</i> group	+	--	--
		<i>Rheocricotopus</i> sp.	+	--	--
	Chironomidae	<i>Clinotanytus</i> sp.	+	--	--
		<i>Thienemannimyia</i> group sp.	+	+	+

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Macroinvertebrate Survey in Little Raccoon Creek, Jackson and Gallia Counties, Ohio

[*, Phylum; **, Class; --, not sampled at site; Quant., Quantitative number representing organisms in 5 sq. ft.; Qual., Qualitative.]

STATION			1	2	3
Latitude			39°05'51"	39°04'13"	39°03'39"
Longitude			82°28'57"	82°28'16"	82°27'20"
Collection Date			7/27/99	7/28/99	7/28/99
Sample Type			Qual.	Qual.	Qual.
ORDER	FAMILY	TAXON			
Diptera	Chironomidae	<i>Ablabesmyia</i> sp.	+	+	--
		<i>Krenopelopia</i> sp.	+	--	--
		<i>Procladius</i> sp.	--	+	+
	Simuliidae	<i>Simulium</i> sp.	+	--	--
	Tipulidae	<i>Tipula</i> sp.	--	+	--
		Limoniinae	+	--	--
		<i>Hexatoma</i> sp.	+	+	+
	Empididae	Hemerodromiinae	+	--	+
		<i>Hemerodromia</i> sp.	+	--	+
	Ephydriidae	Ephydriidae	--	+	--
	Tabanidae	<i>Chrysops</i> sp.	--	+	--
	Total		52	43	25

Macroinvertebrate Survey in Little Raccoon Creek, Jackson and Gallia Counties, Ohio

[*, Phylum; **, Class; --, not sampled at site; Quant., Quantitative number representing organisms in 5 sq. ft.; Qual., Qualitative.]

STATION			4	5	6
Latitude			39°00'43"	39°00'30"	38°58'12"
Longitude			82°27'06"	82°27'05"	82°23'11"
Collection Date			7/27/99	7/27/99	7/28/99
Sample Type			Quant.	Quant.	Quant.
ORDER	FAMILY	TAXON			
Nemertea*		<i>Prostoma</i> sp.	7	3	--
Nematoda*		Nematoda	3	2	--
Bryozoa*		Bryozoa	--	2	--
Gastropoda**	Physidae	<i>Physella</i> sp.	--	--	1
Oligochaeta**	Naididae	Naididae	2	--	--
Acari		Hydrachnidia	2	3	52
Decapoda	Cambaridae	Cambaridae	2	--	--
Ephemeroptera	Leptophlebiidae	<i>Orconectes</i> sp.	2	--	--
		Leptophlebiidae	9	--	--
		<i>Tricorythodes</i> sp.	--	--	98
		Baetidae	--	--	12
		<i>Centroptilum/Procloeon</i> sp.	2	--	--
	Baetidae	<i>Baetis</i> sp.	--	--	12
		<i>Baetis intercalaris</i> McDunnough	--	--	31
		<i>Pseudocloeon propinquum</i> (Walsh)	--	--	1
		Heptageniidae	--	7	35
		<i>Stenacron</i> sp.	2	1	--
		<i>Stenonema exiguum</i> Traver	--	--	9
		<i>Stenonema terminatum</i> (Walsh)	--	--	26
	Isonychiidae	<i>Isonychia</i> sp.	1	--	3
	Calopterygidae	<i>Hetaerina</i> sp.	2	--	--
Odonata	Coenagrionidae	Coenagrionidae	14	3	--
Hemiptera	Veliidae	<i>Rhagovelia</i> sp.	--	2	--
Megaloptera	Corydalidae	<i>Nigronia serricornis</i> (Say)	--	4	--
Trichoptera	Hydroptilidae	<i>Corydalis cornutus</i> (Linnaeus)	--	--	27
		<i>Neotrichia</i> sp.	7	2	--
		<i>Neotrichia vibrans</i> Ross	--	--	6
		<i>Chimarra</i> sp.	--	--	122
		Hydropsychidae	2	--	75
	Hydropsychidae	<i>Cheumatopsyche</i> sp.	34	1	64
		<i>Hydropsyche</i> sp.	--	--	6
		<i>Hydropsyche betteni</i> Ross/depravata Hagen	--	--	23
		<i>Hydropsyche rossi</i>	--	--	6
		Flint, Voshell, and Parker/simulans Ross	--	--	--
	Polycentropodidae	Polycentropodidae	--	--	12
		<i>Neureclipsis</i> sp.	--	--	7
		<i>Polycentropus</i> sp.	15	--	--
		<i>Pycnopsyche</i> sp.	--	3	--
		<i>Oecetis persimilis</i> (Banks)	2	--	51
Coleoptera	Gyrinidae	<i>Dineutus</i> sp.	4	5	--
Diptera	Ceratopogonidae	<i>Bezzia/Palpomyia</i> sp.	--	3	6
Diptera	Chironomidae	Chironomidae	2	8	31
		Chironominae	2	2	--
		<i>Microtendipes</i> sp.	7	3	--
		<i>Nilothauma</i> sp.	12	3	--
		<i>Polypedilum</i> sp.	27	33	6
		<i>Tribelos</i> sp.	7	5	--
		Tanytarsini	45	19	--
		<i>Micropsectra/Tanytarsus</i> sp.	5	--	--
		<i>Paratanytarsus</i> sp.	3	--	--
		<i>Rheotanytarsus</i> sp.	91	158	1607
		<i>Tanytarsus</i> sp.	367	572	191
		Orthocladiinae	--	2	17
		<i>Cricotopus/Orthocladus</i> sp.	3	--	--
		<i>Corynoneura</i> sp.	19	23	--
		<i>Cricotopus</i> sp.	9	--	288
		<i>Cricotopus bicinctus</i> group	--	--	23
		<i>Nanocladius</i> sp.	2	--	--
		<i>Parakiefferiella</i> sp.	2	--	--
		<i>Rheocricotopus</i> sp.	48	51	346
		<i>Thienemanniella</i> sp.	3	5	17
		Tanypodinae	4	2	--
		<i>Thienemannimyia</i> group sp.	55	55	86
		<i>Ablabesmyia</i> sp.	9	2	--
		<i>Conchapelopia</i> sp.	12	17	6
		<i>Labrundinia</i> sp.	5	--	--
		<i>Nilotanypus</i> sp.	3	--	--
		<i>Paramerina</i> sp.	--	3	--

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Macroinvertebrate Survey in Little Raccoon Creek, Jackson and Gallia Counties, Ohio

[*, Phylum; **, Class; --, not sampled at site; Quant., Quantitative number representing organisms in 5 sq. ft.; Qual., Qualitative.]

STATION			4	5	6
Latitude			39°00'43"	39°00'30"	38°58'12"
Longitude			82°27'06"	82°27'05"	82°23'11"
Collection Date			7/27/99	7/27/99	7/28/99
Sample Type			Quant.	Quant.	Quant.
ORDER	FAMILY	TAXON			
Diptera	Empididae	Empididae	2	--	--
		<i>Hemerodromia</i> sp.	9	46	12
		Total	865	1050	3315

Macroinvertebrate Survey in Little Raccoon Creek, Jackson and Gallia Counties, Ohio

[*, Phylum; **, Class; --, not sampled at site; Quant., Quantitative number representing organisms in 5 sq. ft.; Qual., Qualitative.]

STATION			4	5	6
Latitude			39°00'43"	39°00'30"	38°58'12"
Longitude			82°27'06"	82°27'05"	82°23'11"
Collection Date			7/27/99	7/27/99	7/28/99
Sample Type			Qual.	Qual.	Qual.
ORDER	FAMILY	TAXON			
Nemertea*		<i>Prostoma</i> sp.	--	--	+
Gastropoda**	Ancylidae	<i>Ferrissia</i> sp.	--	--	+
	Physidae	<i>Physella</i> sp.	--	--	+
Bivalvia**	Corbiculidae	<i>Corbicula</i> sp.	--	--	+
Oligochaeta**	Tubificidae	Tubificidae	+	--	+
Acari	Enchytraeidae	Hydrachnidia	--	--	+
Decapoda	Cambaridae	Cambarinae	+	+	--
		<i>Orconectes</i> sp.	--	+	+
Isopoda	Asellidae	<i>Caecidotea</i> sp.	--	+	--
Collembola		Collembola	+	--	--
Ephemeroptera	Caenidae	<i>Caenis</i> sp.	+	--	+
		<i>Centroptilum/Procladius</i> sp.	+	+	+
	Baetidae	<i>Baetis intercalaris</i> McDunnough	+	--	--
		<i>Paracloeodes minutus</i> (Daggy)	--	--	+
		<i>Pseudocloeon propinquum</i> (Walsh)	--	+	+
		<i>Stenacron</i> sp.	+	--	+
		<i>Stenacron interpunctatum</i> (Say)	+	+	+
		<i>Stenonema exiguum</i> Traver	--	--	+
	Isonychiidae	<i>Isonychia</i> sp.	--	--	+
	Calopterygidae	<i>Calopteryx</i> sp.	+	--	--
		<i>Calopteryx maculata</i> (Beauvois)	+	+	--
	Coenagrionidae	Coenagrionidae	--	--	+
		<i>Argia</i> sp.	+	+	+
		<i>Argia tibialis</i> (Rambur)	--	--	+
		Anisoptera	+	--	--
Hemiptera	Aeshnidae	<i>Basiaeschna janata</i> (Say)	+	+	+
		<i>Boyeria</i> sp.	--	+	--
		<i>Boyeria vinosa</i> (Say)	+	+	--
		<i>Cordulegaster</i> sp.	--	--	--
	Gomphidae	Gomphidae	--	+	+
		<i>Progomphus obscurus</i> (Rambur)	--	+	+
		<i>Stylurus</i> sp.	--	--	+
		<i>Macromia</i> sp.	--	--	+
	Gerridae	<i>Rheumatobates</i> sp.	+	--	--
		<i>Trepobates</i> sp.	+	+	--
	Mesoveliidae	<i>Mesovelia</i> sp.	+	+	--
		<i>Rhagovelia obesa</i> Uhler	--	+	--
	Corydalidae	<i>Nigronia serricornis</i> (Say)	+	+	--
		<i>Corydalus cornutus</i> (Linnaeus)	--	--	+
Trichoptera	Sialidae	<i>Sialis</i> sp.	--	+	+
		<i>Hydroptila</i> sp.	--	--	+
	Hydroptilidae	<i>Neotrichia</i> sp.	+	--	--
		<i>Neotrichia vibrans</i> Ross	--	--	+
		<i>Oxyethira</i> sp.	--	--	+
		<i>Chimarra</i> sp.	--	--	+
	Philopotamidae	<i>Cheumatopsyche</i> sp.	+	+	+
		<i>Hydropsyche betteni</i> Ross/depravata Hagen	--	+	+
	Hydropsychidae	Polycentropodidae	--	+	--
		<i>Polycentropus</i> sp.	+	+	+
		<i>Pycnopsyche</i> sp.	+	+	+
		<i>Oecetis persimilis</i> (Banks)	+	--	+
	Leptoceridae	<i>Triaenodes</i> sp.	--	--	+
		<i>Triaenodes ignitus</i> (Walker)	--	+	--
Coleoptera	Carabidae	Carabidae	--	+	--
		Hydroporini	+	--	--
	Dytiscidae	<i>Dineutus</i> sp.	+	+	--
		<i>Dineutus discolor</i> Aub	--	+	--
	Gyrinidae	<i>Helichus</i> sp.	--	+	--
		<i>Helichus basalis</i> LeConte	+	+	+
	Dryopidae	<i>Ancyronyx variegata</i> (Germar)	+	+	+
		<i>Dubiraphia</i> sp.	--	--	+
		<i>Dubiraphia minima</i> Hilsenhoff	+	+	+
		<i>Macronychus glabratus</i> Say	+	--	--
		<i>Stenelmis</i> sp.	--	+	--
		Ceratopogonidae	--	--	+
	Chironomidae	<i>Proteozia</i> sp.	--	--	+
		Chironomidae	+	--	--
Diptera	Ceratopogonidae	Chironominae	+	--	+
		Chironomini	--	--	+

PROJECT DATA

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Macroinvertebrate Survey in Little Raccoon Creek, Jackson and Gallia Counties, Ohio

[*, Phylum; **, Class; --, not sampled at site; Quant., Quantitative number representing organisms in 5 sq. ft.; Qual., Qualitative.]

STATION			4	5	6
Latitude			39°00'43"	39°00'30"	38°58'12"
Longitude			82°27'06"	82°27'05"	82°23'11"
Collection Date			7/27/99	7/27/99	7/28/99
Sample Type			Qual.	Qual.	Qual.
ORDER	FAMILY	TAXON			
Diptera	Chironomidae	<i>Phaenopsectra/Tribelos</i> sp.	+	--	--
		<i>Microtendipes</i> sp.	--	+	--
		<i>Phaenopsectra</i> sp.	--	--	+
		<i>Polypedilum</i> sp.	+	+	--
		<i>Stenochironomus</i> sp.	+	+	+
		<i>Tribelos</i> sp.	--	+	+
		<i>Micropsectra/Tanytarsus</i> sp.	+	--	--
		<i>Micropsectra</i> sp.	--	+	--
		<i>Paratanytarsus</i> sp.	--	+	--
		<i>Rheotanytarsus</i> sp.	+	+	--
		<i>Tanytarsus</i> sp.	+	+	+
		<i>Cricotopus</i> sp.	--	--	+
		<i>Psectrocladius</i> sp.	--	--	+
		<i>Rheocricotopus</i> sp.	--	+	+
		<i>Xylotopus par</i> (Coquillett)	+	+	--
		Tanypodinae	+	+	--
		<i>Thienemannimyia</i> group sp.	--	+	--
		<i>Ablabesmyia</i> sp.	+	+	+
		<i>Labrundinia</i> sp.	+	--	+
		<i>Procladius</i> sp.	--	--	+
	Culicidae	<i>Anopheles</i> sp.	--	--	+
		<i>Culex</i> sp.	+	--	--
	Dixidae	Dixidae	--	--	+
	Tipulidae	<i>Tipula</i> sp.	+	--	--
	Tabanidae	Tabanidae	--	--	+
		<i>Chlorotabanus crepuscularis</i> (Bequaert)	+	--	--
		<i>Chrysops</i> sp.	--	--	+
Total			44	45	57

PROJECT DATA
Macroinvertebrate Survey in Little Raccoon Creek, Jackson and Gallia Counties, Ohio

FISH COMMUNITY RESULTS

Fish community surveys were conducted at two stream sites in Little Raccoon Creek in 1999. Fish were collected by electrofishing with pulsed-DC current at each stream site. One electrofishing pass was conducted at each reach on the same day. Fish were identified, measured, weighed, and checked for external anomalies such as parasites, lesions, and skeletal deformities. The fish collected were in good health. The only anomaly observed was a blackside darter blinded in one eye. Most individuals were returned to the stream after processing. Additional surface-water and (or) water-quality data for these sites can be found in the continuous-record sections of the Ohio data reports.

CALENDAR YEAR 1999

[-- , not sampled at site; G, grams]

STATION			4		5	
Latitude			39°00'43"		39°00'30"	
Longitude			82°27'06"		82°27'05"	
Collection Date			8/31/99		8/3199	
FAMILY	SCIENTIFIC NAME	COMMON NAME	ABUNDANCE	BATCH WEIGHT (G)	ABUNDANCE	BATCH WEIGHT (G)
Petromyzontidae	<i>Lampetra aepyptera</i>	least brook lamprey	--	--	1	8.3
Cyprinidae	<i>Notropis stramineus</i>	sand shiner	--	--	1	1.7
	<i>Pimephales notatus</i>	bluntnose minnow	2	0.5	10	7.1
Catostomidae	<i>Moxostoma erythrurum</i>	golden redhorse	--	--	1	7.2
	<i>Hypentelium nigricans</i>	northern hogsucker	3	6.6	6	18.9
	<i>Catostomus commersoni</i>	white sucker	--	--	2	6.0
	<i>Minytrema melanops</i>	spotted sucker	--	--	1	3.7
Esocidae	<i>Esox americanus vermiculatus</i>	grass pickerel	--	--	1	17.4
Centrarchidae	<i>Ambloplites rupestris</i>	rock bass	1	1.5	--	--
	<i>Micropterus punctulatus</i>	spotted bass	2	6.6	17	36.9
	<i>Lepomis cyanellus</i>	green sunfish	18	109.6	16	100.0
	<i>Lepomis megalotis</i>	longear sunfish	1	29.0	3	206.6
Percidae	<i>Percina maculata</i>	blackside darter	5	6.0	10 ^a	23.5
	<i>Etheostoma nigrum</i>	johnny darter	5	2.3	4	1.8
Number of Species			8	--	13	--
Total Number of Fish			37	--	73	--

^a One fish with anomaly (blinded in one eye).

This map displays the 88 counties of Ohio, each labeled with its name. The map is oriented with latitude and longitude lines. Latitude lines are marked at 39°, 40°, and 41° North. Longitude lines are marked at 81°, 82°, 83°, and 84° West. The state's neighbors are labeled: Michigan to the north, Indiana to the west, Pennsylvania to the east, and West Virginia to the south. Major geographical features include Lake Erie to the north and the Ohio River to the south and east. A scale bar in the bottom right corner provides distances in both miles (0 to 40) and kilometers (0 to 40). The county names are arranged in a grid-like fashion, with some counties having unique shapes or positions relative to the grid.

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 September 30, 1999.

GAGE.--Water stage 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; minimum daily discharge, 1.4 ft³/s Sept. 28 and 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	e2.8	2.5	2.1	e1.7
2	---	---	---	---	---	---	---	---	e2.7	2.0	1.9	e1.7
3	---	---	---	---	---	---	---	---	2.7	2.0	2.0	e1.7
4	---	---	---	---	---	---	---	---	2.5	2.0	2.3	e1.7
5	---	---	---	---	---	---	---	---	2.5	2.0	2.3	e1.7
6	---	---	---	---	---	---	---	---	2.5	2.0	2.2	e1.7
7	---	---	---	---	---	---	---	---	2.5	2.0	2.2	e1.7
8	---	---	---	---	---	---	---	---	2.6	2.4	2.5	e1.7
9	---	---	---	---	---	---	---	---	2.6	2.5	2.2	e1.6
10	---	---	---	---	---	---	---	---	2.5	2.2	e2.2	e1.6
11	---	---	---	---	---	---	---	---	2.5	2.0	e2.2	e1.6
12	---	---	---	---	---	---	---	---	2.5	2.1	e2.1	e1.6
13	---	---	---	---	---	---	---	---	2.6	2.1	e2.1	e1.6
14	---	---	---	---	---	---	---	---	2.7	2.0	e2.1	e1.6
15	---	---	---	---	---	---	---	---	2.5	2.0	e2.1	e1.6
16	---	---	---	---	---	---	---	---	2.7	2.0	e2.1	e1.5
17	---	---	---	---	---	---	---	---	2.4	2.0	e2.0	e1.5
18	---	---	---	---	---	---	---	---	2.0	2.0	e2.0	e1.5
19	---	---	---	---	---	---	---	---	2.0	2.1	e2.0	e1.5
20	---	---	---	---	---	---	---	---	2.1	2.1	e1.9	e1.5
21	---	---	---	---	---	---	---	---	2.1	2.1	e1.9	e1.5
22	---	---	---	---	---	---	---	---	2.3	2.4	e1.9	e1.5
23	---	---	---	---	---	---	---	---	2.4	2.4	e1.9	e1.5
24	---	---	---	---	---	---	---	---	2.5	2.5	e1.8	e1.5
25	---	---	---	---	---	---	---	---	2.5	2.4	e1.8	e1.5
26	---	---	---	---	---	---	---	---	2.5	2.3	e1.8	e1.5
27	---	---	---	---	---	---	---	---	2.5	2.2	e1.8	e1.5
28	---	---	---	---	---	---	---	---	2.6	2.4	e1.8	e1.4
29	---	---	---	---	---	---	---	---	2.5	2.5	e1.8	e1.4
30	---	---	---	---	---	---	---	---	2.4	2.5	e1.8	e1.4
31	---	---	---	---	---	---	---	---	---	2.4	e1.8	---
MEAN	---	---	---	---	---	---	---	---	2.47	2.20	2.02	1.57
MAX	---	---	---	---	---	---	---	---	2.8	2.5	2.5	1.7
MIN	---	---	---	---	---	---	---	---	2.0	2.0	1.8	1.4

WTR YR 1999 MEAN 2.06 MAX 2.8 MIN 1.4

PROJECT DATA
Monitoring of Truetown Mine Outflow

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392652082062200 MINE DRAIN AT TRUETOWN, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	BICAR- BONATE WATER DIS IT FIELD HCO3 (00453)	ALKA- LITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)
MAY 1999									
27...	1000	3.0	3110	4.7	14.5	13.0	.6	--	--
JUN									
24...	1245	2.5	3070	4.6	27.5	13.0	.7	--	--
JUL									
29...	1130	2.4	3080	4.6	28.5	13.0	.4	--	--
AUG									
27...	1120	1.8	3010	4.7	23.0	13.5	.9	--	--
SEP									
29...	1100	1.4	2800	4.7	24.0	13.5	.1	--	--

DATE	ACIDITY TOTAL HEATED (MG/L AS CACO3) (70508)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE) (01045)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL) (01105)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)
MAY 1999								
27...	--	2000	390000	365000	6300	7090	6400	7400
JUN								
24...	--	1900	440000	353000	6400	7040	6000	6020
JUL								
29...	469	2000	310000	343000	6300	6760	5800	5960
AUG								
27...	781	1900	330000	230000	6600	4680	5900	4200
SEP								
29...	695	--	360000	358000	7000	6940	6400	5700

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 mile upstream of 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 1998 TO SEPTEMBER 1999

[--, no data; E, estimated value.]

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	BICAR- BONATE WATER DIS IT MG/L AS HCO3 (00453)	ALKA- LITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)
MAY 1999									
27...	0920	39	473	7.4	12.0	14.0	8.3	58	48
JUN									
24...	1130	15	784	7.2	24.5	21.0	7.0	41	34
JUL									
29...	1030	7.4	494	6.9	27.0	24.5	5.4	30	24
AUG									
27...	1045	40	392	7.2	23.0	20.5	6.3	45	37
SEP									
29...	1100	3.6	1070	6.8	24.0	18.0	6.1	29	23

DATE	ACIDITY TOTAL HEATED (MG/L AS CACO3) (70508)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE) (01045)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL) (01105)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)
MAY 1999								
27...	--	140	1800	30	460	459	140	E8.1
JUN								
24...	--	310	1200	50	810	842	40	<10
JUL								
29...	--	400	1200	33	770	751	160	E8.4
AUG								
27...	--	100	2600	37	380	289	730	<15
SEP								
29...	--	36	830	E7.3	640	634	E30	<15

PROJECT DATA

Monitoring of Truetown Mine Outflow

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392637082062100 SUNDAY CREEK BELOW MINE DRAIN

LOCATION.--Latitude 39°26'37", longitude 82°06'21", Athens County, Hydrologic Unit 05030204, 0.2 mile downstream of 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 1998 TO SEPTEMBER 1999

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	BICAR- BONATE WATER DIS IT MG/L AS HCO3 (00453)	ALKA- LITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)
MAY									
27...	0830	42	654	6.7	11.0	14.0	8.2	42	34
JUN									
24...	1055	18	1150	6.2	22.0	20.0	7.0	13	11
JUL									
29...	0930	9.9	1470	5.9	26.0	24.0	5.6	13	11
AUG									
27...	0930	42	508	6.6	21.5	20.0	6.5	26	22
SEP									
29...	1000	5.0	1770	5.6	24.0	16.5	6.2	5	4

DATE	ACIDITY TOTAL HEATED (MG/L AS CACO3) (70508)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE) (01045)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN) (01055)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	ALUM- INUM, TOTAL RECOV- ERABLE (UG/L AS AL) (01105)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)
MAY 1999								
27...	--	240	22000	16300	820	851	480	<10
JUN								
24...	--	530	51000	47900	1700	1730	890	17
JUL								
29...	119	700	65000	64000	1900	1900	1400	135
AUG								
27...	--	180	18000	3000	660	612	1100	<15
SEP								
29...	214	730	110000	113000	2700	2750	1900	331

PROJECT DATA

Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

This study began in 1988 and will continue through 2001. Water-quality samples were collected in 1991-1999. These data are presented to the Ohio Department of Transportation for their use in reviewing deicing practices and to accumulate baseline data.



Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

The following tables list the results of chemical analysis of ground-water samples collected from seven sites throughout Ohio, established to monitor the ground-water quality in areas near state highways where road deicing is practiced. Some wells, with station ID's ending in "01" through "06", represent the multiports within the same well ending in "00". Level "01" is the deepest port and level "06" is the shallowest port. These ports were sampled using dialysis tubing filled with distilled water, set at each level and allowed to come to equilibrium for approximately 6 weeks. Wells at the sites in Clark and Champaign Counties were not sampled until March of this water year due to lack of salt application in those areas during the previous winter. Ground-water level measurements are listed following water-quality records.

WATER-QUALITY RECORDS

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L) AS CA (00915)	SODIUM, DIS- SOLVED (MG/L) AS NA (00930)	CHLO- RIDE, DIS- SOLVED (MG/L) AS CL (00940)	BROMIDE DIS- SOLVED (MG/L) AS BR (71870)
393541083000801 PK-50 NEAR CIRCLEVILLE, OHIO—LEVEL 1 (Latitude 39°35'41", longitude 83°00'08")					
OCT 1998					
23...	766	96	15	32	.038
DEC					
14...	726	100	8.6	20	.014
MAR 1999					
08...	686	94	6.6	16	.029
MAY					
12...	712	96	6.2	18	.027
JUN					
22...	698	100	4.8	16	.026
JUL					
22...	680	97	4.0	14	.028
SEP					
14...	701	99	4.2	16	.025
393541083000802 PK-50 NEAR CIRCLEVILLE, OHIO—LEVEL 2 (Latitude 39°35'41", longitude 83°00'08")					
OCT 1998					
23...	733	89	13	27	.041
DEC					
14...	674	90	7.6	17	.029
MAR 1999					
08...	663	91	4.5	14	.028
MAY					
12...	692	86	9.5	22	.039
JUN					
22...	669	94	7.9	20	.032
JUL					
22...	643	87	6.6	13	.038
SEP					
14...	666	88	4.7	30	.031
393541083000803 PK-50 NEAR CIRCLEVILLE, OHIO—LEVEL 3 (Latitude 39°35'41", longitude 83°00'08")					
OCT 1998					
23...	717	89	12	33	.039
DEC					
14...	614	86	6.5	12	.032
MAR 1999					
08...	648	88	7.7	19	.034
MAY					
12...	714	90	14	41	.048
JUN					
22...	642	86	8.0	20	.032
JUL					
22...	606	84	5.6	12	.044
SEP					
14...	647	88	3.5	14	.048

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
393541083000804 PK-50 NEAR CIRCLEVILLE, OHIO—LEVEL 4 (Latitude 39°35'41", longitude 83°00'08")					
OCT 1998					
23...	685	87	11	27	.041
DEC					
14...	619	84	6.6	14	.030
MAR 1999					
08...	639	82	6.2	16	.032
MAY					
12...	676	85	11	32	.047
JUN					
22...	629	84	7.1	18	.029
JUL					
22...	615	81	5.4	13	.041
SEP					
14...	629	86	3.6	12	.041
393541083000805 PK-50 NEAR CIRCLEVILLE, OHIO—LEVEL 5 (Latitude 39°35'41", longitude 83°00'08")					
DEC					
14...	626	84	7.6	16	.020
MAR 1999					
08...	620	86	5.6	15	.030
MAY					
12...	656	86	11	28	.044
JUN					
22...	620	86	8.1	19	.035
JUL					
22...	597	82	6.3	14	.038
SEP					
14...	611	83	4.0	12	.033
393541083000901 PK-49 NEAR CIRCLEVILLE, OHIO—LEVEL 1 (Latitude 39°35'41", longitude 83°00'09")					
DEC					
14...	416	95	3.5	13	--
MAR 1999					
08...	519	84	2.8	13	--
MAY					
12...	457	81	2.8	12	--
JUN					
22...	452	86	2.7	13	--
JUL					
22...	489	82	2.6	14	--
SEP					
14...	601	89	2.6	13	--
393541083000902 PK-49 NEAR CIRCLEVILLE, OHIO—LEVEL 2 (Latitude 39°35'41", longitude 83°00'09")					
OCT 1998					
23...	--	--	--	--	--
DEC					
14...	462	82	3.5	13	--
MAR 1999					
08...	542	84	2.9	14	--
MAY					
12...	452	82	2.8	13	--
JUN					
22...	411	84	2.8	13	--
JUL					
22...	459	85	2.6	14	--
SEP					
14...	548	86	2.5	13	--

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

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WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
393541083000903 PK-49 NEAR CIRCLEVILLE, OHIO—LEVEL 3 (Latitude 39°35'41", longitude 83°00'09")					
DEC 14...	448	80	3.6	12	--
MAR 1999 08...	528	82	2.9	14	--
MAY 12...	518	89	3.1	12	--
JUN 22...	459	86	2.6	13	--
JUL 22...	527	--	--	12	--
SEP 14...	568	85	2.6	12	--
393541083000904 PK-49 NEAR CIRCLEVILLE, OHIO—LEVEL 4 (Latitude 39°35'41", longitude 83°00'09")					
DEC 14...	529	78	3.4	11	--
MAR 1999 08...	491	78	2.8	13	--
MAY 12...	481	84	2.8	12	--
JUN 22...	456	82	2.7	13	--
JUL 22...	488	80	2.5	13	--
SEP 14...	558	88	2.4	12	--
393541083000905 PK-49 NEAR CIRCLEVILLE, OHIO—LEVEL 5 (Latitude 39°35'41", longitude 83°00'09")					
DEC 14...	455	E82	E8.2	19	--
MAR 1999 08...	474	82	3.2	12	--
MAY 12...	529	77	3.7	14	--
JUN 22...	425	70	3.9	15	--
JUL 22...	424	--	--	12	--
393541083001001 PK-47 NEAR CIRCLEVILLE, OHIO—LEVEL 1 (Latitude 39°35'41", longitude 83°00'10")					
DEC 14...	512	82	3.1	10	--
MAR 1999 08...	577	85	6.1	27	--
MAY 12...	471	99	11	23	--
JUN 22...	504	85	3.2	13	--
JUL 22...	610	86	2.9	11	--
SEP 14...	608	85	2.4	13	--

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
393541083001002 PK-47 NEAR CIRCLEVILLE, OHIO—LEVEL 2 (Latitude 39°35'41", longitude 83°00'10")					
DEC 14...	460	80	3.2	11	--
MAR 1999 08...	602	--	--	26	--
MAY 12...	623	86	10	21	--
JUN 22...	504	--	--	14	--
JUL 22...	515	88	2.7	11	--
SEP 14...	605	84	2.4	13	--
393541083001003 PK-47 NEAR CIRCLEVILLE, OHIO—LEVEL 3 (Latitude 39°35'41", longitude 83°00'10")					
DEC 14...	498	84	3.1	11	--
MAR 1999 08...	622	--	--	26	--
MAY 12...	534	84	9.5	21	--
JUN 22...	461	85	3.4	14	--
JUL 22...	552	83	2.6	11	--
SEP 14...	606	86	2.3	12	--
393541083001004 PK-47 NEAR CIRCLEVILLE, OHIO—LEVEL 4 (Latitude 39°35'41", longitude 83°00'10")					
DEC 14...	--	76	3.1	10	--
MAR 1999 08...	562	83	6.6	26	--
MAY 12...	625	--	--	21	--
JUN 22...	497	85	3.2	12	--
JUL 22...	551	83	2.9	11	--
SEP 14...	604	84	2.4	12	--
393541083001005 PK-47 NEAR CIRCLEVILLE, OHIO—LEVEL 5 (Latitude 39°35'41", longitude 83°00'10")					
DEC 14...	401	83	3.5	9.6	--
MAR 1999 08...	539	84	3.8	20	--
MAY 12...	632	--	--	23	--
JUN 22...	587	85	4.7	14	--
JUL 22...	606	82	2.7	9.4	--
SEP 14...	620	88	2.4	12	--

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

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WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
393541083001006 PK-47 NEAR CIRCLEVILLE, OHIO—LEVEL 6 (Latitude 39°35'41", longitude 83°00'10")					
DEC 14...	486	--	--	12	--
MAR 1999 08...	571	--	--	20	--
MAY 12...	508	83	6.5	16	--
JUN 22...	446	--	--	13	--
393541083001201 PK-53 NEAR CIRCLEVILLE, OHIO—LEVEL 1 (Latitude 39°35'41", longitude 83°00'12")					
OCT 1998 23...	559	110	4.4	13	--
DEC 14...	498	--	--	9.5	--
MAR 1999 08...	513	84	2.2	12	--
MAY 12...	627	--	--	14	--
JUN 22...	471	83	2.2	11	--
JUL 22...	491	87	2.4	7.7	--
SEP 14...	646	110	3.8	14	--
393541083001202 PK-53 NEAR CIRCLEVILLE, OHIO—LEVEL 2 (Latitude 39°35'41", longitude 83°00'12")					
OCT 1998 23...	562	--	--	12	--
DEC 14...	--	73	2.3	9.1	--
MAR 1999 08...	493	85	1.9	11	--
MAY 12...	558	--	--	12	--
JUN 22...	472	87	2.1	11	--
JUL 22...	504	87	2.4	10	--
SEP 14...	574	--	--	8.8	--
393541083001203 PK-53 NEAR CIRCLEVILLE, OHIO—LEVEL 3 (Latitude 39°35'41", longitude 83°00'12")					
OCT 1998 23...	449	78	2.1	9.3	--
DEC 14...	--	77	2.5	10	--
MAR 1999 08...	519	--	--	11	--
MAY 12...	447	--	--	17	--
JUN 22...	477	93	2.3	10	--
JUL 22...	501	86	2.4	8.8	--
SEP 14...	591	87	2.0	8.7	--

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
393541083001204 PK-53 NEAR CIRCLEVILLE, OHIO—LEVEL 4 (Latitude 39°35'41", longitude 83°00'12")					
OCT 1998					
23...	439	79	2.3	9.2	--
DEC					
14...	--	75	2.5	9.7	--
MAR 1999					
08...	515	84	2.1	11	--
MAY					
12...	447	83	2.0	11	--
JUN					
22...	413	90	2.2	10	--
JUL					
22...	493	87	2.4	9.6	--
SEP					
14...	569	88	2.1	8.6	--
393541083001205 PK-53 NEAR CIRCLEVILLE, OHIO—LEVEL 5 (Latitude 39°35'41", longitude 83°00'12")					
OCT 1998					
23...	743	79	49	110	--
DEC					
14...	--	75	2.3	8.6	--
MAR 1999					
08...	503	85	2.1	11	--
MAY					
12...	489	85	2.3	11	--
JUN					
22...	429	88	1.8	10	--
JUL					
22...	472	84	1.9	6.9	--
SEP					
14...	491	83	1.9	8.1	--
393541083001206 PK-53 NEAR CIRCLEVILLE, OHIO—LEVEL 6 (Latitude 39°35'41", longitude 83°00'12")					
OCT 1998					
23...	473	76	1.8	10	--
DEC					
14...	497	--	--	8.7	--
MAR 1999					
08...	550	84	1.8	11	--
MAY					
12...	522	--	--	10	--
JUN					
22...	461	--	--	9.6	--
JUL					
22...	460	85	2.1	6.4	--
SEP					
14...	477	84	2.0	8.2	--
393542083000501 PK-52 NEAR CIRCLEVILLE, OHIO—LEVEL 1 (Latitude 39°35'42", longitude 83°00'05")					
OCT 1998					
23...	646	--	--	21	--
MAR 1999					
08...	569	85	16	25	--
MAY					
12...	634	--	--	53	--
JUN					
22...	520	--	--	37	--
JUL					
22...	566	--	--	15	--
SEP					
14...	629	--	--	13	--

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

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WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
393542083000502 PK-52 NEAR CIRCLEVILLE, OHIO—LEVEL 2 (Latitude 39°35'42", longitude 83°00'05")					
OCT 1998					
23...	633	--	--	17	--
DEC					
14...	566	--	--	10	--
MAR 1999					
08...	610	90	16	31	--
MAY					
12...	684	95	19	49	--
JUN					
22...	548	94	15	31	--
JUL					
22...	518	91	8.0	14	--
SEP					
14...	629	88	5.0	14	--
393542083000503 PK-52 NEAR CIRCLEVILLE, OHIO—LEVEL 3 (Latitude 39°35'42", longitude 83°00'05")					
DEC					
14...	582	--	--	10	--
MAR 1999					
08...	625	--	--	28	--
MAY					
12...	620	95	20	50	--
JUN					
22...	508	100	14	31	--
JUL					
22...	518	87	8.3	14	--
SEP					
14...	600	84	5.5	14	--
393542083000504 PK-52 NEAR CIRCLEVILLE, OHIO—LEVEL 4 (Latitude 39°35'42", longitude 83°00'05")					
DEC					
14...	570	80	4.8	9.8	--
MAR 1999					
08...	693	88	16	31	--
MAY					
12...	596	96	19	50	--
JUN					
22...	579	--	--	30	--
JUL					
22...	590	--	--	14	--
SEP					
14...	590	87	5.3	14	--
393542083000505 PK-52 NEAR CIRCLEVILLE, OHIO—LEVEL 5 (Latitude 39°35'42", longitude 83°00'05")					
DEC					
14...	--	87	8.8	11	--
MAR 1999					
08...	549	89	6.4	18	--
MAY					
12...	618	--	--	47	--
JUN					
22...	532	87	11	27	--
JUL					
22...	591	--	--	13	--
SEP					
14...	637	88	5.5	14	--

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
393542083000506 PK-52 NEAR CIRCLEVILLE, OHIO—LEVEL 6 (Latitude 39°35'42", longitude 83°00'05")					
DEC 14...	603	--	--	13	--
MAR 1999 08...	641	91	17	34	--
MAY 12...	711	110	33	73	--
JUN 22...	623	100	28	51	--
JUL 22...	534	--	--	14	--
SEP 14...	656	--	--	17	--
393542083000701 PK-51 NEAR CIRCLEVILLE, OHIO—LEVEL 1 (Latitude 39°35'42", longitude 83°00'07")					
OCT 1998 23...	628	--	--	14	--
DEC 14...	554	85	8.0	13	--
MAR 1999 08...	539	82	5.8	20	--
MAY 12...	471	85	6.3	17	--
JUN 22...	477	80	6.5	18	--
JUL 22...	503	78	5.9	17	--
SEP 14...	568	83	4.8	14	--
393542083000702 PK-51 NEAR CIRCLEVILLE, OHIO—LEVEL 2 (Latitude 39°35'42", longitude 83°00'07")					
OCT 1998 23...	593	--	--	13	--
DEC 14...	590	87	9.6	10	--
MAR 1999 08...	501	78	6.6	18	--
MAY 12...	464	80	5.7	16	--
JUN 22...	571	82	6.6	17	--
JUL 22...	481	80	5.5	14	--
SEP 14...	555	83	3.3	12	--
393542083000703 PK-51 NEAR CIRCLEVILLE, OHIO—LEVEL 3 (Latitude 39°35'42", longitude 83°00'07")					
DEC 14...	623	79	9.5	9.7	--
MAR 1999 08...	597	82	8.0	19	--
MAY 12...	417	86	5.8	16	--
JUN 22...	604	--	--	17	--
JUL 22...	480	86	4.3	13	--

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

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WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
393542083000704 PK-51 NEAR CIRCLEVILLE, OHIO—LEVEL 4 (Latitude 39°35'42", longitude 83°00'07")					
DEC 14...	631	82	9.9	9.6	--
MAR 1999 08...	565	83	7.4	18	--
MAY 12...	553	--	--	16	--
JUN 22...	533	79	5.9	17	--
JUL 22...	548	83	4.5	11	--
SEP 14...	590	78	3.2	11	--
393542083000705 PK-51 NEAR CIRCLEVILLE, OHIO—LEVEL 5 (Latitude 39°35'42", longitude 83°00'07")					
OCT 1998 23...	635	--	--	13	--
DEC 14...	627	--	--	10	--
MAR 1999 08...	604	79	9.9	22	--
MAY 12...	469	81	6.5	16	--
JUN 22...	529	81	7.4	17	--
JUL 22...	483	82	4.6	10	--
SEP 14...	615	--	--	11	--
393542083000706 PK-51 NEAR CIRCLEVILLE, OHIO—LEVEL 6 (Latitude 39°35'42", longitude 83°00'07")					
OCT 1998 23...	703	--	--	14	--
DEC 14...	481	80	9.3	9.3	--
MAR 1999 08...	540	78	8.2	17	--
MAY 12...	480	81	7.2	17	--
JUN 22...	486	79	5.2	14	--
JUL 22...	501	87	4.4	12	--
SEP 14...	604	--	--	11	--
395859083440201 CL-141 NEAR SPRINGFIELD, OHIO—LEVEL 1 (Latitude 39°58'59", longitude 83°44'02")					
MAR 1999 10...	647	110	12	41	--
MAY 06...	696	110	26	58	--
JUN 11...	656	110	19	44	--
AUG 03...	676	110	18	24	--
SEP 13...	695	100	11	22	--

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
395859083440202 CL-141 NEAR SPRINGFIELD, OHIO—LEVEL 2 (Latitude 39°58'59", longitude 83°44'02")					
MAR 1999					
10...	577	110	14	45	--
MAY					
06...	758	110	25	56	--
JUN					
11...	635	110	18	43	--
AUG					
03...	701	100	17	24	--
SEP					
13...	708	99	11	24	--
395859083440203 CL-141 NEAR SPRINGFIELD, OHIO—LEVEL 3 (Latitude 39°58'59", longitude 83°44'02")					
MAR 1999					
10...	603	110	12	40	--
MAY					
06...	777	110	26	24	--
JUN					
11...	643	110	22	49	--
AUG					
03...	722	100	20	28	--
SEP					
13...	773	110	13	25	--
395859083440204 CL-141 NEAR SPRINGFIELD, OHIO—LEVEL 4 (Latitude 39°58'59", longitude 83°44'02")					
MAR 1999					
10...	533	110	12	38	--
MAY					
06...	754	110	26	62	--
JUN					
11...	710	--	--	51	--
AUG					
03...	732	110	24	36	--
SEP					
13...	759	100	19	31	--
395859083440205 CL-141 NEAR SPRINGFIELD, OHIO—LEVEL 5 (Latitude 39°58'59", longitude 83°44'02")					
MAY 1999					
06...	738	--	--	40	--
JUN					
11...	551	110	19	29	--
AUG					
03...	844	110	26	58	--
SEP					
13...	720	100	24	35	--
395859083440301 CL-143 NEAR SPRINGFIELD, OHIO—LEVEL 1 (Latitude 39°58'59", longitude 83°44'03")					
MAR 1999					
10...	511	100	10	19	--
MAY					
06...	594	120	10	22	--
JUN					
11...	564	110	13	27	--
AUG					
03...	702	110	14	27	--
SEP					
13...	662	110	13	26	--

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

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WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
395859083440302 CL-143 NEAR SPRINGFIELD, OHIO—LEVEL 2 (Latitude 39°58'59", longitude 83°44'03")					
MAR 1999					
10...	528	100	9.1	14	--
MAY					
06...	505	110	8.5	23	--
JUN					
11...	494	98	8.7	18	--
AUG					
03...	565	90	8.6	15	--
SEP					
13...	587	86	7.7	19	--
395859083440303 CL-143 NEAR SPRINGFIELD, OHIO—LEVEL 3 (Latitude 39°58'59", longitude 83°44'03")					
MAR 1999					
10...	585	99	8.8	15	--
MAY					
06...	545	100	8.4	18	--
JUN					
11...	528	110	8.5	17	--
AUG					
03...	600	92	9.0	17	--
SEP					
13...	588	84	7.3	17	--
395859083440304 CL-143 NEAR SPRINGFIELD, OHIO—LEVEL 4 (Latitude 39°58'59", longitude 83°44'03")					
MAR 1999					
10...	423	80	5.7	6.6	--
MAY					
06...	504	100	5.5	13	--
JUN					
11...	454	84	4.7	7.0	--
AUG					
03...	517	80	4.0	4.6	--
SEP					
13...	483	--	--	6.6	--
395859083440305 CL-143 NEAR SPRINGFIELD, OHIO—LEVEL 5 (Latitude 39°58'59", longitude 83°44'03")					
AUG 1999					
03...	481	81	3.0	2.0	--
SEP					
13...	495	76	3.4	5.6	--
395859083440401 CL-142 NEAR SPRINGFIELD, OHIO—LEVEL 1 (Latitude 39°58'59", longitude 83°44'04")					
MAR 1999					
10...	497	100	8.7	20	--
MAY					
06...	733	110	11	100	--
JUN					
11...	644	100	20	51	--
AUG					
03...	729	100	25	45	--
SEP					
13...	819	96	23	34	--
395859083440402 CL-142 NEAR SPRINGFIELD, OHIO—LEVEL 2 (Latitude 39°58'59", longitude 83°44'04")					
MAR 1999					
10...	479	98	7.8	18	--
MAY					
06...	631	100	12	13	--
JUN					
11...	639	99	14	36	--
AUG					
03...	729	--	--	46	--
SEP					
13...	753	97	23	41	--

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
395859083440403 CL-142 NEAR SPRINGFIELD, OHIO—LEVEL 3 (Latitude 39°58'59", longitude 83°44'04")					
MAR 1999					
10...	509	99	8.0	18	--
MAY					
06...	579	97	11	27	--
JUN					
11...	571	97	13	32	--
AUG					
03...	757	--	--	43	--
SEP					
13...	746	98	22	45	--
395859083440404 CL-142 NEAR SPRINGFIELD, OHIO—LEVEL 4 (Latitude 39°58'59", longitude 83°44'04")					
MAR 1999					
10...	474	--	--	16	--
MAY					
06...	663	--	--	23	--
JUN					
11...	475	85	7.2	11	--
AUG					
03...	545	--	--	10	--
SEP					
13...	540	80	5.3	7.1	--
395859083440501 CL-140 NEAR SPRINGFIELD, OHIO—LEVEL 1 (Latitude 39°58'59", longitude 83°44'05")					
MAR 1999					
10...	767	100	11	41	.024
MAY					
06...	806	110	24	57	.037
JUN					
11...	844	110	15	34	.028
AUG					
03...	830	100	15	19	.039
SEP					
13...	826	100	10	21	.030
395859083440502 CL-140 NEAR SPRINGFIELD, OHIO—LEVEL 2 (Latitude 39°58'59", longitude 83°44'05")					
MAR 1999					
10...	812	110	13	45	.031
MAY					
06...	888	100	22	49	.034
JUN					
11...	857	110	15	33	.031
AUG					
03...	806	99	13	17	.029
SEP					
13...	822	100	8.9	20	.028
395859083440503 CL-140 NEAR SPRINGFIELD, OHIO—LEVEL 3 (Latitude 39°58'59", longitude 83°44'05")					
MAR 1999					
10...	754	110	14	52	.030
MAY					
06...	784	110	25	53	.037
JUN					
11...	885	110	17	42	.035
AUG					
03...	784	97	16	19	.038
SEP					
13...	831	100	11	23	.027

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

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WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
395859083440504 CL-140 NEAR SPRINGFIELD, OHIO—LEVEL 4 (Latitude 39°58'59", longitude 83°44'05")					
MAR 1999					
10...	718	110	11	31	.034
MAY					
06...	948	110	19	58	.027
JUN					
11...	916	110	20	48	.042
AUG					
03...	962	110	24	63	.065
SEP					
13...	926	100	36	45	.042
395859083440505 CL-140 NEAR SPRINGFIELD, OHIO—LEVEL 5 (Latitude 39°58'59", longitude 83°44'05")					
MAR 1999					
10...	730	93	12	21	.033
MAY					
06...	833	99	17	36	.019
JUN					
11...	794	100	17	29	.025
AUG					
03...	869	110	17	48	.051
SEP					
13...	930	100	23	52	.046
395859083440601 CL-137 NEAR SPRINGFIELD, OHIO—LEVEL 1 (Latitude 39°58'59", longitude 83°44'06")					
MAR 1999					
10...	616	110	13	43	--
MAY					
06...	760	100	16	32	--
JUN					
11...	604	100	15	27	--
AUG					
03...	656	110	11	18	--
SEP					
13...	718	110	8.6	17	--
395859083440602 CL-137 NEAR SPRINGFIELD, OHIO—LEVEL 2 (Latitude 39°58'59", longitude 83°44'06")					
MAR 1999					
10...	533	--	--	21	--
MAY					
06...	743	110	14	37	--
JUN					
11...	677	110	31	52	--
AUG					
03...	691	110	12	22	--
SEP					
13...	706	110	10	30	--
395859083440603 CL-137 NEAR SPRINGFIELD, OHIO—LEVEL 3 (Latitude 39°58'59", longitude 83°44'06")					
MAR 1999					
10...	520	110	11	25	--
MAY					
06...	770	110	12	35	--
JUN					
11...	614	110	25	41	--
AUG					
03...	696	110	15	24	--
SEP					
13...	779	110	11	31	--

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
395859083440604 CL-137 NEAR SPRINGFIELD, OHIO—LEVEL 4 (Latitude 39°58'59", longitude 83°44'06")					
MAR 1999					
10...	514	100	13	23	--
MAY					
06...	718	100	19	37	--
JUN					
11...	707	110	32	56	--
AUG					
03...	665	110	14	24	--
SEP					
13...	748	110	14	31	--
395859083440605 CL-137 NEAR SPRINGFIELD, OHIO—LEVEL 5 (Latitude 39°58'59", longitude 83°44'06")					
MAY 1999					
06...	601	--	--	11	--
JUN					
11...	552	--	--	14	--
AUG					
03...	637	94	16	19	--
SEP					
13...	622	94	17	20	--
395901083440701 CL-136 NEAR SPRINGFIELD, OHIO—LEVEL 1 (Latitude 39°59'01", longitude 83°44'07")					
MAR 1999					
10...	477	78	14	15	--
MAY					
06...	--	35	12	17	--
JUN					
11...	479	110	4.4	8.7	--
AUG					
03...	611	--	--	8.6	--
SEP					
13...	655	97	3.8	9.0	--
395901083440702 CL-136 NEAR SPRINGFIELD, OHIO—LEVEL 2 (Latitude 39°59'01", longitude 83°44'07")					
MAR 1999					
10...	462	77	14	15	--
MAY					
06...	553	110	11	14	--
JUN					
11...	343	110	4.5	11	--
AUG					
03...	618	110	4.1	7.4	--
SEP					
13...	668	110	3.8	9.9	--
395901083440703 CL-136 NEAR SPRINGFIELD, OHIO—LEVEL 3 (Latitude 39°59'01", longitude 83°44'07")					
MAR 1999					
10...	461	71	14	15	--
MAY					
06...	507	140	13	15	--
JUN					
11...	486	120	4.5	11	--
AUG					
03...	696	--	--	11	--
SEP					
13...	635	100	4.2	10	--

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

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WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
400947083480001 CH-44 NEAR URBANA, OHIO—LEVEL 1 (Latitude 40°09'47", longitude 83°48'00")					
MAR 1999					
11...	939	110	37	37	.046
MAY					
04...	939	110	38	43	.033
JUN					
10...	915	110	41	41	.022
JUL					
23...	817	100	48	39	.030
SEP					
01...	611	95	41	24	.012
400947083480002 CH-44 NEAR URBANA, OHIO—LEVEL 2 (Latitude 40°09'47", longitude 83°48'00")					
MAR 1999					
11...	878	110	30	30	.044
MAY					
04...	944	110	32	32	.039
JUN					
10...	787	100	19	28	.025
JUL					
23...	863	110	17	39	.027
SEP					
01...	832	100	12	32	.025
400947083480003 CH-44 NEAR URBANA, OHIO—LEVEL 3 (Latitude 40°09'47", longitude 83°48'00")					
MAR 1999					
11...	883	110	24	30	.044
MAY					
04...	917	110	23	35	.017
JUN					
10...	889	110	24	38	.020
JUL					
23...	874	110	19	47	.029
SEP					
01...	846	100	16	34	.024
400947083480004 CH-44 NEAR URBANA, OHIO—LEVEL 4 (Latitude 40°09'47", longitude 83°48'00")					
MAR 1999					
11...	869	110	15	27	.043
MAY					
04...	914	110	21	33	.019
JUN					
10...	901	110	24	40	.032
JUL					
23...	875	110	21	43	.032
SEP					
01...	874	100	19	38	.035
400947083480005 CH-44 NEAR URBANA, OHIO—LEVEL 5 (Latitude 40°09'47", longitude 83°48'00")					
JUN 1999					
10...	904	110	39	33	.013
SEP					
01...	933	93	50	35	.028

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
400948083475801 CH-46 NEAR URBANA, OHIO—LEVEL 1 (Latitude 40°09'48", longitude 83°47'58")					
MAR 1999					
11...	601	110	17	28	--
MAY					
04...	686	--	--	31	--
JUN					
10...	726	110	20	35	--
JUL					
23...	711	110	16	39	--
SEP					
01...	793	100	34	53	--
400948083475802 CH-46 NEAR URBANA, OHIO—LEVEL 2 (Latitude 40°09'48", longitude 83°47'58")					
MAR 1999					
11...	573	110	16	27	--
MAY					
04...	604	110	22	31	--
JUN					
10...	735	110	19	35	--
JUL					
23...	697	110	15	35	--
SEP					
01...	778	100	32	47	--
400948083475803 CH-46 NEAR URBANA, OHIO—LEVEL 3 (Latitude 40°09'48", longitude 83°47'58")					
MAR 1999					
11...	650	110	16	26	--
MAY					
04...	636	--	--	30	--
JUN					
10...	716	100	20	34	--
JUL					
23...	697	110	15	32	--
SEP					
01...	777	100	30	43	--
400948083475804 CH-46 NEAR URBANA, OHIO—LEVEL 4 (Latitude 40°09'48", longitude 83°47'58")					
MAR 1999					
11...	668	110	17	27	--
MAY					
04...	710	--	--	30	--
JUN					
10...	700	100	22	29	--
JUL					
23...	678	110	15	28	--
SEP					
01...	754	110	20	36	--
400948083475805 CH-46 NEAR URBANA, OHIO—LEVEL 5 (Latitude 40°09'48", longitude 83°47'58")					
MAR 1999					
11...	413	97	16	22	--
MAY					
04...	613	110	23	28	--
JUN					
10...	574	97	23	24	--
JUL					
23...	669	--	--	23	--
SEP					
01...	712	97	16	23	--

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

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WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
400948083475806 CH-46 NEAR URBANA, OHIO—LEVEL 6 (Latitude 40°09'48", longitude 83°47'58")					
MAR 1999					
11...	496	82	15	12	--
MAY					
04...	507	130	17	18	--
JUN					
10...	594	74	18	22	--
JUL					
23...	596	--	--	19	--
400948083480002 CH-45 NEAR URBANA, OHIO—LEVEL 2 (Latitude 40°09'48", longitude 83°48'00")					
MAR 1999					
11...	530	100	20	26	--
MAY					
04...	663	110	29	36	--
JUN					
10...	739	110	29	31	--
JUL					
23...	676	110	11	24	--
SEP					
01...	632	100	11	27	--
400948083480003 CH-45 NEAR URBANA, OHIO—LEVEL 3 (Latitude 40°09'48", longitude 83°48'00")					
MAR 1999					
11...	659	--	--	26	--
MAY					
04...	790	120	29	35	--
JUN					
10...	797	110	45	37	--
JUL					
23...	650	120	11	24	--
SEP					
01...	682	100	11	27	--
400948083480004 CH-45 NEAR URBANA, OHIO—LEVEL 4 (Latitude 40°09'48", longitude 83°48'00")					
MAR 1999					
11...	618	--	--	25	--
MAY					
04...	716	--	--	35	--
JUN					
10...	798	110	46	36	--
JUL					
23...	716	--	--	27	--
SEP					
01...	620	100	14	31	--
400948083480005 CH-45 NEAR URBANA, OHIO—LEVEL 5 (Latitude 40°09'48", longitude 83°48'00")					
MAR 1999					
11...	481	90	15	14	--
MAY					
04...	523	94	21	16	--
JUN					
10...	673	99	38	29	--
JUL					
23...	705	99	23	26	--
SEP					
01...	799	100	31	52	--
400948083480006 CH-45 NEAR URBANA, OHIO—LEVEL 6 (Latitude 40°09'48", longitude 83°48'00")					
MAR 1999					
04...	581	--	--	9.0	--
JUN					
10...	426	46	14	11	--
JUL					
23...	628	--	--	13	--
SEP					
01...	598	89	18	15	--

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
400948083480101 CH-43 NEAR URBANA, OHIO—LEVEL 1 (Latitude 40°09'48", longitude 83°48'01")					
MAR 1999					
11...	626	110	28	31	--
MAY					
04...	874	120	35	47	--
JUN					
10...	671	110	16	26	--
JUL					
23...	651	110	14	30	--
SEP					
01...	685	110	12	30	--
400948083480102 CH-43 NEAR URBANA, OHIO—LEVEL 2 (Latitude 40°09'48", longitude 83°48'01")					
MAR 1999					
11...	585	100	29	31	--
MAY					
04...	826	120	36	45	--
JUN					
10...	694	100	13	23	--
JUL					
23...	676	110	17	38	--
SEP					
01...	735	110	12	32	--
400948083480103 CH-43 NEAR URBANA, OHIO—LEVEL 3 (Latitude 40°09'48", longitude 83°48'01")					
MAR 1999					
11...	636	100	28	30	--
MAY					
04...	825	110	37	42	--
JUN					
10...	793	110	25	41	--
JUL					
23...	737	110	16	38	--
SEP					
01...	768	100	12	32	--
400948083480104 CH-43 NEAR URBANA, OHIO—LEVEL 4 (Latitude 40°09'48", longitude 83°48'01")					
MAR 1999					
11...	617	100	29	31	--
MAY					
04...	762	--	--	39	--
JUN					
10...	856	110	44	56	--
JUL					
23...	726	110	19	38	--
SEP					
01...	691	100	13	34	--
400948083480105 CH-43 NEAR URBANA, OHIO—LEVEL 5 (Latitude 40°09'48", longitude 83°48'01")					
MAR 1999					
11...	577	91	26	26	--
MAY					
04...	666	99	27	28	--
JUN					
10...	842	110	46	59	--
JUL					
23...	704	100	38	38	--
SEP					
01...	763	100	20	33	--
400948083480106 CH-43 NEAR URBANA, OHIO—LEVEL 6 (Latitude 40°09'48", longitude 83°48'01")					
MAY 1999					
04...	687	--	--	19	--
JUN					
10...	626	--	--	19	--

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

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WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
400948083480201 CH-41 NEAR URBANA, OHIO—LEVEL 1 (Latitude 40°09'48", longitude 83°48'02")					
MAR 1999					
11...	638	100	8.9	19	--
MAY					
04...	625	110	9.0	22	--
JUN					
10...	632	100	8.6	20	--
JUL					
23...	671	110	8.8	25	--
SEP					
01...	709	100	8.9	26	--
400948083480202 CH-41 NEAR URBANA, OHIO—LEVEL 2 (Latitude 40°09'48", longitude 83°48'02")					
MAR 1999					
11...	543	100	8.1	19	--
MAY					
04...	700	100	9.0	22	--
JUN					
10...	660	100	8.6	19	--
JUL					
23...	635	110	7.8	24	--
SEP					
01...	700	100	11	29	--
400948083480203 CH-41 NEAR URBANA, OHIO—LEVEL 3 (Latitude 40°09'48", longitude 83°48'02")					
MAR 1999					
11...	547	100	8.2	19	--
MAY					
04...	764	100	8.8	22	--
JUN					
10...	655	100	8.3	18	--
JUL					
23...	603	110	8.1	25	--
SEP					
01...	658	100	11	29	--
400948083480204 CH-41 NEAR URBANA, OHIO—LEVEL 4 (Latitude 40°09'48", longitude 83°48'02")					
MAR 1999					
11...	570	110	11	22	--
MAY					
04...	777	110	19	46	--
JUN					
10...	608	100	8.6	19	--
JUL					
23...	706	110	13	32	--
SEP					
01...	954	99	102	48	--
400948083480205 CH-41 NEAR URBANA, OHIO—LEVEL 5 (Latitude 40°09'48", longitude 83°48'02")					
MAR 1999					
11...	665	110	27	37	--
MAY					
04...	871	110	31	65	--
JUN					
10...	705	100	21	47	--
JUL					
23...	724	110	23	44	--
SEP					
01...	935	100	88	51	--

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

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DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
400948083480206 CH-41 NEAR URBANA, OHIO—LEVEL 6 (Latitude 40°09'48", longitude 83°48'02")					
MAR 1999					
11...	777	110	28	37	--
MAY					
04...	842	110	32	67	--
JUN					
10...	714	100	21	48	--
JUL					
23...	733	110	23	46	--
SEP					
01...	753	90	30	--	--
400952083480803 CH-40 NEAR URBANA, OHIO—LEVEL 3 (Latitude 40°09'52", longitude 83°48'08")					
MAR 1999					
11...	569	110	6.0	20	--
MAY					
04...	584	110	6.3	21	--
JUN					
10...	664	110	6.3	21	--
JUL					
23...	671	110	6.3	20	--
SEP					
01...	631	120	6.2	21	--
400952083480804 CH-40 NEAR URBANA, OHIO—LEVEL 4 (Latitude 40°09'52", longitude 83°48'08")					
MAR 1999					
11...	600	110	6.2	19	--
MAY					
04...	645	--	--	21	--
JUN					
10...	655	110	6.4	21	--
JUL					
23...	623	--	--	22	--
SEP					
01...	635	100	6.0	20	--
400952083480805 CH-40 NEAR URBANA, OHIO—LEVEL 5 (Latitude 40°09'52", longitude 83°48'08")					
MAR 1999					
11...	578	110	6.1	20	--
MAY					
04...	649	--	--	22	--
JUN					
10...	604	140	6.8	21	--
JUL					
23...	633	110	5.9	20	--
SEP					
01...	598	110	6.2	21	--
400952083480806 CH-40 NEAR URBANA, OHIO—LEVEL 6 (Latitude 40°09'52", longitude 83°48'08")					
MAR 1999					
11...	521	110	6.3	19	--
MAY					
04...	635	120	6.5	21	--
JUN					
10...	580	110	6.3	20	--
JUL					
23...	583	110	6.2	21	--
SEP					
01...	660	--	--	21	--

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

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WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
403922082325901 R-19 NEAR LEXINGTON, OHIO—LEVEL 1 (Latitude 40°39'22", longitude 82°32'59")					
OCT 1998					
26...	197	26	2.1	2.6	--
DEC					
11...	561	78	7.7	41	--
FEB 1999					
16...	568	80	6.6	55	--
MAR					
16...	510	76	6.9	52	--
APR					
28...	542	--	--	46	--
JUN					
15...	470	79	7.7	43	--
JUL					
28...	527	76	7.8	42	--
SEP					
07...	533	75	8.0	50	--
403922082325902 R-19 NEAR LEXINGTON, OHIO—LEVEL 2 (Latitude 40°39'22", longitude 82°32'59")					
OCT 1998					
26...	572	78	7.3	47	--
DEC					
11...	546	--	--	46	--
FEB 1999					
16...	565	77	6.5	55	--
MAR					
16...	525	78	6.9	53	--
APR					
28...	465	80	7.3	46	--
JUN					
15...	455	76	7.7	42	--
JUL					
28...	534	75	7.9	46	--
SEP					
07...	502	74	7.8	50	--
403922082325903 R-19 NEAR LEXINGTON, OHIO—LEVEL 3 (Latitude 40°39'22", longitude 82°32'59")					
OCT 1998					
26...	546	77	7.3	46	--
DEC					
11...	530	77	7.5	47	--
FEB 1999					
16...	570	78	6.7	54	--
MAR					
16...	506	77	6.8	51	--
APR					
28...	454	77	7.7	41	--
JUN					
15...	480	73	7.9	42	--
JUL					
28...	522	73	8.0	46	--
SEP					
07...	515	74	7.6	52	--

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
403922082325904 R-19 NEAR LEXINGTON, OHIO—LEVEL 4 (Latitude 40°39'22", longitude 82°32'59")					
OCT 1998					
26...	558	77	7.3	47	--
DEC					
11...	521	78	7.5	47	--
FEB 1999					
16...	575	79	7.4	55	--
MAR					
16...	529	79	7.0	51	--
APR					
28...	490	71	8.5	36	--
JUN					
15...	454	72	7.9	43	--
JUL					
28...	527	73	8.1	48	--
SEP					
07...	560	--	--	53	--
403922082325905 R-19 NEAR LEXINGTON, OHIO—LEVEL 5 (Latitude 40°39'22", longitude 82°32'59")					
OCT 1998					
26...	548	--	--	32	--
DEC					
11...	494	--	--	40	--
MAR 1999					
16...	470	69	7.9	41	--
APR					
28...	443	63	9.7	36	--
JUN					
15...	442	76	8.8	42	--
JUL					
28...	574	--	--	39	--
403922082325906 R-19 NEAR LEXINGTON, OHIO—LEVEL 6 (Latitude 40°39'22", longitude 82°32'59")					
OCT 1998					
26...	159	--	--	2.0	--
403922082330001 R-20 NEAR LEXINGTON, OHIO—LEVEL 1 (Latitude 40°39'22", longitude 82°33'00")					
OCT 1998					
26...	496	68	7.9	48	--
DEC					
11...	487	73	7.8	49	--
FEB 1999					
16...	506	--	--	48	--
MAR					
16...	469	65	9.1	36	--
APR					
28...	436	--	--	35	--
JUN					
15...	416	61	8.1	32	--
JUL					
28...	501	66	9.0	41	--
SEP					
07...	522	--	--	52	--

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

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WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
403922082330002 R-20 NEAR LEXINGTON, OHIO—LEVEL 2 (Latitude 40°39'22", longitude 82°33'00")					
OCT 1998					
26...	506	68	7.8	47	--
DEC					
11...	492	70	7.6	50	--
FEB 1999					
16...	511	--	--	48	--
MAR					
16...	429	64	9.4	34	--
APR					
28...	397	54	7.9	29	--
JUN					
15...	411	62	8.6	32	--
JUL					
28...	498	67	9.1	42	--
SEP					
07...	479	70	9.4	51	--
403922082330003 R-20 NEAR LEXINGTON, OHIO—LEVEL 3 (Latitude 40°39'22", longitude 82°33'00")					
OCT 1998					
26...	504	64	7.9	49	--
DEC					
11...	528	69	7.2	52	--
FEB 1999					
16...	502	68	6.7	49	--
MAR					
16...	456	63	9.5	34	--
APR					
28...	430	56	7.2	33	--
JUN					
15...	440	61	8.0	31	--
JUL					
28...	502	--	--	43	--
SEP					
07...	500	70	9.3	51	--
403922082330004 R-20 NEAR LEXINGTON, OHIO—LEVEL 4 (Latitude 40°39'22", longitude 82°33'00")					
OCT 1998					
26...	487	58	7.8	50	--
DEC					
11...	411	65	7.6	46	--
FEB 1999					
16...	502	66	6.5	53	--
MAR					
16...	447	62	9.8	33	--
APR					
28...	402	52	7.5	23	--
JUN					
15...	428	61	7.6	31	--
JUL					
28...	442	62	7.4	29	--
SEP					
07...	458	63	8.2	37	--

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
403922082330005 R-20 NEAR LEXINGTON, OHIO—LEVEL 5 (Latitude 40°39'22", longitude 82°33'00")					
OCT 1998					
26...	476	63	8.1	37	--
DEC					
11...	484	63	8.0	42	--
FEB 1999					
16...	502	66	8.4	48	--
MAR					
16...	483	65	7.7	48	--
APR					
28...	430	60	7.3	37	--
JUN					
15...	431	60	7.7	35	--
JUL					
28...	441	61	7.5	31	--
SEP					
07...	470	63	8.1	35	--
403922082330006 R-20 NEAR LEXINGTON, OHIO—LEVEL 6 (Latitude 40°39'22", longitude 82°33'00")					
OCT 1998					
26...	469	64	8.2	36	--
DEC					
11...	470	63	8.1	40	--
FEB 1999					
16...	493	66	8.3	47	--
MAR					
16...	474	62	8.0	47	--
APR					
28...	452	62	7.8	41	--
JUN					
15...	430	60	8.0	35	--
JUL					
28...	454	--	--	32	--
SEP					
07...	430	61	8.0	34	--
403923082325401 R-21 NEAR LEXINGTON, OHIO—LEVEL 1 (Latitude 40°39'23", longitude 82°32'54")					
OCT 1998					
26...	554	77	7.4	45	--
DEC					
11...	186	21	2.5	3.3	--
FEB 1999					
16...	232	--	--	3.2	--
MAR					
16...	239	32	2.5	2.6	--
APR					
28...	255	36	2.2	3.5	--
JUN					
15...	235	--	--	3.4	--
JUL					
28...	181	23	2.0	2.0	--
SEP					
07...	189	25	2.1	2.6	--

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

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WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
403923082325402 R-21 NEAR LEXINGTON, OHIO—LEVEL 2 (Latitude 40°39'23", longitude 82°32'54")					
OCT 1998					
26...	166	19	2.0	2.5	--
DEC					
11...	168	17	2.1	3.4	--
FEB 1999					
16...	246	32	2.2	3.2	--
MAR					
16...	248	38	2.5	2.8	--
APR					
28...	250	37	2.1	3.3	--
JUN					
15...	211	28	2.1	2.5	--
JUL					
28...	170	21	2.0	2.0	--
SEP					
07...	153	18	2.1	2.5	--
403923082325403 R-21 NEAR LEXINGTON, OHIO—LEVEL 3 (Latitude 40°39'23", longitude 82°32'54")					
OCT 1998					
26...	203	--	--	2.7	--
MAR 1999					
16...	245	33	2.9	2.5	--
APR					
28...	253	36	2.1	3.3	--
JUN					
15...	226	27	2.2	2.6	--
JUL					
28...	185	22	2.1	2.2	--
SEP					
07...	237	--	--	2.9	--
403923082325404 R-21 NEAR LEXINGTON, OHIO—LEVEL 4 (Latitude 40°39'23", longitude 82°32'54")					
OCT 1998					
26...	149	--	--	2.8	--
MAR 1999					
16...	243	32	2.3	2.7	--
APR					
28...	243	34	2.1	3.0	--
JUN					
15...	304	--	--	4.7	--
403923082325405 R-21 NEAR LEXINGTON, OHIO—LEVEL 5 (Latitude 40°39'23", longitude 82°32'54")					
APR 1999					
28...	241	--	--	3.5	--
JUN					
15...	274	--	--	4.1	--
403923082325601 R-15 NEAR LEXINGTON, OHIO—LEVEL 1 (Latitude 40°39'23", longitude 82°32'56")					
OCT 1998					
26...	297	27	14	22	--
DEC					
11...	285	26	13	22	--
FEB 1999					
16...	391	29	29	60	--
MAR					
16...	448	31	37	80	--
APR					
28...	426	29	36	73	--
JUN					
15...	294	25	16	34	--
JUL					
28...	326	30	15	34	--
SEP					
07...	328	31	14	33	--

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

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DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
403923082325602 R-15 NEAR LEXINGTON, OHIO—LEVEL 2 (Latitude 40°39'23", longitude 82°32'56")					
OCT 1998					
26...	321	29	15	24	--
DEC					
11...	289	28	12	22	--
FEB 1999					
16...	414	29	29	64	--
MAR					
16...	442	32	35	80	--
APR					
28...	424	28	34	70	--
JUN					
15...	295	25	17	33	--
JUL					
28...	350	32	17	34	--
SEP					
07...	349	--	--	32	--
403923082325603 R-15 NEAR LEXINGTON, OHIO—LEVEL 3 (Latitude 40°39'23", longitude 82°32'56")					
OCT 1998					
26...	78	--	--	2.5	--
DEC					
11...	46	--	--	2.1	--
FEB 1999					
16...	421	--	--	66	--
MAR					
16...	441	31	36	78	--
APR					
28...	417	29	35	70	--
JUN					
15...	312	24	21	38	--
403923082325701 R-18 NEAR LEXINGTON, OHIO—LEVEL 1 (Latitude 40°39'23", longitude 82°32'57")					
OCT 1998					
26...	484	59	5.7	53	.043
DEC					
11...	486	59	5.5	52	.037
FEB 1999					
16...	497	61	6.1	66	.050
MAR					
16...	543	58	14	75	.045
APR					
28...	503	54	19	59	.031
JUN					
15...	407	45	14	43	.037
JUL					
28...	467	54	7.4	53	.041
SEP					
07...	441	52	6.6	49	.034
403923082325702 R-18 NEAR LEXINGTON, OHIO—LEVEL 2 (Latitude 40°39'23", longitude 82°32'57")					
OCT 1998					
26...	466	56	5.3	53	.053
DEC					
11...	460	56	5.2	50	.028
FEB 1999					
16...	491	60	6.4	63	.051
MAR					
16...	528	51	13	75	.046
APR					
28...	449	45	19	57	.035
JUN					
15...	489	61	14	46	.031
JUL					
28...	538	64	13	52	.034
SEP					
07...	502	64	13	49	.034

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

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WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
403923082325703 R-18 NEAR LEXINGTON, OHIO—LEVEL 3 (Latitude 40°39'23", longitude 82°32'57")					
OCT 1998					
26...	538	67	8.2	52	.048
DEC					
11...	527	69	8.0	47	.017
FEB 1999					
16...	527	71	6.9	56	.048
MAR					
16...	575	66	9.6	69	.050
APR					
28...	563	65	15	62	.043
JUN					
15...	398	44	14	43	.030
JUL					
28...	464	52	7.1	51	.041
SEP					
07...	436	51	6.2	49	.036
403923082325704 R-18 NEAR LEXINGTON, OHIO—LEVEL 4 (Latitude 40°39'23", longitude 82°32'57")					
OCT 1998					
26...	538	64	7.6	53	.041
DEC					
11...	544	72	8.9	47	.025
FEB 1999					
16...	569	72	6.7	75	.051
MAR					
16...	609	67	15	83	.046
APR					
28...	593	66	24	66	.031
JUN					
15...	494	56	21	47	.030
JUL					
28...	516	61	16	50	.040
SEP					
07...	515	66	13	50	.037
403923082325705 R-18 NEAR LEXINGTON, OHIO—LEVEL 5 (Latitude 40°39'23", longitude 82°32'57")					
FEB 1999					
16...	557	74	9.5	65	.035
MAR					
16...	647	75	23	78	.045
APR					
28...	593	62	32	67	.035
JUN					
15...	535	62	26	51	.029
403923082325706 R-18 NEAR LEXINGTON, OHIO—LEVEL 6 (Latitude 40°39'23", longitude 82°32'57")					
FEB 1999					
16...	692	88	23	81	.032
MAR					
16...	633	68	37	84	.043
APR					
28...	601	58	36	74	.035
403923082325707 R-18 NEAR LEXINGTON, OHIO—LEVEL 7 (Latitude 40°39'23", longitude 82°32'57")					
APR 1999					
28...	694	80	35	61	.031

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

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DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
403923082325901 R-17 NEAR LEXINGTON, OHIO—LEVEL 1 (Latitude 40°39'23", longitude 82°32'59")					
OCT 1998					
26...	544	68	6.3	54	--
DEC					
11...	518	72	6.3	52	--
FEB 1999					
16...	551	74	6.2	56	--
MAR					
16...	538	72	8.8	69	--
APR					
28...	505	61	16	63	--
JUN					
15...	466	56	18	45	--
JUL					
28...	515	64	10	52	--
SEP					
07...	522	68	126	54	--
403923082325902 R-17 NEAR LEXINGTON, OHIO—LEVEL 2 (Latitude 40°39'23", longitude 82°32'59")					
OCT 1998					
26...	523	63	5.7	56	--
DEC					
11...	438	67	5.8	51	--
FEB 1999					
16...	528	68	6.3	61	--
MAR					
16...	535	63	12	74	--
APR					
28...	497	56	19	57	--
JUN					
15...	441	48	16	44	--
JUL					
28...	501	60	8.3	53	--
SEP					
07...	495	61	6.1	52	--
403923082325903 R-17 NEAR LEXINGTON, OHIO—LEVEL 3 (Latitude 40°39'23", longitude 82°32'59")					
OCT 1998					
26...	506	61	5.6	53	--
DEC					
11...	508	66	6.0	51	--
FEB 1999					
16...	532	64	8.7	71	--
MAR					
16...	549	56	19	78	--
APR					
28...	924	64	70	170	--
JUN					
15...	424	45	16	42	--
JUL					
28...	492	58	7.3	52	--
SEP					
07...	485	--	--	48	--
403923082325904 R-17 NEAR LEXINGTON, OHIO—LEVEL 4 (Latitude 40°39'23", longitude 82°32'59")					
OCT 1998					
26...	164	--	--	5.4	--
DEC					
11...	58	--	--	1.7	--
MAR 1999					
16...	536	55	17	77	--
APR					
28...	484	48	22	57	--
JUN					
15...	534	--	--	63	--

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

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WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

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DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
403923082325905 R-17 NEAR LEXINGTON, OHIO—LEVEL 5 (Latitude 40°39'23", longitude 82°32'59")					
OCT 1998					
26...	129	--	--	2.3	--
DEC					
11...	54	--	--	1.1	--
411136081172403 PO-222 NEAR RAVENNA, OHIO—LEVEL 3 (Latitude 41°11'36", longitude 81°17'24")					
OCT 1998					
28...	693	52	47	100	--
FEB 1999					
18...	705	62	61	110	--
MAR					
18...	731	57	62	110	--
SEP					
09...	713	60	62	110	--
411136081172404 PO-222 NEAR RAVENNA, OHIO—LEVEL 4 (Latitude 41°11'36", longitude 81°17'24")					
OCT 1998					
28...	666	61	57	97	--
DEC					
17...	652	62	56	98	--
FEB 1999					
18...	689	62	60	110	--
MAR					
18...	724	56	58	110	--
APR					
30...	672	61	61	100	--
JUN					
17...	620	60	59	93	--
JUL					
30...	666	59	60	33	--
SEP					
09...	666	60	62	100	--
411136081172405 PO-222 NEAR RAVENNA, OHIO—LEVEL 5 (Latitude 41°11'36", longitude 81°17'24")					
OCT 1998					
28...	688	62	58	100	--
DEC					
17...	694	63	57	100	--
FEB 1999					
18...	736	63	61	120	--
MAR					
18...	728	58	64	110	--
APR					
30...	702	58	59	110	--
JUN					
17...	684	60	60	100	--
JUL					
30...	688	58	59	100	--
SEP					
09...	696	61	62	110	--

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
411136081172406 PO-222 NEAR RAVENNA, OHIO—LEVEL 6 (Latitude 41°11'36", longitude 81°17'24")					
OCT 1998					
28...	691	62	58	100	--
DEC					
17...	689	62	57	100	--
FEB 1999					
18...	745	64	61	120	--
MAR					
18...	733	61	62	110	--
APR					
30...	697	60	61	110	--
JUN					
17...	673	60	60	100	--
JUL					
30...	705	56	58	110	--
SEP					
09...	714	61	59	110	--
411136081172407 PO-222 NEAR RAVENNA, OHIO—LEVEL 7 (Latitude 41°11'36", longitude 81°17'24")					
OCT 1998					
28...	688	62	58	100	--
DEC					
17...	660	63	61	100	--
FEB 1999					
18...	744	59	57	120	--
MAR					
18...	699	56	59	110	--
APR					
30...	698	49	49	100	--
JUN					
17...	664	59	61	100	--
JUL					
30...	706	50	53	110	--
SEP					
09...	696	61	59	110	--
411137081172101 PO-114 NEAR RAVENNA, OHIO—LEVEL 1 (Latitude 41°11'37", longitude 81°17'21")					
OCT 1998					
28...	431	71	7.9	6.3	--
DEC					
17...	477	--	--	11	--
FEB 1999					
18...	220	23	14	7.6	--
MAR					
18...	238	31	9.9	7.1	--
APR					
30...	307	46	11	5.9	--
JUN					
17...	310	54	9.7	7.4	--
JUL					
30...	351	55	7.8	4.5	--
SEP					
09...	389	61	8.9	9.2	--

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

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WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
411137081172102 PO-114 NEAR RAVENNA, OHIO—LEVEL 2 (Latitude 41°11'37", longitude 81°17'21")					
OCT 1998					
28...	432	73	7.3	8.1	--
DEC					
17...	491	--	--	11	--
FEB 1999					
18...	220	--	--	8.2	--
MAR					
18...	239	30	12	7.0	--
APR					
30...	288	42	11	5.6	--
JUN					
17...	336	53	8.7	7.3	--
JUL					
30...	271	59	8.3	8.5	--
SEP					
09...	394	63	8.9	9.7	--
411137081172103 PO-114 NEAR RAVENNA, OHIO—LEVEL 3 (Latitude 41°11'37", longitude 81°17'21")					
OCT 1998					
28...	428	73	6.5	8.9	--
DEC					
17...	394	--	--	11	--
FEB 1999					
18...	215	22	16	8.3	--
MAR					
18...	232	29	11	7.1	--
APR					
30...	289	43	11	5.7	--
JUN					
17...	296	51	7.5	7.1	--
JUL					
30...	365	62	7.8	8.8	--
SEP					
09...	421	68	7.6	11	--
411137081172104 PO-114 NEAR RAVENNA, OHIO—LEVEL 4 (Latitude 41°11'37", longitude 81°17'21")					
OCT 1998					
28...	605	15	101	94	--
DEC					
17...	492	--	--	11	--
FEB 1999					
18...	216	22	16	7.6	--
MAR					
18...	240	30	11	7.1	--
APR					
30...	318	--	--	7.9	--
JUN					
17...	312	54	7.0	6.4	--
JUL					
30...	349	60	7.1	3.4	--
SEP					
09...	417	67	6.9	11	--

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
411137081172105 PO-114 NEAR RAVENNA, OHIO—LEVEL 5 (Latitude 41°11'37", longitude 81°17'21")					
OCT 1998					
28...	458	--	--	9.2	--
DEC					
17...	458	--	--	12	--
FEB 1999					
18...	219	22	16	7.7	--
MAR					
18...	232	30	11	7.1	--
APR					
30...	313	--	--	6.8	--
JUN					
17...	280	55	6.8	6.8	--
JUL					
30...	386	--	--	4.8	--
SEP					
09...	307	--	--	6.8	--
411137081172106 PO-114 NEAR RAVENNA, OHIO—LEVEL 6 (Latitude 41°11'37", longitude 81°17'21")					
OCT 1998					
28...	104	--	--	2.8	--
MAR 1999					
18...	234	30	11	7.2	--
APR					
30...	295	44	11	6.0	--
JUN					
17...	298	--	--	8.2	--
411137081172301 PO-118 NEAR RAVENNA, OHIO—LEVEL 1 (Latitude 41°11'37", longitude 81°17'23")					
OCT 1998					
28...	3050	--	--	760	--
DEC					
17...	2940	100	494	750	--
FEB 1999					
18...	540	16	83	110	--
MAR					
18...	554	18	78	130	--
APR					
30...	739	26	75	180	--
JUN					
17...	5190	240	844	1600	--
JUL					
30...	6310	290	976	1900	--
SEP					
09...	5240	220	759	1600	--
411137081172302 PO-118 NEAR RAVENNA, OHIO—LEVEL 2 (Latitude 41°11'37", longitude 81°17'23")					
OCT 1998					
28...	3000	--	--	770	--
DEC					
17...	2920	100	491	750	--
FEB 1999					
18...	543	17	82	110	--
MAR					
18...	659	22	92	160	--
APR					
30...	605	29	82	140	--
JUN					
17...	5480	240	858	1700	--
JUL					
30...	6340	280	966	--	--
SEP					
09...	5190	--	--	1600	--

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

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WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
411137081172303 PO-118 NEAR RAVENNA, OHIO—LEVEL 3 (Latitude 41°11'37", longitude 81°17'23")					
OCT 1998					
28...	2980	88	503	760	--
DEC					
17...	--	--	--	680	--
FEB 1999					
18...	527	--	--	100	--
MAR					
18...	715	23	103	170	--
APR					
30...	668	29	79	160	--
JUN					
17...	5480	240	857	1600	--
JUL					
30...	6360	--	--	1900	--
SEP					
09...	5070	210	716	1500	--
411137081172304 PO-118 NEAR RAVENNA, OHIO—LEVEL 4 (Latitude 41°11'37", longitude 81°17'23")					
OCT 1998					
28...	2970	82	501	760	--
DEC					
17...	2790	--	--	730	--
FEB 1999					
18...	351	13	53	61	--
MAR					
18...	580	19	87	130	--
APR					
30...	530	23	64	120	--
JUN					
17...	5250	230	828	1600	--
JUL					
30...	--	270	961	--	--
SEP					
09...	4770	210	692	1500	--
411137081172305 PO-118 NEAR RAVENNA, OHIO—LEVEL 5 (Latitude 41°11'37", longitude 81°17'23")					
OCT 1998					
28...	3100	90	515	780	--
DEC					
17...	2990	110	503	770	--
FEB 1999					
18...	263	11	42	40	--
MAR					
18...	498	17	71	110	--
APR					
30...	966	44	114	250	--
JUN					
17...	2800	120	379	790	--
JUL					
30...	5100	230	758	1500	--
SEP					
09...	4730	200	674	1400	--
411137081172306 PO-118 NEAR RAVENNA, OHIO—LEVEL 6 (Latitude 41°11'37", longitude 81°17'23")					
MAR 1999					
18...	414	--	--	88	--
APR					
30...	--	22	53	73	--
JUN					
17...	1450	62	166	370	--

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
411137081172401 PO-117 NEAR RAVENNA, OHIO—LEVEL 1 (Latitude 41°11'37", longitude 81°17'24")					
OCT 1998					
28...	1160	86	118	240	.041
DEC					
17...	1170	93	123	240	.033
FEB 1999					
18...	918	75	96	170	.046
MAR					
18...	749	57	65	120	.041
APR					
30...	714	56	65	120	.027
JUN					
17...	790	69	72	140	.031
JUL					
30...	1100	91	112	220	.042
SEP					
09...	1230	92	112	260	.047
411137081172402 PO-117 NEAR RAVENNA, OHIO—LEVEL 2 (Latitude 41°11'37", longitude 81°17'24")					
OCT 1998					
28...	1420	82	178	300	.060
DEC					
17...	1280	82	172	290	.042
FEB 1999					
18...	1560	91	184	360	.066
MAR					
18...	1170	66	154	230	.061
APR					
30...	1120	63	148	220	.044
JUN					
17...	1250	66	163	270	.042
JUL					
30...	1340	77	169	295	.046
SEP					
09...	1390	81	168	320	.047
411137081172403 PO-117 NEAR RAVENNA, OHIO—LEVEL 3 (Latitude 41°11'37", longitude 81°17'24")					
OCT 1998					
28...	1770	92	209	420	.079
DEC					
17...	1640	99	216	370	.063
FEB 1999					
18...	1370	66	196	280	.061
MAR					
18...	1170	54	177	230	.055
APR					
30...	1380	70	177	320	.046
JUN					
17...	1660	88	204	410	.063
JUL					
30...	2080	130	257	540	.080
SEP					
09...	2260	130	265	590	.084

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

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WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
411137081172404 PO-117 NEAR RAVENNA, OHIO—LEVEL 4 (Latitude 41°11'37", longitude 81°17'24")					
OCT 1998					
28...	2280	120	306	550	.093
DEC					
17...	2150	120	288	510	.076
FEB 1999					
18...	1240	58	182	240	.054
MAR					
18...	1140	56	164	220	.057
APR					
30...	1420	73	184	330	.054
JUN					
17...	2380	130	299	640	.092
JUL					
30...	3030	170	380	810	.12
SEP					
09...	3140	170	399	860	.12
411137081172405 PO-117 NEAR RAVENNA, OHIO—LEVEL 5 (Latitude 41°11'37", longitude 81°17'24")					
OCT 1998					
28...	2300	120	314	560	.099
DEC					
17...	2480	130	370	600	.10
FEB 1999					
18...	978	53	141	170	.045
MAR					
18...	952	54	128	180	.044
APR					
30...	966	56	107	210	.034
JUN					
17...	2150	1390	262	570	.040
JUL					
30...	3060	180	377	830	.12
SEP					
09...	3170	190	393	860	.13
411137081172406 PO-117 NEAR RAVENNA, OHIO—LEVEL 6 (Latitude 41°11'37", longitude 81°17'24")					
DEC 1998					
17...	1530	100	159	330	.045
FEB 1999					
18...	441	42	37	36	.020
MAR					
18...	390	36	29	41	.029
APR					
30...	436	40	35	66	.016
JUN					
17...	752	65	57	150	.028
JUL					
30...	1270	110	120	310	.045
411138081172401 PO-115 NEAR RAVENNA, OHIO—LEVEL 1 (Latitude 41°11'38", longitude 81°17'24")					
OCT 1998					
28...	2410	46	434	590	--
DEC					
17...	2220	--	--	530	--
FEB 1999					
18...	951	30	149	190	--
MAR					
18...	1930	94	246	520	--
APR					
30...	2810	130	375	810	--
JUN					
17...	4970	--	--	1500	--
JUL					
30...	5200	160	908	1500	--
SEP					
09...	4780	150	758	1400	--

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
411138081172402 PO-115 NEAR RAVENNA, OHIO—LEVEL 2 (Latitude 41°11'38", longitude 81°17'24")					
OCT 1998					
28...	2370	--	--	580	--
DEC					
17...	2200	45	410	520	--
FEB 1999					
18...	917	26	146	190	--
MAR					
18...	1990	91	274	550	--
APR					
30...	2830	130	383	--	--
JUN					
17...	4950	180	780	1500	--
JUL					
30...	5140	--	--	1633	--
SEP					
09...	4670	--	--	1400	--
411138081172403 PO-115 NEAR RAVENNA, OHIO—LEVEL 3 (Latitude 41°11'38", longitude 81°17'24")					
OCT 1998					
28...	2290	42	420	540	--
DEC					
17...	2050	36	383	480	--
FEB 1999					
18...	830	28	129	170	--
MAR					
18...	1690	79	230	450	--
APR					
30...	2600	130	348	750	--
JUN					
17...	4810	180	743	1400	--
JUL					
30...	5090	--	--	1500	--
SEP					
09...	4690	140	749	1400	--
411138081172404 PO-115 NEAR RAVENNA, OHIO—LEVEL 4 (Latitude 41°11'38", longitude 81°17'24")					
OCT 1998					
28...	2060	40	361	490	--
DEC					
17...	1830	33	324	410	--
FEB 1999					
18...	734	36	85	130	--
MAR					
18...	1580	75	211	410	--
APR					
30...	2320	120	275	660	--
JUN					
17...	4380	180	681	1300	--
JUL					
30...	4820	140	802	1400	--
SEP					
09...	4520	--	--	1300	--

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

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WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
411138081172405 PO-115 NEAR RAVENNA, OHIO—LEVEL 5 (Latitude 41°11'38", longitude 81°17'24")					
OCT 1998					
28...	1780	31	325	390	--
DEC					
17...	1660	--	--	330	--
FEB 1999					
18...	413	33	51	46	--
MAR					
18...	789	47	98	170	--
APR					
30...	1400	75	138	340	--
JUN					
17...	3340	150	497	970	--
JUL					
30...	4560	130	756	1395	--
SEP					
09...	4120	--	--	1200	--
411138081172406 PO-115 NEAR RAVENNA, OHIO—LEVEL 6 (Latitude 41°11'38", longitude 81°17'24")					
MAR 1999					
18...	403	41	70	59	--
APR					
30...	759	46	54	160	--
JUN					
17...	1610	--	--	420	--
413546083480901 LU-28 NEAR HOLLAND, OHIO—LEVEL 1 (Latitude 41°35'46", longitude 83°48'09")					
OCT 1998					
29...	736	100	18	100	--
DEC					
15...	686	100	16	99	--
MAY 1999					
05...	780	120	15	120	--
JUN					
23...	770	110	14	120	--
AUG					
04...	741	110	17	110	--
SEP					
02...	736	110	17	110	--
413546083480902 LU-28 NEAR HOLLAND, OHIO—LEVEL 2 (Latitude 41°35'46", longitude 83°48'09")					
OCT 1998					
29...	1000	--	--	190	--
DEC					
15...	1010	130	35	210	--
MAY 1999					
05...	1450	150	78	360	--
JUN					
23...	1220	130	69	280	--
AUG					
04...	984	100	66	210	--
SEP					
02...	901	100	55	190	--

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

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DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
413546083480903 LU-28 NEAR HOLLAND, OHIO—LEVEL 3 (Latitude 41°35'46", longitude 83°48'09")					
OCT 1998					
29...	1170	--	--	270	--
DEC					
15...	1460	--	--	370	--
FEB 1999					
05...	1410	150	82	360	--
MAR					
12...	1640	160	96	420	--
MAY					
05...	1430	120	110	350	--
JUN					
23...	1150	82	115	250	--
AUG					
04...	943	68	108	190	--
SEP					
02...	903	52	111	190	--
413546083480904 LU-28 NEAR HOLLAND, OHIO—LEVEL 4 (Latitude 41°35'46", longitude 83°48'09")					
OCT 1998					
29...	1140	70	116	240	--
DEC					
15...	1390	--	--	360	--
FEB 1999					
05...	636	24	109	73	--
MAR					
12...	578	14	112	52	--
MAY					
05...	588	17	100	71	--
JUN					
23...	1080	72	117	230	--
AUG					
04...	623	23	96	100	--
SEP					
02...	660	22	100	110	--
413546083480905 LU-28 NEAR HOLLAND, OHIO—LEVEL 5 (Latitude 41°35'46", longitude 83°48'09")					
OCT 1998					
29...	1070	84	85	150	--
DEC					
15...	1420	110	120	350	--
FEB 1999					
05...	353	49	13	11	--
MAR					
12...	340	46	9.9	9.2	--
MAY					
05...	409	34	46	13	--
JUN					
23...	460	45	29	45	--
AUG					
04...	450	44	17	26	--
SEP					
02...	550	45	40	48	--

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

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WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
413547083481001 LU-26 NEAR HOLLAND, OHIO—LEVEL 1 (Latitude 41°35'47", longitude 83°48'10")					
OCT 1998					
29...	627	97	13	83	.065
DEC					
15...	604	86	11	73	.019
FEB 1999					
05...	669	110	14	100	.043
MAR					
12...	855	130	15	160	.062
MAY					
05...	1430	210	24	340	.064
JUN					
23...	1620	240	35	420	.069
AUG					
04...	1710	230	51	450	.069
SEP					
02...	1690	220	57	450	.064
413547083481002 LU-26 NEAR HOLLAND, OHIO—LEVEL 2 (Latitude 41°35'47", longitude 83°48'10")					
OCT 1998					
29...	441	75	6.4	8.9	.028
DEC					
15...	419	9.2	77	42	.015
FEB 1999					
05...	842	38	126	120	.027
MAR					
12...	858	28	137	160	.055
MAY					
05...	633	16	113	95	.034
JUN					
23...	1110	32	171	260	.041
AUG					
04...	1500	41	239	370	.064
SEP					
02...	1460	38	223	370	.056
413547083481003 LU-26 NEAR HOLLAND, OHIO—LEVEL 3 (Latitude 41°35'47", longitude 83°48'10")					
OCT 1998					
29...	2270	80	326	620	.099
DEC					
15...	2680	68	376	740	.11
FEB 1999					
05...	1260	43	206	320	.038
MAR					
12...	586	13	116	63	.032
MAY					
05...	404	7.2	81	30	.026
JUN					
23...	416	7.5	79	45	<.010
AUG					
04...	971	40	141	230	.025
SEP					
02...	1550	65	207	410	.049

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
413547083481004	LU-26 NEAR HOLLAND, OHIO—LEVEL 4 (Latitude 41°35'47", longitude 83°48'10")				
OCT 1998					
29...	418	54	16	49	.033
DEC					
15...	367	47	11	30	<.010
FEB 1999					
05...	417	58	8.7	54	.010
MAR					
12...	1100	140	34	270	.064
MAY					
05...	1560	180	44	84	.14
JUN					
23...	1740	220	76	470	.069
AUG					
04...	1240	120	86	300	.042
SEP					
02...	892	74	86	190	.022
413547083481005	LU-26 NEAR HOLLAND, OHIO—LEVEL 5 (Latitude 41°35'47", longitude 83°48'10")				
OCT 1998					
29...	456	53	32	22	.019
DEC					
15...	265	17	31	5.5	<.010
FEB 1999					
05...	312	32	28	5.7	.016
MAR					
12...	356	33	35	7.2	.038
MAY					
05...	331	36	26	6.2	.028
JUN					
23...	649	67	39	93	.035
AUG					
04...	458	27	59	51	<.010
SEP					
02...	363	30	30	35	<.010
413547083481006	LU-26 NEAR HOLLAND, OHIO—LEVEL 6 (Latitude 41°35'47", longitude 83°48'10")				
OCT 1998					
29...	217	11	21	20	.019
FEB 1999					
05...	486	41	24	16	.059
MAR					
12...	238	14	22	20	.041
MAY					
05...	221	14	19	17	.035
JUN					
23...	212	14	17	25	.019
AUG					
04...	243	14	25	24	<.010
SEP					
02...	196	10	27	21	<.010
413547083481101	LU-27 NEAR HOLLAND, OHIO—LEVEL 1 (Latitude 41°35'47", longitude 83°48'11")				
OCT 1998					
29...	1330	110	102	320	--
DEC					
15...	738	110	15	100	--
FEB 1999					
05...	746	110	32	130	--
MAR					
12...	774	94	44	130	--
MAY					
05...	907	120	29	170	--
JUN					
23...	898	120	27	170	--
AUG					
04...	963	120	45	190	--
SEP					
02...	919	100	59	190	--

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

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WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
413547083481102 LU-27 NEAR HOLLAND, OHIO—LEVEL 2 (Latitude 41°35'47", longitude 83°48'11")					
OCT 1998					
29...	1270	110	99	300	--
DEC					
15...	1120	100	71	270	--
FEB 1999					
05...	1080	77	106	260	--
MAR					
12...	815	48	103	170	--
MAY					
05...	1150	77	109	270	--
JUN					
23...	1530	78	183	410	--
AUG					
04...	1200	61	156	290	--
SEP					
02...	1170	76	122	290	--
413547083481103 LU-27 NEAR HOLLAND, OHIO—LEVEL 3 (Latitude 41°35'47", longitude 83°48'11")					
OCT 1998					
29...	1240	58	166	250	--
DEC					
15...	605	47	57	45	--
FEB 1999					
05...	680	35	99	110	--
MAR					
12...	847	22	145	160	--
MAY					
05...	441	54	--	--	--
JUN					
23...	623	24	104	91	--
AUG					
04...	797	26	139	150	--
SEP					
02...	762	65	71	93	--
413547083481104 LU-27 NEAR HOLLAND, OHIO—LEVEL 4 (Latitude 41°35'47", longitude 83°48'11")					
OCT 1998					
29...	570	54	35	17	--
DEC					
15...	532	--	--	34	--
FEB 1999					
05...	432	54	16	36	--
MAR					
12...	539	65	18	48	--
MAY					
05...	424	55	17	18	--
JUN					
23...	350	47	17	12	--
AUG					
04...	423	59	14	13	--
SEP					
02...	608	76	23	17	--
413547083481105 LU-27 NEAR HOLLAND, OHIO—LEVEL 5 (Latitude 41°35'47", longitude 83°48'11")					
OCT 1998					
29...	796	110	4.9	17	--
FEB 1999					
05...	781	--	--	15	--
MAR					
12...	508	71	4.4	14	--
MAY					
05...	358	46	3.7	19	--
JUN					
23...	302	44	3.9	3.6	--
AUG					
04...	534	83	5.8	7.0	--
SEP					
02...	661	--	--	13	--

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
413547083481201	LU-25 NEAR HOLLAND, OHIO—LEVEL 1 (Latitude 41°35'47", longitude 83°48'12")				
OCT 1998					
29...	732	--	--	120	--
DEC					
15...	701	100	16	120	--
FEB 1999					
05...	748	110	21	130	--
MAR					
12...	925	130	25	180	--
MAY					
05...	1490	200	40	370	--
JUN					
23...	1770	240	55	470	--
AUG					
04...	1720	230	60	450	--
413547083481202	LU-25 NEAR HOLLAND, OHIO—LEVEL 2 (Latitude 41°35'47", longitude 83°48'12")				
OCT 1998					
29...	648	78	25	110	--
DEC					
15...	345	51	21	39	--
FEB 1999					
05...	485	63	27	63	--
MAR					
12...	621	78	28	100	--
MAY					
05...	968	130	26	220	--
JUN					
23...	1470	200	36	380	--
AUG					
04...	1620	160	107	420	--
SEP					
02...	1300	150	50	340	--
413547083481203	LU-25 NEAR HOLLAND, OHIO—LEVEL 3 (Latitude 41°35'47", longitude 83°48'12")				
OCT 1998					
29...	1540	60	222	380	--
DEC					
15...	2080	--	--	560	--
FEB 1999					
05...	1250	77	195	320	--
MAR					
12...	936	33	156	210	--
MAY					
05...	610	39	73	110	--
JUN					
23...	797	60	87	170	--
SEP					
02...	1240	59	164	340	--
413547083481204	LU-25 NEAR HOLLAND, OHIO—LEVEL 4 (Latitude 41°35'47", longitude 83°48'12")				
OCT 1998					
29...	899	51	104	190	--
DEC					
15...	800	38	91	150	--
FEB 1999					
05...	779	45	107	150	--
MAR					
12...	901	32	145	180	--
MAY					
05...	559	22	87	61	--
JUN					
23...	809	44	104	160	--
AUG					
04...	1040	44	152	230	--
SEP					
02...	1240	43	177	310	--

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

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WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
413547083481205 LU-25 NEAR HOLLAND, OHIO—LEVEL 5 (Latitude 41°35'47", longitude 83°48'12")					
OCT 1998					
29...	594	48	47	82	--
DEC					
15...	417	34	37	28	--
FEB 1999					
05...	480	31	56	71	--
MAR					
12...	344	20	32	29	--
MAY					
05...	291	18	44	24	--
JUN					
23...	365	28	31	56	--
AUG					
04...	443	--	--	71	--
SEP					
02...	394	--	--	54	--
413547083481301 LU-22 NEAR HOLLAND, OHIO—LEVEL 1 (Latitude 41°35'47", longitude 83°48'13")					
OCT 1998					
29...	1800	220	79	470	--
DEC					
15...	1810	190	86	470	--
FEB 1999					
05...	1260	150	84	320	--
MAR					
12...	1150	120	79	250	--
MAY					
05...	925	--	--	180	--
JUN					
23...	970	130	38	180	--
AUG					
04...	2080	120	246	560	--
SEP					
02...	979	120	54	190	--
413547083481302 LU-22 NEAR HOLLAND, OHIO—LEVEL 2 (Latitude 41°35'47", longitude 83°48'13")					
OCT 1998					
29...	1840	190	116	490	--
DEC					
15...	1810	170	105	480	--
FEB 1999					
05...	1170	110	89	<.10	--
MAR					
12...	850	76	78	160	--
MAY					
05...	538	46	54	68	--
JUN					
23...	536	58	42	78	--
AUG					
04...	2460	130	325	680	--
SEP					
02...	1040	100	84	260	--

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

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DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
413547083481303 LU-22 NEAR HOLLAND, OHIO—LEVEL 3 (Latitude 41°35'47", longitude 83°48'13")					
OCT 1998					
29...	1940	120	205	500	--
DEC					
15...	1560	140	113	410	--
FEB 1999					
05...	482	--	--	230	--
MAR					
12...	542	50	47	77	--
MAY					
05...	739	39	64	140	--
JUN					
23...	898	82	63	190	--
AUG					
04...	3520	160	484	1000	--
SEP					
02...	1370	76	172	340	--
413547083481304 LU-22 NEAR HOLLAND, OHIO—LEVEL 4 (Latitude 41°35'47", longitude 83°48'13")					
OCT 1998					
29...	569	--	--	52	--
DEC					
15...	636	40	89	63	--
FEB 1999					
05...	925	55	127	190	--
MAR					
12...	796	35	114	170	--
MAY					
05...	882	41	123	180	--
JUN					
23...	1810	89	196	490	--
AUG					
04...	1540	82	221	380	--
SEP					
02...	1570	71	181	412	--
413547083481305 LU-22 NEAR HOLLAND, OHIO—LEVEL 5 (Latitude 41°35'47", longitude 83°48'13")					
OCT 1998					
29...	306	26	25	8.4	--
MAR 1999					
12...	417	28	60	58	--
MAY					
05...	447	25	36	64	--
JUN					
23...	376	32	21	33	--
AUG					
04...	337	26	24	16	--
SEP					
02...	1200	61	149	290	--
413549083481501 LU-21 NEAR HOLLAND, OHIO—LEVEL 1 (Latitude 41°35'49", longitude 83°48'15")					
OCT 1998					
29...	836	130	9.9	100	--
DEC					
15...	755	130	10	100	--
FEB 1999					
05...	264	140	11	100	--
MAR					
12...	814	140	11	100	--
MAY					
05...	838	150	12	--	--
JUN					
23...	777	130	12	93	--
AUG					
04...	831	140	12	100	--
SEP					
02...	796	130	11	99	--

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

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WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

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DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
413549083481502 LU-21 NEAR HOLLAND, OHIO—LEVEL 2 (Latitude 41°35'49", longitude 83°48'15")					
OCT 1998					
29...	318	45	3.6	16	--
DEC					
15...	303	43	4.0	15	--
FEB 1999					
05...	215	43	3.5	10	--
MAR					
12...	236	35	2.7	4.9	--
MAY					
05...	268	39	3.0	11	--
JUN					
23...	238	34	2.6	4.9	--
AUG					
04...	275	43	3.5	9.4	--
SEP					
02...	290	47	3.6	14	--
413549083481503 LU-21 NEAR HOLLAND, OHIO—LEVEL 3 (Latitude 41°35'49", longitude 83°48'15")					
OCT 1998					
29...	238	35	2.5	6.8	--
DEC					
15...	207	31	2.7	--	--
FEB 1999					
05...	217	32	2.5	<.10	--
MAR					
12...	193	29	2.6	5.0	--
MAY					
05...	132	8.7	8.2	12	--
JUN					
23...	176	21	5.3	7.6	--
AUG					
04...	231	34	2.7	3.8	--
SEP					
02...	227	34	2.5	7.4	--
413549083481504 LU-21 NEAR HOLLAND, OHIO—LEVEL 4 (Latitude 41°35'49", longitude 83°48'15")					
OCT 1998					
29...	207	28	2.1	4.6	--
DEC					
15...	196	25	2.6	4.1	--
FEB 1999					
05...	123	14	3.9	--	--
MAR					
12...	112	11	5.6	5.0	--
MAY					
05...	123	6.3	8.2	13	--
JUN					
23...	121	9.9	5.2	1.3	--
AUG					
04...	177	24	3.9	4.4	--
SEP					
02...	203	29	2.3	6.0	--

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

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DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
413549083481505 LU-21 NEAR HOLLAND, OHIO—LEVEL 5 (Latitude 41°35'49", longitude 83°48'15")					
OCT 1998					
29...	137	14	4.1	3.9	--
DEC					
15...	127	12	4.3	5.3	--
FEB 1999					
05...	113	11	4.4	5.0	--
MAR					
12...	106	8.3	4.4	5.4	--
MAY					
05...	130	7.7	7.1	--	--
JUN					
23...	100	6.8	6.0	7.6	--
AUG					
04...	169	18	4.8	4.3	--
SEP					
02...	140	16	4.6	7.2	--
415305080414201 AB-139 NEAR KINGSVILLE, OHIO—LEVEL 1 (Latitude 41°53'05", longitude 80°41'42")					
DEC					
16...	479	50	41	24	--
FEB 1999					
17...	1830	160	151	430	--
MAR					
17...	982	84	72	170	--
APR					
29...	1220	98	107	240	--
JUN					
16...	2130	140	284	540	--
JUL					
29...	1010	55	126	160	--
SEP					
08...	856	64	88	130	--
415305080414202 AB-139 NEAR KINGSVILLE, OHIO—LEVEL 2 (Latitude 41°53'05", longitude 80°41'42")					
OCT 1998					
27...	567	--	--	35	--
DEC					
16...	505	50	41	23	--
FEB 1999					
17...	1790	160	143	410	--
MAR					
17...	875	77	57	140	--
APR					
29...	1770	120	148	440	--
JUN					
16...	2080	130	277	530	--
JUL					
29...	1010	58	129	170	--
SEP					
08...	849	--	--	130	--

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

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WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

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DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
415305080414203 AB-139 NEAR KINGSVILLE, OHIO—LEVEL 3 (Latitude 41°53'05", longitude 80°41'42")					
DEC 16...	495	51	40	22	--
FEB 1999 17...	1710	160	125	380	--
MAR 17...	546	--	--	56	--
APR 29...	1580	120	155	340	--
JUN 16...	2100	130	267	540	--
JUL 29...	1080	--	--	190	--
SEP 08...	841	--	--	120	--
415305080414204 AB-139 NEAR KINGSVILLE, OHIO—LEVEL 4 (Latitude 41°53'05", longitude 80°41'42")					
OCT 1998 27...	--	--	--	24	--
DEC 16...	284	--	--	10	--
FEB 1999 17...	1700	--	--	390	--
MAR 17...	708	63	40	97	--
APR 29...	831	--	--	140	--
JUN 16...	2020	130	238	520	--
JUL 29...	1250	--	--	240	--
SEP 08...	803	--	--	120	--
415305080414205 AB-139 NEAR KINGSVILLE, OHIO—LEVEL 5 (Latitude 41°53'05", longitude 80°41'42")					
OCT 1998 27...	82	--	--	3.2	--
MAR 1999 17...	649	55	42	93	--
APR 29...	491	49	24	62	--
JUN 16...	1590	--	--	540	--
JUL 29...	434	--	--	86	--
415305080414206 AB-139 NEAR KINGSVILLE, OHIO—LEVEL 6 (Latitude 41°53'05", longitude 80°41'42")					
OCT 1998 27...	129	--	--	4.1	--

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

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DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
415307080414201 AB-133 NEAR KINGSVILLE, OHIO—LEVEL 1 (Latitude 41°53'07", longitude 80°41'42")					
DEC 16...	3890	210	558	1000	--
FEB 1999 17...	4830	180	718	1500	--
MAR 17...	4520	150	671	1400	--
APR 29...	3720	97	575	1100	--
JUN 16...	3580	94	612	1000	--
JUL 29...	3620	120	564	1000	--
SEP 08...	3560	--	--	1000	--
415307080414202 AB-133 NEAR KINGSVILLE, OHIO—LEVEL 2 (Latitude 41°53'07", longitude 80°41'42")					
DEC 16...	4130	200	577	1100	--
FEB 1999 17...	4890	180	748	1500	--
MAR 17...	4530	130	659	1400	--
APR 29...	3620	--	--	1100	--
JUN 16...	3480	100	646	1000	--
JUL 29...	3620	120	564	1000	--
SEP 08...	3610	--	--	1000	--
415307080414203 AB-133 NEAR KINGSVILLE, OHIO—LEVEL 3 (Latitude 41°53'07", longitude 80°41'42")					
DEC 16...	4450	200	684	1200	--
FEB 1999 17...	4700	160	702	1400	--
MAR 17...	4490	130	654	1400	--
APR 29...	3630	--	--	1000	--
JUN 16...	3580	--	--	1000	--
JUL 29...	3610	120	562	1000	--
SEP 08...	3600	110	552	1000	--

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

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WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
415307080414204 AB-133 NEAR KINGSVILLE, OHIO—LEVEL 4 (Latitude 41°53'07", longitude 80°41'42")					
DEC 16...	4450	--	--	1200	--
FEB 1999 17...	4760	180	718	1500	--
MAR 17...	4370	130	641	1300	--
APR 29...	3630	97	593	1000	--
JUN 16...	3490	83	610	990	--
JUL 29...	3610	110	554	1100	--
SEP 08...	3540	--	--	1000	--
415307080414205 AB-133 NEAR KINGSVILLE, OHIO—LEVEL 5 (Latitude 41°53'07", longitude 80°41'42")					
DEC 16...	3820	--	--	1000	--
FEB 1999 17...	4550	170	693	1400	--
MAR 17...	4340	130	638	1300	--
APR 29...	3630	--	--	1000	--
JUN 16...	3320	73	577	950	--
JUL 29...	3320	94	524	930	--
SEP 08...	3520	110	562	1000	--
415307080414206 AB-133 NEAR KINGSVILLE, OHIO—LEVEL 6 (Latitude 41°53'07", longitude 80°41'42")					
MAR 1999 17...	4140	130	606	1300	--
APR 29...	3510	--	--	1000	--
JUN 16...	3050	65	547	860	--
JUL 29...	1650	--	--	450	--
415308080414301 AB-135 NEAR KINGSVILLE, OHIO—LEVEL 1 (Latitude 41°53'08", longitude 80°41'43")					
OCT 1998 27...	1520	120	138	340	--
DEC 16...	1750	130	165	410	--
FEB 1999 17...	2130	--	--	550	--
MAR 17...	1930	130	201	480	--
APR 29...	1660	80	45	410	--
JUN 16...	270	110	153	360	--
JUL 29...	1630	120	152	390	--
SEP 08...	1710	120	162	420	--

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
415308080414302 AB-135 NEAR KINGSVILLE, OHIO—LEVEL 2 (Latitude 41°53'08", longitude 80°41'43")					
OCT 1998					
27...	1590	120	145	370	--
DEC					
16...	1800	130	172	430	--
FEB 1999					
17...	2140	150	236	540	--
MAR					
17...	1790	130	188	430	--
APR					
29...	1630	110	160	380	--
JUN					
16...	--	110	150	360	--
JUL					
29...	1600	120	147	370	--
SEP					
08...	1720	--	--	410	--
415308080414303 AB-135 NEAR KINGSVILLE, OHIO—LEVEL 3 (Latitude 41°53'08", longitude 80°41'43")					
OCT 1998					
27...	1610	120	150	360	--
DEC					
16...	1810	130	177	440	--
FEB 1999					
17...	2050	140	222	510	--
MAR					
17...	1740	120	178	420	--
APR					
29...	1500	--	--	360	--
JUN					
16...	--	120	161	370	--
JUL					
29...	1500	120	142	360	--
SEP					
08...	1690	120	157	420	--
415308080414304 AB-135 NEAR KINGSVILLE, OHIO—LEVEL 4 (Latitude 41°53'08", longitude 80°41'43")					
OCT 1998					
27...	1580	120	146	370	--
DEC					
16...	1860	130	173	450	--
FEB 1999					
17...	1920	--	--	490	--
MAR					
17...	1680	120	177	410	--
APR					
29...	1540	--	--	360	--
JUN					
16...	1500	120	158	370	--
JUL					
29...	1490	110	140	350	--
SEP					
08...	1510	110	132	360	--

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

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WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
415308080414305 AB-135 NEAR KINGSVILLE, OHIO—LEVEL 5 (Latitude 41°53'08", longitude 80°41'43")					
DEC 16...	1500	120	124	340	--
FEB 1999 17...	1750	130	164	430	--
MAR 17...	1690	120	173	410	--
APR 29...	1520	110	157	380	--
JUN 16...	1450	110	144	340	--
JUL 29...	1560	120	139	350	--
SEP 08...	1420	110	125	330	--
415308080414306 AB-135 NEAR KINGSVILLE, OHIO—LEVEL 6 (Latitude 41°53'08", longitude 80°41'43")					
DEC 16...	1390	120	121	320	--
FEB 1999 17...	1710	130	165	410	--
MAR 17...	1790	130	178	440	--
APR 29...	1790	--	--	420	--
JUN 16...	--	120	151	360	--
JUL 29...	1500	120	139	350	--
SEP 08...	1430	110	127	330	--
415309080414301 AB-136 NEAR KINGSVILLE, OHIO—LEVEL 1 (Latitude 41°53'09", longitude 80°41'43")					
OCT 1998 27...	2350	120	303	600	--
DEC 16...	2160	130	279	560	--
FEB 1999 17...	1600	74	209	400	--
MAR 17...	1510	68	193	380	--
APR 29...	1920	--	--	500	--
JUN 16...	2190	120	330	590	--
JUL 29...	2170	120	288	110	--
SEP 08...	2350	--	--	630	--
415309080414302 AB-136 NEAR KINGSVILLE, OHIO—LEVEL 2 (Latitude 41°53'09", longitude 80°41'43")					
OCT 1998 27...	2360	120	299	600	--
DEC 16...	2170	120	276	560	--
FEB 1999 17...	1510	69	204	380	--
MAR 17...	1520	65	188	380	--
APR 29...	1940	--	--	500	--
JUN 16...	2230	110	304	590	--
JUL 29...	2050	--	--	540	--
SEP 08...	2260	120	289	600	--

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
415309080414303 AB-136 NEAR KINGSVILLE, OHIO—LEVEL 3 (Latitude 41°53'09", longitude 80°41'43")					
OCT 1998					
27...	2340	120	301	600	--
DEC					
16...	2170	120	268	540	--
FEB 1999					
17...	1590	78	206	390	--
MAR					
17...	1520	65	185	380	--
APR					
29...	1870	91	247	480	--
JUN					
16...	2250	--	--	600	--
JUL					
29...	1990	110	265	530	--
SEP					
08...	2230	130	276	580	--
415309080414304 AB-136 NEAR KINGSVILLE, OHIO—LEVEL 4 (Latitude 41°53'09", longitude 80°41'43")					
OCT 1998					
27...	2330	120	297	590	--
DEC					
16...	2420	120	313	630	--
FEB 1999					
17...	1560	74	204	390	--
MAR					
17...	1520	66	189	380	--
APR					
29...	1900	--	--	500	--
JUN					
16...	--	100	276	590	--
JUL					
29...	2250	120	308	600	--
SEP					
08...	2420	130	319	660	--
415309080414305 AB-136 NEAR KINGSVILLE, OHIO—LEVEL 5 (Latitude 41°53'09", longitude 80°41'43")					
OCT 1998					
27...	2280	120	291	560	--
DEC					
16...	2240	120	286	580	--
FEB 1999					
17...	1600	70	209	370	--
MAR					
17...	1520	--	--	380	--
APR					
29...	1850	87	238	480	--
JUN					
16...	2170	100	284	580	--
JUL					
29...	2260	110	308	610	--
SEP					
08...	2430	120	312	650	--

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

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WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
415309080414306 AB-136 NEAR KINGSVILLE, OHIO—LEVEL 6 (Latitude 41°53'09", longitude 80°41'43")					
OCT 1998					
27...	1800	110	204	430	--
DEC					
16...	1780	100	203	430	--
FEB 1999					
17...	1620	100	172	380	--
MAR					
17...	1500	69	189	360	--
APR					
29...	1510	--	--	360	--
JUN					
16...	1770	94	222	460	--
JUL					
29...	2010	100	261	530	--
SEP					
08...	2110	--	--	540	--
415309080414401 AB-138 NEAR KINGSVILLE, OHIO—LEVEL 1 (Latitude 41°53'09", longitude 80°41'44")					
OCT 1998					
27...	1010	98	57	180	.049
DEC					
16...	916	91	48	150	.023
FEB 1999					
17...	1200	90	115	250	.049
MAR					
17...	920	71	86	180	.052
APR					
29...	1230	90	124	270	.049
JUN					
16...	1190	84	123	260	.050
JUL					
29...	1120	84	115	230	.044
SEP					
08...	1630	110	173	390	.065
415309080414402 AB-138 NEAR KINGSVILLE, OHIO—LEVEL 2 (Latitude 41°53'09", longitude 80°41'44")					
DEC					
16...	890	92	45	150	.029
FEB 1999					
17...	1180	84	111	240	.049
MAR					
17...	911	78	74	170	.050
APR					
29...	1030	84	86	200	.054
JUN					
16...	974	76	84	190	.042
JUL					
29...	900	78	74	160	.034
SEP					
08...	1400	95	132	320	.057

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
415309080414403 AB-138 NEAR KINGSVILLE, OHIO—LEVEL 3 (Latitude 41°53'09", longitude 80°41'44")					
DEC 16...	--	--	--	--	--
FEB 1999 17...	1220	91	119	250	.049
MAR 17...	922	78	74	170	.051
APR 29...	924	76	73	170	.047
JUN 16...	861	73	70	150	.034
JUL 29...	801	72	54	130	.032
SEP 08...	1300	95	111	290	.052
415309080414404 AB-138 NEAR KINGSVILLE, OHIO—LEVEL 4 (Latitude 41°53'09", longitude 80°41'44")					
FEB 1999 17...	1280	85	107	280	.051
JUN 16...	920	72	89	180	.083
JUL 29...	944	76	80	190	.039
SEP 08...	1400	99	121	330	.054
415309080414405 AB-138 NEAR KINGSVILLE, OHIO—LEVEL 5 (Latitude 41°53'09", longitude 80°41'44")					
DEC 16...	1590	100	159	380	.046
FEB 1999 17...	1260	96	121	290	.054
MAR 17...	905	65	86	170	.048
APR 29...	1080	76	118	230	.041
JUN 16...	981	68	100	210	.039
JUL 29...	1070	77	107	230	.040
SEP 08...	1580	110	159	390	.064
415309080414406 AB-138 NEAR KINGSVILLE, OHIO—LEVEL 6 (Latitude 41°53'09", longitude 80°41'44")					
DEC 16...	1380	100	126	320	.055
FEB 1999 17...	1110	66	129	220	.045
MAR 17...	971	60	106	200	.055
APR 29...	1360	86	134	310	.062
JUN 16...	1360	91	146	300	.053
JUL 29...	1360	93	151	310	.054
SEP 08...	1770	110	189	430	.072

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

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WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
415310080414401 AB-137 NEAR KINGSVILLE, OHIO—LEVEL 1 (Latitude 41°53'10", longitude 80°41'44")					
OCT 1998					
27...	774	79	51	110	--
DEC					
16...	802	76	50	120	--
FEB 1999					
17...	--	--	--	100	--
MAR					
17...	764	86	50	100	--
APR					
29...	695	120	173	96	--
JUN					
16...	749	--	--	110	--
JUL					
29...	792	84	57	130	--
SEP					
08...	759	80	52	120	--
415310080414402 AB-137 NEAR KINGSVILLE, OHIO—LEVEL 2 (Latitude 41°53'10", longitude 80°41'44")					
OCT 1998					
27...	749	77	52	110	--
DEC					
16...	790	75	51	120	--
FEB 1999					
17...	--	--	--	97	--
MAR					
17...	740	83	46	100	--
APR					
29...	648	75	47	100	--
JUN					
16...	732	89	50	120	--
JUL					
29...	834	82	59	130	--
SEP					
08...	728	78	49	110	--
415310080414403 AB-137 NEAR KINGSVILLE, OHIO—LEVEL 3 (Latitude 41°53'10", longitude 80°41'44")					
OCT 1998					
27...	763	77	53	110	--
DEC					
16...	780	76	52	120	--
FEB 1999					
17...	806	86	50	97	--
MAR					
17...	734	81	50	100	--
APR					
29...	--	76	46	98	--
JUN					
16...	713	92	52	120	--
JUL					
29...	781	86	57	130	--
SEP					
08...	761	--	--	110	--

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)
415310080414404 AB-137 NEAR KINGSVILLE, OHIO—LEVEL 4 (Latitude 41°53'10", longitude 80°41'44")					
OCT 1998					
27...	766	79	51	110	--
DEC					
16...	717	75	51	120	--
FEB 1999					
17...	802	88	50	99	--
MAR					
17...	741	82	49	100	--
APR					
29...	--	72	47	100	--
JUN					
16...	714	93	51	110	--
JUL					
29...	818	87	57	130	--
SEP					
08...	728	81	48	110	--
415310080414405 AB-137 NEAR KINGSVILLE, OHIO—LEVEL 5 (Latitude 41°53'10", longitude 80°41'44")					
OCT 1998					
27...	456	79	2.1	10	--
DEC					
16...	726	77	50	120	--
FEB 1999					
17...	812	88	51	96	--
MAR					
17...	737	80	47	100	--
APR					
29...	672	81	45	100	--
JUN					
16...	709	--	--	110	--
JUL					
29...	807	87	55	130	--
SEP					
08...	736	83	47	100	--
415310080414406 AB-137 NEAR KINGSVILLE, OHIO—LEVEL 6 (Latitude 41°53'10", longitude 80°41'44")					
OCT 1998					
27...	775	78	50	110	--
DEC					
16...	--	75	51	110	--
FEB 1999					
17...	803	87	49	99	--
MAR					
17...	725	82	47	100	--
APR					
29...	--	76	44	99	--
JUN					
16...	761	99	54	110	--
JUL					
29...	817	86	54	130	--
SEP					
08...	736	82	49	100	--

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

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WATER-QUALITY RECORDS—CONTINUED

SAMPLE ANALYSES FOR ONE WELL AT EACH SITE, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	CYANIDE DIS- SOLVED (MG/L AS CN) (00723)
393541083000801 PK-50 NEAR CIRCLEVILLE, OHIO—LEVEL 1 (Latitude 39°35'41", longitude 83°00'08")				
MAY 1999 12...	712	7.4	430	<.01
393541083000803 PK-50 NEAR CIRCLEVILLE, OHIO—LEVEL 3 (Latitude 39°35'41", longitude 83°00'08")				
OCT 1998 23...	717	7.3	420	<.01
MAY 1999 12...	714	7.3	416	<.01
393541083000804 PK-50 NEAR CIRCLEVILLE, OHIO—LEVEL 4 (Latitude 39°35'41", longitude 83°00'08")				
OCT 1998 23...	685	7.3	400	<.01
393541083001000 PK-47 NEAR CIRCLEVILLE, OHIO (Latitude 39°35'41", longitude 83°00'10")				
OCT 1998 23...	659	7.4	391	<.01
MAY 1999 12...	702	7.4	419	<.01
393541083001200 PK-53 NEAR CIRCLEVILLE, OHIO (Latitude 39°35'41", longitude 83°00'12")				
OCT 1998 23...	641	7.3	373	<.01
MAY 1999 12...	696	7.3	403	<.01
395859083440502 CL-140 NEAR SPRINGFIELD, OHIO—LEVEL 2 (Latitude 39°58'59", longitude 83°44'05")				
OCT 1998 13...	814	7.2	469	<.01
395859083440503 CL-140 NEAR SPRINGFIELD,, OHIO—LEVEL 3 (Latitude 39°58'59", longitude 83°44'05")				
OCT 1998 13...	823	7.1	468	<.01
395859083440504 CL-140 NEAR SPRINGFIELD, OHIO—LEVEL 4 (Latitude 39°58'59", longitude 83°44'05")				
MAY 1999 06...	948	7.3	504	<.01
395859083440505 CL-140 NEAR SPRINGFIELD, OHIO—LEVEL 5 (Latitude 39°58'59", longitude 83°44'05")				
MAY 1999 06...	833	7.4	482	<.01
395859083440600 CL-137 NEAR SPRINGFIELD, OHIO (Latitude 39°58'59", longitude 83°44'06")				
OCT 1998 13...	814	7.1	465	<.01
MAY 1999 07...	901	7.1	496	<.01
395901083440700 CL-136 NEAR SPRINGFIELD, OHIO (Latitude 39°59'01", longitude 83°44'07")				
OCT 1998 13...	792	7.2	453	<.01
MAY 1999 07...	778	7.2	427	<.01

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

WATER-QUALITY RECORDS—CONTINUED

SAMPLE ANALYSES FOR ONE WELL AT EACH SITE, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	CYANIDE DIS- SOLVED (MG/L) AS CN) (00723)
400947083480003 CH-44 NEAR URBANA, OHIO—LEVEL 3 (Latitude 40°09'47", longitude 83°48'00")				
OCT 1998				
15...	839	7.2	507	<.01
MAY 1999				
04...	917	7.3	530	<.01
400947083480004 CH-44 NEAR URBANA, OHIO—LEVEL 4 (Latitude 40°09'47", longitude 83°48'00")				
OCT 1998				
15...	861	7.2	520	<.01
MAY 1999				
04...	914	7.4	538	<.01
400948083480200 CH-41 NEAR URBANA, OHIO (Latitude 40°09'48", longitude 83°48'02")				
OCT 1998				
15...	899	7.2	545	<.01
MAY 1999				
04...	860	7.3	478	<.01
400950083480600 CH-38 NEAR URBANA, OHIO (Latitude 40°09'50", longitude 83°48'06")				
OCT 1998				
15...	774	7.1	470	<.01
MAY 1999				
04...	801	7.3	497	<.01
403923082325400 R-21 NEAR LEXINGTON, OHIO (Latitude 40°39'23", longitude 82°32'54")				
OCT 1998				
26...	158	7.1	97	<.01
APR 1999				
28...	210	7.3	130	<.01
403923082325600 R-15 NEAR LEXINGTON, OHIO (Latitude 40°39'23", longitude 82°32'56")				
OCT 1998				
26...	268	6.6	152	<.01
APR 1999				
28...	417	6.8	247	<.01
403923082325701 R-18 NEAR LEXINGTON, OHIO—LEVEL 1 (Latitude 40°39'23", longitude 82°32'57")				
OCT 1998				
26...	484	7.2	267	<.01
APR 1999				
28...	503	7.3	282	<.01
403923082325703 R-18 NEAR LEXINGTON, OHIO—LEVEL 3 (Latitude 40°39'23", longitude 82°32'57")				
OCT 1998				
26...	538	7.5	287	<.01
403923082325704 R-18 NEAR LEXINGTON, OHIO—LEVEL 4 (Latitude 40°39'23", longitude 82°32'57")				
APR 1999				
28...	593	7.5	333	<.01
411137081172100 PO-114 NEAR RAVENNA, OHIO (Latitude 41°11'37", longitude 81°17'21")				
OCT 1998				
28...	464	7.7	272	<.01

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

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WATER-QUALITY RECORDS—CONTINUED

SAMPLE ANALYSES FOR ONE WELL AT EACH SITE, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	CYANIDE DIS- SOLVED (MG/L) AS CN) (00723)
411137081172401 PO-117 NEAR RAVENNA, OHIO—LEVEL 1 (Latitude 41°11'37", longitude 81°17'24")				
OCT 1998				
28...	1160	7.6	656	<.01
APR 1999				
30...	714	7.6	402	<.01
411137081172403 PO-117 NEAR RAVENNA, OHIO—LEVEL 3 (Latitude 41°11'37", longitude 81°17'24")				
OCT 1998				
28...	1770	7.5	997	<.01
APR 1999				
30...	1380	7.6	742	<.01
411138081172400 PO-115 NEAR RAVENNA, OHIO (Latitude 41°11'38", longitude 81°17'24")				
OCT 1998				
28...	2780	7.0	1500	.01
APR 1999				
30...	3750	6.9	2270	.02
413547083481001 LU-26 NEAR HOLLAND, OHIO—LEVEL 1 (Latitude 41°35'47", longitude 83°48'10")				
OCT 1998				
29...	627	7.3	397	<.01
413547083481003 LU-26 NEAR HOLLAND, OHIO—LEVEL 3 (Latitude 41°35'47", longitude 83°48'10")				
MAY 1999				
05...	404	8.5	233	<.01
413547083481004 LU-26 NEAR HOLLAND, OHIO—LEVEL 4 (Latitude 41°35'47", longitude 83°48'10")				
OCT 1998				
29...	418	7.7	242	<.01
MAY 1999				
05...	1560	7.3	1010	<.01
413547083481300 LU-22 NEAR HOLLAND, OHIO (Latitude 41°35'47", longitude 83°48'13")				
OCT 1998				
29...	1280	7.7	711	<.01
MAY 1999				
05...	823	7.7	447	<.01
413549083481500 LU-21 NEAR HOLLAND, OHIO (Latitude 41°35'49", longitude 83°48'15")				
OCT 1998				
29...	235	7.8	138	<.01
MAY 1999				
05...	214	7.4	124	<.01
415305080414200 AB-139 NEAR KINGSVILLE, OHIO (Latitude 41°53'05", longitude 80°41'42")				
OCT 1998				
27...	450	7.7	268	<.01
APR 1999				
29...	931	7.5	595	<.01
415307080414200 AB-133 NEAR KINGSVILLE, OHIO (Latitude 41°53'07", longitude 80°41'42")				
OCT 1998				
27...	4520	7.1	2570	<.01
APR 1999				
29...	3910	7.2	2240	.02

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

WATER-QUALITY RECORDS—CONTINUED

SAMPLE ANALYSES FOR ONE WELL AT EACH SITE, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	CYANIDE DIS- SOLVED (MG/L) AS CN) (00723)
415309080414401 AB-138 NEAR KINGSVILLE, OHIO—LEVEL 1 (Latitude 41°53 '9", longitude 80°41'44")				
OCT 1998				
27...	1010	7.5	603	<.01
APR 1999				
29...	1230	7.5	718	<.01
415309080414403 AB-138 NEAR KINGSVILLE, OHIO—LEVEL 3 (Latitude 41°53'09", longitude 80°41'44")				
OCT 1998				
27...	1020	7.6	612	<.01
415309080414405 AB-138 NEAR KINGSVILLE, OHIO—LEVEL 5 (Latitude 41°53'09", longitude 80°41'44")				
APR 1999				
29...	1080	7.5	636	<.01

Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

WATER-QUALITY RECORDS—CONTINUED

ADDITIONAL SAMPLE ANALYSES, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET) (72019)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LITY WAT DIS TOT IT FIELD CACO3 (39086)
393541083001000 PK-47 NEAR CIRCLEVILLE, OHIO (Latitude 39°35'41", longitude 83°00'10")										
OCT 1998 23...	10.09	603	6.9	14.0	350	90	31	3.5	2.3	--
MAY 1999 12...	10.11	662	7.0	16.0	360	91	33	5.6	2.0	238
393541083001200 PK-53 NEAR CIRCLEVILLE, OHIO (Latitude 39°35'41", longitude 83°00'12")										
OCT 1998 23...	9.67	567	7.4	14.0	340	88	30	2.7	1.1	--
MAY 1999 12...	9.74	652	6.9	14.0	360	92	32	2.9	1.0	244
395859083440600 CL-137 NEAR SPRINGFIELD, OHIO (Latitude 39°58'59", longitude 83°44'06")										
OCT 1998 13...	20.35	772	7.1	14.5	430	100	41	5.9	2.5	--
MAY 1999 07...	22.00	850	6.7	14.0	450	110	44	14	2.6	288
395901083440700 CL-136 NEAR SPRINGFIELD, OHIO (Latitude 39°59'01", longitude 83°44'07")										
OCT 1998 13...	19.23	750	7.2	14.5	420	100	40	3.7	1.3	--
MAY 1999 07...	18.86	737	6.8	12.5	420	99	41	7.0	1.2	296
400948083480200 CH-41 NEAR URBANA, OHIO (Latitude 40°09'48", longitude 83°48'02")										
OCT 1998 15...	10.32	855	7.3	13.5	410	100	39	28	4.3	--
MAY 1999 04...	8.72	828	6.9	13.5	420	100	39	17	4.4	256
400950083480600 CH-38 NEAR URBANA, OHIO (Latitude 40°09'50", longitude 83°48'06")										
OCT 1998 15...	7.65	739	7.2	15.0	420	100	40	4.3	2.0	--
MAY 1999 04...	5.95	746	6.8	10.0	440	110	43	5.6	1.7	240
403923082325400 R-21 NEAR LEXINGTON, OHIO (Latitude 40°39'23", longitude 82°32'54")										
OCT 1998 26...	19.77	149	7.1	14.5	70	19	5.5	1.8	.98	--
APR 1999 28...	8.89	205	6.9	11.0	94	27	6.7	1.9	1.1	72
403923082325600 R-15 NEAR LEXINGTON, OHIO (Latitude 40°39'23", longitude 82°32'56")										
OCT 1998 26...	15.98	251	7.0	14.0	90	24	7.2	14	1.1	--
APR 1999 28...	13.91	408	6.1	10.0	110	30	8.5	35	1.0	46
411137081172100 PO-114 NEAR RAVENNA, OHIO (Latitude 41°11'37", longitude 81°17'21")										
OCT 1998 28...	5.36	440	--	15.0	220	74	8.4	5.1	2.2	--
411138081172400 PO-115 NEAR RAVENNA, OHIO (Latitude 41°11'38", longitude 81°17'24")										
OCT 1998 28...	8.80	2620	--	14.0	190	62	7.5	473	2.1	--
APR 1999 30...	6.23	3500	6.6	9.5	530	170	22	517	4.0	76

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

WATER-QUALITY RECORDS—CONTINUED

ADDITIONAL SAMPLE ANALYSES, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	SULFATE DIS- SOLVED (MG/L AS SO ₄) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	BROMIDE DIS- SOLVED (MG/L AS BR)	SILICA, DIS- SOLVED (MG/L AS SiO ₂)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO ₂ +NO ₃ DIS- SOLVED (MG/L AS N)
393541083001000 PK-47 NEAR CIRCLEVILLE, OHIO (Latitude 39°35'41", longitude 83°00'10")									
OCT 1998									
23...	56	14	.13	.038	8.5	391	379	<.010	1.27
MAY 1999									
12...	65	17	.14	.049	8.5	419	400	<.010	.320
393541083001200 PK-53 NEAR CIRCLEVILLE, OHIO (Latitude 39°35'41", longitude 83°00'12")									
OCT 1998									
23...	41	11	.15	.032	8.9	373	358	<.010	2.62
MAY 1999									
12...	46	13	.17	.043	8.9	403	392	<.010	2.75
395859083440600 CL-137 NEAR SPRINGFIELD, OHIO (Latitude 39°58'59", longitude 83°44'06")									
OCT 1998									
13...	30	12	.26	.036	12	465	474	<.010	9.63
MAY 1999									
07...	31	37	.19	.051	12	496	508	<.010	7.24
395901083440700 CL-136 NEAR SPRINGFIELD, OHIO (Latitude 39°59'01", longitude 83°44'07")									
OCT 1998									
13...	33	8.7	.33	.042	13	453	458	<.010	7.64
MAY 1999									
07...	32	11	.18	.032	12	427	446	<.010	4.68
400948083480200 CH-41 NEAR URBANA, OHIO (Latitude 40°09'48", longitude 83°48'02")									
OCT 1998									
15...	97	30	.34	.043	8.7	545	526	.014	3.14
MAY 1999									
04...	90	36	.28	.026	8.9	478	502	<.010	2.29
400950083480600 CH-38 NEAR URBANA, OHIO (Latitude 40°09'50", longitude 83°48'06")									
OCT 1998									
15...	95	14	.41	.042	8.5	470	458	<.010	<.050
MAY 1999									
04...	130	15	.32	.035	6.3	497	486	<.010	.054
403923082325400 R-21 NEAR LEXINGTON, OHIO (Latitude 40°39'23", longitude 82°32'54")									
OCT 1998									
26...	13	2.1	.21	.023	11	97	97	<.010	3.53
APR 1999									
28...	20	2.4	<.10	.010	9.6	130	120	<.010	2.25
403923082325600 R-15 NEAR LEXINGTON, OHIO (Latitude 40°39'23", longitude 82°32'56")									
OCT 1998									
26...	22	24	<.10	.022	10	152	149	.011	3.02
APR 1999									
28...	24	72	<.10	.019	8.7	247	221	<.010	2.45
411137081172100 PO-114 NEAR RAVENNA, OHIO (Latitude 41°11'37", longitude 81°17'21")									
OCT 1998									
28...	37	11	<.10	<.010	7.4	272	264	.025	2.74
411138081172400 PO-115 NEAR RAVENNA, OHIO (Latitude 41°11'38", longitude 81°17'24")									
OCT 1998									
28...	67	700	.22	.11	5.7	1500	1450	<.010	1.00
APR 1999									
30...	52	1100	<.10	.15	4.5	2270	1910	<.010	.845

Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

WATER-QUALITY RECORDS—CONTINUED

ADDITIONAL SAMPLE ANALYSES, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)
393541083001000 PK-47 NEAR CIRCLEVILLE, OHIO (Latitude 39°35'41", longitude 83°00'10")									
OCT 1998									
23...	.020	<.10	.036	.013	81	<1.6	<8.0	<7.0	<10
MAY 1999									
12...	.021	E.10	<.050	.010	77	<1.6	<8.0	<7.0	<10
393541083001200 PK-53 NEAR CIRCLEVILLE, OHIO (Latitude 39°35'41", longitude 83°00'12")									
OCT 1998									
23...	<.020	<.10	<.050	<.010	73	<1.6	<8.0	<7.0	<10
MAY 1999									
12...	<.020	<.10	<.050	<.010	71	<1.6	<8.0	<7.0	<10
395859083440600 CL-137 NEAR SPRINGFIELD, OHIO (Latitude 39°58'59", longitude 83°44'06")									
OCT 1998									
13...	<.020	<.10	<.050	<.010	139	<1.6	<8.0	<7.0	<10
MAY 1999									
07...	.035	<.10	<.050	.011	145	<1.6	<8.0	<7.0	<10
395901083440700 CL-136 NEAR SPRINGFIELD, OHIO (Latitude 39°59'01", longitude 83°44'07")									
OCT 1998									
13...	<.020	<.10	.010	<.010	141	<1.6	<8.0	<7.0	<10
MAY 1999									
07...	.034	<.10	<.050	.011	114	<1.6	<8.0	<7.0	<10
400948083480200 CH-41 NEAR URBANA, OHIO (Latitude 40°09'48", longitude 83°48'02")									
OCT 1998									
15...	.022	<.10	<.050	<.010	85	<1.6	<8.0	<7.0	<10
MAY 1999									
04...	.047	E.10	<.050	.013	82	<1.6	<8.0	<7.0	<10
400950083480600 CH-38 NEAR URBANA, OHIO (Latitude 40°09'50", longitude 83°48'06")									
OCT 1998									
15...	.036	.13	<.050	<.010	80	<1.6	<8.0	<7.0	<10
MAY 1999									
04...	.044	.33	<.050	.011	72	<1.6	<8.0	<7.0	<10
403923082325400 R-21 NEAR LEXINGTON, OHIO (Latitude 40°39'23", longitude 82°32'54")									
OCT 1998									
26...	.021	<.10	<.050	<.010	12	<1.6	<8.0	<7.0	<10
APR 1999									
28...	<.020	<.10	<.050	.018	19	<1.6	<8.0	<7.0	<10
403923082325600 R-15 NEAR LEXINGTON, OHIO (Latitude 40°39'23", longitude 82°32'56")									
OCT 1998									
26...	.032	<.10	<.050	.016	18	<1.6	<8.0	<7.0	<10
APR 1999									
28...	<.020	<.10	<.050	.014	25	<1.6	<8.0	<7.0	<10
411137081172100 PO-114 NEAR RAVENNA, OHIO (Latitude 41°11'37", longitude 81°17'21")									
OCT 1998									
28...	.054	.16	<.050	<.010	32	<1.6	<8.0	<7.0	<10
411138081172400 PO-115 NEAR RAVENNA, OHIO (Latitude 41°11'38", longitude 81°17'24")									
OCT 1998									
28...	.035	.19	.035	.037	55	<1.6	<8.0	<7.0	<10
APR 1999									
30...	.029	.13	<.050	.022	137	<4.8	<24	<21	<30

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

WATER-QUALITY RECORDS—CONTINUED

ADDITIONAL SAMPLE ANALYSES, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	CYANIDE DIS- SOLVED (MG/L AS CN) (00723)
393541083001000 PK-47 NEAR CIRCLEVILLE, OHIO (Latitude 39°35'41", longitude 83°00'10")									
OCT 1998									
23...	<10	<100	<6	18	<50	129	<10	E12	<.01
MAY 1999									
12...	<10	<100	<6	10	<50	133	<10	<20	<.01
393541083001200 PK-53 NEAR CIRCLEVILLE, OHIO (Latitude 39°35'41", longitude 83°00'12")									
OCT 1998									
23...	<10	<100	<6	21	<50	91	<10	<20	<.01
MAY 1999									
12...	E8.3	<100	<6	8.6	<50	95	<10	<20	<.01
395859083440600 CL-137 NEAR SPRINGFIELD, OHIO (Latitude 39°58'59", longitude 83°44'06")									
OCT 1998									
13...	<10	<100	<6	<3.0	<50	165	<10	<20	<.01
MAY 1999									
07...	<10	<100	<6	<3.0	<50	185	<10	<20	<.01
395901083440700 CL-136 NEAR SPRINGFIELD, OHIO (Latitude 39°59'01", longitude 83°44'07")									
OCT 1998									
13...	<10	<100	E3	<3.0	<50	311	<10	<20	<.01
MAY 1999									
07...	<10	<100	<6	<3.0	<50	183	<10	<20	<.01
400948083480200 CH-41 NEAR URBANA, OHIO (Latitude 40°09'48", longitude 83°48'02")									
OCT 1998									
15...	78	<100	E4	119	<50	406	<10	<20	<.01
MAY 1999									
04...	61	<100	<6	111	<50	393	<10	E12	<.01
400950083480600 CH-38 NEAR URBANA, OHIO (Latitude 40°09'50", longitude 83°48'06")									
OCT 1998									
15...	930	<100	E5	133	<50	331	<10	<20	<.01
MAY 1999									
04...	700	<100	<6	124	<50	326	<10	<20	<.01
403923082325400 R-21 NEAR LEXINGTON, OHIO (Latitude 40°39'23", longitude 82°32'54")									
OCT 1998									
26...	<10	<100	<6	<3.0	<50	34	<10	<20	<.01
APR 1999									
28...	<10	<100	E4	<3.0	<50	46	<10	<20	<.01
403923082325600 R-15 NEAR LEXINGTON, OHIO (Latitude 40°39'23", longitude 82°32'56")									
OCT 1998									
26...	<10	<100	<6	<3.0	<50	49	<10	<20	<.01
APR 1999									
28...	<10	<100	E4	<3.0	<50	58	<10	<20	<.01
411137081172100 PO-114 NEAR RAVENNA, OHIO (Latitude 41°11'37", longitude 81°17'21")									
OCT 1998									
28...	<10	<100	<6	58	<50	156	<10	<20	<.01
411138081172400 PO-115 NEAR RAVENNA, OHIO (Latitude 41°11'38", longitude 81°17'24")									
OCT 1998									
28...	<10	<100	<6	<3.0	<50	225	<10	<20	.01
APR 1999									
30...	<30	<300	<18	<9.0	<150	636	<30	<60	.02

Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

WATER-QUALITY RECORDS—CONTINUED

ADDITIONAL SAMPLE ANALYSES, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET) (72019)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LITY WAT DIS TOT IT FIELD CACO3 (39086)
	413547083481300 LU-22 NEAR HOLLAND, OHIO (Latitude 41°35'47", longitude 83°48'13")									
OCT 1998 29...	6.73	1250	--	17.0	250	78	13	155	3.5	--
MAY 1999 05...	4.55	836	7.6	12.5	150	44	9.3	103	2.1	82
	413549083481500 LU-21 NEAR HOLLAND, OHIO (Latitude 41°35'49", longitude 83°48'15")									
OCT 1998 29...	6.25	231	--	15.0	110	34	4.8	3.4	1.6	--
MAY 1999 05...	4.16	202	7.1	12.0	84	25	5.1	6.1	1.3	50
	415305080414200 AB-139 NEAR KINGSVILLE, OHIO (Latitude 41°53'05", longitude 80°41'42")									
OCT 1998 27...	12.45	437	--	18.5	160	49	9.0	30	.79	--
APR 1999 29...	10.05	764	7.1	11.5	270	81	16	89	1.0	98
	415307080414200 AB-133 NEAR KINGSVILLE, OHIO (Latitude 41°53'07", longitude 80°41'42")									
OCT 1998 27...	9.69	4220	--	15.0	590	180	35	654	2.3	--
APR 1999 29...	6.35	3680	6.9	10.0	370	110	20	633	3.3	114
	413547083481300 LU-22 NEAR HOLLAND, OHIO (Latitude 41°35'47", longitude 83°48'13")									
OCT 1998 29...	39	290	.19	.069	8.0	711	681	.015	1.47	
MAY 1999 05...	27	190	<.10	.033	5.6	447	442	<.010	.808	
	413549083481500 LU-21 NEAR HOLLAND, OHIO (Latitude 41°35'49", longitude 83°48'15")									
OCT 1998 29...	27	13	.14	.016	9.1	138	134	<.010	.088	
MAY 1999 05...	24	13	<.10	<.010	8.2	124	117	<.010	.124	
	415305080414200 AB-139 NEAR KINGSVILLE, OHIO (Latitude 41°53'05", longitude 80°41'42")									
OCT 1998 27...	57	18	.25	.013	12	268	261	<.010	.063	
APR 1999 29...	63	190	.21	.038	12	595	536	<.010	.150	
	415307080414200 AB-133 NEAR KINGSVILLE, OHIO (Latitude 41°53'07", longitude 80°41'42")									
OCT 1998 27...	80	1200	<.10	.22	11	2570	2370	.013	.285	
APR 1999 29...	64	1100	<.10	.13	5.5	2240	2040	<.010	.122	

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WATER-QUALITY RECORDS—CONTINUED

ADDITIONAL SAMPLE ANALYSES, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

DATE	NITRO- GEN, AMMONIA + DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)
413547083481300 LU-22 NEAR HOLLAND, OHIO (Latitude 41°35'47", longitude 83°48'13")									
OCT 1998 29...	.103	.20	<.050	.021	97	<1.6	<8.0	<7.0	<10
MAY 1999 05...	.061	.12	<.050	.017	38	<1.6	<8.0	<7.0	<10
413549083481500 LU-21 NEAR HOLLAND, OHIO (Latitude 41°35'49", longitude 83°48'15")									
OCT 1998 29...	.053	.11	<.050	.022	31	<1.6	<8.0	<7.0	<10
MAY 1999 05...	.060	.14	<.050	.020	33	<1.6	<8.0	<7.0	<10
415305080414200 AB-139 NEAR KINGSVILLE, OHIO (Latitude 41°53'05", longitude 80°41'42")									
OCT 1998 27...	.039	<.10	<.050	.011	23	<1.6	<8.0	<7.0	<10
APR 1999 29...	.030	e.10	<.050	.013	48	<1.6	<8.0	<7.0	<10
415307080414200 AB-133 NEAR KINGSVILLE, OHIO (Latitude 41°53'07", longitude 80°41'42")									
OCT 1998 27...	.042	.11	<.050	.012	215	<1.6	<8.0	<7.0	<10
APR 1999 29...	.025	.11	<.050	.010	149	<4.8	<24	<21	<30
DATE	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	CYANIDE DIS- SOLVED (MG/L AS CN) (00723)
413547083481300 LU-22 NEAR HOLLAND, OHIO (Latitude 41°35'47", longitude 83°48'13")									
OCT 1998 29...	540	<100	<6	132	<50	320	<10	E12	<.01
MAY 1999 05...	230	<100	<6	31	<50	259	<10	<20	<.01
413549083481500 LU-21 NEAR HOLLAND, OHIO (Latitude 41°35'49", longitude 83°48'15")									
OCT 1998 29...	330	<100	<6	50	<50	77	<10	<20	<.01
MAY 1999 05...	270	<100	<6	37	<50	64	<10	<20	<.01
415305080414200 AB-139 NEAR KINGSVILLE, OHIO (Latitude 41°53'05", longitude 80°41'42")									
OCT 1998 27...	<10	<100	E5	164	<50	78	<10	<20	<.01
APR 1999 29...	<10	<100	7	278	<50	139	<10	<20	<.01
415307080414200 AB-133 NEAR KINGSVILLE, OHIO (Latitude 41°53'07", longitude 80°41'42")									
OCT 1998 27...	<10	<100	15	20	<50	350	<10	<20	<.01
APR 1999 29...	<30	<300	<18	<9.0	<150	367	<30	<60	.02

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GROUND-WATER LEVELS

The following table lists ground-water level measurements from wells located throughout the seven sites in the "Effects of Highway Deicing Chemicals" study area.

[Aquifer Code (Geologic Unit)are: 111ALVM, Alluvium, Holocene Epoch; 111TRRC, Terrace Deposits, Holocene Epoch; 112LAKE, Lake Deposits, Pleistocene Epoch; 112OTSH, Outwash, Pleistocene Epoch.]

SITE-ID	LOCAL WELL NUMBER	LOCATION	DEPTH OF WELL (FEET)	AQUIFER CODE	WATER- LEVEL DATE	WATER LEVEL (FEET)	ALTITUDE OF LAND SURFACE (FEET)	ALTITUDE DATUM (CODE)
393540083001200	PK-46	NEAR CIRCLEVILLE, OHIO	34.6	112OTSH	10/23/1998 12/14/1998 2/3/1999 3/8/1999 5/12/1999 6/22/1999 7/22/1999 9/14/1999	10.38 11.25 10.37 9.98 10.38 11.05 11.52 12.37	679.16	NGVD29
393541083000700	PK-44	NEAR CIRCLEVILLE, OHIO	38.0	112OTSH	10/23/1998 12/14/1998 2/3/1999 3/8/1999 5/12/1999 6/22/1999 7/22/1999 9/14/1999	11.89 12.71 11.72 11.41 11.89 12.57 13.02 13.85	679.54	NGVD29
393541083000800	PK-50	NEAR CIRCLEVILLE, OHIO	34.3	112OTSH	10/23/1998 12/14/1998 2/3/1999 3/8/1999 5/12/1999 6/22/1999 7/22/1999 9/14/1999	11.58 12.40 11.54 11.25 11.66 12.36 12.81 13.64	679.62	NGVD29
393541083000900	PK-49	NEAR CIRCLEVILLE, OHIO	35.6	112OTSH	10/23/1998 12/14/1998 2/3/1999 3/8/1999 5/12/1999 6/22/1999 7/22/1999 9/14/1999	11.26 12.09 11.16 10.79 11.26 11.94 12.39 13.20	679.51	NGVD29
393541083001000	PK-47	NEAR CIRCLEVILLE, OHIO	36.1	112OTSH	10/23/1998 12/14/1998 2/3/1999 3/8/1999 5/12/1999 6/22/1999 7/22/1999 9/14/1999	10.09 10.96 10.01 9.70 10.11 10.85 11.36 12.18	678.37	NGVD29
393541083001100	PK-48	NEAR CIRCLEVILLE, OHIO	28.0	112OTSH	10/23/1998 12/14/1998 2/3/1999 3/8/1999 5/12/1999 6/22/1999 7/22/1999 9/14/1999	10.48 11.32 10.38 10.07 10.49 11.17 11.62 12.42	678.50	NGVD29
393541083001200	PK-53	NEAR CIRCLEVILLE, OHIO	35.6	112OTSH	10/23/1998 12/14/1998 2/3/1999 3/8/1999 5/12/1999 6/22/1999 7/22/1999 9/14/1999	9.67 10.55 9.65 9.25 9.74 10.36 10.83 11.72	678.50	NGVD29

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Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

GROUND-WATER LEVELS—CONTINUED

[Aquifer Code (Geologic Unit)are: 111ALVM, Alluvium, Holocene Epoch; 111TRRC, Terrace Deposits, Holocene Epoch; 112LAKE, Lake Deposits, Pleistocene Epoch; 112OTSH, Outwash, Pleistocene Epoch.]

SITE-ID	LOCAL WELL NUMBER	LOCATION	DEPTH OF WELL (FEET)	AQUIFER CODE	WATER- LEVEL DATE	ALTITUDE		ALTITUDE DATUM (CODE)
						WATER LEVEL (FEET)	OF LAND SURFACE (FEET)	
393542083000500	PK-52	NEAR CIRCLEVILLE, OHIO	36.2	112OTSH	10/23/1998	11.57	679.58	NGVD29
					12/14/1998	12.49		
					2/3/1999	11.46		
					3/8/1999	11.08		
					5/12/1999	11.57		
					6/22/1999	12.25		
					7/22/1999	12.85		
					9/14/1999	13.67		
393542083000700	PK-51	NEAR CIRCLEVILLE, OHIO	35.5	112OTSH	10/23/1998	11.49	679.63	NGVD29
					12/14/1998	12.28		
					2/3/1999	11.45		
					3/8/1999	11.02		
					5/12/1999	11.50		
					6/22/1999	12.17		
393542083000700	PK-51	NEAR CIRCLEVILLE, OHIO	35.5	112OTSH	7/22/1999	12.50	679.63	NGVD29
					9/14/1999	13.45		
395858083440100	CL-133	NEAR SPRINGFIELD, OHIO	22.3	112OTSH	5/6/1999	12.85	1024.24	NGVD29
395859083440200	CL-141	NEAR SPRINGFIELD, OHIO	37.5	112OTSH	2/2/1999	21.28	1030.70	NGVD29
					3/10/1999	20.89		
					5/6/1999	19.07		
					6/11/1999	18.92		
					8/3/1999	18.93		
					9/13/1999	19.10		
395859083440300	CL-143	NEAR SPRINGFIELD, OHIO	40.0	112OTSH	2/2/1999	20.07	1029.45	NGVD29
					3/10/1999	19.90		
					5/6/1999	18.07		
					6/11/1999	17.69		
					8/3/1999	17.69		
					9/13/1999	17.86		
395859083440400	CL-142	NEAR SPRINGFIELD, OHIO	35.9	112OTSH	2/2/1999	20.58	1030.00	NGVD29
					3/10/1999	20.44		
					5/6/1999	18.60		
					6/11/1999	18.21		
					8/3/1999	18.22		
					9/13/1999	18.39		
395859083440500	CL-140	NEAR SPRINGFIELD, OHIO	36.7	112OTSH	10/13/1998	19.51	1030.49	NGVD29
					2/2/1999	21.16		
					3/10/1999	20.99		
					5/6/1999	19.14		
					6/11/1999	18.75		
					8/3/1999	18.76		
					9/13/1999	18.95		
395859083440600	CL-137	NEAR SPRINGFIELD, OHIO	38.0	112OTSH	10/13/1998	20.35	1031.34	NGVD29
					2/2/1999	21.92		
					3/10/1999	21.48		
					5/6/1999	19.68		
					5/7/1999	19.91		
					6/11/1999	19.56		
					8/3/1999	19.55		
					9/13/1999	19.74		
395859083440700	CL-138	NEAR SPRINGFIELD, OHIO	28.5	112OTSH	10/13/1998	20.61	1031.61	NGVD29
					12/3/1998	22.32		
					2/2/1999	22.22		
					3/10/1999	22.07		
					5/6/1999	20.21		
					6/11/1999	19.81		
					8/3/1999	19.80		
					9/13/1999	19.99		

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Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

GROUND-WATER LEVELS—CONTINUED

[Aquifer Code (Geologic Unit)are: 111ALVM, Alluvium, Holocene Epoch; 111TRRC, Terrace Deposits, Holocene Epoch; 112LAKE, Lake Deposits, Pleistocene Epoch; 112OTSH, Outwash, Pleistocene Epoch.]

SITE-ID	LOCAL WELL NUMBER	LOCATION	DEPTH OF WELL (FEET)	AQUIFER CODE	WATER- LEVEL DATE	WATER LEVEL (FEET)	ALTITUDE OF LAND SURFACE (FEET)	ALTITUDE DATUM (CODE)
395859083440800	CL-139	NEAR SPRINGFIELD, OHIO	36.9	112OTSH	2/2/1999 3/10/1999 5/6/1999 6/11/1999 8/3/1999 9/13/1999	21.53 21.38 19.54 19.15 19.16 19.33	1031.33	NGVD29
395901083440600	CL-135	NEAR SPRINGFIELD, OHIO	37.2	112OTSH	2/2/1999 3/10/1999 5/6/1999 6/11/1999 8/3/1999 9/13/1999	19.49 19.29 18.60 18.52 18.73 18.94	1031.89	NGVD29
395901083440700	CL-136	NEAR SPRINGFIELD, OHIO	37.5	112OTSH	10/13/1998 2/2/1999 3/10/1999 5/6/1999 6/11/1999 8/3/1999 9/13/1999	19.23 19.76 19.54 18.86 18.80 19.00 19.25	1032.08	NGVD29
400947083480000	CH-44	NEAR URBANA, OHIO	31.0	112OTSH	10/15/1998 2/4/1999 3/11/1999 5/4/1999 6/10/1999 7/23/1999 9/1/1999	10.02 8.10 7.99 8.45 9.35 9.50 9.94	1029.71	NGVD29
400948083475800	CH-46	NEAR URBANA, OHIO	34.8	112OTSH	2/4/1999 3/11/1999 5/4/1999 6/10/1999 7/23/1999 9/1/1999	7.09 6.97 7.45 8.41 8.46 8.94	1028.56	NGVD29
400948083480000	CH-45	NEAR URBANA, OHIO	34.4	112OTSH	2/4/1999 3/11/1999 5/4/1999 6/10/1999 7/23/1999 9/1/1999	7.67 7.58 8.08 9.06 9.10 9.56	1029.26	NGVD29
400948083480100	CH-43	NEAR URBANA, OHIO	32.2	112OTSH	2/4/1999 3/11/1999 5/4/1999 6/10/1999 7/23/1999 9/1/1999	7.92 7.82 8.33 9.30 9.37 9.87	1029.48	NGVD29
400948083480200	CH-41	NEAR URBANA, OHIO	34.3	112OTSH	10/15/1998 10/23/1998 2/4/1999 3/11/1999 5/4/1999 6/10/1999 7/23/1999 9/1/1999	10.32 11.42 8.33 8.22 8.72 9.73 9.79 10.29	1029.98	NGVD29
400949083480100	CH-42	NEAR URBANA, OHIO	28.7	112OTSH	10/15/1998 12/3/1998 2/4/1999 3/11/1999 5/4/1999 6/10/1999 7/23/1999 9/1/1999	10.28 10.39 8.29 8.20 8.71 9.69 9.73 10.25	1029.89	NGVD29

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

GROUND-WATER LEVELS—CONTINUED

[Aquifer Code (Geologic Unit)are: 111ALVM, Alluvium, Holocene Epoch; 111TRRC, Terrace Deposits, Holocene Epoch; 112LAKE, Lake Deposits, Pleistocene Epoch; 112OTSH, Outwash, Pleistocene Epoch.]

SITE-ID	LOCAL WELL NUMBER	LOCATION	DEPTH OF WELL (FEET)	AQUIFER CODE	WATER- LEVEL DATE	WATER LEVEL (FEET)	ALTITUDE OF LAND SURFACE (FEET)	ALTITUDE DATUM (CODE)
400950083480600	CH-38	NEAR URBANA, OHIO	19.2	112OTSH	10/15/1998 2/4/1999 3/11/1999 5/4/1999 6/10/1999 7/23/1999 9/1/1999	7.65 5.53 5.45 5.95 6.99 7.10 7.62	1027.30	NGVD29
400952083480800	CH-40	NEAR URBANA, OHIO	34.7	112OTSH	2/4/1999 3/11/1999 5/4/1999 6/10/1999 7/23/1999 9/1/1999	6.26 6.07 6.63 7.66 7.76 8.22	1028.95	NGVD29
403922082325900	R-19	NEAR LEXINGTON, OHIO	30.0	112OTSH	10/26/1998 12/11/1998 2/16/1999 3/16/1999 4/28/1999 6/15/1999 7/28/1999 9/7/1999	13.76 13.86 11.72 10.84 10.48 13.13 14.03 14.61	1164.90	NGVD29
403922082330000	R-20	NEAR LEXINGTON, OHIO	34.2	112OTSH	10/26/1998 12/11/1998 2/16/1999 3/16/1999 4/28/1999 6/15/1999 7/28/1999 9/7/1999	10.48 10.55 8.57 7.77 7.52 9.88 10.75 11.35	1161.26	NGVD29
403923082325400	R-21	NEAR LEXINGTON, OHIO	25.0	112OTSH	10/26/1998 12/11/1998 2/16/1999 3/16/1999 4/28/1999 6/15/1999 7/28/1999 9/7/1999	19.77 20.49 13.53 11.11 8.89 16.78 17.76 19.86	1185.19	NGVD29
403923082325500	R-16	NEAR LEXINGTON, OHIO	18.9	112OTSH	10/26/1998 12/11/1998 2/16/1999 3/16/1999 4/28/1999 6/15/1999 7/28/1999 9/7/1999	17.24 17.38 13.69 12.93 12.33 16.51 17.44 18.13	1168.37	NGVD29
403923082325600	R-15	NEAR LEXINGTON, OHIO	23.0	112OTSH	10/26/1998 12/11/1998 2/16/1999 3/16/1999 4/28/1999 6/15/1999 7/28/1999 9/7/1999	17.48 17.62 15.26 13.99 13.91 16.91 17.80 18.37	1168.39	NGVD29
403923082325700	R-18	NEAR LEXINGTON, OHIO	23.0	112OTSH	10/26/1998 12/11/1998 2/16/1999 3/16/1999 4/28/1999 6/15/1999 7/28/1999 9/7/1999	15.61 15.69 13.46 12.46 12.05 14.98 15.82 16.36	1167.10	NGVD29

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Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

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GROUND-WATER LEVELS—CONTINUED

[Aquifer Code (Geologic Unit)are: 111ALVM, Alluvium, Holocene Epoch; 111TRRC, Terrace Deposits, Holocene Epoch; 112LAKE, Lake Deposits, Pleistocene Epoch; 112OTSH, Outwash, Pleistocene Epoch.]

SITE-ID	LOCAL WELL NUMBER	LOCATION	DEPTH OF WELL (FEET)	AQUIFER CODE	WATER- LEVEL DATE	WATER LEVEL (FEET)	ALTITUDE OF LAND SURFACE (FEET)	ALTITUDE DATUM (CODE)
403923082325800	R-12	NEAR LEXINGTON, OHIO	22.0	112OTSH	10/26/1998 12/11/1998 2/16/1999 3/16/1999 4/28/1999 6/15/1999 7/28/1999 9/7/1999	15.81 15.91 13.67 12.69 12.28 15.16 16.05 16.67	1167.02	NGVD29
403923082325900	R-17	NEAR LEXINGTON, OHIO	23.2	112OTSH	10/26/1998 12/11/1998 2/16/1999 3/16/1999 4/28/1999 6/15/1999 7/28/1999 9/7/1999	15.24 15.32 13.08 12.05 11.69 14.61 15.42 16.02	1166.89	NGVD29
403923082330000	R-13	NEAR LEXINGTON, OHIO	30.0	112OTSH	10/26/1998 12/11/1998 2/16/1999 3/16/1999 4/28/1999 6/15/1999 7/28/1999 9/7/1999	11.58 11.69 9.77 9.00 8.70 11.02 11.88 12.46	1162.27	NGVD29
403925082325600	R-14	NEAR LEXINGTON, OHIO	30.0	112OTSH	10/26/1998 12/11/1998 2/16/1999 3/16/1999 4/28/1999 6/15/1999 7/28/1999 9/7/1999	26.51 27.75 16.32 13.92 11.72 19.60 25.01 28.03	1185.01	NGVD29
411135081172600	PO-113	NEAR RAVENNA, OHIO	9.2	112OTSH	10/28/1998 2/18/1999 3/18/1999 4/30/1999	2.00 .93 1.06 .89	1061.12	NGVD29
411136081172400	PO-122	NEAR RAVENNA, OHIO	24.0	112OTSH	10/28/1998 12/17/1998 2/18/1999 3/18/1999 4/30/1999 6/17/1999 7/30/1999 9/9/1999	5.63 6.30 3.18 3.04 3.04 4.80 5.68 6.19	1065.22	NGVD29
411136081172500	PO-119	NEAR RAVENNA, OHIO	11.0	112OTSH	3/18/1999 9/21/1999	2.65 6.84	1064.91	NGVD29
411136081172600	PO-120	NEAR RAVENNA, OHIO	10.4	112OTSH	2/18/1999 3/18/1999	1.84 1.75	1063.89	NGVD29
411137081172100	PO-114	NEAR RAVENNA, OHIO	12.3	112OTSH	10/28/1998 12/17/1998 2/18/1999 3/18/1999 4/30/1999 6/17/1999 7/30/1999 9/9/1999	5.36 5.17 1.41 1.34 1.25 3.53 5.01 5.60	1064.40	NGVD29

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Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

GROUND-WATER LEVELS—CONTINUED

[Aquifer Code (Geologic Unit)are: 111ALVM, Alluvium, Holocene Epoch; 111TRRC, Terrace Deposits, Holocene Epoch; 112LAKE, Lake Deposits, Pleistocene Epoch; 112OTSH, Outwash, Pleistocene Epoch.]

SITE-ID	LOCAL WELL NUMBER	LOCATION	DEPTH OF WELL (FEET)	AQUIFER CODE	WATER- LEVEL DATE	WATER LEVEL (FEET)	ALTITUDE OF LAND SURFACE (FEET)	ALTITUDE DATUM (CODE)
411137081172300	PO-118	NEAR RAVENNA, OHIO	19.0	112OTSH	10/28/1998	7.52	1067.14	NGVD29
					12/17/1998	7.44		
					2/18/1999	5.01		
					3/18/1999	4.90		
					4/30/1999	4.84		
					6/17/1999	6.65		
					7/30/1999	7.51		
					9/9/1999	8.03		
					9/21/1999	8.16		
					10/28/1998	7.23		
					12/17/1998	7.18		
					2/18/1999	4.74		
					3/18/1999	4.61		
					4/30/1999	4.58		
					6/17/1999	6.38		
					7/30/1999	7.24		
					9/9/1999	7.80		
					10/28/1998	4.91		
					12/17/1998	4.84		
					2/18/1999	2.38		
					3/18/1999	2.28		
					4/30/1999	2.28		
					6/17/1999	4.00		
					7/30/1999	4.90		
					9/9/1999	5.46		
					9/21/1999	5.60		
					10/28/1998	4.19		
					12/17/1998	4.17		
					2/18/1999	1.01		
					3/18/1999	.50		
					4/30/1999	.79		
					6/17/1999	2.74		
					7/30/1999	4.02		
					9/9/1999	4.68		
					10/28/1998	8.80		
					12/17/1998	8.86		
					2/18/1999	6.42		
					3/18/1999	6.30		
					4/30/1999	6.23		
					6/17/1999	8.06		
					7/30/1999	8.81		
					9/9/1999	9.48		
					10/28/1998	8.77		
					12/17/1998	8.71		
					2/18/1999	6.26		
					3/18/1999	6.13		
					4/30/1999	6.07		
					6/17/1999	7.92		
					7/30/1999	8.76		
					9/9/1999	9.32		
					10/28/1998	8.63		
					12/17/1998	8.56		
					2/18/1999	6.15		
					3/18/1999	6.03		
					4/30/1999	5.98		
					6/17/1999	7.79		
					7/30/1999	8.64		
					9/9/1999	9.18		
					9/21/1999	9.32		

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GROUND-WATER LEVELS—CONTINUED

[Aquifer Code (Geologic Unit)are: 111ALVM, Alluvium, Holocene Epoch; 111TRRC, Terrace Deposits, Holocene Epoch; 112LAKE, Lake Deposits, Pleistocene Epoch; 112OTSH, Outwash, Pleistocene Epoch.]

SITE-ID	LOCAL WELL NUMBER	LOCATION	DEPTH OF WELL (FEET)	AQUIFER CODE	WATER- LEVEL DATE	WATER LEVEL (FEET)	ALTITUDE OF LAND SURFACE (FEET)	ALTITUDE DATUM (CODE)
413546083480900	LU-28	NEAR HOLLAND, OHIO	28.2	112LAKE	10/29/1998 12/15/1998 2/5/1999 3/12/1999 5/5/1999 6/23/1999 8/4/1999 9/2/1999	7.14 7.46 5.95 5.78 4.97 5.52 6.38 7.04	676.61	NGVD29
413547083481000	LU-26	NEAR HOLLAND, OHIO	29.6	112LAKE	10/29/1998 12/15/1998 2/5/1999 3/12/1999 5/5/1999 6/23/1999 8/4/1999 9/2/1999	6.58 6.92 5.41 5.22 4.39 4.98 5.84 6.50	676.75	NGVD29
413547083481100	LU-27	NEAR HOLLAND, OHIO	28.4	112LAKE	10/29/1998 12/15/1998 2/5/1999 3/12/1999 5/5/1999 6/23/1999 8/4/1999 9/2/1999	6.39 6.72 5.22 5.02 4.22 4.76 5.61 6.29	676.39	NGVD29
413547083481200	LU-25	NEAR HOLLAND, OHIO	29.4	112LAKE	10/29/1998 12/15/1998 2/5/1999 3/12/1999 5/5/1999 6/23/1999 8/4/1999 9/2/1999	6.53 6.86 5.37 5.16 4.35 4.93 5.77 6.47	676.68	NGVD29
413547083481300	LU-22	NEAR HOLLAND, OHIO	28.3	112LAKE	10/29/1998 12/15/1998 2/5/1999 3/12/1999 5/5/1999 6/23/1999 8/4/1999 9/2/1999	6.73 7.17 5.68 5.37 4.55 5.24 6.09 6.78	677.08	NGVD29
413547083481400	LU-23	NEAR HOLLAND, OHIO	29.4	112LAKE	10/29/1998 12/15/1998 2/5/1999 3/12/1999 5/5/1999 6/23/1999 8/4/1999 9/2/1999	6.77 7.08 5.59 5.39 4.59 5.16 6.01 6.68	676.97	NGVD29
413547083481500	LU-24	NEAR HOLLAND, OHIO	18.7	112LAKE	10/29/1998 12/15/1998 2/5/1999 3/12/1999 5/5/1999 6/23/1999 8/4/1999 9/2/1999	7.01 7.33 5.83 5.64 4.84 5.37 6.23 6.92	677.21	NGVD29
413548083480400	LU-17	NEAR HOLLAND, OHIO	29.2	112LAKE	10/29/1998 12/15/1998 2/5/1999 3/12/1999 5/5/1999 6/23/1999 8/4/1999 9/2/1999	7.11 7.39 5.93 5.76 5.00 5.57 6.42 7.06	676.23	NGVD29

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

GROUND-WATER LEVELS—CONTINUED

[Aquifer Code (Geologic Unit)are: 111ALVM, Alluvium, Holocene Epoch; 111TRRC, Terrace Deposits, Holocene Epoch; 112LAKE, Lake Deposits, Pleistocene Epoch; 112OTSH, Outwash, Pleistocene Epoch.]

SITE-ID	LOCAL WELL NUMBER	LOCATION	DEPTH OF WELL (FEET)	AQUIFER CODE	WATER- LEVEL DATE	WATER LEVEL (FEET)	ALTITUDE OF LAND SURFACE (FEET)	ALTITUDE DATUM (CODE)
413549083481500	LU-21	NEAR HOLLAND, OHIO	29.1	112LAKE	10/29/1998 12/15/1998 2/5/1999 3/12/1999 5/5/1999 6/23/1999 8/4/1999 9/2/1999	6.25 6.51 5.09 4.94 4.16 4.75 5.59 6.22	677.07	NGVD29
413551083481200	LU-20	NEAR HOLLAND, OHIO	31.0	112LAKE	12/15/1998 2/5/1999 3/12/1999 5/5/1999 6/23/1999 8/4/1999 9/2/1999	5.69 4.22 4.14 3.44 4.10 4.92 5.53		
413553083480600	LU-18	NEAR HOLLAND, OHIO	29.0	112LAKE	10/29/1998 12/15/1998 2/5/1999 3/12/1999 5/5/1999 6/23/1999 8/4/1999 9/2/1999	5.66 5.76 4.29 4.23 3.71 4.45 5.19 5.78	675.75	NGVD29
413553083480900	LU-19	NEAR HOLLAND, OHIO	31.3	112LAKE	10/29/1998 12/15/1998 2/5/1999 3/12/1999 5/5/1999 6/23/1999 8/4/1999 9/2/1999	5.07 5.17 3.72 3.69 3.11 3.88 4.64 5.19	675.75	NGVD29
415305080414200	AB-139	NEAR KINGSVILLE, OHIO	20.2	111TRRC	10/27/1998 12/16/1998 2/17/1999 3/17/1999 4/29/1999 6/16/1999 7/29/1999 9/8/1999	12.45 12.31 10.50 9.96 10.05 11.27 12.03 11.69	777.51	NGVD29
415305080414300	AB-132	NEAR KINGSVILLE, OHIO	14.5	111TRRC	10/27/1998 12/16/1998 2/17/1999 3/17/1999 4/29/1999 6/16/1999 7/29/1999 9/8/1999	13.36 13.32 11.43 10.84 10.91 12.17 12.92 12.59	778.47	NGVD29
415307080414200	AB-133	NEAR KINGSVILLE, OHIO	20.0	111TRRC	10/27/1998 12/16/1998 2/17/1999 3/17/1999 4/29/1999 6/16/1999 7/29/1999 9/8/1999	9.69 9.61 5.48 5.17 6.35 7.67 8.95 8.57	772.10	NGVD29
415307080414300	AB-129	NEAR KINGSVILLE, OHIO	18.0	111TRRC	10/27/1998 12/16/1998 2/17/1999 3/17/1999 4/29/1999 6/16/1999 7/29/1999 9/8/1999	10.02 9.97 5.98 5.73 6.80 8.16 9.38 9.05	772.50	NGVD29

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

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GROUND-WATER LEVELS—CONTINUED

[Aquifer Code (Geologic Unit)are: 111ALVM, Alluvium, Holocene Epoch; 111TRRC, Terrace Deposits, Holocene Epoch; 112LAKE, Lake Deposits, Pleistocene Epoch; 112OTSH, Outwash, Pleistocene Epoch.]

SITE-ID	LOCAL WELL NUMBER	LOCATION	DEPTH OF WELL (FEET)	AQUIFER CODE	WATER- LEVEL DATE	WATER LEVEL (FEET)	ALTITUDE OF LAND SURFACE (FEET)	ALTITUDE DATUM (CODE)
415307080414400	AB-130	NEAR KINGSVILLE, OHIO	10.0	111TRRC	10/27/1998 12/16/1998 2/17/1999 3/17/1999 4/29/1999 6/16/1999 7/29/1999 9/8/1999	dry dry 5.63 5.57 6.02 7.08 8.45 8.12	770.95	NGVD29
415307080414500	AB-134	NEAR KINGSVILLE, OHIO	17.4	111TRRC	10/27/1998 12/16/1998 2/17/1999 3/17/1999 4/29/1999 6/16/1999 7/29/1999 9/8/1999	9.72 9.68 5.48 5.17 6.35 7.69 8.96 8.64	772.10	NGVD29
415307080414600	AB-140	NEAR KINGSVILLE, OHIO	20.8	111TRRC	12/16/1998 2/17/1999 3/17/1999 4/29/1999 6/16/1999 7/29/1999 9/8/1999	9.79 5.65 5.35 6.50 7.82 9.13 8.80	772.22	NGVD29
415308080414300	AB-135	NEAR KINGSVILLE, OHIO	19.5	111TRRC	10/27/1998 12/16/1998 2/17/1999 3/17/1999 4/29/1999 6/16/1999 7/29/1999 9/8/1999	9.94 9.91 6.00 5.84 6.57 7.82 9.08 8.82	771.36	NGVD29
415308080414400	AB-131	NEAR KINGSVILLE, OHIO	21.0	111TRRC	10/27/1998 12/16/1998 2/17/1999 3/17/1999 4/29/1999 6/16/1999 7/29/1999 9/8/1999	7.81 7.65 4.66 4.72 5.51 6.62 7.09 7.09	765.00	NGVD29
415309080414300	AB-136	NEAR KINGSVILLE, OHIO	20.1	111TRRC	10/27/1998 12/16/1998 2/17/1999 3/17/1999 4/29/1999 6/16/1999 7/29/1999 9/8/1999	8.50 8.40 5.09 5.08 5.80 6.76 7.61 7.56	767.66	NGVD29
415309080414400	AB-138	NEAR KINGSVILLE, OHIO	19.5	111TRRC	10/27/1998 12/16/1998 2/17/1999 3/17/1999 4/29/1999 6/16/1999 7/29/1999 9/8/1999	8.71 8.59 5.30 5.30 6.00 6.95 7.84 7.75	767.87	NGVD29
415310080414400	AB-137	NEAR KINGSVILLE, OHIO	19.5	111TRRC	10/27/1998 12/16/1998 2/17/1999 3/17/1999 4/29/1999 6/16/1999 7/29/1999 9/8/1999	6.58 6.42 3.40 3.43 4.24 5.39 5.87 5.86	763.76	NGVD29

PROJECT DATA

Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

GROUND-WATER RECORDS

415307080414500. LOCAL NUMBER, AB-134

LOCATION.--Latitude 41°53'07", longitude 80°41'45", Ashtabula County, Hydrologic Unit 04120101, along State Route 84 near Kingsville, Ohio.

Owner.--USGS/Ohio State University (OARDC-Grape Research Branch).

AQUIFER.--Sand and Gravel of Pleistocene age.

WELL CHARACTERISTICS.--Observation well drilled by hollow stem auger, diameter 4.0 in., depth 17.4 ft. Cased with Sch 40 PVC to 7.5 ft; .010 in. screen from 7.5 to 17.4 ft.

INSTRUMENTATION.--Data logger--60 minute record. Precipitation data collected with a propane-heated, tipping-bucket rain gauge. Also collected: water level, air temperature, soil temperature, water temperature, and specific conductance. Conductivity/water temperature probe was set at 10.0 feet below land surface; probe removed July, 1992.

DATUM.--Elevation of land-surface datum is 772.10 feet above sea level.

Measuring point: shelter shelf 3.93 ft. above land-surface datum.

REMARKS.--This station is part of an eight-site network to collect data for the Ohio Department of Transportation concerning road salt application and its effect(s) on shallow ground-water quality. Water-quality data for nearby wells is available in preceding tables. Short periods of missing record due to recorder malfunction.

PERIOD OF RECORD.--February 1991 to current year.

PERIOD OF DAILY RECORD.--

WATER LEVEL: February 1991 to current year

SPECIFIC CONDUCTANCE: February 1991 to July 1992

AIR TEMPERATURE: February 1991 to current year

WATER TEMPERATURE: February 1991 to July 1992

SOIL TEMPERATURE: July 1992 to current year

PRECIPITATION: February 1991 to current year

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER LEVEL: Maximum daily low, 10.66 ft. below land-surface datum, October 26, 1995 (this represents an artificial low due to pumping of well AB-133, 4 ft. away); maximum daily high, 2.11 ft. below land-surface datum, March 23, 1993.

SPECIFIC CONDUCTANCE: Maximum, 2560 microsiemens March 27, 1991; minimum, 948 microsiemens August 8, 1991.

AIR TEMPERATURE: Maximum, 34.9°C July 31, 1999; minimum, -29.6°C January 19, 1994.

WATER TEMPERATURE: Maximum, 15.5°C many days in 1991; minimum, 6.6°C March 26-28, April 1-7 1992.

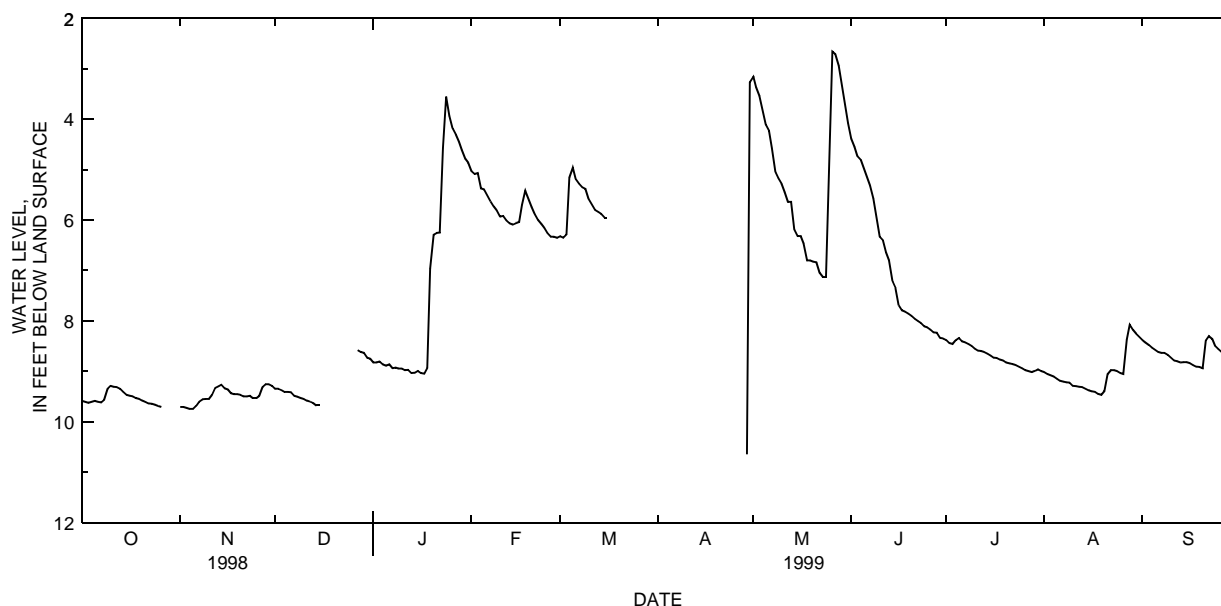
SOIL TEMPERATURE: Maximum, 31.8°C July 11, 1993; minimum, -3.1°C February 5, 1996.

EXTREMES FOR CURRENT YEAR.--

WATER LEVEL: Maximum daily low, 10.65 ft. below land-surface datum, April 29, 1999, (this represents an artificial low due to pumping of well AB-133, 4 ft. away); maximum daily high, 2.57 ft below land-surface datum, May 26, 1999.

AIR TEMPERATURE: Maximum, 34.9°C July 31, 1999; minimum, -22.2°C March 8, 1999.

SOIL TEMPERATURE: Maximum, 24.9°C July 31, 1999; minimum, 0.4°C January 5-8, February 24-March 1, 1999.



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Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

GROUND-WATER RECORDS—CONTINUED

415307080414500. LOCAL NUMBER, AB-134—Continued

TEMPERATURE, AIR, DEGREES CELSIUS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	17.0	8.0	11.1	4.9	11.9	5.2	-7.6	-13.0	5.2	-2.3	1.0	-2.8
2	13.8	6.6	6.7	3.6	17.8	4.5	-2.4	-13.8	7.0	1.8	4.9	-2.8
3	8.9	7.7	4.9	-3	15.8	8.2	1.0	-10.1	7.4	-1.6	4.2	-2.3
4	14.3	7.0	4.2	1.0	15.8	13.1	-10.0	-14.0	5.4	-2.2	-2.3	-8.8
5	17.8	8.3	4.0	1.6	19.2	12.0	-11.5	-16.5	3.3	-6.3	2.1	-8.7
6	24.2	12.1	2.9	.0	19.8	12.0	-3.6	-16.0	5.6	-1.0	-1.4	-9.1
7	20.9	14.1	6.7	2.1	19.0	1.4	-7.5	-13.6	.2	-2.5	-8.0	-11.9
8	14.7	12.1	7.3	3.2	5.4	.9	-5.6	-14.2	.3	-2.4	-4.2	-22.2
9	14.3	7.7	7.9	.1	6.3	-2.4	-4.6	-8.3	10.3	.3	-3.0	-6.1
10	14.4	7.5	16.4	5.1	7.1	-1.8	-8.3	-15.2	6.6	-.9	-3.1	-5.5
11	16.4	4.9	10.8	4.2	5.8	-1.0	-4.8	-14.9	20.6	3.5	-.3	-7.0
12	20.2	4.5	10.7	1.1	9.0	-3.2	-.3	-5.0	19.1	-3.8	-.9	-4.6
13	16.8	8.6	7.8	2.3	6.2	-4.8	-2.8	-13.3	-3.4	-8.1	-1.5	-12.9
14	11.0	8.2	12.9	1.4	4.5	-2.4	-6.6	-13.7	-.1	-6.0	.4	-3.9
15	13.1	2.7	10.9	2.5	10.4	-2.0	-6.6	-11.8	7.9	-2.9	1.8	-3.3
16	20.0	3.1	9.1	1.1	---	---	3.2	-8.1	12.1	2.1	10.3	-3.6
17	23.9	10.9	9.2	2.3	---	---	7.3	-4.9	9.3	-.7	---	---
18	21.1	12.6	8.7	.2	---	---	7.3	-.9	-.6	-3.8	---	---
19	13.6	8.0	14.0	4.8	---	---	.4	-4.1	-2.0	-5.6	---	---
20	11.9	9.0	7.4	1.5	---	---	5.4	-8.1	-3.3	-6.7	---	---
21	10.6	5.0	3.0	.2	---	---	5.3	-2.0	-4.1	-9.0	---	---
22	8.4	4.9	7.9	-2.6	---	---	11.3	-1.3	-6.6	-11.9	---	--
23	15.2	1.8	15.2	6.6	---	---	13.2	5.8	-3.7	-11.9	---	---
24	16.1	4.0	8.4	-2.4	---	---	5.8	.8	.6	-6.0	---	---
25	16.9	5.6	12.3	-1.9	---	---	1.0	-.9	-.2	-3.4	---	---
26	18.0	6.1	8.6	5.1	---	---	.5	-6.0	.2	-9.5	---	---
27	---	---	6.1	1.9	4.7	-7.2	12.4	-5.8	4.3	-5.8	---	---
28	---	---	15.6	2.9	3.5	-6.8	5.9	-.2	6.1	1.0	---	---
29	---	---	18.7	8.2	3.6	-6.1	-.2	-4.8	---	---	---	---
30	---	---	18.5	11.9	-6.1	-10.0	2.2	-4.7	---	---	---	---
31	---	---	---	---	-7.2	-10.1	4.4	-9.0	---	---	---	---
MONTH	24.2	1.8	18.7	-2.6	19.8	-10.1	13.2	-16.5	20.6	-11.9	10.3	-22.2

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PROJECT DATA

Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

GROUND-WATER RECORDS—CONTINUED

415307080414500. LOCAL NUMBER, AB-134—Continued

PRECIPITATION, TOTAL, INCHES, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.03	.00	.00	.00	.16	.01	---	.00	.04	.11	.00	.00
2	.00	.00	.00	.00	.18	.19	---	.00	.33	.00	.00	.00
3	.47	.00	.00	.16	.00	.82	---	.00	.03	.96	.00	.00
4	.00	.00	.12	.00	.06	.00	---	.00	.02	.00	.10	.00
5	.00	.89	.03	.00	.00	.00	---	.00	.00	.00	.40	.00
6	.00	.18	.00	.00	.01	.00	---	.00	.02	.12	.00	.61
7	.68	.00	.03	.00	.09	.00	---	.00	.00	.00	.10	.04
8	.30	.00	.00	.00	.00	.00	---	.24	.00	.00	.01	.00
9	.02	.00	.00	.00	.00	.00	---	.05	.00	.31	.00	.09
10	.00	.66	.00	.00	.00	.00	---	.00	.00	.00	.01	.00
11	.00	.00	.00	.00	.00	.00	---	.00	.00	.00	.31	.00
12	.00	.00	.00	.02	.24	.00	---	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	---	.00	.00	.00	.01	.68
14	.04	.00	.00	.00	.00	.00	---	.00	.02	.00	.06	.01
15	.00	.00	.00	.00	.00	.00	---	.00	.00	.00	.00	.00
16	.00	.02	---	.31	.03	.00	---	.00	.09	.00	.00	.00
17	.00	.15	---	.10	.14	---	---	.00	.00	.00	.00	.00
18	.21	.00	---	.13	.00	---	---	1.31	.00	.03	.00	.00
19	.00	.00	---	.00	.00	---	.03	.00	.00	.02	2.05	.00
20	.00	.18	---	.01	.00	---	.00	.00	.00	.00	.44	1.15
21	.00	.04	---	.00	.00	---	.00	.00	.00	.00	.07	.00
22	.00	.01	---	.23	.00	---	.21	.04	.00	.02	.00	.00
23	.00	.00	---	.01	.00	---	.45	.01	.00	.00	.00	.00
24	.00	.00	---	.00	.00	---	.00	1.63	.32	.02	.01	.26
25	.00	.39	---	.02	.02	---	.00	.73	.18	.00	.14	.00
26	.00	.15	---	.05	.00	---	.00	.00	.00	.00	1.73	.00
27	---	.00	.00	.06	.02	---	.00	.00	.16	.00	.01	.00
28	---	.00	.00	.00	.38	---	.00	.00	.01	1.01	.00	.00
29	---	.00	.06	.00	---	---	.00	.00	.22	.15	.00	2.77
30	---	.16	.00	.00	---	---	.00	.00	.00	.00	.00	.18
31	---	---	.00	.00	---	---	---	.08	---	.04	.00	---
TOTAL	1.75	2.83	0.24	1.10	1.33	1.02	0.69	4.09	1.44	2.79	5.45	5.79
WTR YR 1999	TOTAL 28.52											

DEICING SALT, POUNDS/LANE-MILE, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	600	---	---	---	---	---	---	---	---
2	---	---	---	600	---	---	---	---	---	---	---	---
3	---	---	---	e600	---	---	---	---	---	---	---	---
4	---	---	---	400	---	e400	---	---	---	---	---	---
5	---	---	---	e400	---	e1800	---	---	---	---	---	---
6	---	---	---	e1800	---	e400	---	---	---	---	---	---
7	---	---	---	1200	e400	e600	---	---	---	---	---	---
8	---	---	---	1200	---	---	---	---	---	---	---	---
9	---	---	---	e1800	---	e400	---	---	---	---	---	---
10	---	---	---	e600	---	e400	---	---	---	---	---	---
11	---	---	---	600	---	---	---	---	---	---	---	---
12	---	---	---	600	e600	---	---	---	---	---	---	---
13	---	---	---	1800	e1200	---	---	---	---	---	---	---
14	---	---	---	1200	---	---	---	---	---	---	---	---
15	---	---	---	e1800	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	a400	---	---	---	---	---	---	---	---	---
18	---	---	e400	---	---	---	---	---	---	---	---	---
19	---	---	---	e400	---	---	---	---	---	---	---	---
20	---	---	---	---	e400	---	---	---	---	---	---	---
21	---	---	---	---	e400	e400	---	---	---	---	---	---
22	---	---	e400	---	---	e400	---	---	---	---	---	---
23	---	---	e1800	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	e400	e400	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	e1200	---	---	---	---	---	---	---	---	---
31	---	---	1200	---	---	---	---	---	---	---	---	---
TOTAL	---	---	5400	16000	3400	4800	---	---	---	---	---	---
WTR YR 1999	TOTAL 29600											

^a Estimated.

Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

GROUND-WATER RECORDS—CONTINUED

415307080414600. LOCAL NUMBER, AB-140

LOCATION.--Latitude 41°53'07", longitude 80°41'46", Ashtabula County, Hydrologic Unit 04120101, along State Route 84 near Kingsville, Ohio.

Owner.--USGS/Ohio State University (OARDC-Grape Research Branch).

AQUIFER.--Sand and Gravel of Pleistocene age.

WELL CHARACTERISTICS.--Observation well drilled by hollow stem auger, diameter 4.0 in., depth 20.8 ft. Cased with Sch 40 PVC to 5.8 ft.; .020 in. screen from 5.8 to 20.8 ft.

INSTRUMENTATION.--Data logger--60 minute record. At this well there are 4 conductivity/water temperature probes at increasing depths within the well to better document vertical movement of high conductivity water on an hourly basis. Conductance/water temperature probes are set at 8.3 (level 4), 12.3 (level 3), 16.3 (level 2), and 20.3 (level 1) feet below land surface.

DATUM.--Elevation of land-surface datum is 772.22 feet above sea level.

Measuring point: top of PVC casing 1.70 ft. above land-surface datum.

REMARKS.--This station is part of an eight-site network to collect data for the Ohio Department of Transportation concerning road salt application and its effect(s) on shallow ground-water quality. Water-quality data for nearby wells is available in preceding tables. Short periods of missing record due to recorder malfunction.

PERIOD OF RECORD.--July 1992 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: (FOUR LEVELS): July 1992 to current year

WATER TEMPERATURE: (FOUR LEVELS): July 1992 to current year

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE:

LEVEL 1--Maximum, 4520 microsiemens January 25, 1999; minimum, 837 microsiemens January 30-31, 1995.

LEVEL 2--Maximum, 4550 microsiemens January 23, 1999; minimum, 359 microsiemens January 18, 1996.

LEVEL 3--Maximum, 4220 microsiemens January 22-23, 1999; minimum, 322 microsiemens March 13, 1995.

LEVEL 4--Maximum, 4260 microsiemens March 4, 1999; minimum, 107 microsiemens July 4, 1999.

WATER TEMPERATURE:

LEVEL 1--Maximum, 12.3°C many days in October, November, December, 1993, 1996, 1998; minimum, 7.2°C March 31, April 2-3, 1993.

LEVEL 2--Maximum, 13.0°C many days in October, November, 1992, 1995, 1996; minimum, 6.7°C March 23, 1993, and 1994.

LEVEL 3--Maximum, 14.8°C September 30, 1995, October 1, 2, 1996; minimum, 5.7°C March 22, 1994.

LEVEL 4--Maximum, 17.8°C August 12, 1994, July 27, 1997; minimum, 3.8°C March 23-24, 1993.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE:

LEVEL 1--Maximum, 4520 microsiemens January 25, 1999; minimum, 2830 microsiemens June 16, 1999.

LEVEL 2--Maximum, 4550 microsiemens January 23, 1999; minimum, 1910 microsiemens January 23, 1999.

LEVEL 3--Maximum, 4220 microsiemens January 22-23, 1999; minimum, 1900 microsiemens January 23, 1999.

LEVEL 4--Maximum, 4260 microsiemens March 4, 1999; minimum, 107 microsiemens July 4, 1999.

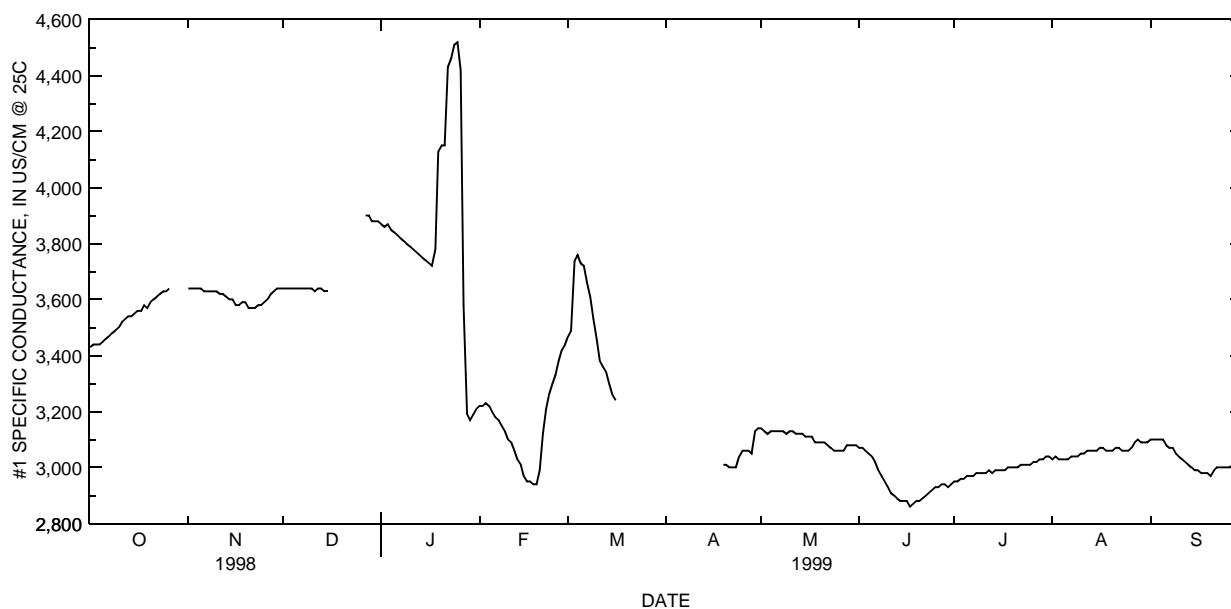
WATER TEMPERATURE:

LEVEL 1--Maximum, 12.3°C November 6-December 29, 1998; minimum, 8.7°C April 19, 29-May 2, 1999.

LEVEL 2--Maximum, 12.8°C November 10-12, 14, 18-19, 25, 1998; minimum, 8.3°C March 5, April 30, 1999.

LEVEL 3--Maximum, 14.0°C September 16-30, 1999; minimum, 7.8°C April 29, 1999.

LEVEL 4--Maximum, 15.5°C September 21-23, 1999; minimum, 6.5°C March 15-16, 1999.



PROJECT DATA

GROUND-WATER RECORDS—CONTINUED

415307080414600. LOCAL NUMBER, AB-140—Continued

LEVEL 1 (22.0' Below Land Surface)
SPECIFIC CONDUCTANCE, MICROSIEMENS/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	3430	3410	3640	3630	3640	3640	3870	3860	3220	3190	3470	3440
2	3440	3420	3640	3630	3640	3640	3860	3850	3220	3210	3490	3470
3	3440	3430	3640	3630	3640	3640	3870	3840	3230	3200	3740	3490
4	3440	3440	3640	3630	3640	3640	3850	3830	3220	3190	3760	3720
5	3450	3440	3640	3630	3640	3640	3840	3820	3200	3170	3730	3710
6	3460	3450	3630	3610	3640	3630	3830	3810	3180	3160	3720	3660
7	3470	3460	3630	3610	3640	3630	3820	3790	3170	3150	3660	3610
8	3480	3470	3630	3610	3640	3640	3810	3780	3150	3130	3610	3530
9	3490	3480	3630	3610	3640	3630	3800	3770	3130	3100	3530	3460
10	3500	3490	3630	3600	3640	3630	3790	3760	3100	3080	3460	3380
11	3520	3490	3620	3600	3630	3630	3780	3750	3090	3060	3380	3330
12	3530	3500	3620	3590	3640	3630	3770	3760	3060	3030	3360	3330
13	3540	3510	3610	3580	3640	3630	3760	3750	3030	3010	3340	3300
14	3540	3520	3600	3580	3630	3630	3750	3730	3010	2970	3300	3260
15	3550	3530	3600	3580	3630	3630	3740	3730	2970	2940	3260	3220
16	3560	3540	3580	3580	---	---	3730	3720	2950	2900	3240	3200
17	3560	3540	3580	3580	---	---	3720	3710	2950	2890	---	---
18	3580	3550	3590	3570	---	---	3780	3700	2940	2920	---	---
19	3570	3560	3590	3570	---	---	4130	3770	2940	2920	---	---
20	3590	3570	3570	3570	---	---	4150	4110	2990	2910	---	---
21	3600	3570	3570	3570	---	---	4150	4140	3120	2990	---	---
22	3610	3580	3570	3570	---	---	4430	4130	3210	3120	---	---
23	3620	3590	3580	3570	---	---	4460	4430	3260	3190	---	---
24	3630	3600	3580	3570	---	---	4510	4450	3300	3260	---	---
25	3630	3610	3590	3580	---	---	4520	4420	3330	3300	---	---
26	3640	3620	3600	3580	---	---	4420	3580	3380	3330	---	---
27	---	---	3620	3600	3900	3880	3580	3190	3420	3380	---	---
28	---	---	3630	3620	3900	3880	3190	3100	3440	3420	---	---
29	---	---	3640	3630	3880	3880	3170	3100	---	---	---	---
30	---	---	3640	3640	3880	3880	3190	3170	---	---	---	---
31	---	---	---	---	3880	3870	3210	3170	---	---	---	---
MONTH	3640	3410	3640	3570	3900	3630	4520	3100	3440	2890	3760	3200

[illegible]

[illegible]

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

GROUND-WATER RECORDS—CONTINUED

415307080414600. LOCAL NUMBER, AB-140—Continued

LEVEL 3 (14.0' Below Land Surface)
SPECIFIC CONDUCTANCE, MICROSIEMENS/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	2880	2850	3190	3150	3250	3230	3440	3430	3240	3200	3740	3690
2	2870	2840	3150	3120	3240	3240	3440	3420	3210	3170	3780	3730
3	2860	2840	3120	3090	3240	3220	3440	3420	3190	3100	4080	3760
4	2880	2840	3090	3060	3230	3210	3430	3410	3110	3040	4100	3760
5	2890	2860	3060	3030	3230	3210	3430	3400	3160	3060	3970	3770
6	2890	2870	3090	3040	3230	3210	3420	3400	3160	3060	4020	3970
7	2890	2870	3110	3080	3220	3200	3410	3400	3070	3050	4020	3980
8	2960	2860	3120	3100	3210	3190	3410	3390	3060	2990	4010	3920
9	3010	2960	3120	3110	3200	3180	3410	3380	3010	2970	3920	3580
10	3030	3010	3120	3110	3190	3180	3400	3380	2970	2840	3590	3510
11	3040	3030	3170	3110	3180	3170	3400	3380	2870	2850	3570	3510
12	3070	3040	3190	3170	3170	3160	3400	3380	2870	2490	3550	3390
13	3090	3060	3190	3190	3170	3150	3400	3370	2580	2490	3410	3190
14	3070	3060	3200	3190	3160	3140	3380	3360	2690	2580	3220	3080
15	3070	3060	3200	3190	3160	3140	3360	3360	2660	2620	3080	2940
16	3070	3050	3210	3190	---	---	3370	3350	2730	2620	2970	2930
17	3090	3070	3210	3160	---	---	3360	3350	2940	2730	---	---
18	3080	3070	3180	3160	---	---	3480	3340	2940	2390	---	---
19	3080	3070	3180	3170	---	---	3860	3450	2900	2630	---	---
20	3080	3070	3170	3170	---	---	3940	3650	3060	2900	---	---
21	3080	3070	3170	3160	---	---	3660	3630	3200	3060	---	---
22	3070	3060	3170	3160	---	---	4220	3380	3310	3200	---	---
23	3060	3050	3190	3160	---	---	4220	1900	3390	3310	---	---
24	3060	3040	3170	3140	---	---	2240	1910	3460	3380	---	---
25	3040	3030	3170	3140	---	---	2310	2240	3530	3460	---	---
26	3030	3020	3240	3170	---	---	2520	2280	3600	3520	---	---
27	---	---	3260	3240	3510	3490	2890	2520	3670	3590	---	---
28	---	---	3270	3260	3490	3470	3080	2890	3700	3660	---	---
29	---	---	3270	3260	3470	3460	3200	3070	---	---	---	---
30	---	---	3260	3250	3460	3450	3200	3160	---	---	---	---
31	---	---	---	---	3450	3440	3240	3180	---	---	---	---
MONTH	3090	2840	3270	3030	3510	3140	4220	1900	3700	2390	4100	2930

[illegible]

415307080414600. LOCAL NUMBER, AB-140—Continued

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	---	---	---	---	---	---	---	---	3410	3250	3890	3850
2	---	---	---	---	---	---	---	---	3390	3070	3940	3890
3	---	---	---	---	---	---	---	---	3310	3100	4250	3920
4	---	---	---	---	---	---	---	---	3270	3220	4260	3850
5	---	---	---	---	---	---	---	---	3340	3240	4130	3900
6	---	---	---	---	---	---	---	---	3340	3070	4140	4100
7	---	---	---	---	---	---	---	---	3250	2970	4140	4100
8	---	---	---	---	---	---	---	---	3180	2970	4100	3860
9	---	---	---	---	---	---	---	---	3170	2830	4010	3470
10	---	---	---	---	---	---	---	---	3040	2760	3590	3420
11	---	---	---	---	---	---	---	---	3040	2550	3420	3220
12	---	---	---	---	---	---	---	---	2600	2490	3220	3000
13	---	---	---	---	---	---	---	---	2540	2440	3000	2820
14	---	---	---	---	---	---	---	---	2490	2410	2830	2580
15	---	---	---	---	---	---	---	---	2560	2410	2580	2390
16	---	---	---	---	---	---	---	---	2540	2420	2520	2390
17	---	---	---	---	---	---	---	---	3030	2260	---	---
18	---	---	---	---	---	---	---	---	2780	2350	---	---
19	---	---	---	---	---	---	3820	3650	3070	2780	---	---
20	---	---	---	---	---	---	3860	3650	3230	3070	---	---
21	---	---	---	---	---	---	3650	2920	3360	3230	---	---
22	---	---	---	---	---	---	3570	2920	3480	3360	---	---
23	---	---	---	---	---	---	3440	1990	3560	3480	---	---
24	---	---	---	---	---	---	2360	2000	3630	3560	---	---
25	---	---	---	---	---	---	2440	2360	3700	3630	---	---
26	---	---	---	---	---	---	2690	2400	3780	3700	---	---
27	---	---	---	---	---	---	3050	2690	3840	3780	---	---
28	---	---	---	---	---	---	3230	3050	3860	3830	---	---
29	---	---	---	---	---	---	3330	3090	---	---	---	---
30	---	---	---	---	---	---	3350	3070	---	---	---	---
31	---	---	---	---	---	---	3410	3330	---	---	---	---
MONTH	---	---	---	---	---	---	3860	1990	3860	2260	4260	2390

[illegible]

Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

GROUND-WATER RECORDS—CONTINUED

415307080414600. LOCAL NUMBER, AB-140—Continued

LEVEL 1 (22.0' Below Land Surface)
TEMPERATURE, WATER, DEGREES CELSIUS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	11.6	11.4	12.1	12.0	12.3	12.3	12.2	12.2	10.3	10.1	9.7	9.7
2	11.6	11.4	12.1	12.0	12.3	12.3	12.2	12.2	10.3	10.1	9.7	9.5
3	11.6	11.6	12.1	12.0	12.3	12.3	12.2	12.0	10.3	9.9	9.7	9.7
4	11.6	11.6	12.0	12.0	12.3	12.3	12.2	12.0	10.1	9.9	10.1	9.4
5	11.6	11.6	12.0	12.0	12.3	12.3	12.2	12.0	10.1	9.8	10.3	9.3
6	11.7	11.6	12.3	12.0	12.3	12.3	12.2	12.0	10.1	9.9	9.5	9.2
7	11.6	11.6	12.3	12.0	12.3	12.3	12.2	12.0	10.1	9.9	9.3	9.2
8	11.6	11.6	12.3	12.0	12.3	12.3	12.2	12.0	10.3	10.1	9.4	9.2
9	11.6	11.6	12.3	12.0	12.3	12.3	12.2	12.0	10.3	10.1	9.9	9.4
10	11.6	11.6	12.3	12.0	12.3	12.2	12.2	12.0	10.3	10.1	10.1	9.9
11	11.8	11.6	12.3	12.0	12.3	12.3	12.2	12.0	10.4	10.1	10.1	10.1
12	11.8	11.6	12.3	12.0	12.3	12.2	12.0	12.0	10.5	10.3	10.1	9.6
13	11.9	11.6	12.3	12.0	12.3	12.2	12.0	12.0	10.5	10.5	9.9	9.6
14	11.8	11.6	12.3	12.1	12.3	12.2	12.2	12.0	10.5	10.3	10.1	9.9
15	11.9	11.6	12.3	12.0	12.3	12.2	12.0	12.0	10.3	10.3	10.3	10.1
16	11.9	11.6	12.3	12.3	---	---	12.0	12.0	10.3	10.1	10.3	9.9
17	11.9	11.6	12.3	12.3	---	---	12.1	12.0	10.3	10.1	---	---
18	11.9	11.6	12.3	12.1	---	---	12.0	11.8	10.7	10.3	---	---
19	11.9	11.8	12.3	12.1	---	---	12.0	11.8	10.5	9.7	---	---
20	11.8	11.8	12.3	12.3	---	---	12.0	11.8	9.9	9.6	---	---
21	12.1	11.8	12.3	12.3	---	---	11.8	11.8	9.9	9.6	---	---
22	12.1	11.8	12.3	12.2	---	---	12.0	11.6	9.9	9.6	---	---
23	12.0	11.8	12.3	12.3	---	---	11.8	11.6	9.8	9.6	---	---
24	12.1	11.8	12.3	12.3	---	---	11.8	10.9	9.7	9.6	---	---
25	12.1	11.8	12.3	12.2	---	---	10.9	9.9	9.7	9.6	---	---
26	12.1	11.8	12.3	12.3	---	---	10.1	9.7	9.7	9.6	---	---
27	---	---	12.3	12.3	12.3	12.0	10.1	9.9	9.7	9.6	---	---
28	---	---	12.3	12.3	12.3	12.0	10.3	10.1	9.7	9.7	---	---
29	---	---	12.3	12.3	12.3	12.2	10.3	10.1	---	---	---	---
30	---	---	12.3	12.3	12.2	12.2	10.3	10.1	---	---	---	---
31	---	---	---	---	12.2	12.2	10.3	10.0	---	---	---	---
MONTH	12.1	11.4	12.3	12.0	12.3	12.0	12.2	9.7	10.7	9.6	10.3	9.2

[illegible]

[illegible]

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

GROUND-WATER RECORDS—CONTINUED

415307080414600. LOCAL NUMBER, AB-140—Continued

LEVEL 3 (14.0' Below Land Surface)
TEMPERATURE, WATER, DEGREES CELSIUS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	13.7	13.5	13.7	13.5	13.0	13.0	12.2	12.2	9.7	9.5	9.5	9.3
2	13.7	13.4	13.7	13.4	13.0	13.0	12.2	12.2	9.9	9.5	9.5	9.3
3	13.7	13.5	13.7	13.4	13.0	13.0	12.3	12.0	9.9	9.4	9.5	9.3
4	13.7	13.5	13.7	13.4	13.0	12.8	12.2	12.0	9.5	9.3	9.5	8.1
5	13.7	13.5	13.7	13.7	13.0	12.8	12.2	12.0	9.5	9.4	8.9	8.3
6	13.8	13.5	13.7	13.4	13.0	12.8	12.2	12.0	9.7	9.5	8.9	8.6
7	13.7	13.5	13.7	13.4	12.8	12.7	12.0	12.0	9.7	9.4	8.9	8.6
8	13.7	13.5	13.7	13.4	13.0	12.7	12.0	11.8	9.9	9.4	9.0	8.7
9	13.7	13.5	13.5	13.4	12.7	12.7	12.0	11.8	9.9	9.5	9.4	8.1
10	13.7	13.7	13.5	13.4	12.7	12.7	12.0	11.8	9.9	9.7	9.1	8.1
11	13.7	13.7	13.5	13.4	12.7	12.7	12.0	11.8	9.9	9.7	9.3	8.8
12	13.8	13.5	13.5	13.4	12.8	12.7	11.8	11.6	10.1	9.1	9.5	8.9
13	13.7	13.5	13.4	13.4	12.7	12.7	11.8	11.6	9.4	9.2	9.0	8.5
14	13.7	13.7	13.5	13.4	12.7	12.5	11.8	11.5	9.9	9.4	8.9	8.5
15	13.7	13.7	13.5	13.4	12.7	12.5	11.6	11.5	9.9	9.6	8.7	8.5
16	13.9	13.7	13.4	13.2	---	---	11.6	11.4	9.9	9.5	8.7	8.3
17	13.8	13.5	13.5	13.2	---	---	11.6	11.4	10.1	9.5	---	---
18	13.7	13.7	13.4	13.2	---	---	11.4	10.9	10.1	8.1	---	---
19	13.7	13.7	13.4	13.2	---	---	11.4	10.7	9.3	8.9	---	---
20	13.7	13.7	13.2	13.2	---	---	11.2	10.7	9.5	9.2	---	---
21	13.7	13.7	13.2	13.2	---	---	11.4	10.7	9.5	9.2	---	---
22	13.7	13.7	13.2	13.2	---	---	11.4	11.1	9.4	9.2	---	---
23	13.7	13.7	13.2	13.0	---	---	11.2	8.7	9.5	9.2	---	---
24	13.7	13.5	13.2	13.0	---	---	8.9	8.7	9.5	9.3	---	---
25	13.7	13.7	13.2	13.0	---	---	8.9	8.7	9.5	9.3	---	---
26	13.7	13.7	13.0	13.0	---	---	9.4	8.7	9.5	9.3	---	---
27	---	---	13.0	13.0	12.3	12.2	9.5	9.2	9.5	9.2	---	---
28	---	---	13.0	13.0	12.3	12.2	9.7	9.5	9.5	9.3	---	---
29	---	---	13.0	13.0	12.3	12.2	9.9	9.4	---	---	---	---
30	---	---	13.0	13.0	12.2	12.2	9.9	9.4	---	---	---	---
31	---	---	---	---	12.2	12.2	9.7	9.4	---	---	---	---
MONTH	13.9	13.4	13.7	13.0	13.0	12.2	12.3	8.7	10.1	8.1	9.5	8.1

[illegible]

415307080414600. LOCAL NUMBER, AB-140—Continued

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	---	---	---	---	---	---	---	---	8.9	7.7	8.9	8.9
2	---	---	---	---	---	---	---	---	8.9	7.6	8.9	8.7
3	---	---	---	---	---	---	---	---	8.9	7.9	8.9	8.3
4	---	---	---	---	---	---	---	---	8.7	8.3	8.7	7.0
5	---	---	---	---	---	---	---	---	8.7	8.3	7.9	7.7
6	---	---	---	---	---	---	---	---	8.9	7.7	7.9	7.7
7	---	---	---	---	---	---	---	---	8.9	7.9	7.9	7.9
8	---	---	---	---	---	---	---	---	8.9	7.9	8.1	7.0
9	---	---	---	---	---	---	---	---	8.9	7.7	7.7	6.6
10	---	---	---	---	---	---	---	---	9.1	7.7	7.7	6.8
11	---	---	---	---	---	---	---	---	8.3	7.6	7.4	6.8
12	---	---	---	---	---	---	---	---	8.0	7.7	6.8	6.6
13	---	---	---	---	---	---	---	---	7.9	7.7	6.7	6.6
14	---	---	---	---	---	---	---	---	7.9	7.7	6.7	6.6
15	---	---	---	---	---	---	---	---	8.1	7.7	6.7	6.5
16	---	---	---	---	---	---	---	---	8.1	7.7	6.8	6.5
17	---	---	---	---	---	---	---	---	8.1	7.0	---	---
18	---	---	---	---	---	---	10.7	9.9	8.3	7.2	---	---
19	---	---	---	---	---	---	10.5	9.9	8.3	8.1	---	---
20	---	---	---	---	---	---	10.3	9.7	8.5	8.3	---	---
21	---	---	---	---	---	---	9.7	9.1	8.6	8.4	---	---
22	---	---	---	---	---	---	9.7	8.9	8.7	8.6	---	---
23	---	---	---	---	---	---	9.1	6.7	8.7	8.6	---	---
24	---	---	---	---	---	---	7.7	7.5	8.7	8.6	---	---
25	---	---	---	---	---	---	7.9	7.3	8.7	8.7	---	---
26	---	---	---	---	---	---	8.5	7.5	8.7	8.6	---	---
27	---	---	---	---	---	---	8.7	8.3	8.9	8.6	---	---
28	---	---	---	---	---	---	8.9	8.3	8.9	8.7	---	---
29	---	---	---	---	---	---	8.9	7.7	---	---	---	---
30	---	---	---	---	---	---	8.9	7.7	---	---	---	---
31	---	---	---	---	---	---	8.9	8.3	---	---	---	---
MONTH	---	---	---	---	---	---	10.7	6.7	9.1	7.0	8.9	6.5

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PROJECT DATA

Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

GROUND-WATER RECORDS—CONTINUED

413551083481200. LOCAL NUMBER, LU-20

LOCATION.--Latitude 41°35'51", longitude 83°48'12", Lucas County, Hydrologic Unit 04100009, along State Route 2 near Holland, Ohio.

Owner.--USGS/Toledo Express Airport.

AQUIFER.--Sand of Quaternary age.

WELL CHARACTERISTICS.--Observation well drilled by hollow stem auger, diameter 4.0 in., depth 31 ft. Cased with Sch 40 PVC to 6.0 ft.; .010 in. screen from 6.0 to 31 ft.

INSTRUMENTATION.--Data logger--60 minute record. Precipitation data collected with a propane-heated, tipping-bucket rain gauge. Also collected: air temperature, soil temperature, water temperature, and specific conductance. At this well there are 4 conductivity/water temperature probes at various depths within the well to better document vertical movement of high conductivity water on an hourly basis. Conductivity/water temperature probes set at 8.6 (level 4), 13.6 (level 3), 21.6 (level 2), and 26.6 (level 1) feet below land surface.

DATUM.--Elevation of land-surface datum is 676.13 feet above sea level.

Measuring point: shelter shelf 2.38 ft. above land-surface datum.

REMARKS.--This station is part of an eight-site network to collect data for the Ohio Department of Transportation concerning road salt application and its effect(s) on shallow ground-water quality. Water-quality data for nearby wells is available in preceding tables.

PERIOD OF RECORD.--February 1991 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE (FOUR LEVELS): February 1991 to current year.

AIR TEMPERATURE: February 1991 to current year.

WATER TEMPERATURE (FOUR LEVELS): February 1991 to current year.

SOIL TEMPERATURE: February 1991 to current year.

PRECIPITATION: February 1991 to current year.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE:

LEVEL 1- Maximum, 1260 microsiemens August 13, 1991; minimum, 247 microsiemens April 4-6, 1998.

LEVEL 2- Maximum, 953 microsiemens July 1, 1991; minimum, 190 microsiemens February 15, 1999.

LEVEL 3- Maximum, 785 microsiemens April 25, 1991; minimum, 99 microsiemens June 9-10, 1993, May 22, 1999.

LEVEL 4- Maximum, 634 microsiemens January 29, 1994; minimum, 70 microsiemens July 14-17, 19, 1996.

AIR TEMPERATURE: Maximum, 38.2°C July 14, 1995; minimum, -28.1°C January 19, 1994.

WATER TEMPERATURE:

LEVEL 1- Maximum, 12.7°C several days in November, December 1991, 1998; minimum, 7.8°C August 5-6, 1997.

LEVEL 2- Maximum, 13.6°C several days in November, 1991; minimum, 7.8°C August 5, 1997.

LEVEL 3- Maximum, 15.2°C many days in October 1991, 1998, September 22-28, 1999; minimum, 7.6°C March 26, 28, 1993.

LEVEL 4- Maximum, 17.5°C many days in 1991; minimum, 6.0°C March 24-26, 1993.

SOIL TEMPERATURE: Maximum, 32.0°C July 30, 1999; minimum, -4.7°C February 6, 1994.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE:

LEVEL 1- Maximum, 799 microsiemens January 10-11, 13-17, 1999; minimum, 258 microsiemens March 27-28, 1999.

LEVEL 2- Maximum, 701 microsiemens January 22, 1999; minimum, 190 microsiemens February 15, 1999.

LEVEL 3- Maximum, 450 microsiemens January 22, 1999; minimum, 99 microsiemens May 22, 1999.

LEVEL 4- Maximum, 421 microsiemens January 24, 1999; minimum, 83 microsiemens June 16, 1999.

AIR TEMPERATURE: Maximum, 35.4°C July 5, 1999; minimum, -22.1°C January 5, 1999.

WATER TEMPERATURE:

LEVEL 1- Maximum, 12.7°C December 2, 4-7, 1998; minimum, 10.6°C April 24-28, 1999.

LEVEL 2- Maximum, 12.7°C November 23, 28-29, December 2, 4-6, 1998; minimum, 9.2°C April 26-27, 1999.

LEVEL 3- Maximum, 15.2°C several days October, 1998, September 22-28, 1999; minimum, 9.2°C March 28-April 2, 1999.

LEVEL 4- Maximum, 17.4°C August 23, 25-September 25, 1999; minimum, 8.2°C March 20, 22-23, 28, 1999.

SOIL TEMPERATURE: Maximum, 32.0°C July 30, 1999; minimum, -0.4°C January 2, 1999.

[illegible]

PROJECT DATA

GROUND-WATER RECORDS—CONTINUED

413551083481200. LOCAL NUMBER, LU-20—Continued

LEVEL 2 (21.6' Below Land Surface)
SPECIFIC CONDUCTANCE, MICROSIEMENS/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	508	504	613	602	648	646	658	656	268	255	235	205
2	510	506	626	613	649	645	656	654	255	246	218	216
3	511	508	633	626	649	645	655	654	246	238	219	216
4	514	511	639	630	650	645	654	652	238	231	222	219
5	519	514	644	636	649	645	653	651	231	223	225	221
6	524	519	648	641	649	645	655	651	224	218	228	223
7	535	524	649	644	649	644	655	650	218	213	230	225
8	542	535	649	645	645	644	654	650	213	209	234	230
9	549	542	648	643	647	643	654	654	210	207	243	233
10	556	547	647	643	646	642	654	650	207	202	360	239
11	562	554	649	645	645	642	655	651	202	199	313	302
12	566	559	653	648	645	641	656	655	199	195	305	296
13	565	563	653	650	645	641	655	654	195	194	299	293
14	566	565	654	653	644	641	654	654	194	192	296	290
15	569	566	653	652	645	641	658	654	193	190	293	289
16	567	564	653	651	646	641	661	655	192	191	291	287
17	568	567	652	651	648	643	664	658	195	191	296	288
18	569	568	651	649	650	644	673	664	196	193	296	283
19	570	566	651	649	650	646	681	673	247	195	285	272
20	571	567	650	649	650	646	691	681	222	215	272	263
21	570	568	650	649	652	650	698	691	215	211	265	257
22	573	570	651	650	652	648	701	689	211	208	260	253
23	576	571	654	650	654	648	689	674	209	205	256	251
24	579	575	651	648	656	650	686	444	206	203	253	249
25	586	579	649	648	658	656	444	409	204	202	252	247
26	588	584	649	648	659	658	410	379	203	201	251	247
27	592	588	649	647	660	659	379	354	203	201	251	247
28	595	592	651	647	660	658	354	329	205	202	249	246
29	596	574	650	647	660	659	329	303	---	---	248	245
30	594	579	651	647	660	658	303	284	---	---	250	246
31	602	594	---	---	658	657	284	268	---	---	250	246
MONTH	602	504	654	602	660	641	701	268	268	190	360	205

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PROJECT DATA

Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

GROUND-WATER RECORDS—CONTINUED

413551083481200. LOCAL NUMBER, LU-20—Continued

LEVEL 4 (8.6' Below Land Surface)
SPECIFIC CONDUCTANCE, MICROSIEMENS/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	93	92	99	98	122	121	145	143	250	238	203	193
2	93	92	100	99	123	121	146	145	238	228	203	201
3	93	93	101	100	124	122	146	145	229	222	205	200
4	93	93	102	101	124	124	150	145	222	215	206	204
5	93	93	103	101	125	124	151	149	216	209	208	205
6	93	93	103	103	126	125	154	150	210	204	210	207
7	94	93	103	103	125	124	154	153	205	199	214	210
8	94	93	103	102	124	124	155	153	200	196	217	213
9	93	93	103	102	124	123	155	155	197	194	222	216
10	94	93	104	103	124	123	159	155	194	190	281	222
11	94	93	109	104	124	123	160	159	190	184	286	281
12	94	93	113	109	124	122	160	159	185	182	283	278
13	94	93	116	113	123	122	160	159	183	181	279	275
14	93	92	120	116	123	122	163	159	181	179	276	272
15	92	92	119	116	123	121	167	163	179	177	273	270
16	93	92	116	114	121	120	167	166	179	177	272	269
17	93	92	114	112	121	120	170	167	181	178	276	270
18	93	92	112	111	123	121	179	170	183	180	277	264
19	94	93	111	109	123	122	183	179	201	182	264	253
20	94	93	110	109	129	123	192	182	203	200	254	246
21	94	94	110	109	128	127	194	192	201	197	246	241
22	95	94	113	110	133	127	217	194	197	195	242	238
23	94	94	115	112	133	132	414	217	195	192	239	235
24	95	94	115	114	134	133	421	406	193	190	237	234
25	95	92	115	114	138	134	407	376	191	189	235	233
26	93	92	117	115	139	137	376	348	189	188	234	232
27	93	92	118	117	142	139	348	325	190	188	233	231
28	93	92	119	118	143	141	326	301	193	189	232	230
29	98	93	120	119	144	143	302	280	---	---	231	230
30	98	98	121	120	144	142	280	262	---	---	232	230
31	98	98	---	---	144	143	263	249	---	---	232	231
MONTH	98	92	121	98	144	120	421	143	250	177	286	193

[illegible]

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413551083481200. LOCAL NUMBER, LU-20—Continued

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	12.0	11.7	12.4	12.4	12.6	12.6	12.4	12.3	10.8	10.8	10.0	9.6
2	12.0	11.7	12.4	12.4	12.7	12.4	12.4	12.3	10.8	10.8	10.0	9.7
3	11.9	11.9	12.6	12.4	12.6	12.4	12.4	12.3	10.8	10.8	9.8	9.8
4	12.0	11.9	12.6	12.4	12.7	12.4	12.3	12.3	10.8	10.6	9.8	9.6
5	12.0	11.9	12.6	12.4	12.7	12.4	12.3	12.3	10.8	10.6	9.8	9.6
6	12.0	11.9	12.6	12.4	12.7	12.4	12.4	12.1	10.8	10.6	9.8	9.5
7	12.0	11.9	12.6	12.4	12.6	12.4	12.3	12.1	10.6	10.6	9.7	9.5
8	12.0	11.9	12.6	12.4	12.6	12.6	12.3	12.1	10.6	10.4	9.6	9.5
9	12.2	11.9	12.6	12.4	12.6	12.4	12.1	12.1	10.6	10.4	9.6	9.5
10	12.2	11.9	12.6	12.4	12.6	12.4	12.3	12.1	10.6	10.4	10.1	9.5
11	12.2	11.9	12.6	12.4	12.6	12.4	12.3	12.1	10.4	10.2	10.1	9.9
12	12.2	12.0	12.6	12.4	12.6	12.4	12.1	12.1	10.4	10.2	10.0	9.8
13	12.2	12.2	12.6	12.6	12.6	12.4	12.1	12.1	10.4	10.1	10.0	9.8
14	12.2	12.1	12.6	12.6	12.6	12.4	12.1	12.1	10.2	10.1	10.0	9.7
15	12.2	12.0	12.6	12.6	12.6	12.4	12.1	11.9	10.2	10.2	10.0	9.8
16	12.4	12.2	12.6	12.6	12.6	12.4	12.1	11.9	10.2	10.2	10.0	9.6
17	12.2	12.2	12.6	12.6	12.6	12.4	12.1	11.9	10.2	10.2	10.0	9.6
18	12.2	12.2	12.6	12.6	12.6	12.4	11.9	11.9	10.2	9.9	10.0	9.6
19	12.4	12.2	12.6	12.6	12.6	12.4	11.9	11.9	10.2	9.9	9.8	9.5
20	12.4	12.2	12.6	12.6	12.6	12.4	11.9	11.9	10.2	10.1	9.8	9.5
21	12.4	12.4	12.6	12.6	12.4	12.4	11.9	11.9	10.2	10.1	9.8	9.5
22	12.4	12.2	12.6	12.6	12.6	12.3	11.9	11.7	10.2	10.1	9.8	9.5
23	12.4	12.2	12.7	12.4	12.6	12.3	11.9	11.7	10.2	10.1	9.7	9.4
24	12.4	12.4	12.6	12.6	12.6	12.3	11.7	10.8	10.2	10.0	9.6	9.4
25	12.4	12.2	12.6	12.6	12.4	12.3	11.0	10.8	10.2	10.0	9.6	9.4
26	12.4	12.4	12.6	12.6	12.4	12.3	11.0	10.8	10.0	9.9	9.6	9.3
27	12.4	12.4	12.6	12.6	12.4	12.3	11.0	10.8	10.0	9.8	9.7	9.3
28	12.4	12.4	12.7	12.4	12.4	12.4	10.8	10.8	10.0	9.6	9.6	9.3
29	12.4	12.4	12.7	12.4	12.4	12.4	11.0	10.8	---	---	9.6	9.4
30	12.4	12.4	12.6	12.4	12.4	12.3	10.8	10.8	---	---	9.6	9.3
31	12.4	12.4	---	---	12.4	12.3	10.8	10.8	---	---	9.6	9.4
MONTH	12.4	11.7	12.7	12.4	12.7	12.3	12.4	10.8	10.8	9.6	10.1	9.3

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PROJECT DATA

GROUND-WATER RECORDS—CONTINUED

413551083481200. LOCAL NUMBER, LU-20—Continued

LEVEL 3 (13.6' Below Land Surface)
TEMPERATURE, WATER, DEGREES CELSIUS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	15.1	14.9	15.1	15.1	14.1	13.8	12.4	12.1	10.8	10.8	10.0	9.8
2	15.1	15.1	15.1	14.9	13.9	13.8	12.3	12.1	10.8	10.6	10.0	9.8
3	15.1	15.1	15.1	14.9	13.9	13.8	12.1	11.9	10.8	10.6	10.0	9.8
4	15.1	15.1	15.1	14.8	13.9	13.9	12.1	11.9	10.8	10.6	10.0	9.7
5	15.1	15.1	15.1	14.8	13.9	13.6	12.1	11.8	10.8	10.6	9.9	9.5
6	15.2	15.1	15.1	14.8	13.6	13.6	12.1	11.9	10.6	10.6	9.9	9.5
7	15.1	15.1	15.1	14.8	13.6	13.6	11.9	11.7	10.8	10.6	9.9	9.5
8	15.1	15.1	14.8	14.8	13.6	13.6	11.9	11.6	10.6	10.4	9.7	9.5
9	15.1	15.1	14.9	14.8	13.6	13.3	11.9	11.6	10.6	10.4	9.8	9.5
10	15.2	15.1	14.9	14.8	13.6	13.6	11.7	11.6	10.6	10.4	9.9	9.5
11	15.2	15.1	14.9	14.8	13.6	13.3	11.7	11.6	10.6	10.2	9.9	9.6
12	15.2	15.1	14.9	14.8	13.6	13.3	11.7	11.7	10.4	10.2	9.9	9.5
13	15.1	15.1	14.9	14.8	13.6	13.3	11.7	11.6	10.4	10.2	9.9	9.5
14	15.1	15.1	14.9	14.8	13.4	13.3	11.6	11.4	10.4	10.1	9.8	9.5
15	15.2	15.1	14.9	14.8	13.4	13.1	11.7	11.4	10.4	10.2	9.8	9.5
16	15.2	15.1	14.9	14.8	13.6	13.3	11.5	11.2	10.2	10.2	9.8	9.5
17	15.2	15.1	14.9	14.8	13.3	13.1	11.7	11.3	10.2	10.2	9.6	9.4
18	15.1	15.1	14.8	14.6	13.3	13.1	11.5	11.2	10.2	10.2	9.6	9.4
19	15.1	15.1	14.6	14.6	13.1	13.1	11.3	11.0	10.2	10.2	9.6	9.3
20	15.1	15.1	14.6	14.6	13.1	12.6	11.2	10.8	10.2	10.1	9.6	9.3
21	15.1	15.1	14.6	14.6	12.9	12.6	11.0	10.8	10.2	10.1	9.6	9.3
22	15.1	15.1	14.6	14.6	12.8	12.6	11.9	10.8	10.2	10.1	9.6	9.3
23	15.1	15.1	14.6	14.3	12.6	12.6	11.7	11.0	10.2	10.0	9.5	9.3
24	15.1	15.1	14.6	14.3	12.6	12.6	11.3	11.0	10.2	10.0	9.6	9.3
25	15.1	15.1	14.3	14.3	12.6	12.6	11.2	11.0	10.2	10.0	9.4	9.3
26	15.2	15.1	14.4	14.3	12.6	12.6	11.0	10.8	10.2	9.9	9.6	9.3
27	15.1	15.1	14.4	14.1	12.6	12.4	11.0	10.8	10.0	9.9	9.4	9.3
28	15.1	15.1	14.3	14.1	12.6	12.4	11.0	10.8	10.0	9.8	9.5	9.2
29	15.1	15.1	14.1	13.9	12.4	12.4	11.0	10.8	---	---	9.4	9.2
30	15.1	15.1	14.1	13.8	12.4	12.3	10.8	10.8	---	---	9.4	9.2
31	15.1	15.1	---	---	12.4	12.3	10.8	10.8	---	---	9.4	9.2
MONTH	15.2	14.9	15.1	13.8	14.1	12.3	12.4	10.8	10.8	9.8	10.0	9.2

[illegible]

413551083481200. LOCAL NUMBER, LU-20—Continued

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	17.3	17.0	15.7	15.4	13.4	13.3	11.9	11.6	9.8	9.5	9.0	8.9
2	17.3	17.0	15.4	15.4	13.4	13.1	11.7	11.6	9.6	9.6	9.0	8.8
3	17.0	17.0	15.4	15.1	13.4	13.1	11.7	11.6	9.6	9.5	9.0	8.8
4	17.1	17.0	15.4	15.1	13.1	13.1	11.6	11.4	9.6	9.4	9.0	8.6
5	17.1	17.0	15.3	15.1	13.1	13.1	11.6	11.4	9.6	9.4	8.8	8.6
6	17.1	17.0	15.1	15.1	13.1	12.9	11.4	11.2	9.6	9.4	8.8	8.6
7	17.1	17.0	15.1	15.1	13.1	13.1	11.4	11.2	9.6	9.3	8.9	8.5
8	17.1	17.0	15.1	14.8	13.1	13.1	11.4	11.2	9.6	9.3	8.8	8.5
9	17.1	17.0	14.9	14.8	13.1	13.1	11.2	11.2	9.6	9.4	8.8	8.5
10	17.1	17.0	14.9	14.8	13.1	12.9	11.2	11.2	9.4	9.3	8.8	8.5
11	17.1	16.8	14.9	14.6	13.1	12.8	11.2	11.0	9.4	9.2	8.8	8.5
12	17.0	16.8	14.8	14.6	13.1	12.8	11.0	11.0	9.4	9.3	8.8	8.5
13	17.0	16.8	14.6	14.6	13.1	12.8	11.0	11.0	9.4	9.3	8.7	8.5
14	16.8	16.7	14.6	14.3	12.9	12.8	11.0	10.8	9.4	9.3	8.6	8.4
15	16.8	16.7	14.6	14.3	12.9	12.6	11.0	10.8	9.4	9.2	8.7	8.4
16	16.8	16.5	14.3	14.3	12.9	12.6	10.8	10.8	9.4	9.1	8.6	8.4
17	16.8	16.5	14.3	14.3	12.6	12.6	10.8	10.8	9.4	9.1	8.6	8.4
18	16.8	16.5	14.3	14.1	12.6	12.6	10.8	10.8	9.4	9.1	8.4	8.4
19	16.5	16.5	14.1	14.1	12.6	12.6	10.8	10.6	9.4	9.1	8.6	8.4
20	16.5	16.5	14.1	13.8	12.6	12.6	10.6	10.4	9.4	9.1	8.4	8.2
21	16.5	16.5	14.1	13.8	12.6	12.4	10.6	10.4	9.3	9.1	8.4	8.4
22	16.5	16.2	14.0	13.8	12.6	12.3	10.4	10.2	9.3	9.1	8.4	8.2
23	16.5	16.2	13.9	13.8	12.6	12.3	10.8	10.2	9.2	9.1	8.4	8.2
24	16.2	15.9	13.9	13.8	12.4	12.3	10.2	10.0	9.2	9.0	8.4	8.4
25	16.2	15.9	13.8	13.8	12.4	12.1	10.2	9.8	9.2	8.9	8.4	8.4
26	16.0	15.9	13.8	13.6	12.4	12.1	10.0	9.8	9.2	8.9	8.4	8.4
27	15.9	15.7	13.6	13.6	12.1	11.9	10.0	9.6	9.2	8.9	8.4	8.3
28	15.9	15.6	13.6	13.4	12.1	11.9	10.0	9.6	9.0	8.9	8.4	8.2
29	15.7	15.6	13.6	13.4	11.9	11.9	9.8	9.6	---	---	8.4	8.4
30	15.6	15.6	13.4	13.4	11.9	11.9	9.8	9.5	---	---	8.4	8.4
31	15.7	15.6	---	---	11.9	11.7	9.8	9.5	---	---	8.4	8.3
MONTH	17.3	15.6	15.7	13.4	13.4	11.7	11.9	9.5	9.8	8.9	9.0	8.2

[illegible]

PROJECT DATA

GROUND-WATER RECORDS—CONTINUED

413551083481200. LOCAL NUMBER, LU-20—Continued

TEMPERATURE, SOIL, DEGREES CELSIUS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	21.6	18.2	13.4	12.6	11.6	8.8	.1	-.2	3.3	2.0	4.0	2.7
2	19.3	15.9	13.1	11.4	10.4	7.9	-.1	-.4	4.7	3.3	3.3	1.9
3	17.8	15.7	11.7	9.4	11.9	9.9	.1	-.1	3.9	2.6	3.2	2.5
4	15.7	14.9	10.5	7.7	13.1	11.9	.1	.0	3.8	2.9	3.9	2.0
5	18.0	14.3	8.8	7.2	13.2	12.1	.0	-.1	2.9	1.9	4.3	2.3
6	20.4	16.6	8.1	6.9	14.3	12.6	.0	-.1	5.4	2.1	3.6	2.5
7	20.1	16.9	9.0	7.0	14.3	10.0	.1	.0	4.3	2.7	2.5	2.0
8	16.9	15.6	8.0	7.1	10.0	7.7	.1	.1	3.5	2.4	2.0	1.5
9	17.8	14.9	8.8	7.3	8.0	5.9	.1	.1	5.8	2.7	1.5	1.5
10	17.6	13.4	10.8	8.4	7.0	5.5	.1	.1	5.4	2.9	1.5	1.4
11	18.1	13.6	9.5	7.1	6.4	4.6	.1	.0	8.7	3.9	1.5	1.4
12	18.0	14.0	8.0	5.8	5.7	4.2	.1	.0	8.7	4.3	1.4	1.2
13	16.9	14.6	8.9	7.4	5.5	3.5	.1	.1	4.3	2.9	1.2	1.1
14	15.4	13.0	8.9	6.5	5.3	3.6	.1	.1	2.9	2.0	1.1	1.0
15	16.4	12.7	9.7	7.7	5.6	3.5	.1	.1	4.1	2.0	1.1	1.0
16	16.9	13.4	9.1	7.3	5.3	4.1	.1	.1	5.1	2.8	1.8	1.0
17	18.1	15.8	9.1	7.7	4.6	3.7	.2	.1	5.0	3.3	6.7	1.4
18	17.8	15.4	8.8	6.2	3.8	2.7	.2	.1	3.3	2.7	6.4	4.1
19	15.9	12.7	10.3	7.9	5.1	3.8	.2	.2	2.9	2.3	6.4	2.7
20	14.9	12.3	9.1	7.2	4.5	3.6	.3	.2	2.8	1.9	7.5	3.0
21	12.9	10.8	7.4	6.2	5.5	4.1	.3	.3	2.4	1.6	6.4	4.3
22	12.0	8.8	7.3	4.8	4.5	2.2	.4	.3	2.0	1.3	5.3	3.6
23	12.6	8.6	9.5	6.9	2.2	1.1	3.4	.4	1.5	1.3	6.7	2.9
24	13.4	9.9	9.2	6.9	1.1	.7	3.0	1.7	1.5	1.2	7.3	4.2
25	14.1	10.7	7.9	6.4	.7	.3	2.0	1.5	1.7	1.5	6.0	4.2
26	14.3	11.4	8.3	6.4	.4	.3	2.6	1.3	2.8	1.7	7.4	3.5
27	13.6	11.7	7.6	5.1	.4	.3	4.7	1.5	4.1	1.8	8.0	3.7
28	15.1	13.4	8.9	5.6	.5	.4	4.4	3.0	4.6	4.0	9.0	4.4
29	14.6	11.4	11.2	8.5	.6	.5	4.0	2.3	---	---	10.0	6.7
30	13.7	12.2	12.1	11.2	.6	.4	3.2	1.9	---	---	10.6	6.1
31	13.5	12.2	---	---	.4	.1	2.8	2.0	---	---	11.9	8.0
MONTH	21.6	8.6	13.4	4.8	14.3	.1	4.7	-.4	8.7	1.2	11.9	1.0

[illegible]

413551083481200. LOCAL NUMBER, LU-20—Continued

[illegible][illegible]

413551083481200. LOCAL NUMBER, LU-20—Continued

PRECIPITATION, TOTAL, INCHES, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY SUM VALUES

PRECIPITATION, TOTAL, INCHES, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992												
DAILY SUM VALUES												
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.13	.00	.00	.01	.00	.13	.07	.03	.00	.00	.00
2	.00	.00	.52	.01	.00	.00	.00	.00	.24	.04	.00	.05
3	.11	.00	.07	.20	.00	.00	.02	.00	.19	.00	.13	.11
4	.12	.00	.00	.00	.00	.00	.14	.25	.06	.00	.04	.00
5	.03	.00	.00	.00	.00	.00	.01	.10	.36	.85	.00	.06
6	.01	.00	.01	.00	.00	.09	.00	.00	.06	.00	.00	.00
7	.02	.03	.00	.00	.00	.30	.00	.00	.14	.00	.00	1.23
8	.01	.01	.00	.03	.01	.00	.00	.00	.00	.03	.04	.05
9	.00	.00	.00	.00	.00	.00	.00	.11	.00	.00	.00	.66
10	.09	.00	.01	.01	.00	.71	.07	.00	.00	.27	.01	.10
11	.01	.00	.00	.00	.00	.02	.16	.00	.00	.00	.00	.00
12	.00	.06	.36	.10	.00	.00	.00	.00	.00	1.22	.10	.00
13	.00	.00	.03	.18	.05	.00	.00	.00	.00	.19	.08	.00
14	.00	.03	.02	.24	.00	.01	.00	.01	.00	.65	.00	.00
15	.01	.07	.00	.00	.56	.00	.00	.00	.00	.26	.00	.00
16	.00	.01	.00	.00	.05	.00	.83	.00	.00	.00	.00	.00
17	.00	.00	.00	.01	.02	.36	.16	.11	.07	.05	.00	.00
18	.02	.21	.00	.00	.04	.00	.37	.00	.15	.00	.46	.17
19	.30	.15	.00	.00	.01	.12	.00	.00	.33	.00	.00	.00
20	.01	1.29	.06	.00	.00	.01	.52	.00	.01	.75	.00	.00
21	.00	.02	.09	.00	.01	.00	.46	.00	.00	.00	.00	1.31
22	.00	.00	.01	.06	.00	.04	.00	.00	.00	.00	.00	.75
23	.00	.06	.04	.08	.00	.09	.09	1.11	.00	.79	.00	.00
24	.75	.00	.00	.01	.00	.00	.68	.08	.00	.00	.53	.00
25	2.05	.00	.00	.00	.00	.14	.04	.00	.00	.00	.01	.00
26	.45	.00	.00	.02	.07	.04	.11	.03	.00	.29	.00	.04
27	.62	.03	.00	.00	.00	.12	.00	.00	.00	.00	.85	.09
28	.00	.16	.15	.00	.09	.00	.00	.00	.00	.00	.33	.00
29	.00	.03	.17	.00	.00	.09	.06	.13	.00	.00	.00	.00
30	.16	.09	.00	.00	---	.15	.07	.29	.00	.01	.00	.00
31	.07	---	.00	.04	---	.05	---	.10	---	.00	.00	---
TOTAL	4.84	2.38	1.54	0.99	0.92	2.34	3.92	2.39	1.64	5.40	2.58	4.62
WTR YR 1992	TOTAL 33.56											

413551083481200. LOCAL NUMBER, LU-20—Continued

[illegible]

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.01	.00	.00	.03	.00	.00	.00	.03	.00	---	.00	.00
2	.00	.00	.08	.00	.00	.00	.00	.00	.00	---	.01	.00
3	.00	.08	.00	.00	.00	.00	---	.00	.00	---	.00	.00
4	.00	.01	.41	.00	.00	.00	.01	.00	.00	---	.00	.00
5	.00	.00	.00	.00	.00	.00	.29	.00	.00	---	.00	.00
6	.00	.00	.01	.12	.00	.04	.10	.00	.06	---	.00	.03
7	.00	.00	.00	.01	.00	.69	.18	.17	.00	---	.00	.00
8	---	.00	.00	.14	.00	.00	.00	.00	.00	---	.00	.00
9	---	.00	.00	.12	.00	.00	.10	.00	.00	---	.00	.00
10	---	.00	.00	.12	.00	.08	.26	.00	.00	---	.00	.00
11	---	.00	.01	.01	.08	.00	.24	.35	.00	---	.11	.00
12	---	.00	.00	.00	.01	.00	1.15	.00	.03	---	.00	.00
13	---	.12	.00	.00	.01	.13	.24	.00	.11	---	.83	.00
14	---	.74	.00	.03	.00	.00	.00	.00	.00	---	.02	.00
15	---	.03	.00	.15	.00	.00	.07	.00	.00	---	.00	.21
16	---	.00	.00	.17	.00	.00	.00	.00	.00	---	.00	.00
17	---	.67	.00	.10	.00	.00	.00	.00	.00	---	.00	.00
18	---	.02	.09	.00	.00	.01	.02	.00	.00	---	.00	.00
19	---	.00	.00	.01	.00	.00	.00	.00	.00	---	.00	.00
20	.30	.00	.17	.09	.00	.13	.00	.00	.90	---	.36	.00
21	.04	.00	.02	.04	.00	.42	.00	.00	.08	---	.00	.00
22	.00	.00	.00	.03	.00	.00	.00	.00	---	---	.00	.00
23	.00	.00	.00	.00	.23	.00	.00	.00	---	---	.00	.00
24	.00	.17	.03	.00	.00	.04	.00	.00	---	---	.00	.20
25	.00	.00	.02	.00	.00	.00	.00	.00	---	---	.00	.02
26	.00	.30	.02	.00	.00	.08	.06	.45	---	---	.00	.11
27	.00	.41	.03	.55	.05	.16	.67	.00	---	---	.00	.12
28	.00	.00	.00	.65	.00	.07	.36	.00	---	---	.01	.00
29	.00	.00	.00	.00	---	.05	.00	.00	---	---	.00	.00
30	.13	.00	.00	.00	---	.00	.54	.00	---	---	.11	.00
31	.03	---	.00	.00	---	.02	---	.20	---	.00	.00	---
TOTAL	0.51	2.55	0.89	2.37	0.38	1.92	4.29	1.20	1.18	0.00	1.45	0.69
WTR YR 1994		TOTAL 17.43										

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

REVISED GROUND-WATER RECORDS—CONTINUED

413551083481200. LOCAL NUMBER, LU-20—Continued

PRECIPITATION, TOTAL, INCHES, WATER YEAR OCTOBER 1994 TO SEPTEMBER 1995
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	.00	.00	.00	.00	---	.00	.08	.00
2	---	---	---	---	.00	.00	---	.00	.21	.00	.05	.00
3	---	---	---	---	.02	.00	.00	.00	.00	.00	.12	.00
4	---	---	---	---	.02	.00	.00	.00	.00	.00	.28	.01
5	---	---	---	---	.13	.12	.00	.00	.00	.00	.11	.00
6	---	---	---	---	.11	.00	.00	.00	.00	.00	.05	.00
7	---	---	---	---	.06	1.10	.00	.00	.00	.00	.00	.15
8	---	---	---	---	.06	.00	.77	.00	.00	.00	.14	.29
9	---	---	---	---	.02	.01	1.56	.00	.00	.01	.12	.00
10	---	---	---	---	.00	.00	.18	.00	.79	.00	.01	.00
11	---	---	---	---	.00	.00	.16	.00	.00	.00	.00	.00
12	---	---	---	---	.00	.00	.29	.00	.00	.00	.07	.07
13	---	---	---	---	.00	.00	.00	.00	.00	.08	.05	.03
14	---	---	---	---	.00	.00	.00	.00	.00	.00	.01	.00
15	---	---	---	---	.04	.00	.00	.00	.00	.09	.00	.00
16	---	---	---	---	.00	.00	.00	.00	.00	.00	.00	.00
17	---	---	---	.00	.00	.00	.02	.00	.00	.00	1.05	.00
18	---	---	---	.00	.00	.00	.39	.00	.00	.00	.10	.00
19	---	---	---	.54	.00	.00	.00	.00	.00	.00	.00	.00
20	---	---	---	.84	.00	.03	.01	.00	.00	.05	.00	---
21	---	---	---	.04	.00	.00	.60	.00	.00	.00	.00	---
22	---	---	---	.05	.00	.00	.00	.00	.00	.08	.00	---
23	---	---	---	.04	.02	.00	.00	.00	.00	.00	.00	---
24	---	---	---	.01	.00	.00	.00	.00	.00	.00	.00	---
25	---	---	---	.08	.00	.00	.00	.00	.00	.00	.00	---
26	---	---	---	.01	.00	.00	.00	.00	3.36	.14	.00	---
27	---	---	---	.06	.38	.14	.00	.00	.25	.00	.00	---
28	---	---	---	.06	.03	.01	.00	.00	.28	.01	.00	---
29	---	---	---	.08	---	.02	.00	.00	.04	.00	.00	---
30	---	---	---	.04	---	.00	.00	.00	.00	.00	.00	---
31	---	---	---	.02	---	.00	---	.00	---	.00	.00	---
TOTAL	---	---	---	1.87	0.89	1.43	3.98	0.00	4.93	0.46	2.24	0.55

WTR YR 1995 TOTAL 16.35

PRECIPITATION, TOTAL, INCHES, WATER YEAR OCTOBER 1995 TO SEPTEMBER 1996
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	.38	.00	.00	---	.00	---	---	---	---	---	.00
2	---	.29	.00	.02	---	.00	---	---	---	---	---	.00
3	---	.00	.00	.10	---	.00	---	---	---	---	---	.00
4	---	.00	.00	.05	---	.00	---	---	---	---	---	.00
5	---	.00	.00	.04	---	.47	---	.43	---	---	---	.00
6	---	.00	.00	.13	---	.00	---	.01	---	---	---	.00
7	---	.42	.00	.04	---	.00	---	.00	---	---	---	.15
8	---	.00	.00	.05	---	.00	---	---	---	---	---	.00
9	---	.00	.00	.02	---	.03	.01	---	---	---	---	.23
10	---	.12	.00	.10	---	.00	.00	---	---	---	---	.00
11	---	.99	.00	.00	.00	.00	.00	---	---	---	---	.02
12	---	.00	.00	.03	.00	---	.35	---	---	---	---	.44
13	---	.03	.00	.00	.00	---	.01	---	---	---	---	.00
14	---	.00	.20	.01	.00	---	.01	---	---	---	---	.01
15	---	.00	.00	.00	.00	---	.14	---	---	---	---	.01
16	---	.00	.00	---	.00	---	.00	---	---	---	---	.00
17	---	.01	.00	---	.00	---	---	---	---	---	---	.00
18	---	.18	.00	---	.00	---	---	---	---	---	---	.01
19	---	.00	.00	---	.01	---	---	---	---	---	---	.00
20	---	.00	.00	---	.01	---	---	---	---	---	---	.00
21	---	.00	.04	---	.00	---	---	---	---	---	---	.00
22	---	.00	.08	---	.01	---	---	---	---	---	---	.00
23	---	.00	.04	---	.00	---	---	---	---	---	---	.00
24	---	.00	.05	---	.00	---	---	---	---	---	.00	.00
25	---	.00	.08	---	.00	---	---	---	---	---	.00	.01
26	---	.00	.13	---	.02	---	---	---	---	---	.00	.01
27	---	.03	.10	---	.57	---	---	---	---	---	.00	.94
28	.02	.00	.03	---	.00	---	---	---	---	---	.00	.34
29	.00	.00	.07	---	.00	---	---	---	---	---	.00	.00
30	.01	.00	.07	---	---	---	---	---	---	---	.00	.00
31	.26	---	.00	---	---	---	---	---	---	---	.00	---
TOTAL	0.29	2.45	0.89	0.59	0.62	0.50	0.52	0.44	---	---	0.00	2.17

WTR YR 1996 TOTAL 8.47

REVISÉD GROUND-WATER RECORDS—CONTINUED

413551083481200. LOCAL NUMBER, LU-20—Continued

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PRECIPITATION, TOTAL, INCHES, WATER YEAR OCTOBER 1996 TO SEPTEMBER 1997
DAILY SUM VALUES
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[illegible]

PRECIPITATION, TOTAL, INCHES, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY SUM VALUES

[illegible]

PROJECT DATA

Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

GROUND-WATER RECORDS—CONTINUED

413547083481400. LOCAL NUMBER, LU-23

LOCATION.--Latitude 41°35'47", longitude 83°48'14", Lucas County, Hydrologic Unit 04100009, along State Route 2 near Holland, Ohio.

Owner.--USGS/Toledo Express Airport.

AQUIFER.--Sand of Quaternary age.

WELL CHARACTERISTICS.--Observation well drilled by hollow stem auger, diameter 4.0 in., depth 29.4 ft. Cased with Sch 40 PVC to 4.4 ft.; .010 in. screen from 4.4 to 29.4 ft.

INSTRUMENTATION.--Data logger--60 minute record. At this well there are 4 conductivity/water temperature probes at increasing depths within the well to better document vertical movement of high conductivity water on an hourly basis. Conductivity/water temperature probes are set at 6.9 (level 4), 10.4 (level 3), 16.9 (level 2), and 25.4 (level 1) feet below land surface.

DATUM.--Elevation of land-surface datum is 676.97 feet above sea level.

Measuring point: top of PVC casing 0.58 ft. above land-surface datum.

REMARKS.--This station is part of an eight-site network to collect data for the Ohio Department of Transportation concerning road salt application and its effect(s) on shallow ground-water quality. Water-quality data for nearby wells is available in preceding tables.

PERIOD OF RECORD.--February 1991 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE (FOUR LEVELS): February 1991 to current year.

WATER TEMPERATURE (FOUR LEVELS): February 1991 to current year.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE:

LEVEL 1- Maximum, 1820 microsiemens October 31, November 12, 1998; minimum, 259 microsiemens March 23, 1998.

LEVEL 2- Maximum, 1790 microsiemens July 15, 1991; minimum, 249 microsiemens March 23, 1998.

LEVEL 3- Maximum, 1620 microsiemens October 26-29, 1998; minimum, 227 microsiemens July 25-26, 1999.

LEVEL 4- Maximum, 1380 microsiemens October 7, 1998; minimum, 107 microsiemens August 31, 1991.

WATER TEMPERATURE

LEVEL 1- Maximum, 14.4°C November 24, 27-29, December 2-4, 6, 1998; minimum, 9.5°C April 1-2, 1998.

LEVEL 2- Maximum, 17.7°C August 25, 1998; minimum, 6.8°C April 1, 1998.

LEVEL 3- Maximum, 17.5°C many days in 1991; minimum, 1.5°C April 1, 1998.

LEVEL 4- Maximum, 19.0°C many days in 1991; minimum, 3.1°C April 1, 1998.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE:

LEVEL 1- Maximum, 1820 microsiemens October 31, November 12, 1998; minimum, 305 microsiemens May 23, 1999.

LEVEL 2- Maximum, 1660 microsiemens October 27-28, 1998; minimum, 258 microsiemens May 23, 1999.

LEVEL 3- Maximum, 1620 microsiemens October 26-29, 1998; minimum, 227 microsiemens July 25-26, 1999.

LEVEL 4- Maximum, 1380 microsiemens October 7, 1998; minimum, 193 microsiemens July 25, 1999.

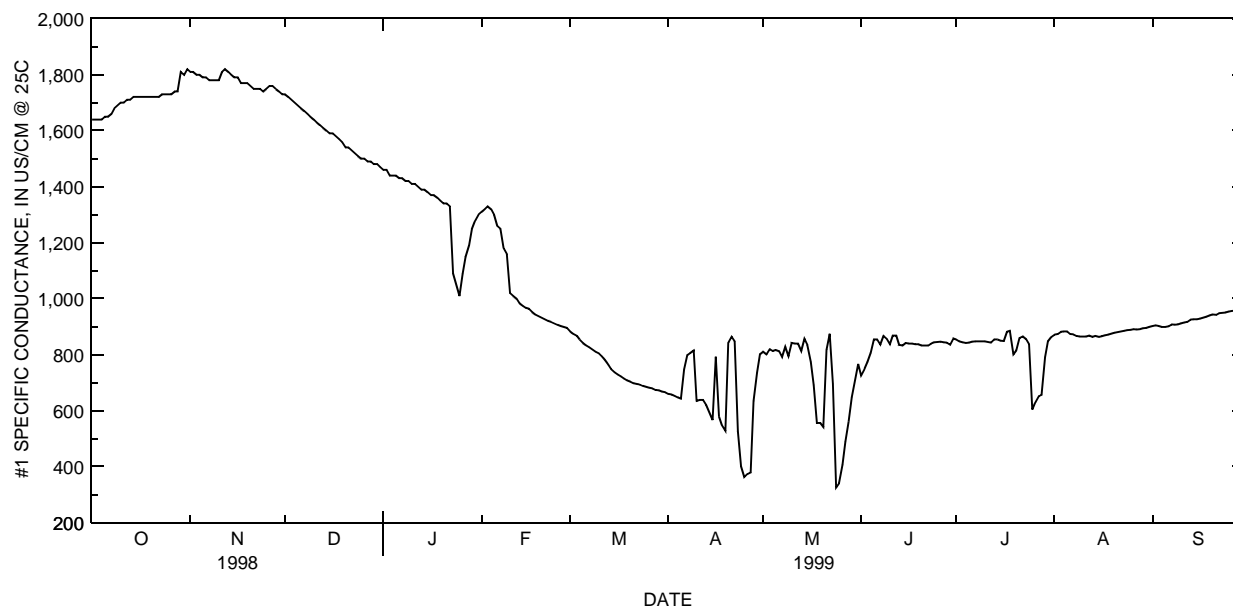
WATER TEMPERATURE:

LEVEL 1- Maximum, 14.4°C November 24, 27-29, December 2-4, 6, 1998; minimum, 11.6°C April 22, May 17, 20 23, 1999.

LEVEL 2- Maximum, 16.5°C October 7, 1998; minimum, 10.5°C April 23-24, 1999.

LEVEL 3- Maximum, 13.2°C October 1, 1998; minimum, 2.0°C April 12, 1999.

LEVEL 4- Maximum, 16.3°C October 1-2, 5-6, 1998; minimum, 5.3°C April 11-12, 1999.



[illegible]

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

GROUND-WATER RECORDS—CONTINUED

413547083481400. LOCAL NUMBER, LU-23—Continued

LEVEL 2 (16.9' Below Land Surface)
SPECIFIC CONDUCTANCE, MICROSIEMENS/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	1540	1530	1510	1500	1530	1520	1140	1130	733	698	774	764
2	1540	1530	1510	1500	1530	1520	1140	1130	752	726	766	757
3	1550	1540	1510	1500	1520	1510	1130	1130	781	751	761	748
4	1550	1540	1510	1500	1510	1490	1130	1120	801	780	749	739
5	1560	1540	1530	1510	1490	1480	1120	1120	815	795	740	731
6	1560	1550	1550	1530	1480	1460	1120	1120	844	815	733	724
7	1560	1550	1560	1540	1470	1450	1120	1110	845	822	725	718
8	1560	1430	1570	1560	1450	1440	1110	1110	866	845	718	710
9	1500	1430	1570	1560	1440	1420	1110	1100	891	866	712	702
10	1520	1500	1570	1550	1430	1380	1110	1100	887	878	703	693
11	1540	1520	1560	1110	1420	1400	1100	1090	880	864	693	681
12	1550	1530	1220	1080	1400	1340	1100	1090	870	857	682	667
13	1570	1550	1380	1220	1400	1360	1090	1080	859	848	669	653
14	1590	1560	1500	1380	1360	1320	1080	1070	851	840	656	645
15	1610	1590	1530	1500	1360	1300	1080	1070	844	837	645	636
16	1620	1600	1560	1530	1350	1290	1080	1070	837	828	637	629
17	1620	1610	1570	1560	1360	1300	1070	1060	830	820	631	618
18	1630	1620	1580	1570	1350	1270	1070	1060	824	819	618	610
19	1640	1620	1590	1570	1320	1240	1070	1060	821	814	613	607
20	1640	1630	1570	1570	1330	1300	1070	1060	816	810	610	605
21	1650	1630	1580	1570	1300	1230	1060	1060	812	806	608	604
22	1650	1640	1570	1560	1300	1240	1060	409	810	802	607	600
23	1650	1640	1570	1560	1280	1240	444	408	806	797	605	600
24	1650	1640	1570	1560	1240	1070	442	400	802	795	603	598
25	1650	1640	1570	1560	1220	1070	400	393	797	791	601	595
26	1650	1640	1560	1540	1220	1090	407	393	793	785	597	591
27	1660	1650	1540	1520	1120	1090	426	407	787	780	595	586
28	1660	1650	1530	1520	1130	1100	482	425	781	771	591	586
29	1650	1530	1530	1510	1130	1110	605	482	---	---	588	582
30	1550	1530	1530	1520	1140	1130	662	594	---	---	585	581
31	1530	1510	---	---	1140	1130	698	660	---	---	584	578
MONTH	1660	1430	1590	1080	1530	1070	1140	393	891	698	774	578

[illegible]

413547083481400. LOCAL NUMBER, LU-23—Continued

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	1520	1500	694	649	449	440	1220	1210	789	745	840	831
2	1520	1520	655	645	462	449	1220	1210	808	783	832	822
3	1520	1520	711	655	475	462	1220	1210	841	808	826	809
4	1520	1520	861	711	491	475	1220	1210	865	839	814	799
5	1530	1520	1010	861	518	491	1210	1200	876	859	802	792
6	1540	1530	1120	1010	550	518	1210	1200	902	876	793	785
7	1550	817	1180	1120	579	549	1200	1200	903	888	787	777
8	817	504	1220	1180	610	579	1200	1190	933	903	779	771
9	538	497	1260	1220	633	609	1190	1190	962	931	773	762
10	639	538	1330	630	673	633	1190	1180	959	950	764	749
11	746	639	630	376	746	672	1180	1170	951	937	753	741
12	876	746	378	376	821	746	1180	1170	940	926	742	728
13	1060	876	379	377	1080	821	1170	1160	929	918	728	711
14	1290	1060	381	378	1240	1080	1170	1160	919	909	712	700
15	1450	1290	385	381	1330	1100	1160	1150	912	900	702	692
16	1540	1450	391	383	1100	1010	1160	1150	907	893	694	684
17	1550	1530	396	391	1210	1030	1150	1140	898	890	686	675
18	1560	1550	403	396	1340	1210	1150	1140	893	885	675	663
19	1570	1560	412	403	1340	1310	1150	1140	888	882	666	661
20	1580	1570	415	411	1310	1270	1160	1150	885	877	666	658
21	1590	1580	418	414	1270	1170	1150	1150	881	872	661	656
22	1590	1580	457	418	1180	1150	1150	433	875	867	660	654
23	1600	1590	728	457	1160	1130	472	435	873	864	660	653
24	1610	1590	907	728	1150	1130	469	426	869	862	654	650
25	1610	1600	1290	907	1150	1140	427	420	865	856	652	646
26	1620	1610	1370	399	1160	1140	438	423	860	850	651	643
27	1620	1610	417	400	1180	1160	458	438	857	847	647	641
28	1620	1610	420	415	1200	1180	518	457	848	836	643	637
29	1620	1410	429	420	1200	1190	631	518	---	---	642	634
30	1440	1210	440	429	1220	1200	704	631	---	---	638	631
31	1210	694	---	---	1220	1210	745	704	---	---	633	628
MONTH	1620	497	1370	376	1340	440	1220	420	962	745	840	628

[illegible]

Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

GROUND-WATER RECORDS—CONTINUED

413547083481400. LOCAL NUMBER, LU-23—Continued

LEVEL 4 (6.9' Below Land Surface)
SPECIFIC CONDUCTANCE, MICROSIEMENS/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	1250	1240	505	460	421	412	1130	1130	719	679	761	753
2	1270	1250	460	455	435	421	1130	1130	741	717	753	746
3	1280	1260	474	458	446	435	1130	1120	772	740	746	733
4	1290	1270	508	474	462	445	1120	1120	790	767	735	723
5	1300	1280	532	508	486	462	1120	1110	800	784	726	718
6	1320	1300	540	532	515	486	1120	1110	825	799	718	710
7	1380	564	544	539	543	515	1110	1110	824	811	712	704
8	564	295	539	518	569	542	1110	1100	854	824	705	698
9	298	293	518	492	596	569	1100	1090	878	852	698	687
10	340	298	517	381	617	596	1090	1080	876	866	689	679
11	408	340	381	355	633	617	1090	1080	870	856	680	667
12	488	408	358	356	649	632	1080	1080	857	845	671	656
13	596	488	359	356	668	647	1080	1070	847	838	656	640
14	716	596	359	357	684	667	1080	1070	838	829	644	631
15	833	716	363	359	694	681	1070	1060	832	821	633	625
16	937	833	369	361	681	678	1070	1060	823	817	626	618
17	1040	937	374	368	691	679	1060	1050	818	809	619	608
18	1120	1040	381	374	720	691	1050	1050	813	806	608	598
19	1180	1120	389	381	775	720	1060	1050	810	801	601	595
20	1230	1180	392	389	853	775	1060	1050	805	800	599	593
21	1260	1230	395	392	1090	853	1060	1050	801	795	597	590
22	1300	1260	396	392	1100	1080	1050	226	796	792	594	589
23	1320	1290	396	396	1080	1050	434	397	792	787	591	586
24	1330	1320	398	395	1070	1050	428	392	789	784	588	585
25	1350	1330	400	395	1070	1060	393	386	786	778	586	582
26	1360	1350	401	376	1080	1060	402	389	780	775	583	579
27	1360	1350	393	376	1100	1070	420	402	776	768	581	576
28	1360	1350	398	392	1110	1090	475	420	769	760	578	573
29	1360	971	405	397	1120	1110	575	475	---	---	577	569
30	1040	719	413	405	1130	1110	640	575	---	---	571	567
31	719	505	---	---	1130	1130	680	640	---	---	568	564
MONTH	1380	293	544	355	1130	412	1130	226	878	679	761	564

[illegible]

413547083481400. LOCAL NUMBER, LU-23—Continued

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	13.4	13.2	13.9	13.6	14.1	14.1	14.1	14.1	14.1	13.9	12.9	12.9
2	13.4	13.2	13.9	13.6	14.4	14.1	14.1	14.1	13.9	13.9	12.9	12.9
3	13.4	13.4	13.9	13.9	14.4	14.1	14.1	14.1	13.9	13.9	12.9	12.9
4	13.4	13.4	14.1	13.9	14.4	14.1	14.1	14.1	13.9	13.6	12.9	12.9
5	13.7	13.4	13.9	13.9	14.2	14.1	14.3	14.0	13.6	13.6	12.9	12.9
6	13.7	13.4	13.9	13.9	14.4	14.1	14.1	14.1	13.7	13.6	12.9	12.9
7	13.7	13.4	14.1	13.9	14.2	14.1	14.1	14.1	13.6	13.6	12.9	12.7
8	13.4	13.4	13.9	13.9	14.1	14.1	14.1	14.1	13.6	13.4	12.9	12.7
9	13.7	13.4	14.1	13.9	14.1	14.1	14.1	14.1	13.6	13.4	12.9	12.7
10	13.7	13.4	14.1	13.9	14.1	14.1	14.1	14.1	13.4	13.2	12.9	12.6
11	13.7	13.4	14.1	14.1	14.1	14.1	14.1	14.1	13.4	13.2	12.9	12.5
12	13.7	13.4	14.1	13.9	14.1	14.1	14.1	14.1	13.4	13.2	12.7	12.5
13	13.7	13.4	14.1	13.9	14.1	14.1	14.1	14.1	13.4	13.3	12.7	12.6
14	13.6	13.4	14.1	13.9	14.1	14.1	14.1	14.1	13.4	13.1	12.7	12.4
15	13.7	13.4	14.1	13.9	14.1	14.1	14.1	14.1	13.4	13.1	12.7	12.4
16	13.7	13.4	14.1	13.9	14.1	14.1	14.1	14.1	13.4	13.1	12.7	12.4
17	13.7	13.4	14.1	14.1	14.1	14.1	14.1	14.1	13.1	13.1	12.7	12.4
18	13.7	13.4	14.1	13.9	14.1	14.1	14.1	14.1	13.1	13.1	12.5	12.4
19	13.7	13.4	14.2	13.9	14.1	14.1	14.1	14.1	13.1	13.1	12.5	12.4
20	13.7	13.6	14.1	14.1	14.1	14.1	14.1	13.9	13.1	13.1	12.7	12.4
21	13.7	13.6	14.1	14.1	14.1	14.1	14.1	13.9	13.1	13.1	12.5	12.4
22	13.7	13.6	14.1	14.1	14.3	14.1	14.1	13.6	13.1	13.1	12.5	12.4
23	13.9	13.6	14.2	14.1	14.3	14.1	13.9	13.9	13.1	13.1	12.5	12.4
24	13.9	13.6	14.4	14.1	14.3	14.1	14.1	13.9	13.2	12.9	12.5	12.2
25	13.9	13.6	14.1	14.1	14.1	14.1	14.1	13.9	13.1	12.9	12.5	12.4
26	13.9	13.6	14.1	14.1	14.1	14.1	14.1	13.9	13.1	12.9	12.5	12.2
27	13.7	13.6	14.4	14.1	14.1	14.1	14.1	13.9	13.1	12.9	12.5	12.2
28	13.9	13.6	14.4	14.1	14.1	14.1	14.1	13.9	12.9	12.9	12.5	12.2
29	14.1	13.6	14.4	14.1	14.1	14.1	14.1	13.9	---	---	12.5	12.2
30	13.9	13.6	14.2	14.1	14.1	14.1	14.1	13.9	---	---	12.5	12.2
31	13.9	13.7	---	---	14.1	14.1	14.1	13.9	---	---	12.5	12.2
MONTH	14.1	13.2	14.4	13.6	14.4	14.1	14.3	13.6	14.1	12.9	12.9	12.2

[illegible]

Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

GROUND-WATER RECORDS—CONTINUED

413547083481400. LOCAL NUMBER, LU-23—Continued

LEVEL 2 (16.9' Below Land Surface)
TEMPERATURE, WATER, DEGREES CELSIUS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	16.0	15.7	16.2	16.2	15.7	15.4	14.1	14.1	12.4	12.2	11.8	11.5
2	15.9	15.7	16.2	16.0	15.7	15.4	14.1	14.1	12.4	12.2	11.8	11.6
3	15.9	15.7	16.2	15.9	15.7	15.4	14.1	14.1	12.4	12.2	11.8	11.5
4	15.9	15.7	16.2	16.0	15.7	15.4	14.1	14.1	12.2	12.2	11.8	11.5
5	16.0	15.7	16.2	16.2	15.4	15.4	14.1	14.0	12.4	12.2	11.8	11.5
6	16.0	15.7	16.2	16.2	15.7	15.4	14.1	13.8	12.4	12.2	11.8	11.5
7	16.5	15.7	16.2	15.9	15.4	15.4	14.1	13.8	12.2	12.2	11.7	11.3
8	16.2	15.9	16.2	15.9	15.4	15.4	13.8	13.8	12.4	12.2	11.7	11.5
9	16.3	15.9	16.2	15.9	15.4	15.2	13.8	13.6	12.3	12.2	11.5	11.3
10	16.3	15.9	16.2	15.9	15.4	15.1	13.8	13.6	12.4	12.2	11.6	11.3
11	16.2	15.9	16.2	16.2	15.4	15.1	13.8	13.6	12.5	12.0	11.6	11.3
12	16.3	15.9	16.2	15.9	15.4	14.9	13.6	13.6	12.3	12.0	11.5	11.3
13	16.0	15.9	16.2	15.9	15.4	15.1	13.6	13.6	12.2	12.0	11.5	11.3
14	16.2	15.9	16.2	15.9	15.1	14.9	13.6	13.6	12.2	12.0	11.3	11.3
15	16.3	15.9	16.0	15.9	15.1	14.9	13.6	13.3	12.2	12.0	11.5	11.3
16	16.3	15.9	15.9	15.9	15.1	14.9	13.6	13.4	12.2	12.0	11.4	11.3
17	16.3	16.0	15.9	15.9	15.1	14.9	13.4	13.4	12.2	12.0	11.6	11.3
18	16.2	15.9	15.9	15.7	15.1	14.9	13.4	13.4	12.0	12.0	11.4	11.3
19	16.3	15.9	16.0	15.7	14.9	14.6	13.4	13.4	12.2	12.0	11.4	11.1
20	16.2	16.0	15.9	15.9	14.9	14.9	13.4	13.2	12.0	11.8	11.4	11.1
21	16.2	16.0	15.9	15.7	14.9	14.6	13.4	13.1	12.0	11.7	11.3	11.1
22	16.3	16.0	15.9	15.7	14.9	14.6	13.4	12.2	12.0	11.7	11.3	11.1
23	16.3	16.0	16.0	15.7	14.9	14.6	12.7	12.5	12.0	11.7	11.3	11.1
24	16.3	16.0	16.0	15.6	14.8	14.3	12.7	12.7	12.0	11.7	11.3	10.9
25	16.3	16.0	15.7	15.6	14.4	14.1	12.7	12.7	11.8	11.8	11.3	11.1
26	16.3	16.0	15.7	15.7	14.6	14.1	12.7	12.4	11.8	11.8	11.3	11.1
27	16.3	16.0	16.0	15.6	14.1	14.1	12.7	12.4	11.8	11.8	11.4	10.9
28	16.3	16.0	15.7	15.4	14.1	14.1	12.5	12.2	11.8	11.8	11.2	10.9
29	16.3	16.0	16.0	15.4	14.1	14.1	12.5	12.2	---	---	11.4	10.9
30	16.2	15.9	15.7	15.4	14.1	14.1	12.5	12.2	---	---	11.2	10.9
31	16.2	16.2	---	---	14.1	14.1	12.4	12.2	---	---	11.2	10.9
MONTH	16.5	15.7	16.2	15.4	15.7	14.1	14.1	12.2	12.5	11.7	11.8	10.9

[illegible]

413547083481400. LOCAL NUMBER, LU-23—Continued

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	13.2	12.9	11.4	11.4	8.5	8.5	7.1	7.0	4.3	4.2	3.6	3.5
2	13.0	12.9	11.4	11.3	8.5	8.3	7.0	6.8	4.3	4.2	3.6	3.4
3	12.9	12.9	11.4	11.1	8.5	8.3	7.0	6.8	4.3	4.2	3.6	3.4
4	12.9	12.9	11.3	11.1	8.3	8.1	6.8	6.8	4.3	4.2	3.5	3.4
5	13.0	12.7	11.1	11.1	8.3	8.1	6.8	6.6	4.2	4.1	3.5	3.3
6	13.0	12.7	11.1	10.9	8.1	8.0	6.8	6.6	4.2	4.2	3.4	3.3
7	13.0	12.7	11.1	10.9	8.1	8.1	6.6	6.6	4.2	4.2	3.4	3.3
8	12.9	12.7	10.9	10.9	8.1	7.9	6.6	6.4	4.2	4.2	3.4	3.2
9	13.0	12.7	10.9	10.7	8.1	7.9	6.6	6.4	4.2	4.0	3.4	3.1
10	12.8	12.5	10.7	10.5	7.9	7.9	6.6	6.4	4.2	4.0	3.4	3.1
11	12.8	12.5	10.5	10.3	7.9	7.8	6.4	6.4	4.2	3.9	3.4	3.1
12	12.8	12.4	10.5	10.3	7.9	7.7	6.5	6.1	4.2	4.0	3.4	3.1
13	12.5	12.5	10.3	10.1	7.9	7.7	6.3	6.1	4.2	4.0	3.3	3.1
14	12.5	12.4	10.3	10.1	7.9	7.7	6.3	6.1	4.2	3.9	3.2	3.0
15	12.7	12.4	10.1	9.9	7.9	7.6	6.1	6.1	4.0	3.8	3.1	3.0
16	12.5	12.3	10.1	9.7	7.7	7.5	6.1	5.9	4.0	3.9	3.1	3.0
17	12.5	12.3	9.7	9.6	7.6	7.5	6.1	5.9	4.0	3.7	3.2	2.8
18	12.3	12.2	9.7	9.6	7.7	7.5	6.0	5.8	4.0	3.8	3.1	3.0
19	12.5	12.2	9.7	9.5	7.9	7.7	5.9	5.8	3.9	3.8	3.0	2.8
20	12.3	12.0	9.5	9.4	7.9	7.9	5.8	5.6	3.9	3.8	3.0	2.8
21	12.2	12.0	9.4	9.2	7.9	7.5	5.7	5.6	3.9	3.6	3.0	2.8
22	12.2	12.0	9.2	9.1	7.7	7.5	5.6	4.7	3.8	3.6	3.0	2.8
23	12.1	11.8	9.3	9.1	7.7	7.5	5.2	4.8	3.8	3.7	3.0	2.7
24	12.1	11.8	9.1	8.9	7.5	7.3	5.0	4.8	3.7	3.5	2.8	2.7
25	12.1	11.8	9.1	8.9	7.5	7.3	4.8	4.6	3.7	3.5	2.8	2.7
26	11.8	11.6	9.1	8.7	7.4	7.3	4.8	4.6	3.7	3.5	2.8	2.6
27	11.8	11.6	9.1	8.9	7.4	7.3	4.7	4.5	3.7	3.5	2.9	2.6
28	11.8	11.6	9.1	8.9	7.4	7.2	4.7	4.5	3.6	3.5	2.9	2.5
29	11.6	11.1	8.9	8.7	7.3	7.2	4.5	4.3	---	---	2.9	2.5
30	11.6	11.4	8.7	8.5	7.3	7.1	4.5	4.3	---	---	2.9	2.7
31	11.4	11.3	---	---	7.2	7.0	4.5	4.3	---	---	2.9	2.6
MONTH	13.2	11.1	11.4	8.5	8.5	7.0	7.1	4.3	4.3	3.5	3.6	2.5

[illegible]

PROJECT DATA

GROUND-WATER RECORDS—CONTINUED

413547083481400. LOCAL NUMBER, LU-23—Continued

LEVEL 4 (6.9' Below Land Surface)
TEMPERATURE, WATER, DEGREES CELSIUS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	16.3	16.2	14.1	14.1	11.4	11.3	10.1	10.0	7.4	7.2	6.7	6.6
2	16.3	16.0	14.1	13.9	11.4	11.1	10.0	9.8	7.2	7.0	6.7	6.5
3	16.2	16.2	13.9	13.9	11.4	11.1	9.8	9.8	7.3	7.0	6.7	6.5
4	16.2	16.0	13.9	13.6	11.2	10.9	9.8	9.8	7.2	7.0	6.7	6.5
5	16.3	15.9	13.9	13.6	11.1	10.9	9.8	9.6	7.3	7.0	6.6	6.5
6	16.3	15.7	13.6	13.6	11.2	10.7	9.8	9.6	7.2	7.0	6.6	6.4
7	16.2	15.7	13.6	13.4	10.9	10.9	9.6	9.6	7.2	7.0	6.6	6.3
8	16.0	15.7	13.4	13.4	10.9	10.7	9.6	9.6	7.2	7.0	6.5	6.3
9	16.0	15.7	13.4	13.2	10.9	10.7	9.6	9.4	7.2	7.0	6.5	6.3
10	16.0	15.7	13.2	12.9	10.7	10.7	9.6	9.4	7.2	7.0	6.5	6.1
11	16.0	15.7	13.2	13.1	10.7	10.5	9.4	9.4	7.2	6.9	6.5	6.2
12	15.7	15.4	13.2	13.1	10.7	10.5	9.4	9.2	7.0	7.0	6.5	6.2
13	15.7	15.4	13.2	12.9	10.7	10.5	9.4	9.2	7.0	7.0	6.4	6.1
14	15.7	15.4	13.1	12.9	10.5	10.5	9.4	9.2	7.0	6.8	6.3	6.1
15	15.7	15.4	12.9	12.7	10.5	10.5	9.2	9.0	7.0	6.8	6.3	6.1
16	15.7	15.4	12.9	12.5	10.5	10.5	9.2	9.0	7.0	6.8	6.3	6.1
17	15.5	15.2	12.7	12.4	10.5	10.3	9.1	9.0	7.0	6.8	6.4	6.1
18	15.4	15.1	12.5	12.4	10.5	10.2	9.1	9.1	7.0	6.8	6.2	6.1
19	15.4	15.1	12.5	12.2	10.3	10.1	9.1	8.9	7.0	6.8	6.2	6.0
20	15.2	15.1	12.2	12.2	10.3	10.1	8.9	8.7	7.0	6.7	6.1	5.8
21	15.2	14.9	12.2	12.0	10.5	10.1	8.9	8.7	6.8	6.7	6.1	5.9
22	15.1	14.9	12.2	11.8	10.5	10.4	8.7	6.7	7.0	6.7	6.1	5.8
23	15.2	14.9	11.8	11.8	10.5	10.4	8.1	7.7	6.8	6.6	6.1	5.8
24	14.9	14.9	11.8	11.6	10.5	10.4	7.9	7.5	6.8	6.6	6.1	5.8
25	14.9	14.6	11.8	11.6	10.5	10.4	7.7	7.5	6.8	6.6	6.0	5.9
26	14.7	14.4	11.6	11.4	10.5	10.3	7.7	7.4	6.8	6.6	6.0	5.8
27	14.6	14.4	11.8	11.5	10.4	10.2	7.6	7.3	6.7	6.6	6.0	5.8
28	14.7	14.4	11.8	11.6	10.3	10.1	7.4	7.4	6.7	6.7	6.0	5.8
29	14.4	14.1	11.6	11.4	10.3	10.0	7.4	7.3	---	---	6.0	5.8
30	14.1	14.1	11.6	11.4	10.2	10.0	7.4	7.2	---	---	6.0	5.8
31	14.1	14.1	---	---	10.0	10.0	7.4	7.2	---	---	6.0	5.8
MONTH	16.3	14.1	14.1	11.4	11.4	10.0	10.1	6.7	7.4	6.6	6.7	5.8

[illegible]

Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

GROUND-WATER RECORDS—CONTINUED

413547083481500. LOCAL NUMBER, LU-24

LOCATION.--Latitude 41°35'47", longitude 83°48'15", Lucas County, Hydrologic Unit 04100009, along State Route 2 near Holland, Ohio.

Owner.--USGS/Toledo Express Airport.

AQUIFER.--Sand of Quaternary age.

WELL CHARACTERISTICS.--Observation well drilled by hollow stem auger, diameter 4.0 in., depth 18.7 ft. Cased with Sch 40 PVC to 8.7 ft.; .010 in. screen from 8.7 to 18.7 ft.

INSTRUMENTATION.--Data logger--60 minute record. Water-level data only was collected at this well.

DATUM.--Elevation of land-surface datum is 677.21 feet above sea level.

Measuring point: shelter floor 2.12 ft. above land-surface datum.

REMARKS.--This station is part of an eight-site network to collect data for the Ohio Department of Transportation concerning road salt application and its effect(s) on shallow ground-water quality. Water-quality data for nearby wells is available in adjacent tables.

PERIOD OF RECORD.--February 1991 to current year.

PERIOD OF DAILY RECORD.--

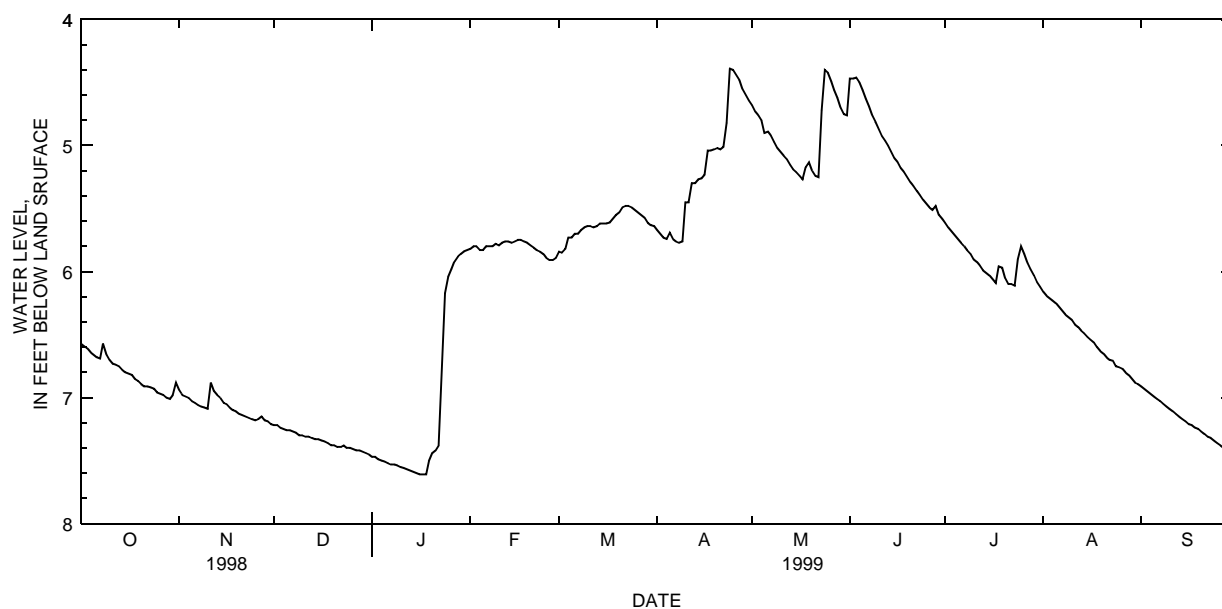
WATER LEVEL: February 1991 to current year.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER LEVEL: Maximum daily low, 8.10 ft. below land-surface datum, October 24, 1991; maximum daily high, 3.21 ft. below land-surface data, May 2-3, 1998.

EXTREMES FOR CURRENT YEAR.--

WATER LEVEL: Maximum daily low, 7.61 ft. below land-surface datum, January 16-18, 1999; maximum daily high, 4.30 ft. below land-surface datum, May 24, 1999.



413547083481500. LOCAL NUMBER, LU-24—Continued

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	6.57	6.54	6.94	6.88	7.22	7.21	7.47	7.45	5.82	5.80	5.84	5.82
2	6.59	6.57	6.98	6.94	7.22	7.22	7.47	7.44	5.80	5.79	5.85	5.82
3	6.61	6.59	6.99	6.98	7.24	7.22	7.49	7.45	5.80	5.79	5.82	5.72
4	6.64	6.61	7.00	6.99	7.25	7.24	7.50	7.49	5.83	5.79	5.73	5.73
5	6.66	6.64	7.03	7.00	7.26	7.25	7.51	7.50	5.83	5.79	5.73	5.70
6	6.68	6.66	7.04	7.03	7.26	7.26	7.52	7.51	5.80	5.79	5.70	5.69
7	6.69	6.37	7.06	7.04	7.27	7.26	7.53	7.52	5.80	5.79	5.70	5.67
8	6.57	6.40	7.07	7.06	7.28	7.27	7.53	7.53	5.80	5.78	5.67	5.65
9	6.66	6.57	7.08	7.07	7.30	7.28	7.54	7.53	5.78	5.77	5.65	5.63
10	6.70	6.66	7.09	6.76	7.30	7.30	7.55	7.54	5.79	5.77	5.64	5.63
11	6.73	6.70	6.88	6.76	7.31	7.30	7.56	7.55	5.77	5.75	5.64	5.64
12	6.74	6.73	6.95	6.88	7.31	7.31	7.57	7.56	5.76	5.75	5.65	5.64
13	6.75	6.74	6.98	6.95	7.32	7.31	7.58	7.57	5.76	5.75	5.64	5.62
14	6.78	6.75	7.00	6.98	7.33	7.32	7.59	7.58	5.77	5.76	5.62	5.61
15	6.80	6.78	7.04	7.00	7.33	7.33	7.60	7.59	5.76	5.75	5.62	5.61
16	6.81	6.80	7.05	7.03	7.34	7.33	7.61	7.60	5.75	5.74	5.62	5.61
17	6.82	6.81	7.08	7.05	7.35	7.34	7.61	7.61	5.75	5.74	5.61	5.58
18	6.85	6.82	7.10	7.08	7.36	7.35	7.61	7.50	5.76	5.75	5.58	5.55
19	6.87	6.85	7.11	7.10	7.38	7.36	7.50	7.44	5.77	5.76	5.55	5.53
20	6.89	6.87	7.13	7.11	7.38	7.38	7.44	7.42	5.79	5.77	5.53	5.49
21	6.91	6.89	7.14	7.13	7.39	7.38	7.42	7.38	5.81	5.79	5.49	5.48
22	6.91	6.91	7.15	7.14	7.39	7.38	7.38	6.72	5.83	5.81	5.48	5.47
23	6.92	6.91	7.16	7.15	7.38	7.38	6.72	6.17	5.84	5.83	5.48	5.47
24	6.93	6.92	7.17	7.16	7.40	7.38	6.17	6.04	5.86	5.84	5.49	5.47
25	6.96	6.93	7.18	7.17	7.40	7.40	6.04	5.98	5.89	5.86	5.51	5.49
26	6.97	6.96	7.17	7.06	7.41	7.40	5.98	5.92	5.91	5.89	5.53	5.51
27	6.98	6.97	7.15	7.10	7.42	7.41	5.92	5.88	5.91	5.89	5.55	5.53
28	7.00	6.98	7.18	7.15	7.42	7.41	5.88	5.86	5.89	5.82	5.57	5.55
29	7.01	6.98	7.19	7.18	7.43	7.42	5.86	5.84	---	---	5.61	5.57
30	6.98	6.82	7.21	7.19	7.44	7.43	5.84	5.83	---	---	5.63	5.61
31	6.88	6.81	---	---	7.45	7.44	5.83	5.82	---	---	5.64	5.63
MONTH	7.01	6.37	7.21	6.76	7.45	7.21	7.61	5.82	5.91	5.74	5.85	5.47

[illegible]

Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

GROUND-WATER RECORDS—CONTINUED

403923082325500. LOCAL NUMBER, R-16

LOCATION.--Latitude 40°39'23", longitude 82°32'55", Ross County, Hydrologic Unit 05040002, along State Route 97 near Lexington, Ohio.

Owner.--USGS/Sam McBride.

AQUIFER.--Sand and Gravel of Pleistocene age.

WELL CHARACTERISTICS.--Observation well drilled by hollow stem auger, diameter 4.0 in., depth 18.9 ft. Cased with Sch 40 PVC to 8.9 ft.; .010 in. screen from 8.9 to 18.9 ft.

INSTRUMENTATION.--Data logger--60 minute record. Precipitation data collected with a propane-heated, tipping-bucket rain gauge. Also collected: water level, air temperature, soil temperature, water temperature, and specific conductance. Conductivity/water temperature probe set at 18.6 feet below land surface.

DATUM.--Elevation of land-surface datum is 1168.37 feet above sea level.

Measuring point: shelter shelf 2.36 ft. above land-surface datum.

REMARKS.--This station is part of an eight-site network to collect data for the Ohio Department of Transportation concerning road salt application and its effect(s) on shallow ground-water quality. Water-quality data for nearby wells is available in preceding tables. Incomplete data this year due to problems with Handar encoder.

PERIOD OF RECORD.--February 1991 to current year.

PERIOD OF DAILY RECORD.--

WATER LEVEL: February 1991 to current year.

SPECIFIC CONDUCTANCE: February 1991 to current year.

AIR TEMPERATURE: February 1991 to current year.

WATER TEMPERATURE: February 1991 to current year.

SOIL TEMPERATURE: February 1991 to current year.

PRECIPITATION: February 1991 to current year.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER LEVEL: Maximum daily low, 18.31 ft. below land-surface datum, September 30, 1999; maximum daily high, 10.56 ft. below land-surface datum, March 27, 1993.

SPECIFIC CONDUCTANCE: Maximum, 774 microsiemens August 9, 1995; minimum, 157 microsiemens March 6, 1991.

AIR TEMPERATURE: Maximum, 36.0°C August 1, 1991; minimum, -26.1°C January 19, 1992.

WATER TEMPERATURE: Maximum, 12.6°C October 11-13, 1995; minimum, 7.7°C April 16-17, 1994, and March 22-April 8, 1996.

SOIL TEMPERATURE: Maximum, 29.3°C August 29, 1993, and June 19, 1994; minimum, -1.6°C February 6, 1996.

EXTREMES FOR CURRENT YEAR.--

WATER LEVEL: Maximum daily low, 18.31 ft. below land-surface datum, September 30, 1999; maximum daily high, 11.80 ft. below land-surface datum, April 22, 1999.

SPECIFIC CONDUCTANCE: Maximum, 602 microsiemens January 24, 1999; minimum, 312 microsiemens June 15, 1999.

AIR TEMPERATURE: Maximum, 34.5°C July 31, 1999; minimum, -25.0°C January 10, 1999.

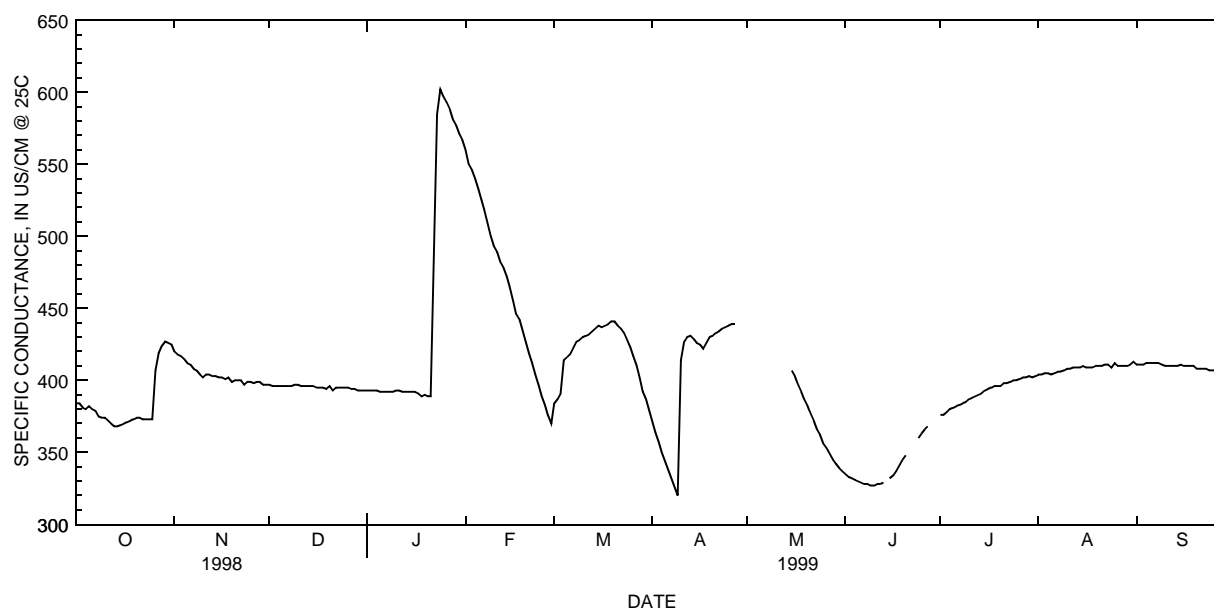
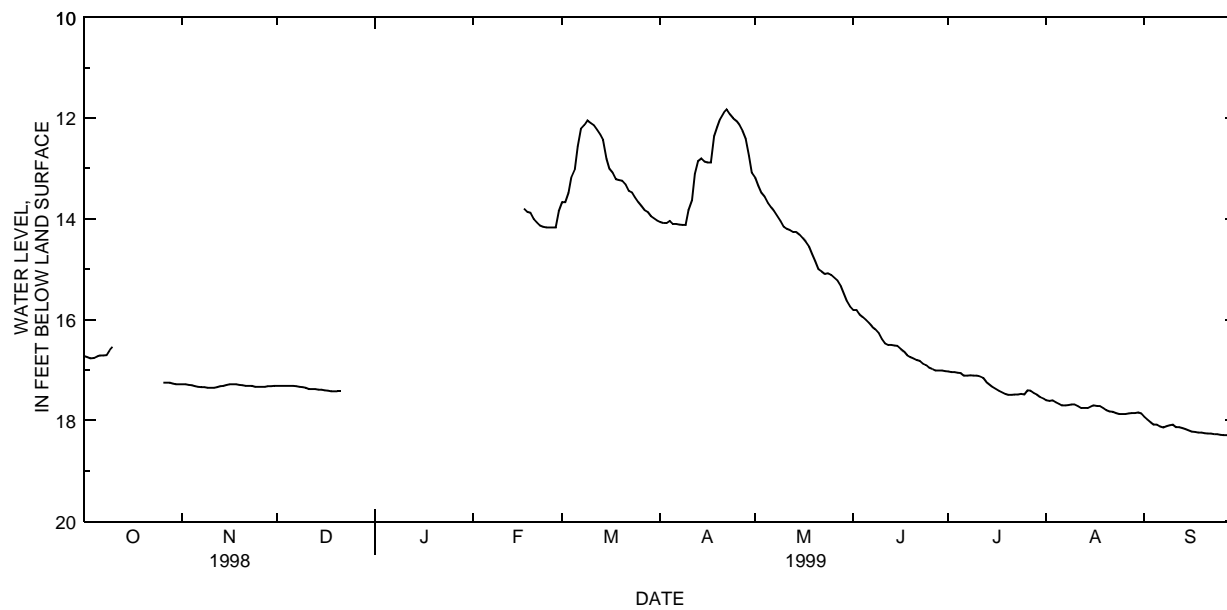
WATER TEMPERATURE: Maximum, 12.3°C many days October, November, December, 1998; minimum, 8.3°C April 18-19, 1999.

SOIL TEMPERATURE: Maximum, 25.3°C July 31, 1999; minimum, 0.6°C January 8, 1999.

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

GROUND-WATER RECORDS—CONTINUED

403923082325500. LOCAL NUMBER, R-16—Continued



403923082325500. LOCAL NUMBER, R-16—Continued

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	16.72	16.72	17.28	17.28	17.31	17.31	---	---	---	---	13.67	13.62
2	16.74	16.72	17.28	17.28	17.31	17.31	---	---	---	---	13.67	13.48
3	16.77	16.74	17.29	17.28	17.31	17.31	---	---	---	---	13.48	13.17
4	16.76	16.73	17.30	17.29	17.31	17.31	---	---	---	---	13.17	13.01
5	16.73	16.71	17.32	17.30	17.31	17.31	---	---	---	---	13.01	12.56
6	16.71	16.71	17.33	17.32	17.31	17.31	---	---	---	---	12.56	12.18
7	16.71	16.70	17.34	17.33	17.32	17.31	---	---	---	---	12.21	12.13
8	16.70	16.60	17.34	17.34	17.33	17.31	---	---	---	---	12.14	12.04
9	16.60	16.55	17.35	17.34	17.34	17.33	---	---	---	---	12.04	12.00
10	16.54	16.50	17.35	17.35	17.35	17.34	---	---	---	---	12.09	12.01
11	---	---	17.35	17.34	17.38	17.35	---	---	---	---	12.14	12.08
12	---	---	17.34	17.32	17.38	17.38	---	---	---	---	12.23	12.14
13	---	---	17.32	17.31	17.38	17.38	---	---	---	---	12.32	12.23
14	---	---	17.31	17.29	17.39	17.38	---	---	---	---	12.43	12.32
15	---	---	17.29	17.28	17.39	17.38	---	---	---	---	12.81	12.43
16	---	---	17.28	17.28	17.40	17.39	---	---	---	---	13.01	12.79
17	---	---	17.28	17.28	17.41	17.40	---	---	13.80	13.69	13.08	12.97
18	---	---	17.28	17.28	17.42	17.41	---	---	13.86	13.80	13.21	13.08
19	---	---	17.29	17.28	17.42	17.42	---	---	13.88	13.80	13.23	13.20
20	---	---	17.30	17.29	17.42	17.42	---	---	14.00	13.88	13.24	13.22
21	---	---	17.31	17.30	17.42	17.42	---	---	14.07	14.00	13.31	13.23
22	---	---	17.31	17.31	---	---	---	---	14.13	14.07	13.44	13.31
23	---	---	17.31	17.31	---	---	---	---	14.16	14.13	13.47	13.43
24	---	---	17.33	17.31	---	---	---	---	14.17	14.14	13.57	13.47
25	---	---	17.33	17.33	---	---	---	---	14.17	14.09	13.67	13.57
26	17.25	17.24	17.33	17.33	---	---	---	---	14.17	14.17	13.74	13.67
27	17.25	17.25	17.33	17.32	---	---	---	---	14.17	13.84	13.82	13.74
28	17.25	17.25	17.32	17.32	---	---	---	---	13.84	13.65	13.86	13.82
29	17.27	17.25	17.32	17.31	---	---	---	---	---	---	13.94	13.86
30	17.28	17.27	17.31	17.31	---	---	---	---	---	---	13.99	13.94
31	17.28	17.28	---	---	---	---	---	---	---	---	14.03	13.99
MONTH	17.28	16.50	17.35	17.28	17.42	17.31	---	---	14.17	13.65	14.03	12.00

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	14.06	14.03	13.19	13.08	15.81	15.74	17.03	17.02	17.60	17.56	17.93	17.86
2	14.08	14.06	13.34	13.19	15.81	15.79	17.04	17.03	17.61	17.60	17.98	17.93
3	14.08	14.03	13.48	13.34	15.89	15.80	17.04	17.04	17.60	17.60	18.04	17.98
4	14.04	13.99	13.56	13.48	15.95	15.89	17.05	17.04	17.64	17.60	18.08	18.00
5	14.10	14.04	13.68	13.56	16.00	15.95	17.06	17.05	17.67	17.64	18.08	18.07
6	14.10	14.08	13.77	13.68	16.06	16.00	17.11	17.06	17.70	17.67	18.12	18.08
7	14.11	14.07	13.84	13.77	16.14	16.06	17.11	17.02	17.70	17.69	18.14	18.11
8	14.12	14.07	13.95	13.84	16.19	16.14	17.10	17.06	17.69	17.68	18.11	18.09
9	14.12	13.83	14.04	13.95	16.26	16.19	17.11	17.10	17.68	17.67	18.09	18.05
10	13.83	13.63	14.15	14.04	16.38	16.26	17.11	17.11	17.68	17.67	18.08	18.05
11	13.63	13.10	14.20	14.15	16.47	16.38	17.12	17.11	17.71	17.68	18.13	18.08
12	13.10	12.85	14.22	14.20	16.50	16.47	17.15	17.12	17.75	17.71	18.13	18.13
13	12.85	12.80	14.26	14.22	16.50	16.50	17.23	17.15	17.75	17.75	18.15	18.12
14	12.80	12.77	14.26	14.24	16.51	16.50	17.28	17.23	17.75	17.72	18.17	18.15
15	12.86	12.79	14.31	14.24	16.52	16.51	17.33	17.28	17.72	17.70	18.20	18.17
16	12.88	12.85	14.38	14.31	16.58	16.52	17.37	17.33	17.70	17.70	18.22	18.20
17	12.88	12.36	14.45	14.38	16.63	16.58	17.41	17.37	17.71	17.70	18.23	18.22
18	12.36	12.17	14.55	14.45	16.70	16.63	17.44	17.41	17.71	17.71	18.24	18.23
19	12.17	12.01	14.69	14.55	16.74	16.70	17.47	17.44	17.75	17.71	18.24	18.24
20	12.01	11.89	14.84	14.69	16.77	16.74	17.49	17.47	17.80	17.75	18.25	18.24
21	11.89	11.82	15.00	14.84	16.80	16.77	17.49	17.48	17.82	17.80	18.26	18.25
22	11.83	11.80	15.04	15.00	16.82	16.80	17.48	17.47	17.83	17.82	18.26	18.26
23	11.92	11.81	15.09	15.04	16.87	16.82	17.48	17.47	17.85	17.83	18.27	18.26
24	12.00	11.92	15.08	15.05	16.90	16.87	17.47	17.47	17.87	17.85	18.27	18.27
25	12.05	12.00	15.11	15.07	16.95	16.90	17.48	17.40	17.87	17.86	18.28	18.27
26	12.13	12.05	15.17	15.11	16.98	16.95	17.40	17.39	17.87	17.86	18.29	18.28
27	12.25	12.13	15.22	15.17	17.01	16.98	17.41	17.39	17.86	17.85	18.29	18.29
28	12.41	12.25	15.33	15.22	17.01	17.01	17.45	17.41	17.85	17.85	18.30	18.29
29	12.74	12.41	15.47	15.33	17.01	17.01	17.48	17.45	17.85	17.84	18.30	18.30
30	13.08	12.74	15.63	15.47	17.02	17.01	17.53	17.48	17.84	17.82	18.31	18.30
31	---	---										

Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

GROUND-WATER RECORDS—CONTINUED

403923082325500. LOCAL NUMBER, R-16—Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	384	381	420	418	397	394	393	390	560	550	384	368
2	384	381	418	415	396	394	393	391	550	544	387	382
3	381	380	417	412	396	394	393	391	546	540	391	386
4	380	380	415	410	396	394	393	389	540	533	414	389
5	382	378	412	408	396	394	392	389	533	525	416	413
6	380	377	411	406	396	395	392	389	525	516	418	414
7	379	375	408	404	396	393	392	389	518	505	423	418
8	375	374	407	403	396	393	392	390	508	497	427	422
9	374	371	404	402	397	393	392	389	500	491	428	425
10	374	369	402	401	397	393	393	389	493	486	430	426
11	372	367	404	401	396	393	393	391	489	482	431	427
12	370	366	404	400	396	392	392	388	482	476	432	428
13	368	365	403	399	396	393	392	389	478	471	434	430
14	368	366	403	399	396	392	392	391	472	464	436	432
15	369	366	402	399	396	392	392	391	464	455	438	434
16	370	367	402	399	395	392	392	387	455	446	437	435
17	371	368	401	399	395	392	391	387	446	441	438	437
18	372	369	402	398	395	392	389	387	442	435	439	437
19	373	370	399	397	394	392	390	386	435	426	441	437
20	374	371	400	397	396	391	389	386	427	418	441	435
21	374	371	400	397	393	392	389	385	419	411	438	434
22	373	370	400	397	395	393	496	389	412	403	436	431
23	373	370	397	396	395	393	585	496	404	396	433	426
24	373	370	399	396	395	392	602	585	397	388	428	421
25	373	370	399	396	395	392	597	590	389	381	423	415
26	407	370	398	395	395	391	593	585	383	375	417	408
27	419	407	399	395	394	391	588	581	376	367	410	401
28	424	418	399	395	394	391	581	574	370	365	402	392
29	427	422	397	395	393	390	577	570	---	---	392	385
30	426	422	397	395	393	390	571	564	---	---	387	377
31	425	420	---	---	393	391	567	557	---	---	379	371
MONTH	427	365	420	395	397	390	602	385	560	365	441	368

[illegible]

[illegible]

403923082325500. LOCAL NUMBER, R-16—Continued

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	12.0	11.8	12.3	12.2	12.3	12.1	12.0	11.7	10.5	10.3	9.9	9.4
2	12.0	11.8	12.3	12.2	12.3	12.1	11.8	11.6	10.5	10.3	9.7	9.4
3	12.0	12.0	12.3	12.0	12.3	12.0	11.8	11.6	10.5	10.3	9.6	9.2
4	12.0	12.0	12.3	12.0	12.3	12.0	12.0	11.5	10.5	10.1	9.4	9.2
5	12.1	11.8	12.3	12.0	12.3	12.0	12.0	11.5	10.3	10.1	9.5	9.2
6	12.1	11.8	12.2	12.0	12.1	12.0	12.0	11.5	10.3	10.1	9.4	9.2
7	12.1	11.8	12.3	12.0	12.3	12.0	11.8	11.5	10.3	10.0	9.3	9.0
8	12.0	12.0	12.3	12.0	12.2	12.0	11.8	11.5	10.3	9.8	9.3	9.0
9	12.3	12.0	12.3	12.2	12.3	12.0	11.8	11.5	10.1	9.8	9.2	9.0
10	12.3	11.8	12.3	12.3	12.3	12.0	11.9	11.5	10.1	9.8	9.3	9.0
11	12.3	11.8	12.3	12.0	12.3	12.0	11.7	11.5	10.1	9.8	9.3	9.0
12	12.3	11.9	12.3	12.0	12.3	12.0	11.8	11.6	10.1	9.8	9.2	9.0
13	12.3	12.0	12.3	12.0	12.3	12.0	11.8	11.5	10.1	9.6	9.1	8.8
14	12.3	12.0	12.3	12.0	12.3	12.0	11.5	11.5	9.9	9.6	9.1	8.8
15	12.3	12.0	12.3	12.0	12.2	12.0	11.5	11.5	9.9	9.8	9.1	8.8
16	12.3	12.0	12.3	12.0	12.2	12.0	11.8	11.5	9.9	9.9	9.1	9.0
17	12.3	12.0	12.3	12.0	12.2	12.0	11.8	11.5	9.9	9.6	9.1	9.0
18	12.3	12.1	12.3	12.0	12.2	12.0	11.8	11.6	9.9	9.6	9.1	9.0
19	12.3	12.1	12.3	12.2	12.2	12.0	11.8	11.5	9.9	9.6	9.1	8.8
20	12.3	12.0	12.3	12.0	12.2	11.8	11.8	11.6	9.8	9.6	9.1	8.8
21	12.3	12.0	12.2	12.0	12.0	12.0	11.8	11.6	9.9	9.6	9.1	8.8
22	12.3	12.0	12.3	12.0	12.0	11.8	11.6	11.1	9.9	9.6	9.1	8.8
23	12.3	12.0	12.3	12.2	12.0	11.8	11.1	10.9	9.9	9.6	9.1	8.8
24	12.3	12.0	12.3	12.0	12.0	11.8	10.9	10.7	9.9	9.6	9.1	8.8
25	12.3	12.0	12.3	12.0	12.0	11.8	10.9	10.5	9.9	9.6	9.1	8.8
26	12.3	12.0	12.3	12.0	12.0	11.8	10.7	10.4	9.9	9.6	9.1	8.8
27	12.3	12.0	12.3	12.0	12.0	11.8	10.5	10.4	9.9	9.6	9.1	8.8
28	12.3	12.0	12.3	12.0	12.0	11.8	10.7	10.5	9.9	9.6	9.1	8.8
29	12.3	12.0	12.3	12.1	12.0	11.8	10.7	10.4	---	---	9.1	8.9
30	12.3	12.3	12.3	12.1	12.0	11.7	10.5	10.3	---	---	9.1	8.8
31	12.3	12.0	---	---	12.0	11.7	10.5	10.2	---	---	9.1	8.8
MONTH	12.3	11.8	12.3	12.0	12.3	11.7	12.0	10.2	10.5	9.6	9.9	8.8

[illegible]

403923082325500. LOCAL NUMBER, R-16—Continued

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	17.8	15.6	11.6	11.1	10.3	8.7	1.2	1.0	3.1	2.4	2.5	2.0
2	15.6	13.7	11.4	10.6	9.0	8.2	1.0	.9	4.0	3.1	2.0	1.9
3	14.5	13.5	10.6	9.2	10.2	8.9	1.0	.8	3.9	3.0	2.0	1.9
4	14.1	13.5	9.2	8.3	11.2	10.2	1.0	.9	3.6	3.1	1.9	1.5
5	15.9	14.1	8.3	7.9	11.1	10.5	1.0	.9	3.1	2.2	2.3	1.4
6	17.6	15.7	7.9	7.3	12.8	11.1	1.0	.9	4.0	2.6	2.3	1.7
7	17.6	17.2	8.0	7.3	12.8	10.7	1.0	.9	3.5	2.8	1.7	1.3
8	17.2	15.5	7.7	7.1	10.7	8.8	1.0	.6	3.0	2.5	1.3	1.1
9	15.5	14.6	8.3	7.6	8.8	7.1	1.0	.8	4.0	2.7	1.1	1.1
10	14.6	13.4	10.2	8.3	7.1	5.8	1.0	1.0	4.1	2.8	1.2	1.1
11	14.0	12.6	10.1	8.3	6.4	5.5	1.0	1.0	6.5	3.4	1.2	1.2
12	14.4	12.7	8.3	7.5	5.8	5.1	1.1	.9	6.9	4.6	1.2	1.1
13	14.0	13.0	8.7	8.0	5.2	4.4	1.0	.9	4.6	2.6	1.2	1.1
14	13.5	12.1	8.5	7.3	5.1	4.4	1.2	1.0	2.6	2.2	1.2	1.2
15	12.9	11.5	8.7	8.0	4.5	3.5	1.3	1.2	2.8	2.0	1.2	1.1
16	13.2	11.6	8.2	7.1	4.6	4.1	1.3	1.3	4.3	2.6	1.4	1.0
17	14.3	12.5	8.4	8.0	4.5	4.2	1.4	1.1	4.4	3.5	4.2	1.4
18	14.9	14.1	8.0	6.8	4.2	3.7	1.3	1.1	3.5	2.8	4.2	3.4
19	14.7	13.5	8.9	7.4	4.8	4.0	1.3	1.2	2.8	2.2	3.5	2.6
20	13.5	12.5	8.8	7.5	5.3	4.8	1.5	1.3	2.2	1.6	3.8	2.0
21	12.5	11.2	7.5	6.4	7.3	5.3	1.6	1.5	1.6	1.3	3.8	3.0
22	11.5	10.4	6.5	5.7	7.0	3.3	3.4	1.5	1.3	1.1	3.4	2.7
23	10.5	9.1	8.0	6.5	3.3	2.2	5.7	3.4	1.1	1.0	3.4	1.9
24	10.6	9.2	7.9	6.7	2.2	1.8	5.7	4.2	1.0	1.0	4.5	2.9
25	10.9	9.5	7.1	5.8	1.8	1.5	4.2	3.5	1.1	1.0	3.8	2.7
26	11.0	9.6	7.5	6.9	1.5	1.3	3.5	2.8	1.3	1.1	4.0	2.6
27	11.4	9.8	7.3	6.2	1.3	1.2	4.6	2.5	1.8	1.1	4.3	2.4
28	12.2	11.3	7.3	5.7	1.3	1.2	4.7	3.9	2.7	1.8	5.2	2.8
29	11.9	10.6	9.3	7.1	1.4	1.3	3.9	3.2	---	---	6.3	4.7
30	11.7	11.1	10.3	9.2	1.4	1.3	3.2	2.2	---	---	6.6	4.2
31	11.8	11.3	---	---	1.3	1.2	2.6	2.0	---	---	7.3	4.8
MONTH	17.8	9.1	11.6	5.7	12.8	1.2	5.7	.6	6.9	1.0	7.3	1.0

[illegible]

PROJECT DATA

Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

GROUND-WATER RECORDS—CONTINUED

403923082325500. LOCAL NUMBER, R-16—Continued

PRECIPITATION, TOTAL, INCHES, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.21	.03	.32	.00	.56	1.61	.01	.00
2	.00	.00	.00	.19	.10	.12	.00	.00	.03	.01	.00	.00
3	1.14	.00	.00	.56	.00	.34	.17	.00	.00	.00	.00	.00
4	.00	.00	.00	.00	.04	.00	.07	.00	.00	.00	.09	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00
6	.00	.00	.00	.00	.01	.78	.03	.00	.00	.28	.00	.77
7	1.75	.00	.27	.07	1.02	.02	.00	.00	.00	.00	.34	.01
8	.01	.00	.00	.00	.00	.00	.04	.23	.00	.00	.03	.00
9	.00	.00	.00	.02	.00	.06	2.05	.00	.00	.52	.00	.00
10	.00	1.06	.00	.00	.00	.13	.00	.00	.00	.00	.16	.00
11	.00	.00	.02	.00	.00	.00	.51	.00	.01	.00	.00	.00
12	.00	.00	.00	.55	.26	.00	.01	.06	.00	.00	.00	.00
13	.00	.00	.00	.25	.01	.00	.00	.61	.00	.00	.75	.01
14	.00	.00	.00	.00	.00	.00	.00	.03	.48	.00	.03	.00
15	.00	.00	.00	.00	.00	.00	.40	.00	.01	.00	.00	.00
16	.00	.00	.09	.42	.10	.00	.91	.00	.00	.00	.00	.00
17	.00	.00	.02	.28	.02	.00	.36	.00	.00	.00	.00	.00
18	.75	.00	.00	.03	.00	.00	.22	.28	.00	.00	.00	.00
19	.00	.00	.11	.00	.00	.00	.31	.00	.00	.49	.00	.00
20	.00	.20	.02	.00	.00	.00	.03	.00	.00	.00	.00	.20
21	.18	.00	1.47	.31	.00	.00	.17	.00	.00	.15	.00	.00
22	.00	.00	.00	.81	.00	.00	.00	.35	.00	.03	.00	.00
23	.01	.00	.00	.10	.00	.00	.44	.78	.00	.68	.00	.00
24	.00	.00	.00	.00	.01	.00	.00	.17	.01	.05	.90	.21
25	.00	.51	.00	.01	.08	.00	.00	.00	.00	.00	.07	.00
26	.00	.01	.00	.00	.06	.00	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.95	.00	.00	.00	.22	.00	.01	.00
28	.00	.00	.00	.00	.26	.00	.00	.00	.43	.09	.00	.00
29	.00	.00	.10	.00	---	.00	.00	.00	.02	.01	.00	.91
30	.32	.13	.00	.00	---	.00	.00	.00	.00	.09	.00	.00
31	.00	---	.00	.00	---	.01	---	.14	---	.44	.00	---
TOTAL	4.16	1.91	2.10	3.60	3.13	1.49	6.04	2.65	1.77	4.45	2.40	2.11

WTR YR 1999 TOTAL 35.81

DEICING SALT, POUNDS/LANE-MILE, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	750	---	---	---	---	---	---
2	---	---	---	750	---	---	---	---	---	---	---	---
3	---	---	---	500	250	500	---	---	---	---	---	---
4	---	---	---	---	---	250	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	1000	---	500	---	---	---	---	---	---
7	---	---	---	250	500	500	---	---	---	---	---	---
8	---	---	---	2000	---	---	---	---	---	---	---	---
9	---	---	---	750	---	1000	---	---	---	---	---	---
10	---	---	---	---	---	500	---	---	---	---	---	---
11	---	---	---	500	---	---	---	---	---	---	---	---
12	---	---	---	---	500	---	---	---	---	---	---	---
13	---	---	---	---	750	---	---	---	---	---	---	---
14	---	---	---	250	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	250	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	250	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	250	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	500	---	---	---	---	---	---	---	---	---
30	---	---	750	---	---	---	---	---	---	---	---	---
31	---	---	500	---	---	---	---	---	---	---	---	---
TOTAL	---	---	2000	6000	2500	4000	---	---	---	---	---	---

WTR YR 1999 TOTAL 14500

Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

GROUND-WATER RECORDS—CONTINUED

411138081172500. LOCAL NUMBER, PO-116

LOCATION.--Latitude 41°11'38", longitude 81°17'25", Portage County, Hydrologic Unit 04110002, along State Route 14 near Ravenna, Ohio.

Owner.--USGS/City of Akron, Ohio.

AQUIFER.--Sand and Gravel of Pleistocene age.

WELL CHARACTERISTICS.--Observation well drilled by hollow stem auger, diameter 4.0 in., depth 17.5 ft. Cased with Sch 40 PVC to 5.2 ft.; .010 in. screen from 5.2 to 17.5 ft.

INSTRUMENTATION.--Data logger--60 minute record. Precipitation data collected with a propane-heated, tipping-bucket rain gauge. Also collected: water level, air temperature, soil temperature, water temperature and specific conductance. Conductivity/water temperature probe set at 10.8 feet below land surface from February, 1991, through July, 1992, when removed; probe reinstalled August, 1994, through current year at depth of 13.4 feet below land surface.

DATUM.--Elevation of land-surface datum is 1068.39 feet above sea level.

Measuring point: shelter shelf 2.20 ft. above land-surface datum.

REMARKS.--This station is part of an eight-site network to collect data for the Ohio Department of Transportation concerning road salt application and its effect(s) on shallow ground-water quality. Water-quality data for nearby wells is available in preceding tables.

PERIOD OF RECORD.--February 1991 to current year.

PERIOD OF DAILY RECORD.--

WATER LEVEL: February 1991 to current year.

SPECIFIC CONDUCTANCE: February 1991 to July 1992; September, 1994 to current year.

AIR TEMPERATURE: February 1991 to current year.

SOIL TEMPERATURE: July 1992 to current year.

PRECIPITATION: February 1991 to current year.(Incomplete data this year due to malfunctioning of raingage).

WATER TEMPERATURE: February 1991 to July 1992; September, 1994, to current year.

EXTREMES FOR PERIOD OF DAILY RECORD:

WATER LEVEL: Maximum daily low, 9.47 ft. below land-surface datum, September 27-29, 1999; maximum daily high, 4.35 ft. below land-surface datum, April 13, 1994.

SPECIFIC CONDUCTANCE: Maximum, 2930 microsiemens September 30, 1999; minimum, 242 microsiemens April 10, 1992.

AIR TEMPERATURE: Maximum, 36.0°C August 2, 1991, July 23, 31, 1999; minimum, -32.2°C January 19, 1994.

WATER TEMPERATURE: Maximum, 14.8°C October 1, 1991; minimum, 6.1°C March 23-28, 1996.

SOIL TEMPERATURE: Maximum, 28.5°C August 11, 1992; minimum, -0.4°C February 10-14, 1994.

EXTREMES FOR CURRENT YEAR:

WATER LEVEL: Maximum daily low, 9.47 ft. below land-surface datum, September 27-29, 1999; maximum daily high, 5.63 ft. below land-surface datum, January 24, 1999.

SPECIFIC CONDUCTANCE: Maximum, 2930 microsiemens September 30, 1999; minimum, 266 microsiemens March 20, 1999.

AIR TEMPERATURE: Maximum, 36.0°C July 23, 31, 1999; minimum, -19.4°C January 5, 1999.

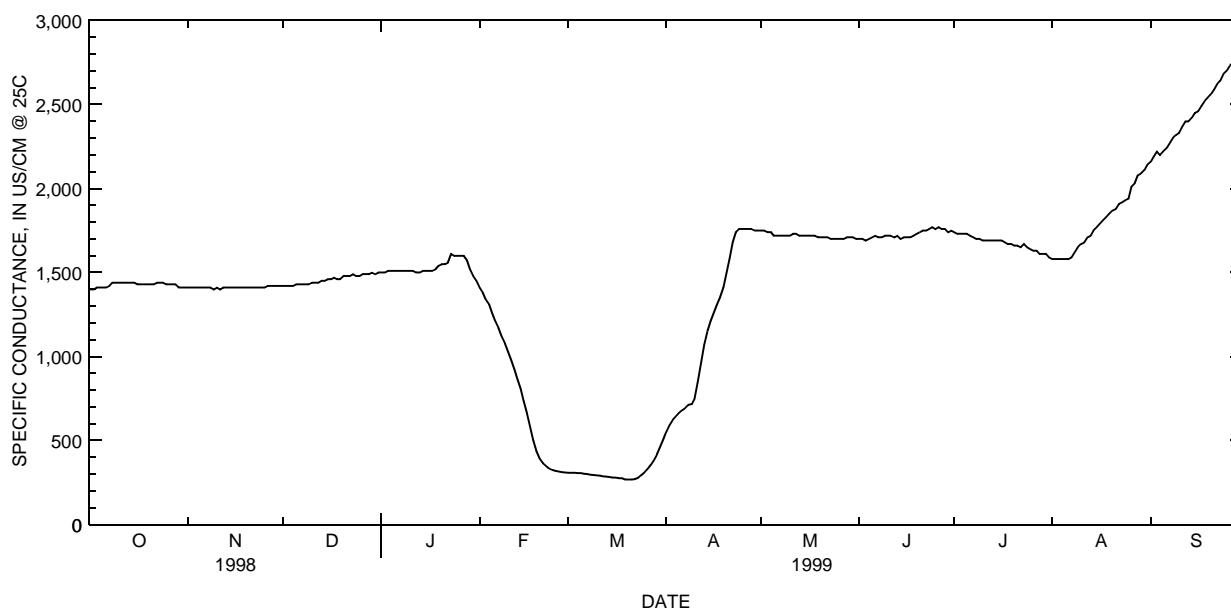
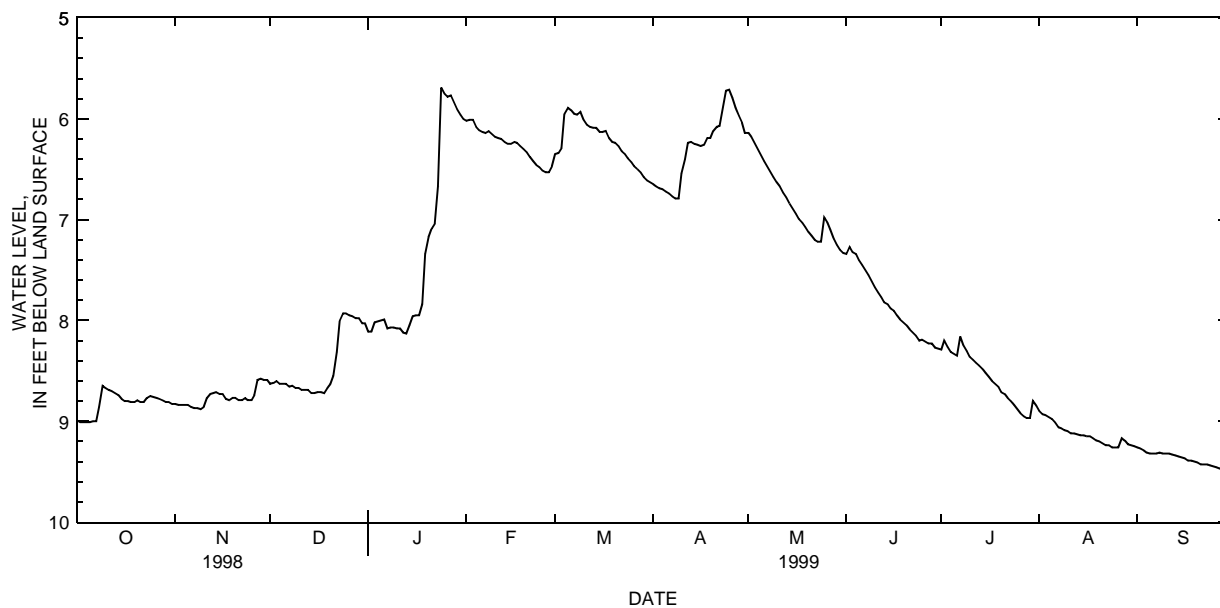
WATER TEMPERATURE: Maximum, 13.2°C many days October, November, 1998, September, 1999; minimum, 6.9°C March 16-April 9, 1999.

SOIL TEMPERATURE: Maximum, 23.5°C July 31, 1999; minimum, -0.1°C January 5-15, 1999.

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

GROUND-WATER RECORDS—CONTINUED

411138081172500. LOCAL NUMBER, PO-116—Continued



PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

GROUND-WATER RECORDS—CONTINUED

411138081172500. LOCAL NUMBER, PO-116—Continued

DEICING SALT POUNDS/LANE-MILE, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	3000	---	---	---	---	---	---
2	---	---	---	2200	---	---	---	---	---	---	---	---
3	---	---	---	600	---	---	---	---	---	---	---	---
4	---	---	---	1320	---	2100	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	5805	---	1500	---	---	---	---	---	---
7	---	---	---	900	300	---	---	---	---	---	---	---
8	---	---	---	1800	---	---	---	---	---	---	---	---
9	---	---	---	2400	---	1300	---	---	---	---	---	---
10	---	---	---	---	---	1200	---	---	---	---	---	---
11	---	---	---	3420	---	---	---	---	---	---	---	---
12	---	---	---	510	---	---	---	---	---	---	---	---
13	---	---	---	900	2600	---	---	---	---	---	---	---
14	---	---	---	1870	---	---	---	---	---	---	---	---
15	---	---	---	900	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	1400	---	---	---	---	---	---	---	---	---
18	---	---	2900	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	800	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	900	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	400	---	---	---	---	---	---	---
25	---	---	---	700	1800	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	300	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	600	---	---	---	---	---	---	---	---	---
30	---	---	3900	---	---	---	---	---	---	---	---	---
31	---	---	2150	---	---	---	---	---	---	---	---	---
TOTAL	---	---	11850	23325	6200	9100	---	---	---	---	---	---

WTR YR 1999 TOTAL 50475

Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

GROUND-WATER RECORDS--CONTINUED

393541083001100. LOCAL NUMBER, PK-48

LOCATION.--Latitude 39°35'41", longitude 83°00'11", Pickaway County, Hydrologic Unit 05060002, along State Route 104 near Circleville, Ohio
Owner.--USGS/Stacy and Clesson Thomas.

AQUIFER.--Sand and Gravel of Pleistocene age.

WELL CHARACTERISTICS.--Observation well drilled by hollow stem auger, diameter 4.0 in., depth 28 ft. Cased with Sch 40 PVC to 8 ft.; .010 in. screen from 8 to 28 ft.

INSTRUMENTATION.--Data logger--60 minute record. Precipitation data collected with a propane-heated, tipping-bucket rain gauge. Also collected: water level, air temperature, soil temperature, water temperature, and specific conductance. Conductivity/water temperature probe set at 16.0 feet below land surface from January 16, 1991 through August 2, 1994, when lowered to 24.0 feet through present.

DATUM.--Elevation of land-surface datum is 678.50 feet above sea level.
Measuring point: shelter shelf 3.36 ft. above land-surface datum.

REMARKS.--This station is part of an eight-site network to collect data for the Ohio Department of Transportation concerning road salt application and its effect(s) on shallow ground-water quality. Water-quality data for nearby wells is available in preceding tables.

PERIOD OF RECORD.--February 1991 to current year.

PERIOD OF DAILY RECORD.--
WATER LEVEL: February 1991 to current year.
SPECIFIC CONDUCTANCE: February 1991 to current year.
AIR TEMPERATURE: February 1991 to current year.
WATER TEMPERATURE: February 1991 to current year.
SOIL TEMPERATURE: February 1991 to current year.
PRECIPITATION: February 1991 to current year.

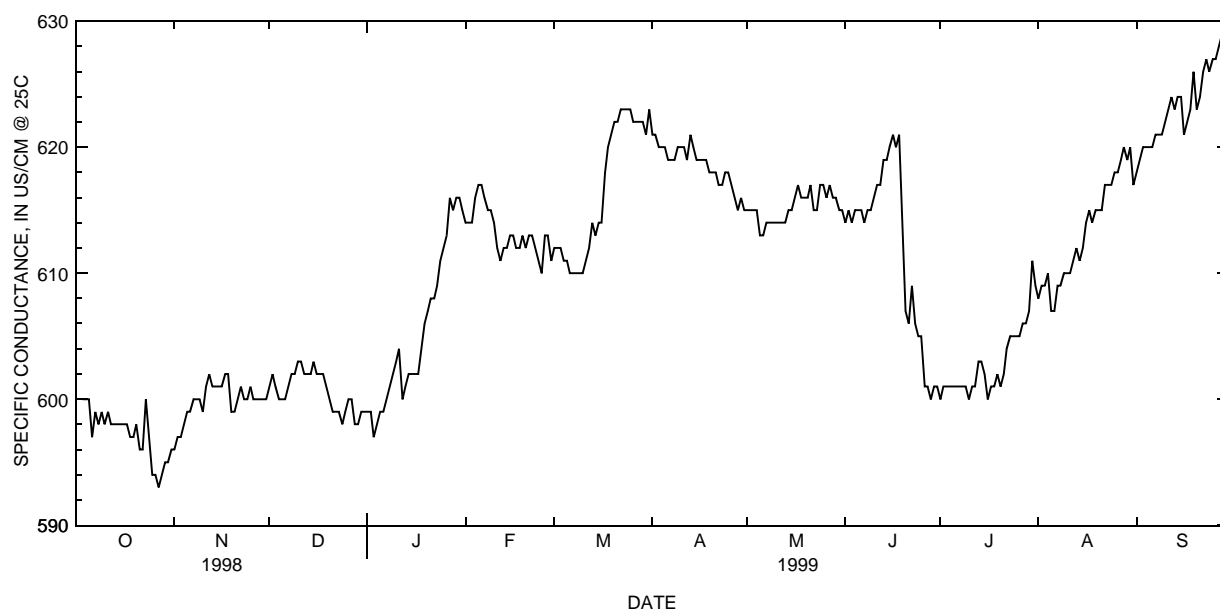
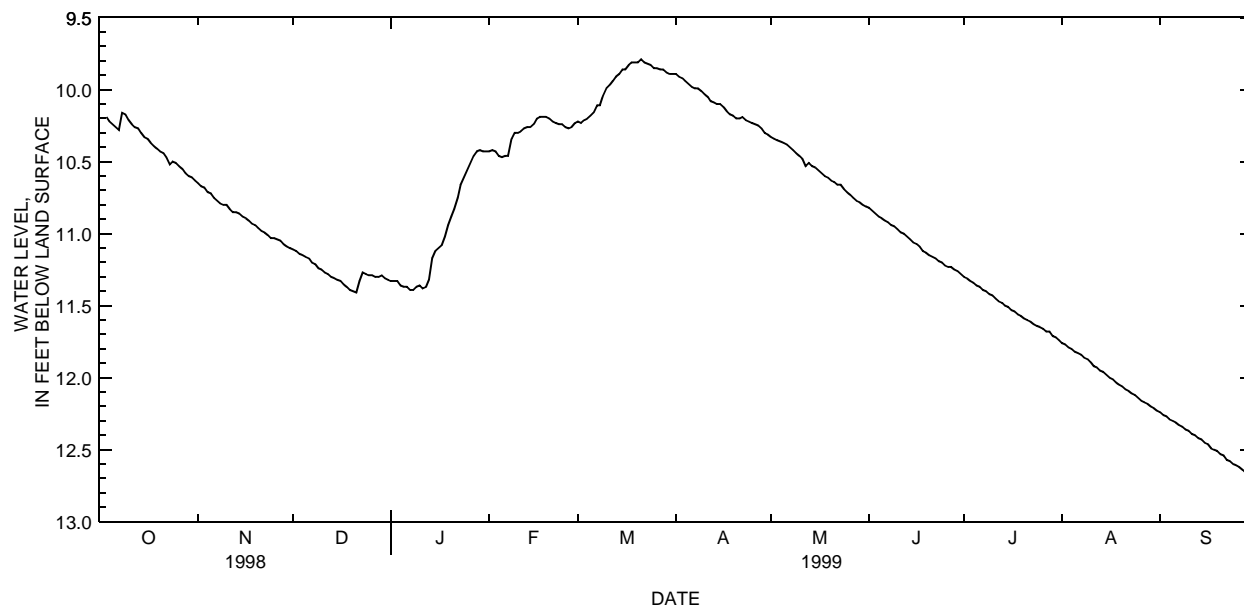
EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER LEVEL: Maximum daily low, 13.11 ft. below land-surface datum, June 18, 1992; maximum daily high, 6.50 ft. below land-surface datum, June 20, 1996.
SPECIFIC CONDUCTANCE: Maximum, 933 microsiemens April 15, 1994; minimum, 565 microsiemens November 17-19, 24, 25, 1997.
AIR TEMPERATURE: Maximum, 38.3°C July 30, 1999; minimum, -34.1°C January 19, 1994.
WATER TEMPERATURE: Maximum, 15.0°C October 20-21 1991; minimum, 10.6°C April 29, 1993.
SOIL TEMPERATURE: Maximum, 32.5°C September 16, 1991; minimum, -2.2°C February 12, 1994.

EXTREMES FOR CURRENT YEAR.--
WATER LEVEL: Maximum daily low, 12.69 ft. below land-surface datum, September 30, 1999; maximum daily high, 9.78 ft. below land-surface datum, March 21, 1999.
SPECIFIC CONDUCTANCE: Maximum, 629 microsiemens September 28, 30, 1999; minimum, 591 microsiemens October 25-26, 1998.
AIR TEMPERATURE: Maximum, 38.3°C July 30, 1999; minimum, -21.2°C January 10, 1999.
WATER TEMPERATURE: Maximum, 14.0°C many days in November, December, 1998, January, 1999; minimum, 11.9°C many days April, May, June, 1999.
SOIL TEMPERATURE: Maximum, 28.3°C July 31, 1999; minimum, -1.7°C January 13 1999.

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

GROUND-WATER RECORDS--CONTINUED

393541083001100. LOCAL NUMBER, PK-48—Continued



PROJECT DATA

Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

GROUND-WATER RECORDS--CONTINUED

393541083001100. LOCAL NUMBER. PK-48—Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	---	---	596	595	601	600	599	594	614	611	612	608
2	---	---	597	596	602	599	599	594	614	613	612	609
3	600	596	597	597	601	599	597	593	614	611	612	610
4	600	596	598	597	600	599	598	593	616	611	611	607
5	600	596	599	598	600	599	599	593	617	611	611	608
6	597	595	599	598	600	599	599	594	617	613	610	609
7	599	595	600	598	601	599	600	593	616	615	610	607
8	598	596	600	598	602	600	601	593	615	612	610	607
9	599	597	600	598	602	599	602	595	615	612	610	608
10	598	597	599	598	603	599	603	595	614	610	610	606
11	599	596	601	596	603	599	604	595	612	609	611	608
12	598	596	602	596	602	601	600	598	611	609	612	607
13	598	596	601	596	602	601	601	599	612	608	614	608
14	598	597	601	596	602	599	602	598	612	608	613	612
15	598	596	601	596	603	598	602	599	613	608	614	610
16	598	593	601	597	602	598	602	599	613	607	614	610
17	598	593	602	597	602	601	602	600	612	608	618	610
18	597	593	602	597	602	599	604	601	612	612	620	613
19	597	593	599	598	601	600	606	604	613	608	621	615
20	598	594	599	598	600	599	607	605	612	608	622	617
21	596	594	600	597	599	597	608	606	613	608	622	616
22	596	594	601	597	599	595	608	606	613	609	623	617
23	600	594	600	598	599	594	609	607	612	608	623	619
24	597	593	600	598	598	594	611	607	611	609	623	617
25	594	591	601	599	599	595	612	609	610	609	623	617
26	594	591	600	598	600	595	613	610	613	609	622	619
27	593	592	600	598	600	595	616	609	613	609	622	619
28	594	593	600	598	598	597	615	611	611	610	622	617
29	595	594	600	598	598	596	616	611	---	---	622	618
30	595	594	600	599	599	595	616	613	---	---	621	617
31	596	594	---	---	599	595	615	614	---	---	623	616
MONTH	600	591	602	595	603	594	616	593	617	607	623	606

[illegible]

393541083001100. LOCAL NUMBER, PK-48—Continued

[illegible][illegible]

Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

GROUND-WATER RECORDS--CONTINUED

400949083480100. LOCAL NUMBER, CH-42

LOCATION.--Latitude 40°09'49", longitude 83°48'01", Champaign County, Hydrologic Unit 05080001, along State Route 29 near Urbana, Ohio.

Owner.--USGS/Jack Sommers.

AQUIFER.--Sand and Gravel of Pleistocene age.

WELL CHARACTERISTICS.--Observation well drilled by hollow stem auger, diameter 4.0 in., depth 28.7 ft. Cased with Sch 40 PVC to 13.7 ft.; .020 in. screen from 13.7 to 28.7 ft.

INSTRUMENTATION.--Data logger--60 minute record. Precipitation data was collected with a propane-heated, tipping-bucket rain gauge. Also collected: water level, air temperature, soil temperature, water temperature, and specific conductance. Conductivity/water temperature probe set at 23.7 feet below land surface.

DATUM.--Elevation of land-surface datum is 1029.89 feet above sea level.

Measuring point: shelter shelf 2.32 ft. above land-surface datum.

REMARKS.--This station is part of an eight-site network to collect data for the Ohio Department of Transportation concerning road salt application and its effect(s) on shallow ground-water quality. Water-quality data for nearby wells is available in preceding tables.

PERIOD OF RECORD.--February 1991 to current year.

PERIOD OF DAILY RECORD.--

WATER LEVEL: February 1991 to current year.

SPECIFIC CONDUCTANCE: February 1991 to current year.

AIR TEMPERATURE: February 1991 to current year.

WATER TEMPERATURE: February 1991 to current year.

SOIL TEMPERATURE: February 1991 to current year.

PRECIPITATION: February 1991 to current year.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER LEVEL: Maximum daily low, 10.62 ft. below land-surface datum, December 19, 1991; maximum daily high, 4.64 ft. below land-surface datum, May 11, 1996.

SPECIFIC CONDUCTANCE: Maximum, 919 microsiemens December 11-12, 1993; minimum, 712 microsiemens August 23-24, 1997.

AIR TEMPERATURE: Maximum, 39.9°C September 4, 1999; minimum, -33.6°C January 19, 1994.

WATER TEMPERATURE: Maximum, 13.2°C many days October, November 1992; minimum, 10.2°C many days in May, June, and July, 1996.

SOIL TEMPERATURE: Maximum, 30.5°C August 2, 1991; minimum, -1.8°C February 10, 1994.

EXTREMES FOR CURRENT YEAR.--

WATER LEVEL: Maximum daily low, 10.44 ft. below land-surface datum, September 30, 1999; maximum daily high, 6.46 ft. below land-surface datum, January 23-24, 1999.

SPECIFIC CONDUCTANCE: Maximum, 865 microsiemens October 15, 1998; minimum, 780 microsiemens June 22-28, 1999.

AIR TEMPERATURE: Maximum, 39.9°C September 4, 1999; minimum, -24.6°C January 5, 1999.

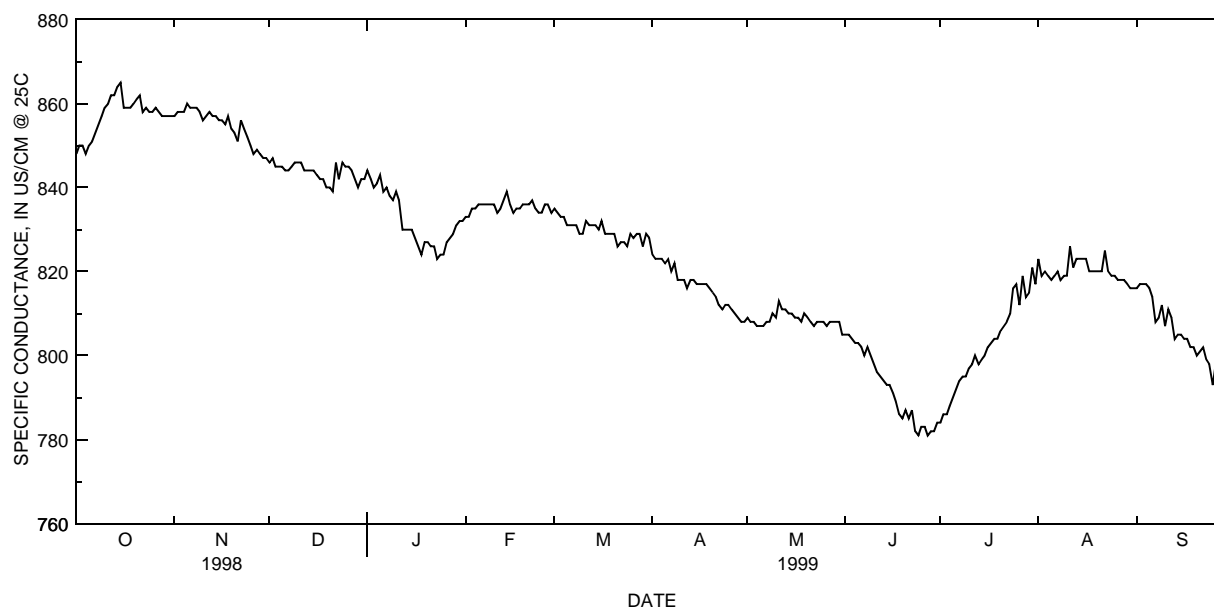
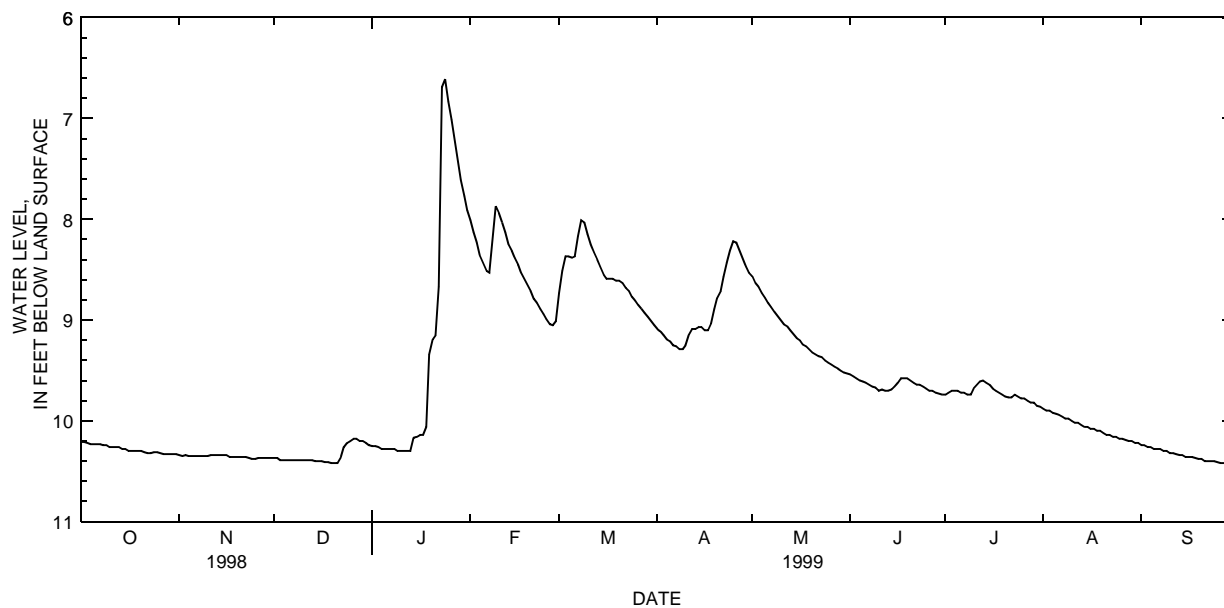
WATER TEMPERATURE: Maximum, 13.0°C December 18, 22-25, 1998, January 1, 5, 1999; minimum, 11.0°C many days May, June, 1999.

SOIL TEMPERATURE: Maximum, 29.9°C July 30, 1999; minimum, 1.6°C January 17-18, 1999.

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

GROUND-WATER RECORDS--CONTINUED

400949083480100. LOCAL NUMBER, CH-42—Continued



Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

GROUND-WATER RECORDS--CONTINUED

400949083480100. LOCAL NUMBER, CH-42—Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	848	842	857	856	846	844	844	834	833	831	835	828
2	850	843	858	857	847	844	842	837	833	832	834	828
3	850	845	858	856	845	844	840	833	835	832	833	828
4	848	847	858	856	845	844	841	835	835	834	833	827
5	850	848	860	856	845	843	843	832	836	833	831	827
6	851	850	859	856	844	842	839	831	836	832	831	828
7	853	851	859	856	844	842	840	834	836	835	831	826
8	855	852	859	857	845	843	838	830	836	834	831	828
9	857	855	858	855	846	842	837	832	836	832	829	825
10	859	857	856	854	846	841	839	834	836	831	829	825
11	860	858	857	855	846	842	837	830	834	831	832	825
12	862	859	858	850	844	841	830	828	835	831	831	824
13	862	861	857	850	844	840	830	828	837	834	831	824
14	864	858	857	848	844	840	830	828	839	833	831	825
15	865	855	856	849	844	840	830	827	836	832	830	823
16	859	853	856	849	843	841	828	824	834	831	832	822
17	859	854	855	849	842	840	826	822	835	833	829	821
18	859	853	857	849	842	837	824	823	835	834	829	823
19	860	854	854	849	840	839	827	821	836	833	829	824
20	861	854	853	848	840	839	827	819	836	834	829	821
21	862	855	851	849	839	838	826	821	836	832	826	824
22	858	855	856	848	846	837	826	821	837	831	827	824
23	859	855	854	847	842	837	823	822	835	832	827	822
24	858	855	852	847	846	836	824	823	834	832	826	822
25	858	856	850	847	845	836	824	823	834	831	829	822
26	859	855	848	846	845	836	827	821	836	830	828	819
27	858	856	849	845	844	836	828	823	836	829	829	820
28	857	856	848	845	842	833	829	826	834	829	829	819
29	857	855	847	845	840	834	831	828	---	---	826	819
30	857	855	847	845	842	835	832	828	---	---	829	820
31	857	856	---	---	842	835	832	830	---	---	828	822
MONTH	865	842	860	845	847	833	844	819	839	829	835	819

[illegible]

[illegible]

[illegible]

400949083480100. LOCAL NUMBER, CH-42—Continued

[illegible][illegible]

Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

GROUND-WATER RECORDS--CONTINUED

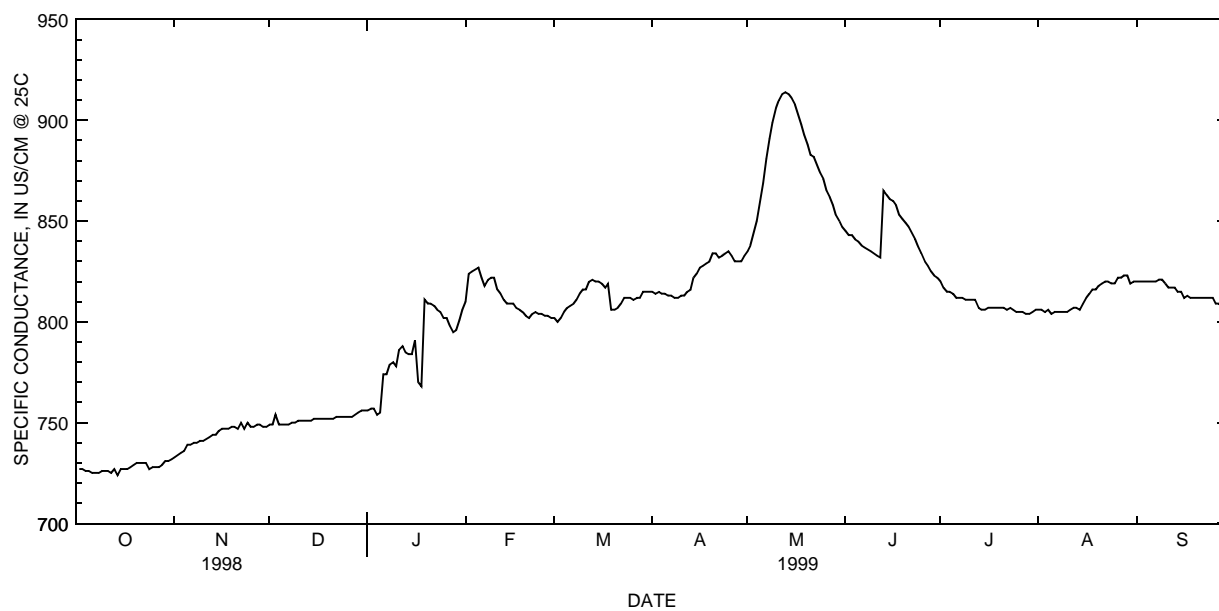
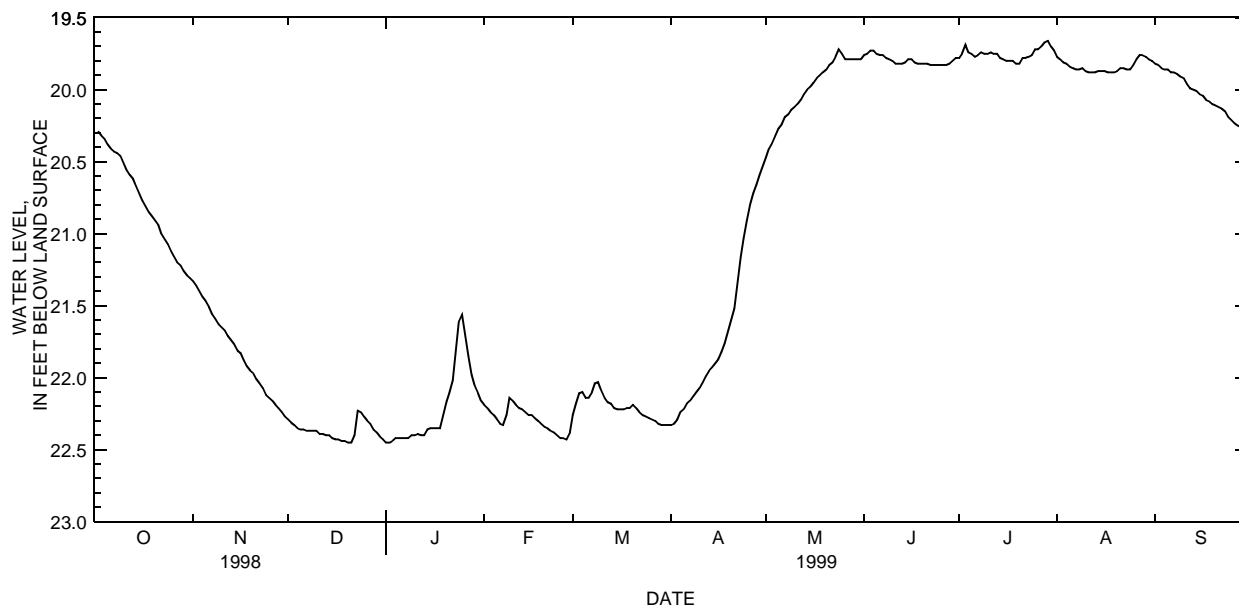
395859083440700. LOCAL NUMBER, CL-138

LOCATION.--Latitude 39°58'59", longitude 83°44'07", Clark County, Hydrologic Unit 05080001, along State Route 4 near Springfield, Ohio.
Owner.--USGS/U.S. Corps of Engineers.
AQUIFER.--Sand and Gravel of Pleistocene age.
WELL CHARACTERISTICS.--Observation well drilled by hollow stem auger, diameter 4.0 in., depth 28.5 ft. Cased with Sch 40 PVC to 18.5 ft.; .020 in. screen from 18.5 to 28.5 ft.
INSTRUMENTATION.--Data logger--60 minute record. Precipitation data collected with a propane-heated, tipping-bucket rain gauge. Also collected: water level, air temperature, soil temperature, water temperature, and specific conductance. Conductivity/water temperature probe set at 25.2 feet below land surface from 7-28-92 through present.
DATUM.--Elevation of land-surface datum is 1031.61 feet above sea level.
Measuring point: shelter shelf 3.31 ft. above land-surface datum.
REMARKS.--This station is part of an eight-site network to collect data for the Ohio Department of Transportation concerning road salt application and its effect(s) on shallow ground-water quality. Water-quality data for nearby wells is available in preceding tables.
PERIOD OF RECORD.--February 1991 to current year.
PERIOD OF DAILY RECORD.--
WATER LEVEL: February 1991 to current year.
SPECIFIC CONDUCTANCE: July 1992 to current year.
AIR TEMPERATURE: February 1991 to current year.
WATER TEMPERATURE: July 1992 to current year.
SOIL TEMPERATURE: February 1991 to current year.
PRECIPITATION: February 1991 to current year.
EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER LEVEL: Maximum daily low, 22.61 ft. below land-surface datum, February 2,3, 1995; maximum daily high, 17.00 ft. below land-surface datum, May 12, 1996.
SPECIFIC CONDUCTANCE: Maximum, 1010 microsiemens, February 4-7, May 13-15, 1996; minimum 716 microsiemens, October 13, 1998.
AIR TEMPERATURE: Maximum, 37.5°C July 22, 1991; minimum, -30.7°C January 21, 1994.
WATER TEMPERATURE: Maximum, 13.9°C many days in November, December, 1993, 1998, January, 1999; minimum, 2.2°C August 29-September 4, 1995.
SOIL TEMPERATURE: Maximum, 39.5°C July 22 and August 2, 1991; minimum, -2.7°C Dec. 27, 1992.
EXTREMES FOR CURRENT YEAR.--
WATER LEVEL: Maximum daily low, 22.45 ft. below land-surface datum, December 20-21, 1998, January 1-2, 1999; maximum daily high, 19.65 ft. below land-surface datum, July 28-29, 1999.
SPECIFIC CONDUCTANCE: Maximum, 914 microsiemens, May 13, 1999; minimum 716 microsiemens, October 13, 1998.
AIR TEMPERATURE: Maximum, 36.6°C July 30, 1999; minimum, -24.0°C January 10, 1999.
WATER TEMPERATURE: Maximum, 13.9°C many days December, 1998, January, 1999; minimum, 10.3°C June 3-13, 1999.
SOIL TEMPERATURE: Maximum, 32.4°C July 5, 1999; minimum, 0.6°C January 5-8, 1999.

PROJECT DATA
Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

GROUND-WATER RECORDS--CONTINUED

395859083440700. LOCAL NUMBER, CL-138—Continued



Effects of Highway Deicing Chemicals on Shallow Unconsolidated Aquifers in Ohio

GROUND-WATER RECORDS--CONTINUED

395859083440700. LOCAL NUMBER, CL-138—Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	---	---	733	732	749	747	756	751	810	806	802	800
2	727	722	734	733	749	747	757	751	824	810	800	798
3	727	722	735	734	754	747	757	752	825	823	802	799
4	726	720	736	732	749	747	754	752	826	824	805	803
5	726	722	739	732	749	747	755	753	827	821	807	801
6	725	723	739	734	749	749	774	753	822	817	808	802
7	725	724	740	738	749	744	774	773	818	816	809	804
8	725	723	740	739	750	745	779	773	821	815	811	805
9	726	721	741	740	750	745	780	775	822	816	814	811
10	726	721	741	740	751	744	778	777	822	815	816	813
11	726	722	742	737	751	747	786	764	816	813	816	815
12	725	721	743	737	751	747	788	784	814	811	820	815
13	727	716	744	739	751	747	785	782	811	809	821	816
14	724	723	744	739	751	746	784	782	809	806	820	815
15	727	724	746	740	752	747	784	782	809	804	820	814
16	727	726	747	741	752	748	791	769	809	804	819	814
17	727	726	747	741	752	748	770	767	807	804	817	816
18	728	727	747	743	752	748	768	765	806	805	819	803
19	729	727	748	743	752	751	811	765	805	800	806	804
20	730	728	748	743	752	747	809	807	803	802	806	805
21	730	725	747	745	752	747	809	804	802	801	807	806
22	730	725	750	745	753	748	808	802	804	800	809	807
23	730	725	747	746	753	748	806	800	805	800	812	807
24	727	725	750	746	753	749	805	799	804	799	812	808
25	728	726	748	745	753	748	802	801	804	798	812	807
26	728	727	748	747	753	748	802	797	803	797	811	809
27	728	727	749	747	753	748	798	794	803	801	812	810
28	729	728	749	747	754	749	795	793	802	801	812	811
29	731	728	748	748	755	749	796	794	---	---	815	811
30	731	730	748	747	756	750	801	796	---	---	815	810
31	732	731	---	---	756	751	806	801	---	---	815	811
MONTH	732	716	750	732	756	744	811	751	827	797	821	798

[illegible]

[illegible]

395859083440700. LOCAL NUMBER, CL-138—Continued

[illegible][illegible]

395859083440700. LOCAL NUMBER, CL-138—Continued

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PRECIPITATION, TOTAL, INCHES, WATER YEAR OCTOBER 1991 TO SEPTEMBER 1992
DAILY SUM VALUES
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PRECIPITATION, TOTAL, INCHES, WATER YEAR OCTOBER 1992 TO SEPTEMBER 1993												
DAILY SUM VALUES												
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.27	.00	.00	---	---	.05	.00	.00	1.63	.00	.00
2	.00	---	.05	.00	---	---	.01	.00	.16	.22	.00	.03
3	.00	.00	.00	.01	---	---	.00	.04	.10	.00	.16	.00
4	.00	.20	.01	1.49	---	---	.00	.25	.57	.00	.21	.00
5	.00	.22	.06	.02	---	---	.01	.00	.01	.00	.00	.00
6	.00	.00	.00	.00	---	---	.00	.01	.00	.13	.02	.00
7	.00	.00	.00	.00	---	---	.00	.00	.00	.48	.01	.00
8	.65	.00	.00	.01	---	---	.00	.00	.00	.02	.00	.00
9	.04	.00	.10	.00	---	---	.75	.00	1.49	.00	.00	.00
10	.09	.18	.20	.04	---	---	.06	.18	.01	.46	.33	.00
11	.01	.55	.00	.06	---	---	.00	.06	.00	1.67	.00	.00
12	.00	1.36	.00	.60	---	---	.00	1.02	.00	.01	.01	.00
13	.04	.01	.00	.16	---	.02	.00	.01	.00	.00	.00	.00
14	.00	.00	.00	.00	---	.00	.49	.00	.25	.00	.00	.00
15	.66	.05	.03	.00	---	.00	.50	.00	.00	.00	.00	.00
16	.27	.00	.01	.01	---	.08	.02	.00	.00	.00	.00	.00
17	.00	.00	.00	.00	---	.02	.00	.00	.00	.00	.00	.00
18	.02	.00	.00	.00	---	.00	.00	.11	1.00	.86	.00	.00
19	.01	.01	.24	.00	---	.00	.20	.02	.00	1.65	.00	.00
20	.00	.00	.08	.00	---	.09	.10	.00	.03	.00	.00	.00
21	.00	.52	.00	1.07	---	.00	.05	.00	.54	.00	.00	.00
22	.00	.70	.02	.06	---	.00	.00	.00	.00	.00	.00	.00
23	.00	.00	.01	.01	---	.61	.00	.10	.00	.00	.00	.00
24	.00	.21	.09	.59	---	.01	.15	.19	.00	.00	.00	.00
25	.00	.00	.08	.00	---	.00	1.26	.00	.04	.76	.00	.00
26	.00	.00	.00	.00	---	.00	.01	.00	.40	.00	.00	.00
27	.00	.00	.00	---	---	.01	.03	.00	.55	.00	.00	.00
28	.00	.01	.00	---	---	.00	.00	.20	.32	.00	.00	.00
29	.00	.00	.13	---	---	.00	.03	.29	.00	.00	.09	.00
30	.07	.01	.04	---	---	.00	.04	.02	1.24	.00	.00	.00
31	.00	---	.30	---	---	.25	---	.18	---	.00	.00	---
TOTAL	1.86	4.30	1.45	4.13	---	1.09	3.76	2.68	6.71	7.89	0.83	0.03
WTR YR 1993	TOTAL 34.73											

395859083440700. LOCAL NUMBER, CL-138—Continued

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395859083440700. LOCAL NUMBER, CL-138—Continued

[illegible][illegible]

395859083440700. LOCAL NUMBER, CL-138—Continued

[illegible]

PROJECT DATA
Ground-Water Records for Former Air Force Plant 36

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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

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.

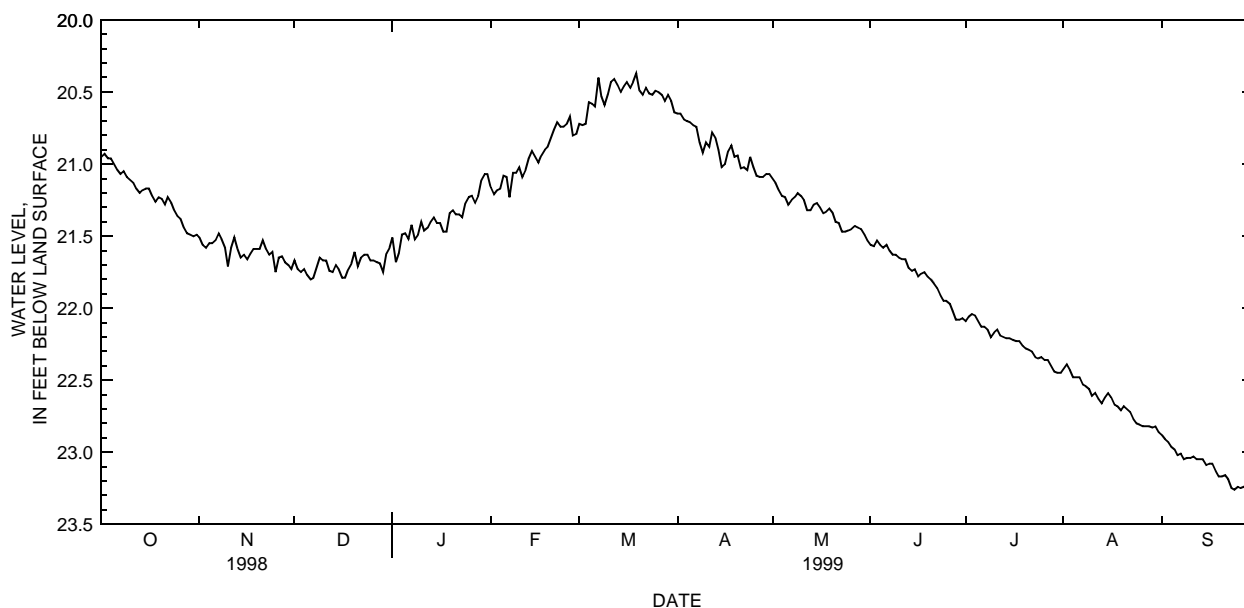
DATUM.--Altitude of land surface is 560.40 feet above National Geodetic Vertical Datum of 1929. Measuring point is top of inner casing, 1.39 ft. above land-surface datum.

PERIOD OF RECORD.--Nov. 1997 to current year.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily low, 23.34 ft. below land-surface datum, Sept. 29, 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 1998 TO SEPTEMBER 1999 DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20.95	21.51	21.67	21.51	21.16	20.72	20.65	21.11	21.56	22.09	22.42	22.88
2	20.93	21.56	21.73	21.68	21.21	20.73	20.65	21.14	21.57	22.06	22.39	22.91
3	20.96	21.58	21.75	21.62	21.18	20.72	20.69	21.18	21.53	22.04	22.43	22.93
4	20.96	21.55	21.73	21.49	21.17	20.56	20.71	21.22	21.56	22.05	22.48	22.96
5	21.00	21.55	21.77	21.48	21.08	20.57	20.71	21.24	21.58	22.09	22.48	22.98
6	21.04	21.53	21.80	21.52	21.09	20.60	20.73	21.29	21.56	22.13	22.48	23.02
7	21.07	21.48	21.79	21.42	21.23	20.40	20.74	21.25	21.60	22.13	22.53	23.01
8	21.05	21.52	21.72	21.52	21.06	20.53	20.85	21.23	21.63	22.15	22.54	23.05
9	21.09	21.58	21.65	21.49	21.06	20.59	20.92	21.20	21.63	22.20	22.56	23.04
10	21.11	21.71	21.67	21.40	21.02	20.52	20.85	21.22	21.65	22.17	22.61	23.04
11	21.13	21.58	21.67	21.46	21.09	20.43	20.88	21.25	21.66	22.15	22.59	23.03
12	21.17	21.51	21.74	21.44	21.04	20.41	20.78	21.32	21.66	22.19	22.63	23.05
13	21.20	21.59	21.75	21.40	20.96	20.45	20.82	21.32	21.72	22.20	22.66	23.05
14	21.18	21.65	21.70	21.37	20.91	20.50	20.90	21.28	21.74	22.21	22.62	23.05
15	21.17	21.63	21.73	21.41	20.95	20.46	21.02	21.27	21.73	22.21	22.59	23.09
16	21.17	21.66	21.79	21.41	20.99	20.43	21.00	21.30	21.78	22.22	22.62	23.08
17	21.22	21.62	21.79	21.47	20.94	20.47	20.91	21.34	21.76	22.23	22.67	23.08
18	21.26	21.59	21.73	21.47	20.90	20.43	20.87	21.33	21.75	22.23	22.68	23.13
19	21.23	21.59	21.69	21.34	20.88	20.37	20.95	21.31	21.78	22.26	22.71	23.17
20	21.24	21.59	21.61	21.32	20.82	20.49	20.94	21.34	21.80	22.28	22.68	23.17
21	21.28	21.53	21.71	21.35	20.76	20.52	21.03	21.40	21.83	22.29	22.70	23.16
22	21.23	21.59	21.65	21.35	20.71	20.47	21.02	21.41	21.86	22.30	22.72	23.19
23	21.27	21.63	21.63	21.37	20.74	20.51	21.04	21.47	21.91	22.34	22.77	23.25
24	21.32	21.61	21.63	21.27	20.74	20.52	20.95	21.47	21.95	22.35	22.80	23.26
25	21.36	21.75	21.67	21.23	20.72	20.49	21.02	21.46	21.95	22.34	22.81	23.24
26	21.38	21.65	21.67	21.22	20.67	20.50	21.08	21.45	21.97	22.36	22.82	23.25
27	21.44	21.64	21.68	21.27	20.80	20.52	21.09	21.43	22.02	22.36	22.82	23.24
28	21.48	21.68	21.69	21.22	20.79	20.56	21.09	21.44	22.08	22.40	22.82	23.27
29	21.49	21.70	21.75	21.11	---	20.52	21.07	21.45	22.08	22.44	22.83	23.34
30	21.50	21.73	21.62	21.07	---	20.56	21.07	21.49	22.07	22.45	22.82	23.33
31	21.49	---	21.58	21.07	---	20.64	---	21.53	---	22.45	22.86	---
MAX	21.50	21.75	21.80	21.68	21.23	20.73	21.09	21.53	22.08	22.45	22.86	23.34



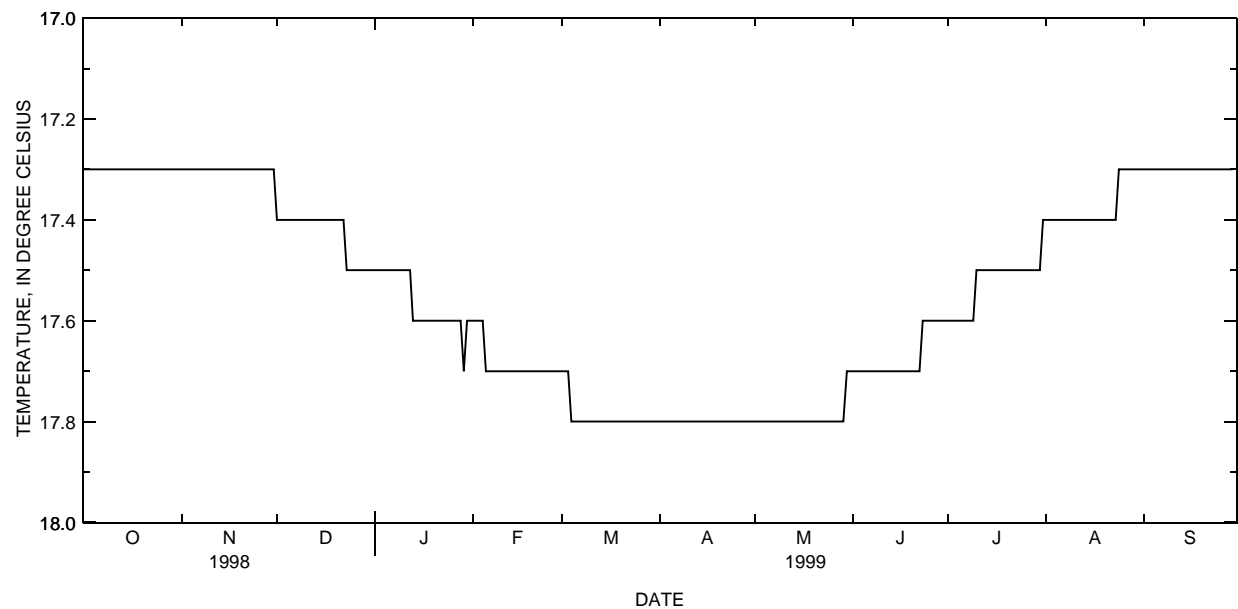
PROJECT DATA
Ground-Water Records for Former Air Force Plant 36

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391411084264000. LOCAL NUMBER, AF-3S—Continued

TEMPERATURE, WATER, DEGREE CELSIUS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17.3	17.3	17.4	17.5	17.6	17.7	17.8	17.8	17.7	17.6	17.4	17.3
2	17.3	17.3	17.4	17.5	17.6	17.7	17.8	17.8	17.7	17.6	17.4	17.3
3	17.3	17.3	17.4	17.5	17.6	17.7	17.8	17.8	17.7	17.6	17.4	17.3
4	17.3	17.3	17.4	17.5	17.6	17.8	17.8	17.8	17.7	17.6	17.4	17.3
5	17.3	17.3	17.4	17.5	17.7	17.8	17.8	17.8	17.7	17.6	17.4	17.3
6	17.3	17.3	17.4	17.5	17.7	17.8	17.8	17.8	17.7	17.6	17.4	17.3
7	17.3	17.3	17.4	17.5	17.7	17.8	17.8	17.8	17.7	17.6	17.4	17.3
8	17.3	17.3	17.4	17.5	17.7	17.8	17.8	17.8	17.7	17.6	17.4	17.3
9	17.3	17.3	17.4	17.5	17.7	17.8	17.8	17.8	17.7	17.6	17.4	17.3
10	17.3	17.3	17.4	17.5	17.7	17.8	17.8	17.8	17.7	17.5	17.4	17.3
11	17.3	17.3	17.4	17.5	17.7	17.8	17.8	17.8	17.7	17.5	17.4	17.3
12	17.3	17.3	17.4	17.5	17.7	17.8	17.8	17.8	17.7	17.5	17.4	17.3
13	17.3	17.3	17.4	17.6	17.7	17.8	17.8	17.8	17.7	17.5	17.4	17.3
14	17.3	17.3	17.4	17.6	17.7	17.8	17.8	17.8	17.7	17.5	17.4	17.3
15	17.3	17.3	17.4	17.6	17.7	17.8	17.8	17.8	17.7	17.5	17.4	17.3
16	17.3	17.3	17.4	17.6	17.7	17.8	17.8	17.8	17.7	17.5	17.4	17.3
17	17.3	17.3	17.4	17.6	17.7	17.8	17.8	17.8	17.7	17.5	17.4	17.3
18	17.3	17.3	17.4	17.6	17.7	17.8	17.8	17.8	17.7	17.5	17.4	17.3
19	17.3	17.3	17.4	17.6	17.7	17.8	17.8	17.8	17.7	17.5	17.4	17.3
20	17.3	17.3	17.4	17.6	17.7	17.8	17.8	17.8	17.7	17.5	17.4	17.3
21	17.3	17.3	17.4	17.6	17.7	17.8	17.8	17.8	17.7	17.5	17.4	17.3
22	17.3	17.3	17.4	17.6	17.7	17.8	17.8	17.8	17.7	17.5	17.4	17.3
23	17.3	17.3	17.5	17.6	17.7	17.8	17.8	17.8	17.6	17.5	17.4	17.3
24	17.3	17.3	17.5	17.6	17.7	17.8	17.8	17.8	17.6	17.5	17.3	17.3
25	17.3	17.3	17.5	17.6	17.7	17.8	17.8	17.8	17.6	17.5	17.3	17.3
26	17.3	17.3	17.5	17.6	17.7	17.8	17.8	17.8	17.6	17.5	17.3	17.3
27	17.3	17.3	17.5	17.6	17.7	17.8	17.8	17.8	17.6	17.5	17.3	17.3
28	17.3	17.3	17.5	17.6	17.7	17.8	17.8	17.8	17.6	17.5	17.3	17.3
29	17.3	17.3	17.5	17.7	---	17.8	17.8	17.8	17.6	17.5	17.3	17.3
30	17.3	17.3	17.5	17.6	---	17.8	17.8	17.7	17.6	17.5	17.3	17.3
31	17.3	---	17.5	17.6	---	17.8	---	17.7	---	17.4	17.3	---
MAX	17.3	17.3	17.5	17.7	17.7	17.8	17.8	17.8	17.7	17.6	17.4	17.3



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.

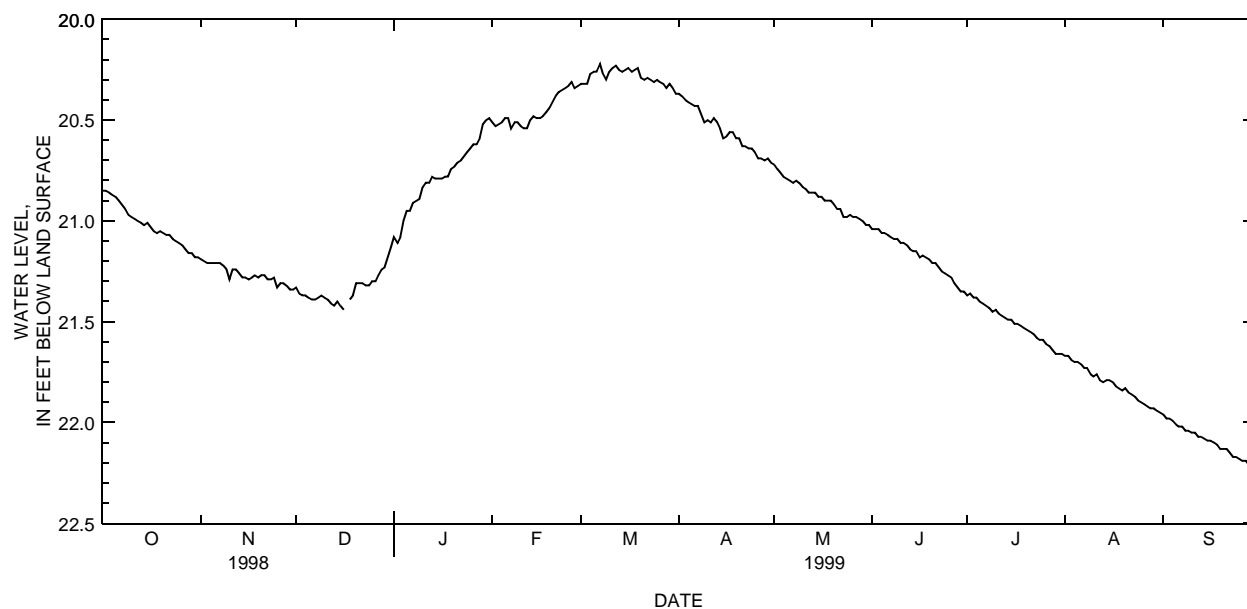
DATUM.--Altitude of land surface is 559.90 feet above National Geodetic Vertical Datum of 1929. Measuring point is top of inner casing, 1.33 ft. above land-surface datum.

PERIOD OF RECORD.--Nov. 1997 to current year.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily low, 22.25 ft. below land-surface datum, Sept. 30, 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 1998 TO SEPTEMBER 1999 DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20.85	21.19	21.33	21.08	20.51	20.32	20.37	20.73	21.04	21.37	21.67	21.96
2	20.85	21.20	21.36	21.11	20.53	20.32	20.38	20.74	21.04	21.36	21.67	21.98
3	20.86	21.21	21.37	21.08	20.52	20.32	20.40	20.76	21.04	21.38	21.69	21.98
4	20.87	21.21	21.37	21.00	20.51	20.27	20.40	20.78	21.06	21.38	21.70	21.99
5	20.88	21.21	21.38	20.95	20.49	20.26	20.42	20.79	21.06	21.40	21.70	22.01
6	20.90	21.21	21.39	20.95	20.49	20.26	20.43	20.80	21.07	21.41	21.71	22.02
7	20.92	21.21	21.39	20.91	20.54	20.22	20.43	20.81	21.08	21.42	21.73	22.02
8	20.94	21.22	21.38	20.90	20.51	20.27	20.47	20.81	21.09	21.43	21.73	22.04
9	20.97	21.24	21.37	20.89	20.51	20.30	20.51	20.81	21.09	21.45	21.76	22.04
10	20.98	21.29	21.38	20.83	20.53	20.26	20.50	20.83	21.11	21.44	21.77	22.05
11	20.99	21.24	21.39	20.81	20.54	20.24	20.51	20.84	21.11	21.46	21.76	22.05
12	21.00	21.24	21.41	20.80	20.54	20.23	20.49	20.86	21.12	21.47	21.79	22.07
13	21.01	21.26	21.42	20.78	20.50	20.25	20.51	20.86	21.14	21.48	21.80	22.07
14	21.02	21.28	21.40	20.79	20.48	20.26	20.54	20.86	21.15	21.49	21.79	22.08
15	21.01	21.28	21.42	20.79	20.49	20.25	20.59	20.88	21.15	21.49	21.79	22.09
16	21.03	21.29	21.44	20.79	20.49	20.24	20.58	20.88	21.18	21.51	21.80	22.09
17	21.05	21.28	21.44	20.78	20.48	20.26	20.56	20.90	21.17	21.51	21.82	22.10
18	21.06	21.27	21.39	20.78	20.46	20.25	20.56	20.90	21.18	21.52	21.83	22.11
19	21.05	21.28	21.37	20.74	20.44	20.24	20.59	20.90	21.19	21.53	21.84	22.13
20	21.06	21.27	21.31	20.72	20.41	20.29	20.59	20.92	21.21	21.54	21.83	22.13
21	21.07	21.27	21.31	20.71	20.38	20.30	20.63	20.94	21.21	21.55	21.85	22.13
22	21.07	21.29	21.31	20.69	20.36	20.29	20.63	20.94	21.23	21.56	21.86	22.15
23	21.09	21.29	21.32	20.68	20.35	20.30	20.64	20.98	21.25	21.58	21.87	22.17
24	21.10	21.28	21.32	20.66	20.34	20.31	20.64	20.98	21.26	21.59	21.89	22.17
25	21.11	21.33	21.30	20.64	20.33	20.30	20.66	20.97	21.27	21.59	21.90	22.18
26	21.12	21.31	21.30	20.62	20.31	20.31	20.69	20.98	21.28	21.61	21.91	22.19
27	21.14	21.31	21.27	20.62	20.34	20.32	20.69	20.98	21.31	21.62	21.92	22.19
28	21.16	21.32	21.24	20.59	20.33	20.34	20.70	20.99	21.33	21.64	21.93	22.21
29	21.16	21.34	21.23	20.52	---	20.32	20.69	21.00	21.35	21.66	21.93	22.23
30	21.18	21.34	21.18	20.50	---	20.34	20.71	21.02	21.35	21.66	21.94	22.25
31	21.18	---	21.13	20.49	---	20.37	---	21.02	---	21.66	21.95	---
MAX	21.18	21.34	21.44	21.11	20.54	20.37	20.71	21.02	21.35	21.66	21.95	22.25



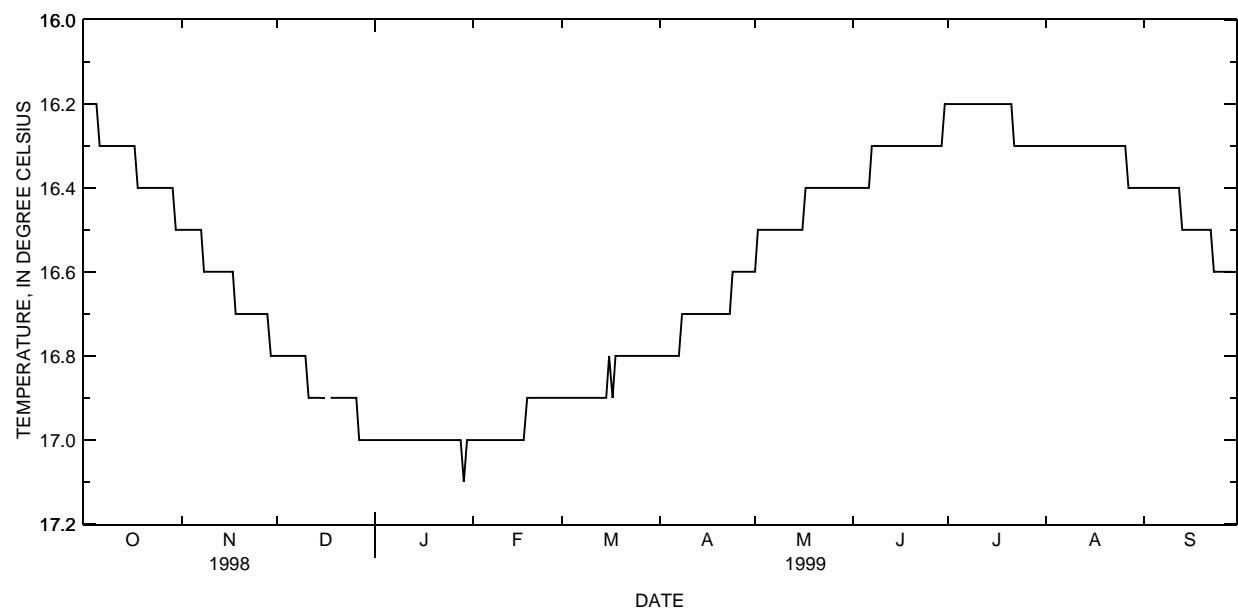
PROJECT DATA
Ground-Water Records for Former Air Force Plant 36

293

391408084264101. LOCAL NUMBER, AF-5P—Continued

TEMPERATURE, WATER, DEGREE CELSIUS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16.2	16.5	16.8	17.0	17.0	16.9	16.8	16.6	16.4	16.2	16.3	16.4
2	16.2	16.5	16.8	17.0	17.0	16.9	16.8	16.5	16.4	16.2	16.3	16.4
3	16.2	16.5	16.8	17.0	17.0	16.9	16.8	16.5	16.4	16.2	16.3	16.4
4	16.2	16.5	16.8	17.0	17.0	16.9	16.8	16.5	16.4	16.2	16.3	16.4
5	16.2	16.5	16.8	17.0	17.0	16.9	16.8	16.5	16.4	16.2	16.3	16.4
6	16.3	16.5	16.8	17.0	17.0	16.9	16.8	16.5	16.4	16.2	16.3	16.4
7	16.3	16.5	16.8	17.0	17.0	16.9	16.8	16.5	16.3	16.2	16.3	16.4
8	16.3	16.6	16.8	17.0	17.0	16.9	16.7	16.5	16.3	16.2	16.3	16.4
9	16.3	16.6	16.8	17.0	17.0	16.9	16.7	16.5	16.3	16.2	16.3	16.4
10	16.3	16.6	16.8	17.0	17.0	16.9	16.7	16.5	16.3	16.2	16.3	16.4
11	16.3	16.6	16.9	17.0	17.0	16.9	16.7	16.5	16.3	16.2	16.3	16.4
12	16.3	16.6	16.9	17.0	17.0	16.9	16.7	16.5	16.3	16.2	16.3	16.4
13	16.3	16.6	16.9	17.0	17.0	16.9	16.7	16.5	16.3	16.2	16.3	16.5
14	16.3	16.6	16.9	17.0	17.0	16.9	16.7	16.5	16.3	16.2	16.3	16.5
15	16.3	16.6	16.9	17.0	17.0	16.9	16.7	16.5	16.3	16.2	16.3	16.5
16	16.3	16.6	16.9	17.0	17.0	16.8	16.7	16.5	16.3	16.2	16.3	16.5
17	16.3	16.6	16.9	17.0	17.0	16.9	16.7	16.4	16.3	16.2	16.3	16.5
18	16.4	16.7	16.9	17.0	16.9	16.8	16.7	16.4	16.3	16.2	16.3	16.5
19	16.4	16.7	16.9	17.0	16.9	16.8	16.7	16.4	16.3	16.2	16.3	16.5
20	16.4	16.7	16.9	17.0	16.9	16.8	16.7	16.4	16.3	16.2	16.3	16.5
21	16.4	16.7	16.9	17.0	16.9	16.8	16.7	16.4	16.3	16.2	16.3	16.5
22	16.4	16.7	16.9	17.0	16.9	16.8	16.7	16.4	16.3	16.3	16.3	16.5
23	16.4	16.7	16.9	17.0	16.9	16.8	16.7	16.4	16.3	16.3	16.3	16.6
24	16.4	16.7	16.9	17.0	16.9	16.8	16.6	16.4	16.3	16.3	16.3	16.6
25	16.4	16.7	16.9	17.0	16.9	16.8	16.6	16.4	16.3	16.3	16.3	16.6
26	16.4	16.7	16.9	17.0	16.9	16.8	16.6	16.4	16.3	16.3	16.3	16.6
27	16.4	16.7	17.0	17.0	16.9	16.8	16.6	16.4	16.3	16.3	16.4	16.6
28	16.4	16.7	17.0	17.0	16.9	16.8	16.6	16.4	16.3	16.3	16.4	16.6
29	16.4	16.8	17.0	17.1	---	16.8	16.6	16.4	16.3	16.3	16.4	16.6
30	16.5	16.8	17.0	17.0	---	16.8	16.6	16.4	16.2	16.3	16.4	16.6
31	16.5	---	17.0	17.0	---	16.8	---	16.4	---	16.3	16.4	---
MAX	16.5	16.8	17.0	17.1	17.0	16.9	16.8	16.6	16.4	16.3	16.4	16.6



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 1120TSH.

WELL CHARACTERISTICS.--Drilled observation water well, depth 51.0 ft.

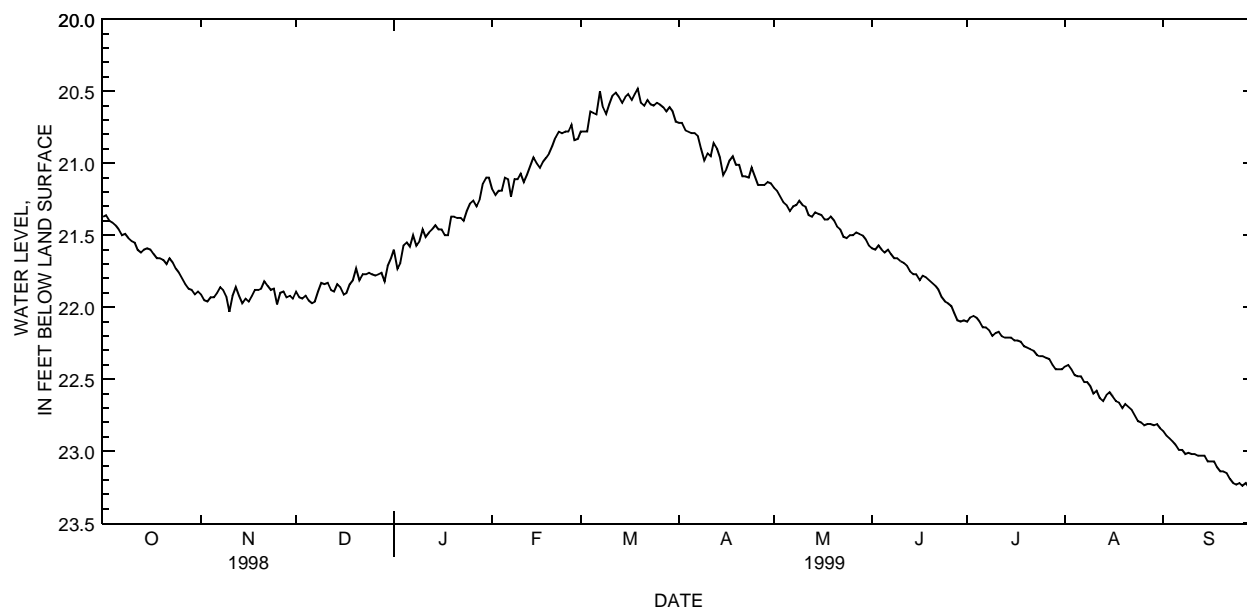
DATUM.--Altitude of land surface is 559.90 feet above National Geodetic Vertical Datum of 1929. Measuring point is top of inner casing, 1.66 ft. above land-surface datum.

PERIOD OF RECORD.--Nov. 1997 to current year.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily low, 23.30 ft. below land-surface datum, Sept. 29 and 30, 1999; minimum daily low, 18.69 ft. below land-surface datum, July 19, 1998.

DEPTH BELOW LAND SURFACE (WATER LEVEL), FEET, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999 DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21.37	21.91	21.89	21.60	21.18	20.78	20.72	21.17	21.59	22.10	22.41	22.86
2	21.36	21.95	21.93	21.73	21.22	20.78	20.72	21.19	21.60	22.07	22.40	22.89
3	21.40	21.96	21.94	21.69	21.19	20.78	20.77	21.23	21.57	22.06	22.43	22.91
4	21.41	21.93	21.92	21.57	21.19	20.64	20.77	21.27	21.60	22.07	22.47	22.93
5	21.43	21.93	21.95	21.54	21.10	20.65	20.79	21.29	21.62	22.10	22.48	22.96
6	21.46	21.90	21.97	21.58	21.11	20.66	20.79	21.33	21.60	22.14	22.48	22.99
7	21.50	21.86	21.96	21.50	21.23	20.50	20.81	21.30	21.63	22.14	22.52	22.99
8	21.49	21.88	21.89	21.57	21.11	20.61	20.90	21.29	21.66	22.16	22.52	23.02
9	21.52	21.93	21.83	21.54	21.11	20.66	20.98	21.26	21.66	22.20	22.55	23.01
10	21.54	22.03	21.84	21.46	21.07	20.59	20.93	21.29	21.68	22.18	22.60	23.02
11	21.55	21.92	21.83	21.51	21.13	20.53	20.95	21.30	21.69	22.17	22.58	23.02
12	21.60	21.86	21.88	21.48	21.08	20.51	20.86	21.36	21.71	22.20	22.63	23.03
13	21.62	21.92	21.89	21.46	21.02	20.54	20.90	21.37	21.75	22.21	22.65	23.03
14	21.60	21.97	21.84	21.43	20.96	20.58	20.96	21.34	21.77	22.21	22.61	23.03
15	21.59	21.94	21.86	21.45	21.00	20.54	21.08	21.35	21.77	22.21	22.59	23.07
16	21.60	21.96	21.91	21.46	21.03	20.52	21.04	21.36	21.81	22.23	22.62	23.07
17	21.63	21.92	21.90	21.50	20.99	20.56	20.98	21.39	21.78	22.23	22.65	23.07
18	21.66	21.88	21.84	21.50	20.96	20.52	20.95	21.39	21.79	22.24	22.66	23.11
19	21.66	21.88	21.81	21.37	20.93	20.48	21.01	21.37	21.81	22.27	22.70	23.14
20	21.67	21.87	21.73	21.37	20.88	20.58	21.01	21.40	21.83	22.28	22.67	23.14
21	21.70	21.82	21.81	21.38	20.82	20.60	21.09	21.44	21.85	22.29	22.69	23.15
22	21.66	21.85	21.77	21.38	20.78	20.57	21.09	21.46	21.88	22.30	22.71	23.19
23	21.69	21.88	21.77	21.40	20.79	20.59	21.10	21.51	21.93	22.33	22.75	23.22
24	21.73	21.87	21.76	21.33	20.78	20.60	21.03	21.52	21.96	22.34	22.79	23.23
25	21.76	21.98	21.77	21.28	20.78	20.58	21.09	21.50	21.97	22.34	22.80	23.22
26	21.80	21.90	21.77	21.26	20.73	20.59	21.15	21.50	21.99	22.35	22.82	23.24
27	21.84	21.89	21.77	21.29	20.84	20.61	21.15	21.48	22.04	22.36	22.81	23.22
28	21.87	21.93	21.76	21.25	20.83	20.64	21.15	21.49	22.09	22.40	22.81	23.25
29	21.88	21.92	21.82	21.14	---	20.61	21.13	21.50	22.10	22.43	22.82	23.30
30	21.91	21.94	21.71	21.10	---	20.64	21.14	21.53	22.09	22.43	22.81	23.30
31	21.89	---	21.66	21.10	---	20.71	---	21.57	---	22.43	22.84	---
MAX	21.91	22.03	21.97	21.73	21.23	20.78	21.15	21.57	22.10	22.43	22.84	23.30



Ground-water-level measurements from the 33 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. Precipitation data presented in this section were obtained from National Weather Service station 331458 in Chardon, Ohio. 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 (*).

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.

WELL CHARACTERISTICS.--Water-supply well located in pit, not currently in use; diameter 6.25 in.; depth 80 ft.

DATUM.--Elevation of land-surface datum is 1,160 ft above sea level.

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, November 12, 1980.

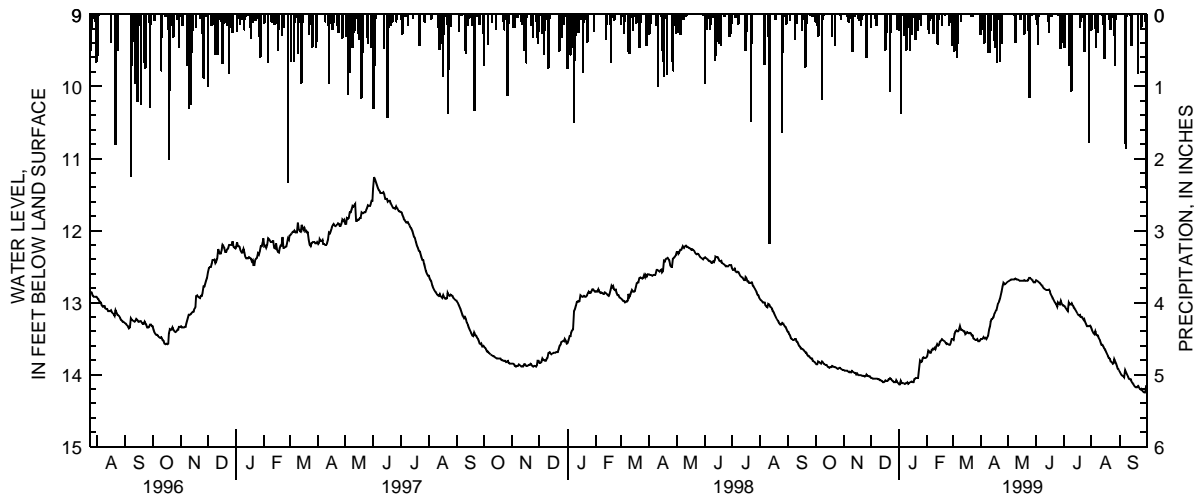
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13.85	13.94	14.05	14.14	13.74	13.51	13.51	12.71	12.69	13.04	13.36	13.96
2	13.86	13.95	14.05	14.14	13.67	13.52	13.51	12.70	12.70	13.05	13.40	13.99
3	13.86	13.95	14.06	14.09	13.68	13.44	13.50	12.69	12.71	13.07	13.43	14.01
4	13.82	13.95	14.06	14.12	13.70	13.40	13.48	12.68	12.72	13.09	13.44	14.02
5	13.83	13.95	14.06	14.12	13.70	13.39	13.50	12.68	12.73	13.11	13.40	14.03
6	13.84	13.96	14.06	14.12	13.66	13.40	13.49	12.68	12.75	13.12	13.45	14.04
7	13.85	13.97	14.06	14.13	13.64	13.40	13.51	12.68	12.76	13.00	13.46	13.94
8	13.82	13.96	14.06	14.12	13.65	13.38	13.48	12.68	12.78	13.03	13.46	13.97
9	13.83	13.97	14.07	14.12	13.63	13.33	13.46	12.67	12.80	13.03	13.50	14.00
10	13.85	13.95	14.07	14.11	13.65	13.38	13.38	12.68	12.81	13.01	13.52	14.03
11	13.86	13.96	14.08	14.13	13.61	13.38	13.33	12.68	12.82	13.04	13.56	14.06
12	13.87	13.97	14.08	14.12	13.58	13.39	13.27	12.68	12.83	13.06	13.59	14.07
13	13.87	13.98	14.09	14.11	13.60	13.40	13.23	12.69	12.83	13.08	13.59	14.07
14	13.89	13.98	14.11	14.10	13.59	13.40	13.22	12.70	12.83	13.10	13.61	14.10
15	13.90	14.00	14.11	14.10	13.55	13.44	13.20	12.70	12.82	13.12	13.64	14.12
16	13.91	13.99	14.10	14.11	13.53	13.43	13.15	12.70	12.84	13.15	13.66	14.14
17	13.90	14.01	14.08	14.11	13.51	13.41	13.12	12.70	12.88	13.17	13.69	14.16
18	13.90	14.01	14.09	14.06	13.52	13.42	13.11	12.70	12.91	13.18	13.72	14.17
19	13.88	14.01	14.09	14.05	13.53	13.43	13.07	12.69	12.93	13.17	13.74	14.18
20	13.89	14.01	14.07	14.05	13.54	13.42	13.01	12.70	12.96	13.20	13.77	14.18
21	13.89	14.02	14.07	14.05	13.56	13.43	12.99	12.70	12.99	13.20	13.78	14.16
22	13.90	14.02	14.05	14.05	13.58	13.46	12.95	12.70	13.01	13.22	13.82	14.18
23	13.90	14.02	14.06	13.92	13.57	13.46	12.91	12.69	13.03	13.24	13.83	14.20
24	13.91	14.03	14.08	13.81	13.58	13.50	12.85	12.66	13.06	13.23	13.85	14.21
25	13.92	14.02	14.09	13.83	13.59	13.51	12.78	12.66	13.00	13.27	13.84	14.20
26	13.92	14.00	14.11	13.82	13.59	13.52	12.73	12.67	13.02	13.30	13.79	14.23
27	13.91	14.02	14.11	13.77	13.56	13.52	12.75	12.68	13.03	13.33	13.82	14.24
28	13.91	14.02	14.11	13.76	13.51	13.51	12.74	12.70	12.98	13.33	13.85	14.25
29	13.92	14.03	14.08	13.77	---	13.54	12.73	12.72	13.02	13.33	13.89	14.25
30	13.93	14.03	14.11	13.77	---	13.54	12.72	12.72	13.04	13.32	13.92	14.15
31	13.94	---	14.12	13.76	---	13.52	---	12.72	---	13.34	13.94	

PROJECT DATA
Ground-Water Data for Geauga County, Ohio

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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 Rd., west of S.R. 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, April 26, 1978; lowest measured, 19.37 ft below land-surface datum, January 16, 1996.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM

DATE	WATER LEVEL
10/19/98	18.31
12/14/98	19.12
2/16/99	17.92
4/19/99	17.80
6/29/99	18.20
8/23/99	18.60

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, 24.72 ft below land-surface datum, August 24, 1999.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM

DATE	WATER LEVEL
10/21/98	23.17
12/16/98	23.64
2/17/99	24.22
4/20/99	23.90
6/23/99	24.32*
8/24/99	24.72

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, August 14, 1985;
 lowest measured, 35.29 ft below land-surface datum, August 23, 1999.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM

DATE	WATER LEVEL
10/21/98	32.69
12/15/98	33.67
2/16/99	34.38
4/19/99	34.79
6/17/99	34.80
8/23/99	35.29

412748081143900. LOCAL NUMBER, GE-91

LOCATION.--Latitude 41°27'48", longitude 81°14'39", Geauga County, northeast corner of Auburn Rd. and S.R. 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, October 19, 1978;
 lowest measured, 46.29* ft below land-surface datum, August 23, 1999.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM

DATE	WATER LEVEL
10/20/98	45.06
12/15/98	45.52
2/16/99	45.60
4/19/99	46.25
6/17/99	45.76
8/23/99	46.29*

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, March 17, 1997;
 lowest measured, 25.09 ft below land-surface datum, October 20 and December 15, 1998.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM

DATE	WATER LEVEL
10/20/98	25.09
12/16/98	25.09
2/16/99	23.15
4/20/99	22.64
6/24/99	24.39
8/24/99	24.15

PROJECT DATA
Ground-Water Data for Geauga County, Ohio

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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 (S.R. 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, 91.85 ft below land-surface datum, March 27, 1996.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM

DATE	WATER LEVEL
10/20/98	91.18*
12/15/98	91.44
2/17/99	91.11
4/20/99	91.27
6/24/99	91.19
8/24/99	91.15

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

DATE	WATER LEVEL
10/21/98	35.77
12/15/98	36.08
2/17/99	35.94
4/20/99	36.31
6/22/99	36.18
8/24/99	36.35

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, 48.77 ft below land-surface datum, March 27, 1996.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM

DATE	WATER LEVEL
10/21/98	46.70
12/14/98	46.21
2/17/99	47.38
4/20/99	47.95
6/17/99	48.20
8/24/99	48.42

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 S.R. 608, Middlefield Township.
 Owner.--Gauga 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, August 20, 1980; lowest measured, 15.31 ft below land-surface datum, March 28, 1996.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM

DATE	WATER LEVEL
10/21/98	14.53
12/14/98	14.71
2/16/99	14.57
4/19/99	14.47
6/17/99	14.77
8/23/99	15.06

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 gal/min 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

DATE	WATER LEVEL
10/20/98	18.23
12/14/98	22.03*
2/18/99	24.18*
4/19/99	20.95*
6/17/99	19.71*
8/23/99	19.52

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, 39.56 ft below land-surface datum, December 14, 1998.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM

DATE	WATER LEVEL
10/19/98	38.62
12/14/98	39.56
2/16/99	37.73
4/19/99	36.11
6/23/99	37.48
8/23/99	38.95

PROJECT DATA
Ground-Water Data for Geauga County, Ohio

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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, 29.47 ft below land-surface datum, August 25, 1999.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM

DATE	WATER LEVEL
10/21/98	26.82
12/16/98	27.86
2/17/99	27.82
4/21/99	27.14
6/23/99	28.95
8/25/99	29.47

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, February 5, 1986; lowest measured, 17.02 ft below land-surface datum, August 23, 1999.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM

DATE	WATER LEVEL
10/19/98	16.34
12/14/98	16.85
2/16/99	15.95
4/19/99	15.48
6/16/99	16.37
8/23/99	17.02

412454081162400. LOCAL NUMBER, GE-166

LOCATION.--Latitude 41°24'54", longitude 81°16'24", Geauga County, 16725 Munn Road, Auburn Township.
Owner.--Privately owned.
AQUIFER.--Pottsville Formation (sandstone) of Pennsylvanian age.
WELL CHARACTERISTICS.--Domestic water-supply well; diameter 5.63 in.; depth 155 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, 1.88 ft above land-surface datum.
PERIOD OF RECORD.--February 4, 1986 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 49.37 ft below land-surface datum, July 16, 1997; lowest measured, 84.48 ft below land-surface datum, April 19, 1999.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM

DATE	WATER LEVEL
10/19/98	53.54
12/14/98	81.41
2/16/99	62.93*
4/19/99	84.48
6/23/99	71.42*
8/23/99	82.68*

PROJECT DATA
Ground-Water Data for Geauga County, Ohio

LONG-TERM GROUND-WATER MONITORING NETWORK—CONTINUED

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, November 19, 1996;
 lowest measured, 50.00 ft below land-surface datum, August 18, 1986.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM

DATE	WATER LEVEL
10/19/98	48.93
12/14/98	49.07
2/16/99	46.38
4/19/99	45.23
7/1/99	47.15
8/23/99	47.41

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, November 21, 1996;
 lowest measured, 37.19 ft below land-surface datum, December 15, 1998.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM

DATE	WATER LEVEL
10/20/98	36.49
12/15/98	37.19
2/16/99	35.64*
4/20/99	35.14*
6/28/99	36.74
8/24/99	36.51

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, February 10, 1986;
 lowest measured, 30.46 ft below land-surface datum, August 24, 1999.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM

DATE	WATER LEVEL
10/20/98	30.23
12/15/98	30.42
2/17/99	30.13
4/20/99	30.11
6/22/99	30.28
8/24/99	30.46

PROJECT DATA
Ground-Water Data for Geauga County, Ohio

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LONG-TERM GROUND-WATER MONITORING NETWORK—CONTINUED

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, 54.09* ft below land-surface datum, June 23, 1999.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM

DATE	WATER LEVEL
10/21/98	53.74*
12/16/98	53.41*
2/17/99	52.82
4/20/99	52.89
6/23/99	54.09*
8/25/99	53.19

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, September 10, 1996; lowest measured, 40.26 ft below land-surface datum, March 27, 1996.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM

DATE	WATER LEVEL
10/20/98	37.44*
12/15/98	38.61
2/17/99	39.09*
4/20/99	37.46
6/23/99	38.69
8/24/99	38.75

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, April 20, 1998; lowest measured, 35.96 ft below land-surface datum, December 14, 1998.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM

DATE	WATER LEVEL
10/19/98	34.53
12/14/98	35.96
2/17/99	35.35*
4/20/99	33.81
6/22/99	34.42
8/24/99	35.04

PROJECT DATA

Ground-Water Data for Geauga County, Ohio

LONG-TERM GROUND-WATER MONITORING NETWORK—CONTINUED

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, 62.77 ft below land-surface datum, February 17 and August 24, 1999.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM

DATE	WATER LEVEL
10/21/98	62.60
12/16/98	62.70
2/17/99	62.77
4/20/99	62.61
6/23/99	62.66
8/24/99	62.77

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, April 20, 1999; lowest measured, 24.80 ft below land-surface datum, July 15, 1996.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM

DATE	WATER LEVEL
10/21/98	24.22
12/16/98	23.79
2/17/99	22.80
4/20/99	20.05
6/23/99	24.74
8/24/99	24.65

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, 35.48* ft below land-surface datum, August 24, 1999.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM

DATE	WATER LEVEL
10/19/98	34.54
12/15/98	34.74
2/16/99	34.81
4/19/99	34.98
6/14/99	35.06
8/24/99	35.48*

PROJECT DATA
Ground-Water Data for Geauga County, Ohio

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LONG-TERM GROUND-WATER MONITORING NETWORK—CONTINUED

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, September 8, 1994;
lowest measured, 73.29 ft below land-surface datum, January 22, 1997.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM

DATE	WATER LEVEL
10/20/98	60.85
12/15/98	60.54
2/17/99	60.36
4/19/99	60.12*
6/17/99	62.04*
8/24/99	62.03*

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, November 20, 1996;
lowest measured, 10.11 ft below land-surface datum, September 7, 1994.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM

DATE	WATER LEVEL
10/20/98	9.03
12/15/98	9.29
2/17/99	5.71*
4/20/99	5.01
6/23/99	6.81
8/24/99	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, September 7, 1994.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM

DATE	WATER LEVEL
10/20/98	72.20
12/15/98	71.83
2/17/99	72.40
4/20/99	71.58
6/23/99	70.75
8/24/99	70.77

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.

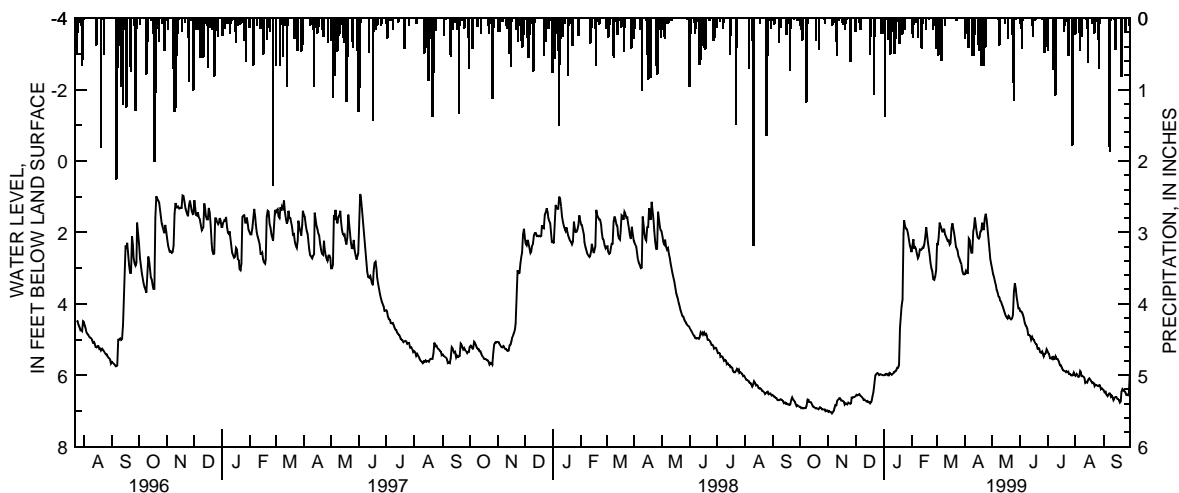
PERIOD OF RECORD.--July 23, 1996 to current year.

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, November 5, 1998.

DEPTH BELOW LAND SURFACE (WATER LEVEL), FEET, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999 DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.89	7.03	6.58	6.00	2.55	2.30	3.17	3.02	4.21	5.33	6.02	6.41
2	6.92	7.01	6.55	6.00	2.35	2.36	3.08	3.17	4.22	5.39	5.97	6.48
3	6.91	7.03	6.57	5.96	2.19	2.12	3.14	3.26	4.25	5.41	6.00	6.46
4	6.94	7.04	6.55	5.97	2.42	1.72	3.14	3.38	4.31	5.53	6.05	6.55
5	6.92	7.07	6.53	5.99	2.41	1.80	2.17	3.49	4.40	5.53	6.04	6.58
6	6.93	7.03	6.57	5.96	2.47	1.87	2.22	3.61	4.54	5.54	5.89	6.54
7	6.93	7.00	6.58	6.00	2.61	1.98	2.37	3.68	4.61	5.46	5.91	6.51
8	6.86	6.90	6.61	5.94	2.72	1.98	2.57	3.79	4.63	5.56	6.03	6.52
9	6.68	6.84	6.64	5.97	2.66	1.90	2.57	3.82	4.71	5.54	6.03	6.59
10	6.69	6.85	6.69	5.99	2.48	2.06	1.96	3.91	4.87	5.47	6.05	6.57
11	6.75	6.71	6.68	5.96	2.49	2.12	1.89	3.95	4.87	5.54	6.10	6.61
12	6.75	6.68	6.71	5.92	2.48	2.19	1.58	4.03	4.90	5.54	6.22	6.69
13	6.77	6.65	6.74	5.92	2.42	2.24	1.80	4.10	5.00	5.59	6.19	6.64
14	6.82	6.65	6.72	5.89	2.43	2.22	2.01	4.19	4.94	5.63	6.21	6.61
15	6.88	6.71	6.75	5.87	2.33	2.33	2.15	4.27	4.99	5.73	6.13	6.61
16	6.89	6.71	6.75	5.80	2.13	2.29	2.17	4.35	5.00	5.72	6.09	6.66
17	6.91	6.72	6.79	5.80	1.85	1.87	2.12	4.38	5.08	5.79	6.13	6.67
18	6.94	6.74	6.76	5.71	2.08	1.74	1.99	4.41	5.12	5.86	6.16	6.69
19	6.92	6.82	6.74	4.67	2.25	1.91	1.95	4.34	5.14	5.88	6.22	6.77
20	6.94	6.79	6.59	4.32	2.44	2.00	1.72	4.38	5.26	5.89	6.20	6.73
21	6.95	6.79	6.47	4.07	2.65	2.19	1.91	4.41	5.25	5.91	6.22	6.47
22	6.92	6.82	6.24	3.88	2.83	2.41	1.91	4.44	5.25	5.89	6.30	6.40
23	6.90	6.77	6.00	2.05	3.00	2.47	1.60	4.41	5.36	5.91	6.26	6.43
24	6.91	6.78	5.96	1.66	3.10	2.52	1.47	4.31	5.37	5.90	6.28	6.44
25	6.96	6.80	5.94	1.83	3.31	2.69	1.65	3.66	5.33	5.97	6.29	6.47
26	6.96	6.78	5.95	1.90	3.33	2.74	1.96	3.42	5.38	5.96	6.31	6.55
27	6.96	6.63	5.99	1.91	3.24	2.83	2.25	3.58	5.47	6.00	6.28	6.54
28	6.96	6.62	5.98	2.03	3.05	2.90	2.51	3.77	5.40	6.01	6.29	6.57
29	7.01	6.62	5.98	2.21	---	3.09	2.73	3.95	5.38	6.00	6.40	6.57
30	6.99	6.60	5.99	2.37	---	3.17	2.88	4.13	5.28	5.93	6.37	5.96
31	6.99	---	6.00	2.46	---	3.18	---	4.13	---	6.00	6.39	---
MEAN	6.90	6.81	6.44	4.58	2.58	2.30	2.22	3.93	4.95	5.72	6.16	6.54
MAX	7.01	7.07	6.79	6.00	3.33	3.18	3.17	4.44	5.47	6.01	6.40	6.77
MIN	6.68	6.60	5.94	1.66	1.85	1.72	1.47	3.02	4.21	5.33	5.89	5.96

CAL YR 1998 MEAN 4.63 HIGH 1.00 LOW 7.07
WTR YR 1999 MEAN 4.94 HIGH 1.47 LOW 7.07



PROJECT DATA
Ground-Water Data for Geauga County, Ohio

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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.

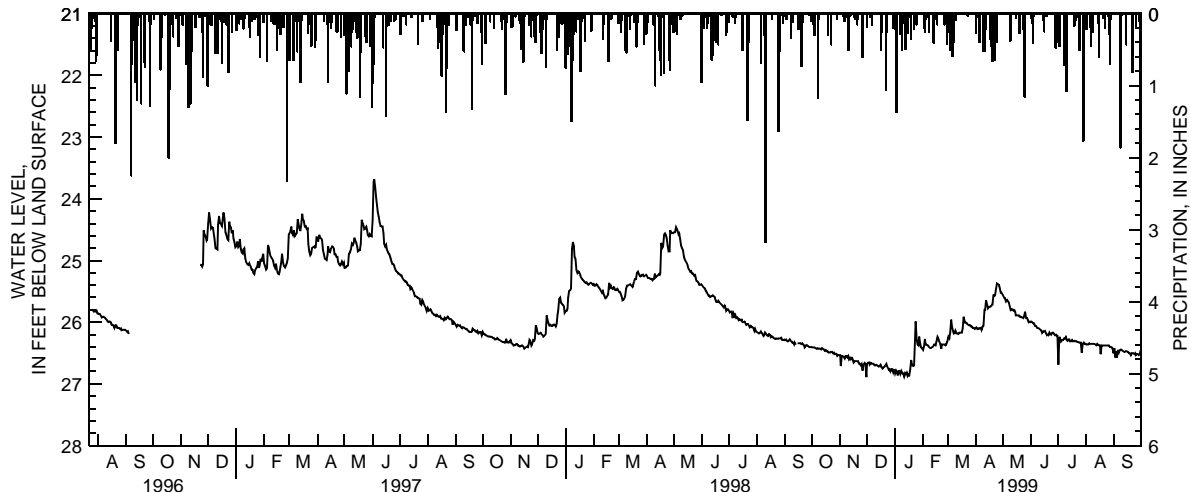
PERIOD OF RECORD.--July 24, 1996 to current year.

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, November 30, 1998.

DEPTH BELOW LAND SURFACE (WATER LEVEL), FEET, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26.41	26.53	26.67	26.83	26.45	26.24	26.08	25.58	25.99	26.69	26.36	26.42
2	26.41	26.71	26.66	26.78	26.39	26.26	26.11	25.61	26.00	26.24	26.36	26.57
3	26.41	26.55	26.65	26.80	26.27	26.16	26.10	25.61	26.02	26.26	26.36	26.47
4	26.41	26.55	26.68	26.86	26.36	25.96	26.11	25.66	26.02	26.31	26.34	26.57
5	26.42	26.56	26.66	26.79	26.36	26.05	26.09	25.64	26.06	26.29	26.35	26.45
6	26.43	26.59	26.67	26.79	26.37	26.13	26.09	25.66	26.06	26.29	26.35	26.49
7	26.42	26.55	26.67	26.84	26.39	26.18	26.12	25.68	26.09	26.26	26.35	26.45
8	26.43	26.55	26.67	26.79	26.41	26.17	26.07	25.74	26.09	26.26	26.35	26.44
9	26.43	26.57	26.70	26.83	26.42	26.14	26.05	25.80	26.10	26.24	26.35	26.45
10	26.43	26.54	26.70	26.83	26.42	26.18	25.80	25.79	26.11	26.29	26.35	26.46
11	26.44	26.60	26.69	26.88	26.40	26.18	25.80	25.79	26.12	26.30	26.36	26.47
12	26.42	26.58	26.70	26.82	26.39	26.19	25.64	25.81	26.13	26.28	26.37	26.48
13	26.43	26.60	26.71	26.84	26.36	26.17	25.71	25.80	26.17	26.28	26.35	26.47
14	26.44	26.58	26.72	26.81	26.36	26.17	25.77	25.83	26.15	26.31	26.37	26.47
15	26.46	26.60	26.71	26.87	26.37	26.17	25.75	25.89	26.15	26.31	26.37	26.47
16	26.45	26.65	26.69	26.85	26.31	26.17	25.75	25.89	26.14	26.29	26.38	26.48
17	26.47	26.63	26.73	26.86	26.24	26.10	25.74	25.89	26.18	26.31	26.52	26.50
18	26.47	26.63	26.75	26.76	26.27	25.91	25.73	25.89	26.21	26.31	26.38	26.50
19	26.49	26.63	26.73	26.61	26.32	25.98	25.71	25.91	26.20	26.30	26.38	26.53
20	26.49	26.63	26.72	26.70	26.35	26.01	25.56	25.91	26.21	26.31	26.38	26.50
21	26.49	26.63	26.70	26.71	26.43	26.01	25.57	25.92	26.17	26.31	26.38	26.50
22	26.48	26.67	26.67	26.70	26.36	26.03	25.56	25.92	26.19	26.32	26.38	26.50
23	26.48	26.67	26.71	26.25	26.36	26.04	25.46	25.93	26.20	26.32	26.38	26.52
24	26.50	26.70	26.74	25.99	26.36	26.05	25.37	25.90	26.17	26.33	26.38	26.50
25	26.49	26.67	26.77	26.27	26.36	26.05	25.38	25.83	26.17	26.33	26.38	26.53
26	26.52	26.78	26.76	26.36	26.37	26.07	25.39	25.93	26.19	26.33	26.38	26.52
27	26.51	26.68	26.80	26.38	26.35	26.07	25.45	25.93	26.21	26.49	26.40	26.52
28	26.51	26.66	26.76	26.23	26.31	26.09	25.52	25.96	26.20	26.35	26.40	26.53
29	26.55	26.68	26.76	26.34	---	26.09	25.52	26.00	26.22	26.33	26.41	26.52
30	26.53	26.89	26.81	26.41	---	26.11	25.55	25.99	26.22	26.35	26.42	26.45
31	26.53	---	26.76	26.43	---	26.09	---	26.00	---	26.35	26.50	---
MEAN	26.46	26.63	26.71	26.65	26.36	26.10	25.75	25.83	26.14	26.32	26.38	26.49
MAX	26.55	26.89	26.81	26.88	26.45	26.26	26.12	26.00	26.22	26.69	26.52	26.57
MIN	26.41	26.53	26.65	25.99	26.24	25.91	25.37	25.58	25.99	26.24	26.34	26.42

CAL YR 1998 MEAN 25.84 HIGH 24.46 LOW 26.89
WTR YR 1999 MEAN 26.32 HIGH 25.37 LOW 26.89



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.

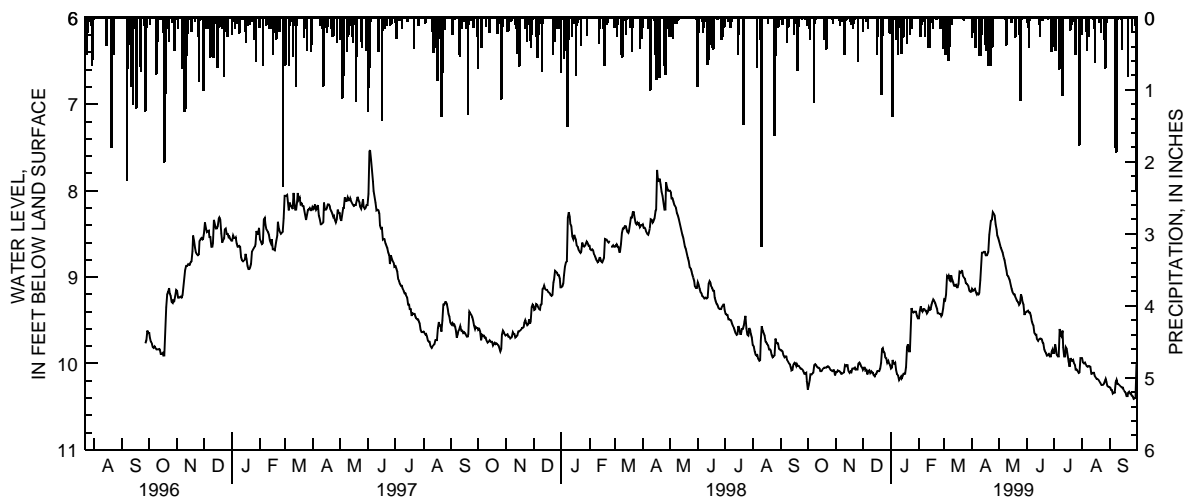
Measuring point: mark on wooden base of instrument shelter, 0.77 ft above land-surface datum.

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, September 27, 1999.

DEPTH BELOW LAND SURFACE (WATER LEVEL), FEET, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999 DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10.30	10.10	10.07	10.06	9.48	9.26	9.14	8.59	9.40	9.88	9.94	10.28
2	10.25	10.10	10.05	10.05	9.39	9.27	9.16	8.63	9.39	9.78	9.99	10.31
3	10.19	10.08	10.05	9.96	9.34	9.20	9.15	8.66	9.41	9.82	10.00	10.31
4	10.13	10.09	10.08	10.00	9.38	8.99	9.14	8.69	9.41	9.90	9.99	10.35
5	10.13	10.09	10.07	10.00	9.40	9.00	9.17	8.72	9.45	9.92	10.01	10.34
6	10.12	10.10	10.13	9.99	9.37	8.98	9.20	8.77	9.51	9.92	10.03	10.34
7	10.11	10.12	10.09	10.08	9.37	9.04	9.19	8.81	9.55	9.60	10.04	10.22
8	10.02	10.12	10.08	10.13	9.39	9.05	9.20	8.87	9.56	9.67	10.03	10.19
9	10.01	10.11	10.11	10.14	9.39	8.98	9.18	8.93	9.65	9.69	10.03	10.24
10	10.02	10.10	10.09	10.19	9.42	9.03	9.04	8.98	9.67	9.62	10.04	10.24
11	10.04	10.02	10.11	10.17	9.40	9.06	8.90	8.99	9.67	9.81	10.12	10.25
12	10.05	10.03	10.11	10.15	9.35	9.10	8.72	9.02	9.72	9.92	10.12	10.26
13	10.05	10.02	10.14	10.17	9.38	9.10	8.72	9.04	9.74	9.92	10.11	10.27
14	10.06	10.02	10.15	10.15	9.37	9.09	8.71	9.09	9.72	9.81	10.11	10.28
15	10.09	10.09	10.13	10.12	9.33	9.12	8.71	9.14	9.71	9.83	10.15	10.28
16	10.09	10.11	10.12	10.12	9.29	9.12	8.75	9.18	9.71	9.91	10.16	10.31
17	10.07	10.09	10.09	10.12	9.26	9.08	8.75	9.20	9.72	9.98	10.18	10.33
18	10.06	10.10	10.09	10.04	9.28	8.94	8.74	9.20	9.76	10.04	10.18	10.34
19	10.05	10.06	10.09	9.81	9.30	8.95	8.71	9.24	9.77	9.94	10.19	10.38
20	10.05	10.06	10.06	9.78	9.34	8.95	8.51	9.26	9.84	9.97	10.21	10.38
21	10.05	10.06	9.99	9.86	9.37	8.92	8.41	9.28	9.87	9.97	10.23	10.34
22	10.04	10.05	9.83	9.86	9.42	8.99	8.35	9.29	9.88	9.96	10.25	10.33
23	10.03	10.07	9.82	9.57	9.42	9.01	8.34	9.32	9.91	10.00	10.25	10.35
24	10.04	10.07	9.87	9.36	9.43	9.02	8.25	9.30	9.90	10.02	10.25	10.35
25	10.05	10.07	9.88	9.40	9.43	9.07	8.27	9.20	9.89	10.07	10.24	10.37
26	10.07	10.00	9.93	9.41	9.45	9.08	8.29	9.24	9.92	10.07	10.21	10.38
27	10.08	9.99	9.94	9.40	9.43	9.09	8.39	9.29	9.92	10.09	10.18	10.41
28	10.09	10.01	9.99	9.40	9.36	9.11	8.45	9.32	9.87	10.11	10.21	10.40
29	10.08	10.04	9.97	9.40	---	9.16	8.52	9.44	9.84	10.10	10.26	10.40
30	10.08	10.05	10.00	9.45	---	9.17	8.55	9.41	9.88	9.94	10.27	10.01
31	10.14	---	10.02	9.48	---	9.17	---	9.40	---	9.94	10.27	---
MEAN	10.09	10.07	10.04	9.87	9.38	9.07	8.75	9.08	9.71	9.91	10.14	10.31
MAX	10.30	10.12	10.15	10.19	9.48	9.27	9.20	9.44	9.92	10.11	10.27	10.41
MIN	10.01	9.99	9.82	9.36	9.26	8.92	8.25	8.59	9.39	9.60	9.94	10.01
CAL YR 1998	MEAN 9.29	HIGH 7.76	LOW 10.30									
WTR YR 1999	MEAN 9.70	HIGH 8.25	LOW 10.41									



PROJECT DATA
Ground-Water Data for Geauga County, Ohio

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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.

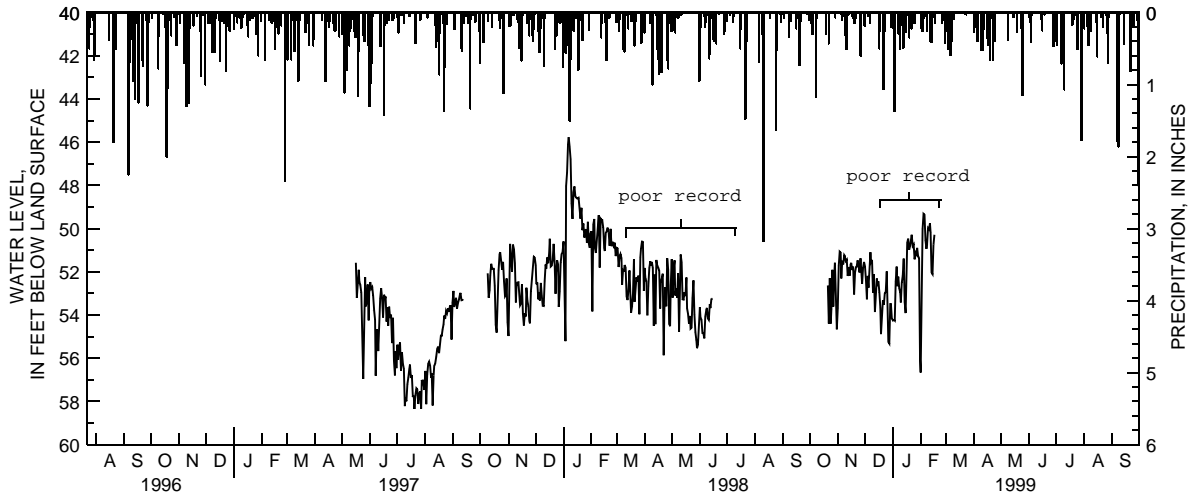
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 45.75 ft below land-surface datum, January 7, 1998;
 lowest measured, 58.35 ft below land-surface datum, July 20, 1997.

REMARKS.--Poor record between February 25, 1998 and June 16, 1998 due to slowly failing transducer. Poor record between December 16, 1998 and February 17, 1999 due to slowly failing transducer.

DEPTH BELOW LAND SURFACE (WATER LEVEL), FEET, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
 DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	53.68	51.74	54.24	56.67	---	---	---	---	---	---	---
2	---	51.72	52.38	54.21	52.96	---	---	---	---	---	---	---
3	---	51.06	53.26	54.26	50.01	---	---	---	---	---	---	---
4	---	51.10	52.19	52.44	49.31	---	---	---	---	---	---	---
5	---	52.31	52.73	51.75	49.35	---	---	---	---	---	---	---
6	---	51.49	52.00	52.66	50.53	---	---	---	---	---	---	---
7	---	51.65	51.09	52.22	50.93	---	---	---	---	---	---	---
8	---	51.22	51.54	52.75	50.73	---	---	---	---	---	---	---
9	---	51.27	51.45	52.94	49.97	---	---	---	---	---	---	---
10	---	51.48	52.95	53.42	50.04	---	---	---	---	---	---	---
11	---	51.43	52.12	52.50	49.74	---	---	---	---	---	---	---
12	---	52.19	53.86	52.18	50.17	---	---	---	---	---	---	---
13	---	51.77	53.00	51.39	52.04	---	---	---	---	---	---	---
14	---	52.17	52.30	53.39	52.12	---	---	---	---	---	---	---
15	---	51.66	52.54	53.91	50.73	---	---	---	---	---	---	---
16	---	51.57	52.44	51.78	50.28	---	---	---	---	---	---	---
17	---	51.90	52.96	50.64	---	---	---	---	---	---	---	---
18	---	51.75	53.67	50.45	---	---	---	---	---	---	---	---
19	---	53.05	54.89	50.97	---	---	---	---	---	---	---	---
20	---	52.01	54.12	50.80	---	---	---	---	---	---	---	---
21	52.63	51.77	53.31	50.60	---	---	---	---	---	---	---	---
22	54.39	51.75	53.52	50.28	---	---	---	---	---	---	---	---
23	52.29	51.47	52.97	50.78	---	---	---	---	---	---	---	---
24	54.39	51.72	52.88	50.71	---	---	---	---	---	---	---	---
25	53.73	52.03	51.97	51.42	---	---	---	---	---	---	---	---
26	51.91	51.38	53.19	51.11	---	---	---	---	---	---	---	---
27	53.61	51.90	55.25	51.20	---	---	---	---	---	---	---	---
28	52.13	52.55	55.32	50.88	---	---	---	---	---	---	---	---
29	51.58	51.80	53.49	51.26	---	---	---	---	---	---	---	---
30	52.98	51.54	53.48	51.37	---	---	---	---	---	---	---	---
31	54.66	---	54.17	56.05	---	---	---	---	---	---	---	---
MEAN	53.12	51.81	52.99	50.08	50.97	---	---	---	---	---	---	---
MAX	54.66	53.68	55.32	56.05	56.67	---	---	---	---	---	---	---
MIN	51.58	51.06	51.09	50.28	49.31	---	---	---	---	---	---	---

CAL YR 1998 MEAN 52.03 HIGH 45.75 LOW 55.87
 WTR YR 1999 MEAN 52.20 HIGH 49.31 LOW 56.67



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 S.R. 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.

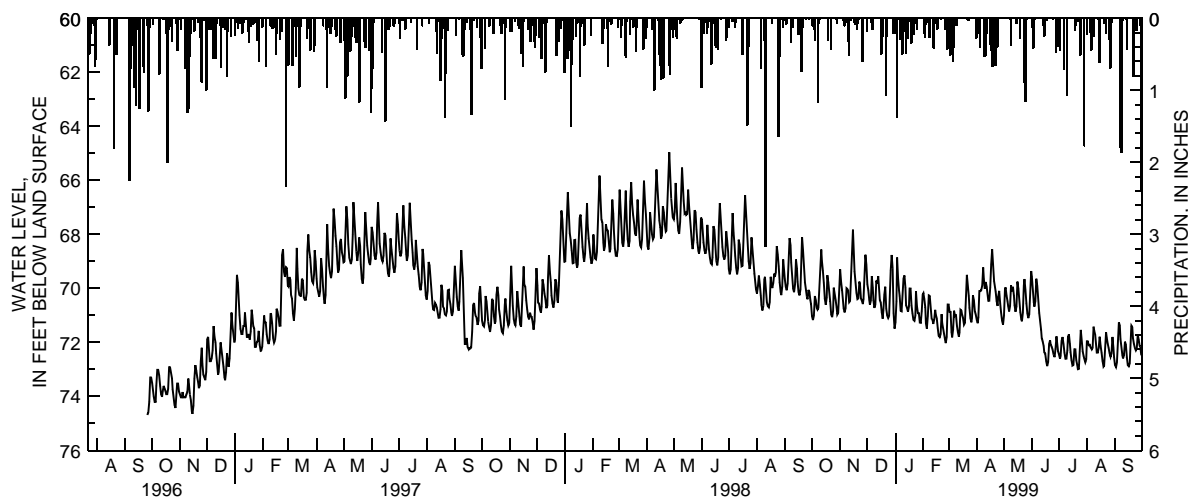
PERIOD OF RECORD.--September 25, 1996 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 64.96 ft below land-surface datum, April 26, 1998; lowest measured, 74.80 ft below land-surface datum, September 25, 1996.

DEPTH BELOW LAND SURFACE (WATER LEVEL), FEET, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999 DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	71.03	69.30	69.85	71.26	70.17	70.60	71.18	71.01	69.56	72.45	71.97	72.86
2	71.18	69.76	70.08	70.49	70.39	70.88	71.30	70.05	69.98	72.61	71.97	72.93
3	71.01	70.07	70.43	68.86	70.70	70.88	71.07	69.97	70.50	72.50	72.11	72.74
4	70.28	70.50	70.60	69.63	71.29	71.61	70.11	70.26	70.68	71.95	72.10	72.05
5	70.44	70.75	70.45	70.08	71.50	71.81	70.11	70.48	70.48	71.80	72.21	71.27
6	70.73	70.89	69.56	70.29	71.03	71.52	70.06	70.66	69.65	72.07	72.26	71.39
7	70.79	70.74	69.98	70.84	70.26	70.84	69.89	70.85	69.91	72.39	72.19	71.87
8	70.71	70.00	70.44	70.86	70.29	71.02	69.23	70.66	70.44	72.61	71.43	72.18
9	70.11	70.03	70.73	70.34	70.68	71.00	69.64	69.90	70.91	72.61	71.56	72.47
10	69.26	70.09	70.61	69.65	71.14	71.39	70.01	70.11	71.23	72.30	71.72	72.60
11	68.57	70.51	69.72	69.53	71.19	71.63	69.76	69.95	71.54	71.80	72.12	72.47
12	68.99	70.47	69.83	69.98	71.32	71.79	69.95	70.26	71.85	71.71	72.38	71.98
13	69.35	69.72	69.56	70.63	71.16	71.64	70.26	70.62	71.97	72.06	72.38	72.10
14	69.80	68.76	70.13	70.73	70.80	70.80	70.46	70.87	72.13	72.36	72.21	72.55
15	70.38	67.84	70.44	70.87	70.98	70.83	70.46	70.68	72.39	72.67	71.79	72.86
16	70.60	68.46	70.53	70.68	71.12	70.98	69.98	69.75	72.43	72.86	72.14	72.89
17	70.35	69.37	70.89	70.02	71.47	71.10	69.11	70.01	72.71	72.83	72.38	72.78
18	69.52	69.76	71.13	70.01	71.76	71.34	68.56	70.43	72.88	72.26	72.69	72.20
19	69.78	70.17	70.83	70.63	71.81	71.27	69.21	70.88	72.73	72.26	72.89	71.39
20	70.14	70.41	70.24	70.93	71.69	70.56	69.73	71.15	72.07	72.67	72.86	71.45
21	70.50	70.37	69.94	71.18	70.96	69.50	69.97	71.22	71.92	72.84	72.30	71.83
22	70.97	69.75	70.75	71.21	71.30	69.90	70.12	70.91	72.08	73.00	71.62	72.05
23	71.07	69.85	71.01	71.01	71.50	70.29	70.48	69.90	72.17	72.99	71.81	72.20
24	70.84	70.38	71.11	70.12	71.71	70.71	70.66	69.66	72.28	72.31	72.04	72.30
25	69.98	70.46	71.02	70.65	71.91	71.11	70.30	70.05	72.45	71.54	72.20	72.22
26	70.22	70.59	70.16	70.92	72.03	71.26	70.10	70.55	72.55	71.91	72.40	71.72
27	70.44	70.40	69.34	70.92	71.80	71.11	70.55	70.92	72.24	72.34	72.54	71.90
28	70.71	69.70	68.77	71.27	70.60	70.26	70.91	71.10	71.78	72.51	72.41	72.14
29	70.96	68.76	69.25	71.28	---	70.44	71.20	70.96	72.13	72.61	71.80	72.15
30	70.89	69.13	70.92	70.86	---	70.85	71.34	70.26	72.34	72.74	72.20	72.47
31	70.11	---	71.50	70.21	---	70.99	---	69.36	---	72.63	72.55	---
MEAN	70.31	69.90	70.32	70.51	71.16	70.96	70.19	70.43	71.60	72.39	72.17	72.20
MAX	71.18	70.89	71.50	71.28	72.03	71.81	71.34	71.22	72.88	73.00	72.89	72.93
MIN	68.57	67.84	68.77	68.86	70.17	69.50	68.56	69.36	69.56	71.54	71.43	71.27

CAL YR 1998 MEAN 68.79 HIGH 64.96 LOW 71.50
WTR YR 1999 MEAN 71.01 HIGH 67.84 LOW 73.00



PROJECT DATA
Ground-Water Data for Geauga County, Ohio

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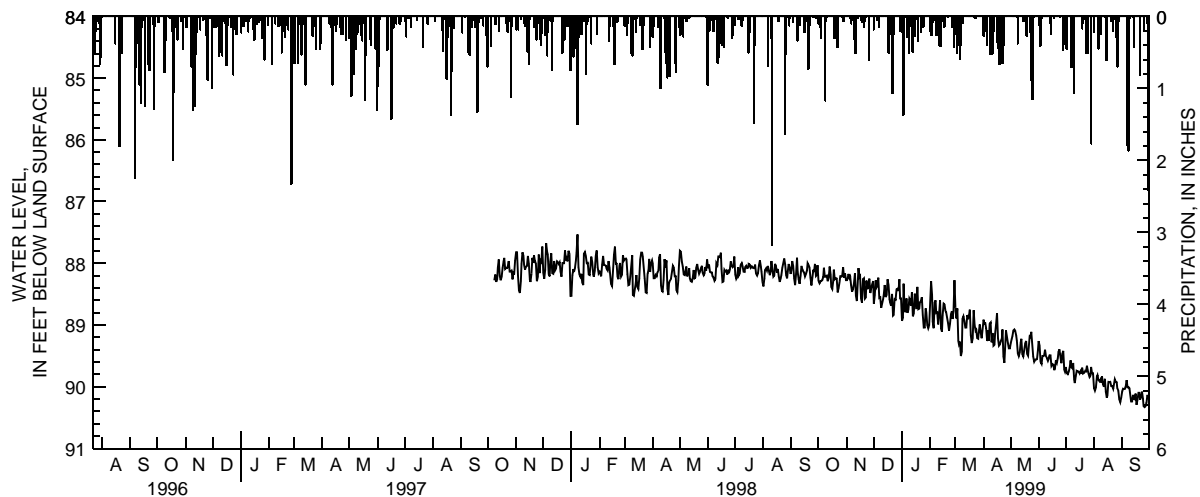
LONG-TERM GROUND-WATER MONITORING NETWORK—CONTINUED

412748081172000. LOCAL NUMBER, GE-354

LOCATION.--Latitude 41°27'48", longitude 81°17'20", Geauga County, northwest corner of intersection of Sperry Rd. and S.R. 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, January 8, 1998;
 lowest measured, 90.33 ft below land-surface datum, September 26, 1999.

DEPTH BELOW LAND SURFACE (WATER LEVEL), FEET, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
 DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	88.28	88.27	88.65	88.93	88.71	88.72	88.91	89.29	89.26	89.68	90.02	90.08
2	88.32	88.25	88.51	88.88	88.29	88.89	88.99	89.22	89.33	89.78	90.06	90.03
3	88.29	88.17	88.27	88.33	88.51	88.73	88.96	89.18	89.60	89.80	90.01	90.04
4	88.29	88.23	88.39	88.72	88.94	89.25	89.05	89.09	89.63	89.76	89.84	90.04
5	88.27	88.21	88.36	88.79	89.05	89.31	89.26	89.07	89.50	89.69	89.81	90.00
6	88.22	88.36	88.23	88.57	88.64	89.27	89.09	89.10	89.50	89.57	89.89	89.89
7	88.07	88.46	88.56	88.80	88.60	89.50	89.26	89.17	89.47	89.68	89.91	90.01
8	88.22	88.42	88.55	88.75	88.80	89.43	88.98	89.25	89.40	89.70	89.88	90.01
9	88.22	88.32	88.72	88.57	88.79	88.90	88.96	89.46	89.51	89.62	89.93	90.03
10	88.20	88.16	88.65	88.59	88.99	88.86	89.28	89.50	89.54	89.88	89.83	90.11
11	88.29	88.52	88.58	88.69	88.82	88.93	89.13	89.44	89.58	89.94	89.96	90.24
12	88.23	88.61	88.51	88.47	88.60	89.04	89.34	89.28	89.55	89.83	90.00	90.24
13	88.05	88.36	88.35	88.86	89.06	89.04	89.32	89.22	89.49	89.74	89.87	90.13
14	88.18	88.08	88.55	88.81	89.11	88.84	89.14	89.47	89.49	89.75	90.08	90.19
15	88.39	88.22	88.51	88.49	88.85	88.88	88.99	89.51	89.66	89.76	90.18	90.20
16	88.42	88.20	88.26	88.64	88.65	88.86	88.81	89.41	89.63	89.79	90.14	90.11
17	88.29	88.57	88.35	88.74	88.67	88.75	89.21	89.30	89.64	89.75	89.92	90.29
18	88.10	88.64	88.58	88.38	88.78	89.16	89.33	89.26	89.73	89.79	89.93	90.21
19	88.26	88.26	88.64	88.74	88.79	89.29	89.31	89.47	89.70	89.69	89.92	90.10
20	88.24	88.24	88.69	88.73	88.88	89.21	89.26	89.50	89.57	89.78	89.99	90.10
21	88.25	88.57	88.50	88.63	88.97	88.76	89.22	89.37	89.61	89.77	89.99	90.21
22	88.47	88.55	88.85	88.61	89.09	89.00	89.07	89.18	89.53	89.74	90.03	90.17
23	88.40	88.28	88.84	88.55	88.98	89.09	89.51	89.20	89.44	89.75	89.97	90.08
24	88.30	88.42	88.58	88.84	88.83	89.07	89.61	89.11	89.39	89.66	89.88	90.19
25	88.21	88.38	88.59	89.04	88.78	89.21	89.43	89.29	89.51	89.72	89.92	90.32
26	88.22	88.25	88.42	89.04	88.90	89.22	89.09	89.51	89.62	89.79	89.93	90.33
27	88.21	88.48	88.41	88.73	88.77	89.12	89.19	89.59	89.47	89.84	90.03	90.32
28	88.06	88.40	88.45	88.79	88.27	88.99	89.29	89.56	89.42	89.81	90.06	90.26
29	88.23	88.34	88.26	89.00	---	89.12	89.38	89.56	89.72	89.68	90.20	90.13
30	88.16	88.29	88.57	89.05	---	89.21	89.38	89.55	89.75	89.78	90.25	90.20
31	88.27	---	88.57	89.00	---	89.06	---	89.40	---	89.78	90.18	---
MEAN	88.25	88.35	88.51	88.73	88.79	89.06	89.19	89.34	89.54	89.75	89.99	90.14
MAX	88.47	88.64	88.85	89.05	89.11	89.50	89.61	89.59	89.75	89.94	90.25	90.33
MIN	88.05	88.08	88.23	88.33	88.27	88.72	88.81	89.07	89.26	89.57	89.81	89.89
CAL YR 1998	MEAN 88.18	HIGH 87.53	LOW 88.85									
WTR YR 1999	MEAN 89.14	HIGH 88.05	LOW 90.33									



PROJECT DATA

Ground-Water Data for Geauga County, Ohio

WATER-QUALITY DATA

The table on the next page contains chemical analyses of 31 ground-water samples collected between June 7 and July 1, 1999, from aquifers in the glacial deposits, the Pottsville Formation, the Cuyahoga Group, and the Berea Sandstone. Only wells completed in a single aquifer were used. All samples were collected from domestic and industrial wells that were in regular use. Samples were collected from spigots using the existing plumbing fixtures and well pumps. Well owners identified spigots that provided untreated water. Objectives of the study were to assess (1) areal variations in ground-water quality; (2) stratigraphic variations in ground-water quality; and (3) changes in ground-water quality since wells were last sampled by U.S. Geological Survey personnel in 1986. Descriptions of the 31 sample sites are specified below. Well construction data were obtained from drillers' logs or from measurements made by U.S. Geological Survey personnel, unless otherwise indicated. Open interval refers to the interval of the well that is not cased; this interval is constructed as open hole or open end, unless otherwise noted.

WELL SITE DESCRIPTIONS

WELL NAME	SITE ID	LATITUDE	LONGITUDE	TOWNSHIP	CASING DIAMETER (INCHES)	LAND SURFACE DATUM (FEET)	MP HEIGHT (FEET ABOVE LS)	AQUIFER	OPEN INTERVAL (FEET BELOW LS)	
									TOP	BOTTOM
GE-23	412309081202400	41°23'09"	81°20'24"	Bainbridge	5.63	1,162	1.32	Pottsville	31	40
GE-77	413028081221000	41°30'28"	81°22'10"	Chester	6	1,140	2.07	Cuyahoga	80	155
GE-85A	412716081125401	41°27'16"	81°12'54"	Newbury	6	1,220	2.23	Pottsville	72	140
GE-101	413757081122300	41°37'57"	81°12'23"	Chardon	6.25	990	.90	Glacial	48	48
GE-103	413755081101200	41°37'55"	81°10'12"	Hambden	5.63	1,158	.40	Berea SS	133	136
GE-104	413606081102100	41°36'06"	81°10'21"	Hambden	6	1,215	1.25	Berea SS	187	204
GE-108	413117081171900	41°31'06"	81°17'19"	Munson	6	1,120	.60	Glacial	132	132
GE-109	413005081130000	41°30'02"	81°13'02"	Munson	6	1,280	1.50	Pottsville	89	105
GE-119	412657081040500	41°26'58"	81°04'12"	Middlefield	5.63	1,185	1.50	Pottsville	21	79
GE-120	413230081190200	41°32'30"	81°19'02"	Chester	6	1,115	1.00	Berea SS	91	135
GE-122	412410081223900	41°24'10"	81°22'39"	Bainbridge	6.25	1,010	1.20	Berea SS	94	135
GE-126	412212081230100	41°22'12"	81°02'53"	Parkman	6	1,070	1.50	Berea SS	136	200
GE-141	412224081084300	41°22'24"	81°08'43"	Troy	6	1,118	.80	Glacial	53	53
GE-147	412845081030100	41°28'45"	81°03'01"	Middlefield	6	1,120	1.90	Cuyahoga	54	63
GE-151	412319081135000	41°23'19"	81°13'50"	Auburn	6	1,270	2.30	Pottsville	64.5	148
GE-157	413628081060500	41°36'28"	81°06'05"	Hambden	6	1,185	1.50	Glacial	36	36
GE-159	412442081102100	41°24'20"	81°10'21"	Troy	6	1,140	1.40	Berea SS	237	286
GE-165	412319081163000	41°23'19"	81°16'30"	Auburn	6	1,165	1.20	Glacial	56	56
GE-174A	412907081202101	41°29'07"	81°20'21"	Russell	6	1,060	1.15	Glacial	^a 85	^b 85
GE-185A	413630081145001	41°36'30"	81°14'50"	Chardon	5.50	1,260	.84	Cuyahoga	68.5	90
GE-202	413607081032500	41°36'07"	81°03'25"	Montville	5.63	1,247	1.60	Pottsville	51	74
GE-204	413256081045800	41°32'56"	81°04'58"	Huntsburg	5.63	1,230	.70	Pottsville	46	53
GE-228	412408081221500	41°24'08"	81°22'15"	Bainbridge	6	1,060	1.00	Cuyahoga	37	65
GE-234	412948081090000	41°29'48"	81°09'00"	Burton	5.63	1,170	1.33	Cuyahoga	40	80
GE-235	412733081094600	41°27'33"	81°09'46"	Burton	6	1,105	1.81	Glacial	46	^c 51
GE-280	413127081025900	41°31'27"	81°02'59"	Huntsburg	6	1,145	1.45	Cuyahoga	62	162
GE-321	412318081003200	41°23'18"	81°00'32"	Parkman	5.63	925	2.25	Glacial	89	^d 92
GE-332	412558081184200	41°25'58"	81°18'42"	Russell	5.63	1,180	1.14	Pottsville	48	104
GE-341	414121081030800	41°41'21"	81°03'08"	Thompson	6.63	1,267	2.00	Cuyahoga	72	120
GE-349A	413247081103301	41°32'47"	81°10'33"	Claridon	6	1,190	1.32	Pottsville	^e 16.5	49.5
GE-355	413910081043900	41°39'10"	81°04'39"	Thompson	5.63	1,222	.60	Pottsville	63	71

^a Estimated value based on fact that other wells in area that are completed in glacial deposits are constructed as open-ended wells.

^b Value reported by owner.

^c Slotted polyvinylchloride (PVC) well screen, 0.30 slot.

^d Stainless steel well screen, 0.10 slot.

^e Estimated value based on construction of adjacent well, and the fact that other Pottsville wells in the area are cased through the glacial deposits and have an open hole through the Pottsville Formation.

SUMMARY OF GROUND-WATER QUALITY

STATION NAME	DATE	DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET)	DEPTH OF WELL, TOTAL (FEET)	SPECIFIC CONDUCTANCE (US/CM)	PH, WATER WHOLE, FIELD (STANDARD UNITS)	TEMPERATURE, WATER (DEGREES CELSIUS)	OXYGEN, DISSOLVED (MG/L)	COLIFORM, TOTAL, WATER UNFILTERED MF, MI (COLS./100 ML)	E. COLI, WATER, UNFILTERED MF, MI (COLS./100 ML)	HARDNESS, TOTAL (MG/L AS CaCO3)	CALCIUM, DISSOLVED (MG/L AS Ca)	MAGNESIUM, DISSOLVED (MG/L AS Mg)
GLACIAL DEPOSITS												
GE-101	06/24/99	24.39	48	665	7.1	11.4	.1	120	<1	360	97	29
GE-108	06/28/99	49.92	132	326	7.8	11.8	.1	54	<1	130	33	12
GE-141	06/15/99	9.55	53	502	7.4	11.2	.4	a ₁₉	<1	260	75	18
GE-157	06/23/99	8.53	36	485	7.6	12.0	.1	<1	<1	170	41	17
GE-165	06/08/99	10.72	56	427	7.4	10.5	.1	<1	<1	210	63	13
GE-174A	06/14/99	29.13	85	574	7.7	12.2	.1	<1	<1	240	67	18
GE-235	06/21/99	13.49	51	365	7.6	11.0	.1	a ₉	<1	190	55	12
GE-321	06/22/99	31.21	92	719	7.8	11.7	.1	<1	<1	120	37	7.7
POTTSVILLE FORMATION												
GE-23	06/29/99	18.20	40	1300	6.9	13.0	1.3	53	<1	500	140	35
GE-85A	06/15/99	64.89	140	334	6.8	12.3	6.4	a ₁	<1	170	45	15
GE-109	06/15/99	76.66	105	511	7.4	12.0	.1	<1	<1	270	70	22
GE-119 ^b	06/17/99	14.77	79	449	6.3	13.2	.1	<1	<1	.2	.06	.03
GE-151	06/08/99	86.26	148	431	7.3	11.4	.4	<1	<1	230	62	17
GE-202	06/22/99	30.28	74	514	7.3	11.7	.1	a ₆	<1	270	72	23
GE-204	06/30/99	11.56	53	479	6.8	11.5	.1	<1	<1	260	74	18
GE-332	06/14/99	35.06	104	418	6.8	13.4	3.8	100	<1	200	55	15
GE-349A	07/01/99	25.59	49.5	338	6.0	11.2	8.3	a ₁	<1	88	26	5.8
GE-355	06/30/99	19.88	71	586	7.0	10.9	4.0	a ₈	<1	310	87	24
CUYAHOGA GROUP												
GE-77	06/08/99	42.53	155	803	7.4	12.1	.1	<1	<1	360	84	35
GE-147	06/16/99	6.72	63	757	7.6	11.9	.1	a ₁	<1	220	55	20
GE-185A	06/28/99	36.74	90	325	6.7	11.7	.1	a ₄	<1	150	46	8.7
GE-228	06/30/99	4.70	65	605	7.0	12.4	.1	61	<1	260	77	17
GE-234	06/21/99	14.70	80	313	7.4	11.5	.4	<1	<1	120	33	10
GE-280	06/22/99	34.42	162	383	7.0	11.5	7.6	<1	<1	170	46	14
GE-341	06/23/99	6.81	120	556	4.7	12.7	1.5	<1	<1	72	21	4.6
BEREA SANDSTONE												
GE-103	06/24/99	91.19	136	543	7.2	11.8	.1	<1	<1	240	56	25
GE-104	06/23/99	98.67	204	507	7.7	11.6	.1	<1	<1	170	40	16
GE-120	06/29/99	105.91	135	497	7.4	12.1	.2	a ₆	<1	150	38	14
GE-122	06/07/99	63.80	135	1490	7.2	11.6	.1	a ₁	<1	730	160	76
GE-126	06/17/99	120.65	200	608	7.4	11.6	.1	<1	<1	240	66	17
GE-159 ^b	06/16/99	41.77	286	749	8.7	12.8	6.9	a ₁	<1	7	1.8	.54

SUMMARY OF GROUND-WATER QUALITY—CONTINUED

STATION NAME	SODIUM, DISSOLVED (MG/L AS NA)	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE WATER DIS IT, FIELD (MG/L AS HCO3)	CARBONATE WATER DIS IT, FIELD (MG/L AS CO3)	ALKALINITY, WATER, DIS TOT IT, FIELD (MG/L AS CACO3)	SULFIDE, TOTAL (MG/L AS S)	SULFATE, DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	BROMIDE, DISSOLVED (MG/L AS BR)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEGREES CELSIUS, DISSOLVED (MG/L)	NITROGEN, NITRATE, DISSOLVED (MG/L AS N)
GLACIAL DEPOSITS												
GE-101	8.1	1.7	320	0	270	1.2	97	6.4	.04	15	420	<.18
GE-108	21	1.4	190	0	150	.06	14	1.0	.03	13	207	<.18
GE-141	8.2	1.1	220	0	180	.05	53	29	.04	11	306	<.18
GE-157	45	3.2	290	0	240	<.01	19	2.7	.04	14	283	<.18
GE-165	9.0	.9	200	0	170	.01	37	20	.21	10	272	<.18
GE-174A	23	2.6	220	0	180	<.01	52	41	.03	11	330	<.18
GE-235	3.4	.8	190	0	150	<.01	34	2.4	.03	13	203	<.18
GE-321	120	1.4	310	0	260	.04	5.7	74	.28	13	418	<.18
POTTSVILLE FORMATION												
GE-23	68	1.6	290	0	240	<.01	68	240	.21	15	820	.38
GE-85A	4.0	1.2	150	0	120	<.01	38	4.1	.03	12	220	.92
GE-109	5.6	1.0	260	0	210	<.01	47	11	.04	12	286	<.18
GE-119	99	.2	130	0	110	.02	70	21	.02	11	283	<.18
GE-151	3.5	.9	200	0	160	<.01	44	5.0	.04	10	267	<.18
GE-202	7.8	1.6	300	0	240	.02	32	4.5	.03	16	312	<.18
GE-204	4.5	1.2	250	0	200	.04	31	3.2	.04	11	265	<.18
GE-332	5.0	1.4	180	0	150	.03	53	8.3	.03	9.4	266	.98
GE-349A	24	1.8	42	0	34	<.01	35	43	.05	8.0	231	2.2
GE-355	5.9	.9	270	0	220	<.01	55	13	.06	11	321	2.5
CUYAHOGA GROUP												
GE-77	46	5.9	440	0	360	<.01	110	2.0	.06	17	507	<.18
GE-147	90	5.4	340	0	280	.02	120	8.1	.09	15	480	<.18
GE-185A	7.5	2.9	170	0	140	<.01	19	10	.06	15	213	<.18
GE-228	21	1.8	170	0	140	.21	24	93	.08	15	361	<.18
GE-234	15	3.2	130	0	100	.01	12	32	.02	11	194	<.18
GE-280	12	1.9	200	0	160	.04	36	6.4	.03	16	260	<.18
GE-341	67	2.4	5	0	4	<.01	20	150	.03	7.4	338	1.4
BEREA SANDSTONE												
GE-103	26	2.9	340	0	270	<.01	27	1.2	.02	15	318	<.18
GE-104	50	2.7	300	0	250	.01	23	4.3	.06	13	302	<.18
GE-120	57	2.4	300	0	250	<.01	10	8.1	.07	15	301	<.18
GE-122	55	3.8	430	0	350	.07	530	9.5	.06	13	1100	<.18
GE-126	41	1.8	300	0	250	.20	48	21	.05	15	354	<.18
GE-159	180	1.0	280	60	330	.40	.1	52	.34	7.2	479	<.18

SUMMARY OF GROUND-WATER QUALITY—CONTINUED

STATION NAME	NITROGEN, NITRITE DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA, DISSOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC, DISSOLVED (MG/L AS N)	PHOSPHORUS, DISSOLVED (MG/L AS P)	PHOSPHORUS, ORTHO, DISSOLVED (MG/L AS P)	BORON, DISSOLVED (UG/L AS B)	IRON, DISSOLVED (UG/L AS FE)	MANGANESE, DISSOLVED (UG/L AS MN)	STRONTIUM, DISSOLVED (UG/L AS SR)	TRITIUM, TOTAL (PCI/L)	CARBON, ORGANIC, DISSOLVED (MG/L AS C)	VOLATILE ORGANIC CARBON, SCREEN (UG/L) ^d
GLACIAL DEPOSITS												
GE-101	<.02	.13	.188	<.02	<.01	49.5	1600	120	250	31.0	1.0	ND
GE-108	<.02	.26	.266	<.02	<.01	167	440	34	680	<5.7	.6	ND
GE-141	<.02	.04	<.005	<.02	<.01	27.3	890	200	110	42.2	.7	ND
GE-157	<.02	.54	.482	<.02	<.01	336	290	15	790	--	1.0	ND
GE-165	<.02	.04	<.005	<.02	<.01	18.3	1900	180	84	--	.3	ND
GE-174A	<.02	.06	<.005	<.02	<.01	46.1	<10	120	140	--	1.2	ND
GE-235	<.02	.05	.117	<.02	<.01	19.8	630	72	100	--	.7	ND
GE-321	<.02	.25	.208	<.02	<.01	413	360	92	96	29.8	1.4	ND
POTTSVILLE FORMATION												
GE-23	<.02	.03	<.005	<.02	.01	36.5	10	C ₂	220	65.9	1.0	ND
GE-85A	<.02	.03	<.005	<.02	<.01	21.5	<10	<3	100	72.0	.6	ND
GE-109	<.02	.04	<.005	<.02	.02	25.9	300	110	250	52.5	.9	ND
GE-119	<.02	<.03	<.005	<.02	<.01	25.0	18	6	<1	--	.9	ND
GE-151	<.02	.04	<.005	<.02	<.01	26.0	310	96	96	--	.3	ND
GE-202	<.02	.13	.099	<.02	<.01	45.6	640	100	230	<5.7	.8	ND
GE-204	<.02	<.03	<.005	<.02	.01	22.2	170	250	160	--	1.0	ND
GE-332	<.02	.04	<.005	<.02	<.01	21.5	<10	<3	100	61.8	.9	ND
GE-349A	<.02	<.03	<.005	<.02	<.01	56.5	15	<3	88	47.4	.8	ND
GE-355	<.02	<.03	.014	<.02	.01	21.8	<10	<3	150	81.3	1.0	ND
CUYAHOGA GROUP												
GE-77	<.02	1.4	1.19	<.02	<.01	471	890	22	1300	--	.7	ND
GE-147	<.02	.85	.786	<.02	<.01	473	490	9	700	--	1.1	ND
GE-185A	<.02	.20	.145	<.02	.01	107	2100	190	160	50.2	.7	ND
GE-228	<.02	.10	<.005	<.02	.02	75.6	1900	180	150	46.7	.6	ND
GE-234	<.02	.36	.335	<.02	<.01	335	560	69	260	--	.4	ND
GE-280	<.02	.21	.233	<.02	<.01	86.5	1800	260	170	--	.8	ND
GE-341	<.02	.10	<.005	<.02	<.01	50.8	28	260	81	--	.7	ND
BEREA SANDSTONE												
GE-103	<.02	.37	.376	<.02	<.01	231	680	174	920	--	1.0	ND
GE-104	<.02	.70	.654	<.02	<.01	375	310	7	640	--	.8	ND
GE-120	<.02	.65	.487	<.02	<.01	256	C ₉	25	360	<5.7	.8	ND
GE-122	<.02	1.3	1.27	.02	<.01	273	1200	63	1000	--	.6	ND
GE-126	<.02	.16	<.005	<.02	<.01	238	570	140	170	--	1.1	ND
GE-159	<.02	.42	.330	<.02	<.01	1250	<10	C ₂	37	--	1.5	ND

^a Estimated count based on a non-ideal colony count. An ideal colony count, necessary for accurate enumeration, is ≥ 20 and ≤ 150 colonies per filter.

^b Although efforts were made to collect untreated water that would be representative of the aquifer, the high sodium concentration and unusually low concentrations of hardness, calcium, magnesium, iron, manganese, and strontium suggest that this water sample was softened by ion-exchange methods.

^c Estimated value.

^d Samples were screened using a portable gas chromatograph with a heated column and a calibration library consisting of benzene at 3 ug/L, trichloroethylene at 5 ug/L, toluene at 3 ug/L, perchloroethylene at 5 ug/L, and xylene at 13 ug/L. ND means not detected.

PROJECT DATA

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 1999 water year. The second table lists the discontinued streamflow-gaging stations for which a discharge measurement was performed in 1999 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

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LOW-FLOW PARTIAL-RECORD STATIONS

STATION NUMBER	STATION NAME	LOCATION	DRAINAGE AREA (MI ²)	PERIOD OF RECORD (WATER YEAR)	MEASUREMENTS	
					DATE	DISCHARGE (FT ³ /S)
BEAVER RIVER BASIN						
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 SR 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	6/23/99 9/15/99	5.08 6.57
03108996	Middle Fork Little Beaver Creek at Teegarden, Ohio	Latitude 40°49'18", longitude 80°49'37", Columbiana County, Hydrologic Unit 05030101, at Teegarden covered bridge of Eagleton Road over Middle Fork Little Beaver Creek (covered bridge is abandoned, next to new bridge), 3.3 mi. below Stone Mill Run, 1 mi. northeast of Salem Reservoir, 4.5 mi. northwest of Lisbon, Ohio. (Lisbon 1:24000 quad)	90.2	1995-99	6/23/99 9/15/99	14.80 8.62
YELLOW CREEK BASIN						
03109861	Yellow Creek at Bergholz, Ohio	Latitude 40°30'54", longitude 80°53'17", Jefferson County, Hydrologic Unit 05030101, at State Route 164 bridge over Yellow Creek, 0.8 mi. below confluence of Elkhorn Creek, 0.4 mi. southwest of Bergholz, Ohio.(Bergholz 1:24000 quad)	65.8	1994-99	6/22/99 9/15/99	5.87 0.40
SHORT CREEK BASIN						
03111465	Short Creek at Adena, Ohio	Latitude 40°13'09", longitude 80°52'22", Jefferson County, Hydrologic Unit 05030106, at Adena-Smithfield Road bridge over Short Creek, 400 ft below confluence with North Fork, in Adena, Ohio. (Dillonvale 1:24,000 quad)	63.9	1981-82 1994-99	6/22/99 9/14/99	17.80 7.71
MCMAHON CREEK BASIN						
03112820	McMahon Creek at Glencoe, Ohio	Latitude 40°00'10", longitude 80°52'38", Belmont County, Hydrologic Unit 05030106, at County Road 149, 0.7 mi. southeast of Glencoe, Ohio. (St. Clairsville 1:24000 quad)	50.7	1981-82 1995 1997-99	6/22/99 9/15/99	3.00 0.58
03113550	McMahon Creek at Bellaire, Ohio	Latitude 40°00'39", longitude 80°45'45", Belmont County, Hydrologic Unit 05030106, at county road bridge connecting Bellaire with State Route 147, 300 ft upstream from Bellaire City Limits, Ohio. (Lansing 1:24000 quad)	90.2	1981-82 1995-99	6/22/99 9/15/99	6.45 2.40
SUNFISH CREEK BASIN						
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	6/23/99 9/16/99	0.09 0.04
LITTLE MUSKINGUM RIVER BASIN						
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 L Muskingum River, 1.2 mi. north of Rinard Mills, Ohio. (Rinard Mills 1:24000 quad)	48.8	1997-99	6/23/99 9/14/99	0.39 0.004

PROJECT DATA
Low-Flow Magnitude and Frequency of Ohio Streams

LOW-FLOW PARTIAL-RECORD STATIONS—CONTINUED

STATION NUMBER	STATION NAME	LOCATION	DRAINAGE AREA (MI ²)	PERIOD OF RECORD (WATER YEAR)	MEASUREMENTS	
					DATE	DISCHARGE (FT ³ /S)
MUSKINGUM RIVER BASIN						
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	1997-99	12/17/98 6/22/99 9/15/99	11.80 6.28 2.39
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	1997-99	12/17/98 6/22/99 9/15/99	10.30 5.10 2.11
03126170	Skull Fork near Freeport, Ohio	Latitude 40°11'52", longitude 81°16'13', Harrison County, Hydrologic Unit 05040001, at county road bridge, 0.8 mi. south of Freeport, Ohio. (Freeport 1:24000 quad)	45.9	1981-82 1997-99	6/22/99 9/14/99	0.68 0.05
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 1998-99	6/25/99 9/13/99	2.51 0.97
03140700	Buffalo Fork at Pleasant City, Ohio	Latitude 39°54'10", longitude 81°33'15", Guernsey County, Hydrologic Unit 05040005, at State Route 82 bridge, 500 ft north of junction with State Route 146, at Pleasant City, Ohio. (Byesville 1:24000 quad)	71.1	1959 1962-67 1969 1971-74 1996 1998-99	6/23/99 9/14/99	8.85 6.34
03140800	Buffalo Creek at Pleasant City, Ohio	Latitude 39°54'10", longitude 81°33'00", Guernsey County, Hydrologic Unit 05040005, at State Route 146 bridge, just above confluence with Buffalo Fork, at Pleasant City, Ohio. (Byesville 1:24000 quad)	49.7	1959 1962-67 1967 1969 1971-74 1996 1998-99	6/23/99 9/14/99	0.08 0.06
03143760	Wakatomika Creek near Perryton, Ohio	Latitude 40°13'10", longitude 82°10'53', Coshocton County, Hydrologic Unit 05040004, at point in stream 0.15 mile north of east-west section of county road, 0.7 mi. upstream from Winding Fork, 5.2 mi. north of Perryton, Ohio. (Perryton 1:24000 quad)	58.3	1981-82 1995-99	6/22/99 9/13/99	1.10 2.24
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 SR 37 and SR 161, 0.2 mi. southeast of Alexandria, Ohio. (Granville 1:24000 quad)	40.6	1997-99	12/16/98 6/23/99	2.75 2.42
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	12/16/98 6/22/99	21.80 20.80
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	9/14/99	0.05
HOCKING RIVER BASIN						
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 m. southeast of Greendale, 4 mi. northeast of Haydenville, Ohio. (Gore 1:24000 quad)	67.2	1995-96 1998-99	12/17/98 9/13/99	6.84 0.29

PROJECT DATA
Low-Flow Magnitude and Frequency of Ohio Streams

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LOW-FLOW PARTIAL-RECORD STATIONS-CONTINUED

STATION NUMBER	STATION NAME	LOCATION	DRAINAGE AREA (MI ²)	PERIOD OF RECORD (WATER YEAR)	MEASUREMENTS			
					DATE	DISCHARGE (FT ³ /S)		
SHADE RIVER BASIN								
03159555	East Branch Shade River near Tupper Plains, Ohio	Latitude 39°08'29", longitude 81°52'39", Meigs County, Hydrologic Unit 05030202, at private road bridge, adjacent to Township Road 279, 2.1 mi. downstream from Meigs Creek, 2.8 mi. upstream from Big Run, 2.7 mi. southwest of Tupper Plains, Ohio (Alfred 1:24000 quad)	37.5	1980-81 ^a	6/28/99	0.10		
				1983-85 ^a	9/14/99	0.45		
				1995-96				
				1998-99				
LEADING CREEK BASIN								
03160050	Leading Creek near Middleport, Ohio	Latitude 39°00'25", longitude 82°05'10", Meigs County, Hydrologic Unit 05030202, at first private road bridge, 1.2 mi. above State Highway 7, 1.75 mi. northwest of Middleport, Ohio. (Pomeroy 1:24000 quad)	118	1956	9/13/99	6.15		
				1962-67				
				1969				
				1971-75				
				1995-96				
				1998-99				
SYMMES CREEK BASIN								
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	9/13/99	0.02		
PINE CREEK BASIN								
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	9/15/99	0.01		
SCIOTO RIVER BASIN								
03230745	Deer Creek at US 142 near London, Ohio	Latitude 39°54'17", longitude 83°23'35", Madison County, Hydrologic Unit 05060002, at State Route 142 bridge, 3.0 mi. northeast of London, Ohio. (London 1:24000 quad)	50.7	1981-82	12/16/98	2.12		
				1995-96	6/23/99	2.32		
				1998-99	9/14/99	0.06		
03231550	Paint Creek at Washington Court House, Ohio	Latitude 39°32'12", longitude 83°26'46", Fayette County, Hydrologic Unit 05060003, at U.S. 35 (Dayton Avenue) bridge in Washington Court House, 1.7 mi. (2.7 km) upstream from East Fork Paint Creek. (Washington Court House 1:24000 quad)	62.3	1980-82	12/16/98	0.21		
				1995-96	6/21/99	2.20		
				1998-99	9/15/99	0.04		
03231620	East Fork Paint Creek near Bloomingburg, Ohio	Latitude 39°35'15", longitude 83°23'47", Fayette County, Hydrologic Unit 05060003, at Matthews Road bridge, 0.3 mi. upstream from Green Ditch, 1.2 mi. south of Bloomingburg, Ohio, 2.0 mi. upstream from Big Run. (Washington Court House 1:24000 quad)	36.8	1979-82	12/16/98	0.69		
				1995-96	6/21/99	2.39		
				1998-99	9/14/99	0.00		
03237040	Big Beaver Creek near Piketon, Ohio	Latitude 39°02'41", longitude 83°01'18", Pike County, Hydrologic Unit 05060002, at State Route 124 bridge, 0.9 mi. upstream from Little Beaver Creek, 1.2 mi. south of Piketon, Ohio. (Piketon 1:24000 quad)	62.0	1980-82	9/16/99	0.00		
				1995-99				
03237130	Scioto Brush Creek at Otway, Ohio	Latitude 38°51'43", longitude 83°11'24", Scioto County, Hydrologic Unit 05060002, at State Highway 348 bridge, 600 ft upstream from South Fork, in Otway, Ohio. (Otway 1:24000 quad)	94.4	1956	9/16/99	0.06		
				1972-77				
				1996-97				
				1999				
WHITEOAK CREEK BASIN								
03238370	East Fork White Oak Creek near Sardinia, Ohio	Latitude 39°00'24", longitude 83°49'19", Brown County, Hydrologic Unit 05090201, at State Route 32 bridge, 0.2 mi. (0.3 km) upstream from Slab Camp Run, 0.7 mi. (1.1 km) west of Sardinia, Ohio. (Sardinia 1:24000 quad)	60.1	1980-82	9/15/99	0.00		
				1995-99				

PROJECT DATA

Low-Flow Magnitude and Frequency of Ohio Streams

LOW-FLOW PARTIAL-RECORD STATIONS-CONTINUED

STATION NUMBER	STATION NAME	LOCATION	DRAINAGE AREA (MI ²)	PERIOD OF RECORD (WATER YEAR)	MEASUREMENTS	
					DATE	DISCHARGE (FT ³ /S)
LITTLE MIAMI RIVER BASIN						
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. (1.6 km) upstream from Lytle Creek, 2.7 mi. (4.3 km) northeast of Clarksville, Ohio. (Clarksville 1:24000 quad)	56.6	1981-82 1995-96 1998-99	6/22/99	2.18
03244570	Turtle Creek at South Lebanon, Ohio	Latitude 39°22'21", longitude 84°13'47", Warren County, Hydrologic Unit 05090202, at bridge on Mason Road at South Lebanon, Ohio. (South Lebanon 1:24000 quad)	58.2	1980-83 1998-99	6/22/99	2.04
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 1998-99	6/22/99 9/14/99	1.37 1.23
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 1998-99	6/23/99	0.11
GREAT MIAMI RIVER BASIN						
03260450	South Fork Great Miami River near Huntsville, Ohio	Latitude 40°28'43", longitude 83°48'43", Logan County, Hydrologic Unit 05080001, at State Route 117 bridge, 3.3 mi. (5.3 km) upstream from Indian Lake, 2.5 mi. (4.0 km) north of Huntsville, Ohio. (Huntsville 1:24000 quad)	4 7.5	1981-82 1988-89 ^a 1994-99	6/22/99 9/14/99	5.40 1.78
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 mi. east of Ansonia, 1.8 mi. west of Dawn, Ohio. (Dawn 1:24000 quad)	74.3	1995-99	6/23/99 9/13/99	4.90 0.00
03263390	Greenville Creek near Coletown, Ohio	Latitude 40°08'54", longitude 84°43'56", Darke County, Hydrologic Unit 05080001, at Fisher Road bridge, 1.9 mi. (2.9 km) northwest of Coletown, Ohio. (Ansonia 1:24000 quad)	69.2	1981-82 1995-99	6/23/99 9/13/99	15.10 3.28
03266647	Mad River at Lippincott, Ohio	Latitude 40°11'41", longitude 83°47'48", Champaign County, Hydrologic Unit 05080001, at Lippincott Road bridge over Mad River, 0.55 mi. upstream from confluence of Macochee Ditch, 1.5 mi. upstream from confluence of Gladdy Creek, 4.0 mi. southwest of West Liberty, Ohio, 5.0 mi. northwest of Urbana, Ohio. (Northville 1:24000 quad)	68.4	1994-99	6/22/99 9/14/99	44.80 26.40
03266897	Kings Creek near Urbana, Ohio	Latitude 40°09'25", longitude 83°47'08", Champaign County, Hydrologic Unit 05080001, at State Route 290 bridge over Kings Creek, just above confluence with Mad River, 3.0 mi. northwest of Urbana, Ohio. (Northville 1:24000 quad)	43.6	1994-99	6/22/99 9/14/99	21.0 15.6
03271736	Twin Creek at Lewisburg, Ohio	Latitude 39°51'17", longitude 84°31'54", Preble County, Hydrologic Unit 05080002, at U.S. Route 40 over Twin Creek, 0.1 mi. below confluence with Millers Fork, 0.1 mi. above confluence with Swamp Creek, 0.3 mi. east of Lewisburg, Ohio. (Lewisburg 1:24000 quad)	68.4	1995-96 1998-99	6/24/99 9/15/99	8.10 0.26
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	6/23/99	2.58

PROJECT DATA
Low-Flow Magnitude and Frequency of Ohio Streams

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LOW-FLOW PARTIAL-RECORD STATIONS-CONTINUED

STATION NUMBER	STATION NAME	LOCATION	DRAINAGE AREA (MI ²)	PERIOD OF RECORD (WATER YEAR)	MEASUREMENTS	
					DATE	DISCHARGE (FT ³ /S)
GREAT MIAMI RIVER BASIN—Continued						
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	6/23/99	1.91
				1998-99	9/14/99	0.12
MAUMEE RIVER BASIN						
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. Mary's 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.Mary's, Ohio. (St. Marys 1:24000 quad)	67.0	1994-99	6/22/99	2.69
					9/13/99	0.00
04185200	Beaver Creek near Stryker, Ohio	Latitude 41°27'23", longitude 84°26'09", Williams County, Hydrologic Unit 04100006, at bridge of township road, 0.3 mi. (0.5 km) upstream from mouth, 3.1 mi. (5.0 km) southwest of Stryker, Ohio (Evansport 1:24000 quad)	44.8	1980-82	12/16/98	5.66
				1994-96 1998-99	6/24/99	6.23
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	12/16/98	4.98
				1998-99	6/24/99 9/14/99	7.40 0.69
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	12/16/98	4.98
				1998-99	6/24/99 9/14/99	7.40 0.69
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	6/22/99	4.00
				1999	9/13/99	1.35
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	6/22/99	10.0
				1998-99	9/15/99	3.02
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	9/15/99	0.00
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	6/23/99 9/14/99	9.83 0.21

PROJECT DATA

Low-Flow Magnitude and Frequency of Ohio Streams

LOW-FLOW PARTIAL-RECORD STATIONS—CONTINUED

STATION NUMBER	STATION NAME	LOCATION	DRAINAGE AREA (MI ²)	PERIOD OF RECORD (WATER YEAR)	MEASUREMENTS	
					DATE	DISCHARGE (FT ³ /S)
PORTAGE RIVER BASIN						
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	6/22/99 9/14/99	0.72 0.00
SANDUSKY RIVER BASIN						
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 1997-99	12/17/98 6/23/99 9/14/99	0.32 0.63 0.00
04197052	Honey Creek near Caroline, Ohio	Latitude 41°02'41", longitude 82°51'04", Seneca County, Hydrologic Unit 04100011, at truss bridge over Honey Creek, 1.7 mi. below confluence with Brokenknife Creek, 2.3 mi. east of Caroline, 2.5 mi. southeast of Attica, Ohio. (Centerton 1:24000 quad)	69.0	1994-96 1998-99	12/17/98 6/23/99 9/14/99	1.48 1.33 0.15
04198007	Muskellunge Creek near Fremont, Ohio	Latitude 41°22'21", longitude 83°08'46", Sandusky County, Hydrologic Unit 04100011, at Christy Road bridge, 1.8 mi. (2.9 km) upstream from mouth, 1.8 mi. (2.9 km) northwest of Fremont, Ohio. (Fremont West 1:24000 quad)	41.8	1980-83 1994-96 1998-99	12/17/98 6/23/99 9/15/99	1.60 2.58 0.22
HURON RIVER BASIN						
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 1997-99	12/17/98 6/22/99 9/15/99	5.57 4.64 2.46
VERMILION RIVER BASIN						
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	1997-99	12/16/98 6/22/99 9/15/99	3.58 0.72 0.00
BLACK RIVER BASIN						
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 1998-99	12/16/98 6/22/99 9/15/99	6.36 0.00 0.00
ROCKY RIVER BASIN						
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	6/22/99	0.02

PROJECT DATA
Low-Flow Magnitude and Frequency of Ohio Streams

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LOW-FLOW PARTIAL-RECORD STATIONS—CONTINUED

STATION NUMBER	STATION NAME	LOCATION	DRAINAGE AREA (MI ²)	PERIOD OF RECORD (WATER YEAR)	MEASUREMENTS	
					DATE	DISCHARGE (FT ³ /S)
CUYAHOGA RIVER BASIN						
04205600	Little Cuyahoga River at Akron, Ohio	Latitude 41°05'27", longitude 81°30'58", 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 mile. Turn right (east) onto East North Street. Travel for 0.2 mile to station at Stuber Street bridge on left (north). (Akron West 1:24000 quad)	44.2	1998-99	6/22/99	15.9
CHAGRIN RIVER BASIN						
04208815	Chagrin River at Chagrin Falls, Ohio	Latitude 41°25'33", longitude 81°23'52", Geauga County, Hydrologic Unit 04110003, at Miles Road bridge, at west city limits of Chagrin Falls, Ohio. (Chagrin Falls 1:24000 quad)	57.3	1981-82 1995-99	6/23/99 9/15/99	6.98 9.90
GRAND RIVER BASIN						
04212085	Big Creek at Painesville, Ohio	Latitude 41°41'50", longitude 81°13'47", Lake County, Hydrologic Unit 04110004, at Fry Road bridge, 1.1 mi. (1.8 km) upstream from mouth, 0.5 mi. (0.8 km) south of south city limits of Painesville, Ohio. (Painesville 1:24000 quad)	36.4	1981-82 1995-99	6/22/99 9/14/99	2.68 12.40
ASHTABULA RIVER BASIN						
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	6/22/99 9/14/99	0.03 0.00

^aOperated as a continuous-record gaging station

PROJECT DATA

Low-Flow Magnitude and Frequency of Ohio Streams

DISCONTINUED STREAMFLOW-GAGING STATIONS

STATION NUMBER	STATION NAME	LOCATION	DRAINAGE AREA (MI ²)	PERIOD OF RECORD (WATER YEAR)	MEASUREMENTS	
					DATE	DISCHARGE (FT ³ /S)
MUSKINGUM RIVER BASIN						
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	12/17/98 6/22/99 9/15/99	26.60 18.40 6.72
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 feet above highway bridge on Route 146, 8 miles (on map), 11 miles by road southeast of Zanesville, and 2 miles northwest of Chandlersville, Ohio	75.6	1936-47	6/23/99 9/14/99	3.28 0.35
SCIOTO RIVER BASIN						
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	6/25/99 9/13/99	7.34 0.39
LITTLE MIAMI RIVER BASIN						
03242050	Little Miami River near Spring Valley, Ohio	Latitude 39°35'00", longitude 84°01'49", (SE 14 sec Waynesville Quadrangle) in Greene County on right bank at downstream side of bridge on New Burlington Road, 3/4 mile west of Roxanna, and 2.2 miles southwest of Spring Valley, Ohio.	366	1968-85	6/22/99 9/14/99	98.60 43.20
GREAT MIAMI RIVER BASIN						
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	6/22/99 9/14/99	101 58.8
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	6/24/99 9/15/99	24.90 2.26
MAUMEE RIVER BASIN						
04184500	Bean Creek at Powers, Ohio	Latitude 41°39'34", longitude 84°14'55", NE 1/4, SE 1/4 sec. 26, T.9S., R.1E., at left downstream abutment of highway bridge on County Road 20, 1 mile south of Powers, Fulton County, 1.7 miles upstream from Iron Creek, 3.5 miles downstream from Silver Creek.	206	1941-81	10/7/98 12/14/98 12/16/98 6/24/99 9/14/99	116 77.70 69.00 46.00 7.50
VERMILION RIVER BASIN						
04199500	Vermilion River near Vermilion, Ohio	Latitude 41°22'55", longitude 82°19'01", T.6N., R.19W., on right bank 40 foot downstream from bridge on North Ridge Road, 3.5 miles southeast of Vermilion, Lorain County, and 4.5 miles upstream from mouth.	262	1950-81	12/16/98 6/22/99 9/16/99	14.70 3.11 .56

PROJECT DATA
Low-Flow Magnitude and Frequency of Ohio Streams

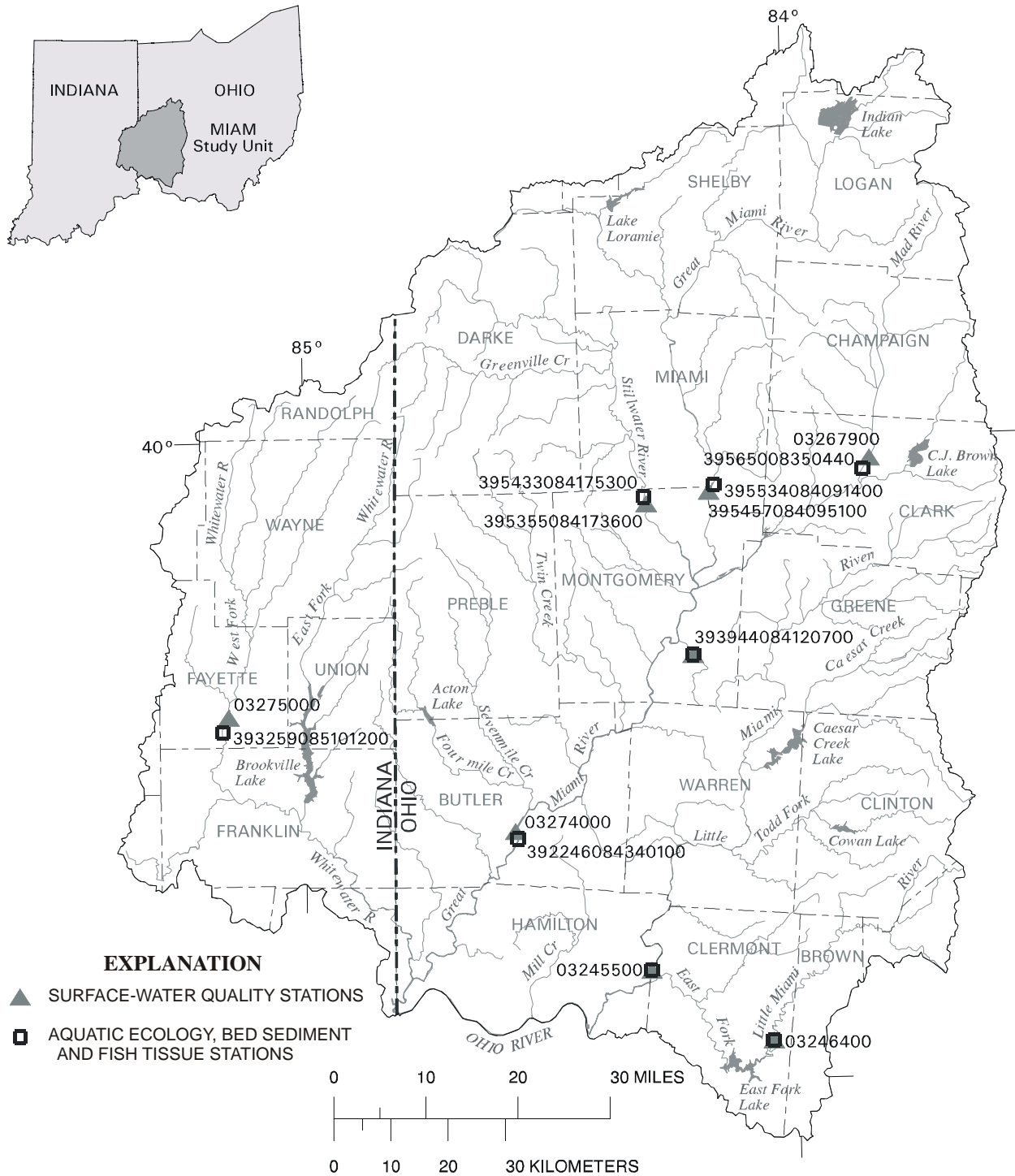
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DISCONTINUED STREAMFLOW-GAGING STATIONS—CONTINUED

STATION NUMBER	STATION NAME	LOCATION	DRAINAGE AREA (MI ²)	PERIOD OF RECORD (WATER YEAR)	MEASUREMENTS	
					DATE	DISCHARGE (FT ³ /S)
CHAGRIN RIVER BASIN						
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	6/23/99	32.50
				1940-84	9/15/99	50.90
				1988-94		
				1996-98		

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basins
(National Water-Quality Assessment Program)

The data described in the following tables were collected and analyzed as part of the NAWQA (National Water-Quality Assessment Program) project in the Great Miami and Little Miami River Basins (MIAM). 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. Surveys were also done to assess the occurrence and distribution of trace elements and organochlorine compounds in fish tissue and streambed sediments. The period of high-intensity data collection for the Great Miami and Little Miami River Basins project is water years 1999-2001.



PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basins
(National Water-Quality Assessment Program)
WATER-QUALITY RECORDS

Data collected at seven stream sites in Ohio are being reported in this publication as part of the NAWQA study of the Great and Little Miami River Basins: Stillwater River at Martindale Road near Union, Ohio (395355084173600), Great Miami River near Vandalia, Ohio (395457084095100), Mad River at St. Paris Pike near Eagle City, Ohio (03267900), Holes Creek at Huffman Park near Kettering, Ohio (393944084120700), Great Miami River at Hamilton, Ohio (03274000), Little Miami River at Milford, Ohio (03245500), and East Fork Little Miami River near Williamsburg, Ohio (03246400). Data from one site in the Indiana part of the Great and Little Miami River Basins study area is reported in the 1999 Indiana annual data report: Whitewater River near Alpine, Indiana (03275000).

Streamflow data for gaging stations located at or near these sampling sites can be found in the continuous-record station sections of the Indiana and Ohio data reports.

These data also can be obtained electronically at: <http://oh.water.usgs.gov/miam.html>.

03245500 LITTLE MIAMI RIVER AT MILFORD, OHIO

LOCATION.--Latitude 39°10'17", longitude 84°17'53", Clermont County, Hydrologic Unit 05090202, on right bank 500 ft downstream from Wooster Pike Bridge on U.S. Highway 50 in Milford, 1.2 mi upstream from East Fork, 6.4 mi downstream from North Branch Creek, and at mile 12.9.

DRAINAGE AREA.--1,203 mi².

REMARKS.--Discharge data for this site are located in the surface-water section of this report.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value; K, value is estimated from a non-ideal colony count.]

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (PER- CENT SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SOLVED (MG/L) (00301)	E. COLI WATER WHOLE TOTAL UREASE (COL/ 100 ML) (31633)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)
OCT											
22...	0950	813	8.5	6	11.5	762	9.9	91	--	27	53
NOV											
19...	1400	628	8.5	15	9.0	748	12.3	108	590	23	33
DEC											
14...	1630	910	8.2	6	6.0	756	13.1	106	--	25	56
JAN											
13...	1130	752	7.8	1	0.0	752	13.9	96	800	11	78
21...	1300	588	8.0	10	4.0	743	15.9	123	840	18	36
FEB											
10...	1250	478	8.2	15	5.0	754	12.7	101	420	20	14
23...	1130	674	8.1	0	3.0	754	13.3	100	350	25	29
MAR											
09...	0940	514	7.9	0	2.0	746	12.8	94	--	20	16
23...	1600	588	8.6	7	6.5	751	--	--	--	23	24
APR											
07...	1230	767	8.4	20	17.0	753	10.7	112	--	26	42
22...	1340	506	7.7	27	15.0	743	9.2	94	--	18	21
MAY											
07...	1300	774	8.4	25	21.5	741	7.2	85	K58	28	38
19...	1500	800	8.2	22	22.0	753	10.6	125	320	27	45
JUN											
16...	1010	674	7.8	17	22.0	751	7.5	87	1600	18	38
29...	1010	751	7.8	22	24.5	743	7.0	88	4800	18	54
JUL											
14...	1000	866	8.0	24	25.5	751	7.6	94	70	27	62
AUG											
10...	1030	810	7.9	25	25.0	744	--	--	250	20	66
SEP											
07...	1020	1020	8.2	20	25.0	747	8.5	105	K50	26	90

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basins
(National Water-Quality Assessment Program)
WATER-QUALITY RECORDS—CONTINUED

03245500 LITTLE MIAMI RIVER AT MILFORD, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value; K, value is estimated from a non-ideal colony count.]

DATE	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	CAR- BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	ALKA- LINITY WAT DIS TOT IT MG/L AS CACO3 (39086)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)
OCT 22...	5.8	276	<1	229	49	85	71	E9	8	2.3	475
NOV 19...	4.7	212	12	197	37	59	57	14	8	0.45	365
DEC 14...	5.4	251	12	229	55	100	75	10	11	2.7	494
JAN 13...	4.7	98	<1	80	27	150	41	38	19	4.2	433
21...	3.3	185	<1	154	34	69	53	11	8	5.3	351
FEB 10...	3.2	146	<1	122	30	30	51	<10	3	5.1	276
23...	3.0	268	<1	223	45	58	71	E8	17	4.4	406
MAR 09...	2.8	200	<1	166	29	33	54	E7	3	5.4	292
23...	2.9	205	12	190	38	45	63	E5	9	2.5	352
APR 07...	3.5	276	<1	229	49	77	72	E9	6	0.34	439
22...	3.1	188	<1	156	31	39	55	16	5	3.8	296
MAY 07...	3.5	281	<1	234	48	71	74	E6	15	1.8	455
19...	4.2	281	<1	233	50	82	71	<10	15	3.4	462
JUN 16...	5.1	203	<1	168	36	66	54	<10	13	7.8	387
29...	4.7	185	<1	154	43	86	58	E8	8	6.1	424
JUL 14...	5.4	271	<1	225	51	110	68	<10	6	7.9	490
AUG 10...	5.6	195	<1	162	48	110	58	E6	3	7.6	449
SEP 07...	8.0	229	10	207	62	150	71	<10	3	5.5	570
DATE	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C) (00689)	SEDI- MENT, SUS- PENDE (MG/L) (80154)
OCT 22...	0.01	3.4	<0.02	0.42	0.31	0.42	0.42	0.38	3.0	0.4	8
NOV 19...	0.02	1.9	0.02	0.45	0.34	0.37	0.33	0.30	3.3	0.6	8
DEC 14...	0.03	3.0	0.02	0.43	0.22	0.52	0.50	0.47	3.3	0.3	3
JAN 13...	0.02	1.4	0.17	2.0	0.62	0.90	0.17	0.14	--	--	401
21...	0.02	4.0	0.07	0.85	0.46	0.22	0.12	0.10	4.4	0.8	63
FEB 10...	0.02	4.0	0.05	0.56	0.33	0.15	0.08	0.09	3.6	1.0	53
23...	0.03	3.6	0.03	0.43	0.25	0.16	0.14	0.14	2.8	0.2	5
MAR 09...	0.01	4.1	0.02	0.61	0.37	0.16	0.09	0.09	3.5	0.5	36
23...	0.02	3.3	<0.02	0.34	0.28	0.09	0.06	0.05	3.0	0.2	5
APR 07...	0.03	1.9	<0.02	0.50	0.30	0.19	0.15	0.12	3.3	0.6	5
22...	0.03	2.6	0.06	1.4	0.46	0.30	0.09	0.06	5.2	3.4	120
MAY 07...	0.06	3.1	0.09	0.55	0.38	0.26	0.19	0.17	3.0	0.4	16
19...	0.06	2.3	0.04	0.67	0.37	0.40	0.30	0.29	3.5	1.3	20
JUN 16...	0.06	2.4	0.07	0.91	0.52	0.46	0.29	0.23	4.9	2.5	94
29...	0.04	1.7	0.14	1.1	0.51	0.71	0.42	0.35	4.8	2.1	137
JUL 14...	0.02	2.3	<0.02	0.66	0.37	0.54	0.48	0.42	3.5	1.6	35
AUG 10...	0.02	2.2	0.07	0.74	0.40	0.51	0.39	0.42	4.0	1.1	51
SEP 07...	0.02	3.3	<0.02	0.58	0.40	0.80	0.72	0.64	3.6	1.0	29

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basins
(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, at mile 36.0.

DRAINAGE AREA.--234.2 mi².

REMARKS.--Discharge is not measured at this site. Discharge is measured 1.0 mile downstream at East Fork Little Miami River at Williamsburg, Ohio (03246400).

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value; K, value is estimated from a non-ideal colony count.]

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, (PER- CENT SATUR- ATION) (00301)	E. COLI WATER WHOLE TOTAL UREASE (COL / 100 ML) (31633)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)
DEC 14...	1230	474	8.1	6	5.0	747	11.7	93	--	16	12
MAR 23...	1320	583	8.1	4	7.0	744	11.8	99	--	17	8.8
MAY 11...	1250	542	8.2	29	23.0	741	10.0	120	K35	23	13
25...	1200	556	8.3	18	18.5	737	8.0	88	K35	22	16
JUN 09...	0940	719	8.1	27	26.0	741	7.5	95	300	24	25
22...	1000	740	8.1	24	23.0	743	6.2	74	280	26	23
JUL 08...	1040	586	8.1	25	23.0	741	7.3	82	120	23	21
21...	0850	465	7.3	24	26.5	742	2.0	26	460	18	20

DATE	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	CAR- BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	ALKA- LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	NITRO- GEN, DIS- SOLVED (MG/L AS N) (00613)
DEC 14...	6.0	<1	185	154	36	28	58	14	12	0.6	267	0.02
MAR 23...	2.6	<1	205	170	38	19	55	E8	15	3.0	281	0.04
MAY 11...	3.7	5	220	190	39	27	63	E6	E3	0.5	315	0.01
25...	3.9	<1	237	197	--	30	59	<10	E2	1.0	338	<0.01
JUN 09...	3.6	<1	253	210	40	40	63	<10	7	0.4	364	<0.01
22...	4.0	<1	259	215	42	40	60	<10	7	2.8	352	<0.01
JUL 08...	2.3	24	171	182	25	41	52	<10	27	1.8	304	<0.01
21...	4.3	<1	173	144	21	34	43	E6	105	1.9	250	<0.01

DATE	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C) (00689)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	ACETO- CHLOR, WATER FLTRD REC (UG/L) (49260)	ALA- CHLOR, WATER, DISS, REC, (UG/L) (46342)
DEC 14...	0.09	0.02	0.45	0.25	0.06	0.05	0.04	4.7	0.4	4	0.015	E0.004
MAR 23...	1.6	<0.02	0.32	0.47	0.07	0.04	<0.01	3.9	0.2	17	<0.002	0.006
MAY 11...	0.22	0.07	0.61	0.41	0.08	0.04	0.04	4.5	1.1	11	0.16	0.021
25...	0.16	0.02	0.73	0.42	0.12	0.06	0.04	4.8	1.7	18	0.13	0.29
JUN 09...	<0.05	<0.02	0.80	0.42	0.13	0.06	0.04	4.9	1.5	24	0.009	0.016
22...	<0.05	<0.02	0.75	0.42	0.13	0.06	0.05	5.2	1.5	16	0.052	0.030
JUL 08...	0.08	<0.02	--	0.43	0.14	0.08	0.06	--	--	13	0.012	<0.002
21...	<0.05	0.02	0.64	0.54	0.14	0.06	0.03	--	--	31	<0.002	<0.002

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basins
(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 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value; K, value is estimated from a non-ideal colony count.]

DATE	ATRA- ZINE, WATER, DISS, REC (UG/L) (39632)	DEETHYL ATRA- ZINE, WATER, DISS, REC (UG/L) (04040)	METHYL AZIN- PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)	BEN- FLUR- ALIN WAT FLD 0.7 U GF, REC (UG/L) (82673)	BUTYL- ATE, WATER, DISS, REC (UG/L) (04028)	CAR- BARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680)	CARBO- FURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674)	CHLOR- PYRIFOS DIS- SOLVED (UG/L) (38933)	CYANA- ZINE, WATER, DISS, REC (UG/L) (04041)	DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682)	P, P' DDE DISSOLV (UG/L) (34653)	DI- AZINON, DIS- SOLVED (UG/L) (39572)
DEC 14...	1.8	E0.28	<0.001	<0.002	<0.002	<0.003	<0.003	<0.004	0.11	<0.002	<0.0060	<0.002
MAR 23...	0.052	E0.054	<0.001	<0.002	<0.002	<0.003	<0.003	<0.004	0.010	<0.002	<0.0060	<0.002
MAY 11...	2.40	E0.14	<0.001	<0.002	<0.002	<0.003	<0.003	<0.004	0.069	<0.002	<0.0060	<0.002
MAY 25...	7.33	E0.56	<0.001	<0.002	<0.002	<0.003	<0.003	<0.004	0.12	<0.002	<0.0060	<0.002
JUN 09...	1.19	E0.10	<0.001	<0.002	<0.002	<0.003	<0.003	<0.004	0.031	<0.002	<0.0060	<0.002
JUN 22...	1.25	E0.11	<0.001	<0.002	<0.002	<0.003	<0.003	<0.004	0.048	<0.002	<0.0060	<0.002
JUL 08...	2.07	E0.28	<0.001	<0.002	<0.002	<0.003	<0.003	<0.004	0.21	<0.002	<0.0060	<0.002
JUL 21...	1.52	E0.22	<0.001	<0.002	<0.002	<0.003	<0.003	<0.004	0.15	<0.002	<0.0060	<0.002

DATE	DI- ELDRIN DIS- SOLVED (UG/L) (39381)	2,6-DI- ETHYL ANILINE WAT FLT 0.7 U GF, REC (UG/L) (82660)	DISUL- FOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677)	EPTC WATER FLTRD 0.7 U GF, REC (UG/L) (82668)	ETHAL- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82663)	ETHO- PROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	FONOFOS WATER DISS REC (UG/L) (04095)	ALPHA BHC DIS- SOLVED (UG/L) (34253)	LINDANE DIS- SOLVED (UG/L) (39341)	LIN- URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666)	MALA- THION, DIS- SOLVED (UG/L) (39532)
DEC 14...	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
MAR 23...	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
MAY 11...	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
MAY 25...	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
JUN 09...	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
JUN 22...	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
JUL 08...	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
JUL 21...	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005

DATE	METO- LACHLOR WATER DISSOLV (UG/L) (39415)	METRI- BUZIN WATER DISSOLV (UG/L) (82630)	MOL- INATE WATER FLTRD 0.7 U GF, REC (UG/L) (82671)	NAPROP- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684)	PARA- THION, DIS- SOLVED (UG/L) (39542)	METHYL PARA- THION WAT FLT 0.7 U GF, REC (UG/L) (82667)	PEB- ULATE WATER FILTRD 0.7 U GF, REC (UG/L) (82669)	PENDI- METH- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683)	PER- METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)	PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664)	PRO- METON, WATER, DISS, REC (UG/L) (04037)
DEC 14...	0.23	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	E0.010
MAR 23...	0.041	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	<0.018
MAY 11...	0.38	<0.010	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	E0.003
MAY 25...	1.8	0.030	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	<0.018
JUN 09...	0.25	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	E0.004
JUN 22...	0.76	<0.010	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	E0.010
JUL 08...	0.18	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	<0.018
JUL 21...	0.063	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	E0.009

PROJECT DATA

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Results from Selected Sites in the Great Miami and Little Miami River Basins
(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 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value; K, value is estimated from a non-ideal colony count.]

DATE	PRON- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)	PROP- CHLOR, WATER, DISS, REC (UG/L) (04024)	PRO- PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	PRO- PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	SI- MAZINE, WATER, DISS, REC (UG/L) (04035)	TEBU- THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)	TER- BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	TER- BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	THIO- BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	TRIAL- LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	TRI- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)
DEC 14...	<0.003	<0.007	<0.004	<0.013	0.11	<0.010	<0.007	<0.013	<0.002	<0.001	<0.002
MAR 23...	<0.003	<0.007	<0.004	<0.013	0.007	<0.010	<0.007	<0.013	<0.002	<0.001	<0.002
MAY 11...	<0.003	<0.007	<0.004	<0.013	0.040	E0.005	<0.007	<0.013	<0.002	<0.001	<0.002
MAY 25...	<0.003	<0.007	<0.004	<0.013	0.51	<0.010	<0.007	<0.013	<0.002	<0.001	<0.002
JUN 09...	<0.003	<0.007	<0.004	<0.013	0.078	<0.010	<0.007	<0.013	<0.002	<0.001	<0.002
JUN 22...	<0.003	<0.007	<0.004	<0.013	0.13	<0.010	<0.007	<0.013	<0.002	<0.001	<0.002
JUL 08...	<0.003	<0.007	<0.004	<0.013	0.29	<0.010	<0.007	<0.013	<0.002	<0.001	<0.002
JUL 21...	<0.003	<0.007	<0.004	<0.013	0.30	0.010	<0.007	<0.013	<0.002	<0.001	E0.003

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basins
(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 data for this site are located in the surface-water section of this report.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value; K, value is estimated from a non-ideal colony count.]

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED CENT SATUR- ATION (00301)	E. COLI WATER TOTAL UREASE (COL/ 100 ML) (31633)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)
OCT											
19...	1030	694	8.0	11	12.0	743	10.3	99	--	33	9.3
NOV											
17...	1030	725	7.8	7	9.5	738	10.8	98	K42	34	11
DEC											
17...	1000	730	8.1	0	5.5	737	11.5	95	320	35	12
JAN											
11...	1200	335	8.1	-7	-0.5	742	13.9	97	36	36	11
19...	1440	559	7.8	4	3.0	740	12.4	95	360	22	9.3
FEB											
09...	0930	653	7.9	7	6.0	739	11.0	91	320	28	7.1
25...	1100	747	8.1	2	6.0	740	12.3	101	40	33	9.1
MAR											
03...	1200	655	8.1	0	6.0	726	12.0	100	K310	27	8.0
10...	1130	711	8.1	-2	5.0	743	12.0	96	--	32	9.6
17...	1100	601	8.0	17	6.5	735	10.4	88	--	25	7.2
25...	1010	695	8.1	7	6.5	744	--	--	--	34	9.1
APR											
05...	1000	717	8.0	9	11.5	742	11.3	107	--	34	8.7
09...	1500	668	8.3	15	15.5	722	12.1	127	--	31	10
20...	1020	645	7.9	9	9.5	739	10.7	97	--	30	7.4
21...	1400	409	7.7	22	11.5	732	10.5	100	--	19	5.3
28...	1130	296	7.7	15	10.0	737	10.0	92	5800	11	3.5
MAY											
06...	1330	705	8.1	18	17.0	728	8.0	87	39	33	8.6
13...	0910	750	7.7	12	14.0	732	9.6	97	260	34	10
19...	0850	736	7.8	13	13.5	741	9.4	92	230	33	9.3
26...	1140	723	8.0	15	12.0	--	10.0	96	K55	35	9.5
JUN											
08...	0940	751	7.9	25	18.5	739	8.9	98	160	36	11
17...	1300	717	8.1	20	15.5	742	11.0	112	K52	33	8.4
24...	0920	725	7.9	24	17.5	733	8.9	97	140	34	9.9
JUL											
01...	1320	710	8.1	25	18.0	732	8.3	91	140	34	9.2
06...	1940	689	8.0	25	22.0	737	5.3	63	780	33	8.6
13...	1050	723	7.9	25	16.5	741	8.6	90	220	35	9.8
21...	1410	691	8.1	31	20.5	738	7.7	89	1400	32	8.7
22...	0900	352	7.7	26	20.5	739	7.3	84	--	15	4.0
AUG											
12...	0920	746	7.9	21	17.0	738	8.4	93	130	35	12
SEP											
09...	1020	704	7.8	22	17.5	734	--	--	110	35	12

Results from Selected Sites in the Great Miami and Little Miami River Basins
(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 1998 TO SEPTEMBER 1999—Continued

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DATE	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	CAR- BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	ALKA- LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)
OCT 19...	2.4	<1	322	267	58	20	88	E9	7	0.3	9.2	431
NOV 17...	2.2	<1	344	286	65	23	90	22	<3	0.3	6.7	451
DEC 17...	2.3	<1	356	296	63	23	92	E6	E3	0.3	8.0	449
JAN 11...	<0.10	<1	349	286	64	24	95	E7	19	0.3	9.5	466
19...	2.8	<1	195	162	50	23	63	15	20	0.2	6.6	337
FEB 09...	2.4	<1	264	219	56	19	78	E6	14	0.3	8.0	377
25...	2.0	<1	349	289	68	20	91	16	28	0.3	7.6	446
MAR 03...	2.0	<1	290	241	51	20	77	<10	14	0.2	6.9	383
10...	2.0	<1	322	267	64	22	90	E6	23	0.2	7.9	430
17...	2.0	<1	268	223	48	19	68	11	14	0.3	5.7	371
25...	1.9	<1	342	284	66	20	92	20	21	0.3	6.0	416
APR 05...	1.6	<1	312	259	64	20	91	23	13	0.3	3.8	372
09...	2.1	24	259	255	62	20	80	E6	<3	0.3	7.6	365
20...	1.7	<1	300	249	52	20	83	<10	13	0.2	5.6	282
21...	3.1	<1	195	162	26	14	52	13	7	0.4	4.7	253
28...	3.1	<1	113	94	15	8.2	33	23	5	0.2	4.0	176
MAY 06...	2.0	<1	334	278	61	19	87	14	14	0.3	6.6	435
13...	1.9	<1	347	288	63	21	87	E9	9	0.3	6.2	39
19...	2.1	<1	339	282	61	21	85	13	9	0.3	7.5	443
26...	2.0	<1	344	286	62	20	90	E10	7	0.3	8.2	422
JUN 08...	1.9	<1	342	284	62	23	94	<10	4	0.3	9.2	435
17...	2.0	<1	339	282	62	19	91	E5	4	0.3	8.2	409
24...	2.0	<1	329	274	67	21	87	<10	E2	0.3	6.3	400
JUL 01...	2.0	<1	334	278	65	20	88	<10	<3	0.3	6.8	407
06...	2.0	24	264	259	62	21	85	<10	4	0.3	7.1	375
13...	1.9	<1	336	279	63	21	90	<10	5	0.3	7.1	401
21...	2.1	10	293	259	56	20	86	E6	7	0.2	8.3	391
22...	4.1	<1	159	131	27	10	43	23	<3	0.2	6.7	213
AUG 12...	2.3	<1	326	270	63	25	90	15	4	0.3	5.1	384
SEP 09...	2.7	<1	349	290	62	25	87	<10	6	0.3	6.5	412

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basins
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WATER-QUALITY RECORDS—CONTINUED

03267900 MAD RIVER AT ST. PARIS PIKE NEAR EAGLE CITY, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

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DATE	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C) (00689)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	ACETO- CHLOR, WATER FLTRD REC (UG/L) (49260)
OCT												
19...	0.01	3.6	<0.02	0.3	0.1	0.08	0.08	0.06	2.0	0.3	15	--
NOV												
17...	0.02	3.6	0.03	0.1	0.3	0.05	0.04	0.05	1.3	0.3	3	--
DEC												
17...	0.02	4.2	0.03	0.1	<0.1	0.13	0.13	0.10	1.1	0.2	3	--
JAN												
11...	0.02	4.4	0.05	0.3	0.2	0.08	0.05	0.05	--	--	27	--
19...	0.02	6.3	0.08	1.0	0.5	0.20	0.12	0.10	4.3	0.8	42	--
FEB												
09...	0.01	6.1	0.06	0.4	0.3	0.09	0.05	0.06	3.0	0.8	38	--
25...	0.01	4.1	0.03	0.3	0.2	0.03	0.02	0.02	1.4	0.2	11	--
MAR												
03...	0.02	5.2	0.03	0.3	0.2	0.07	0.04	0.04	2.7	0.3	16	<0.002
10...	0.01	4.2	0.04	0.2	0.2	0.04	0.02	0.04	1.8	<0.2	22	<0.002
17...	0.02	4.6	0.07	0.5	0.4	0.08	0.04	0.04	2.6	0.4	25	<0.002
25...	0.01	3.8	<0.02	0.2	0.2	0.02	0.02	0.01	1.6	<0.2	17	<0.002
APR												
05...	0.03	3.5	<0.02	0.2	0.1	0.02	0.007	<0.01	1.6	0.3	15	<0.002
09...	0.04	3.1	<0.02	1.6	0.2	0.20	0.009	0.01	2.0	1.6	105	0.023
20...	0.02	5.4	0.03	0.5	0.2	0.04	0.02	0.02	2.6	0.3	29	0.048
21...	0.03	4.1	0.15	3.4	0.6	0.80	0.08	0.06	4.9	>10	662	0.042
28...	0.04	3.7	0.32	6.1	1.0	1.7	0.11	0.08	5.2	>10	1870	4.0
MAY												
06...	0.02	3.9	0.04	0.2	0.2	0.11	0.10	0.09	--	0.2	34	0.030
13...	0.03	4.0	0.02	0.2	0.2	0.05	0.03	0.02	1.6	0.2	25	0.017
19...	0.06	3.9	0.14	0.4	0.3	0.04	0.03	0.03	1.7	0.3	36	0.079
26...	0.04	4.1	0.04	0.3	0.2	0.05	0.04	0.04	1.4	0.3	38	0.001
JUN												
08...	0.06	3.7	0.06	0.2	0.2	0.08	0.07	0.08	1.2	0.4	28	<0.002
17...	0.03	4.4	<0.02	0.3	0.2	0.04	0.03	0.03	2.3	0.3	22	0.052
24...	0.04	3.6	<0.02	0.2	0.1	0.04	0.04	0.04	2.0	0.2	13	<0.002
JUL												
01...	0.01	3.6	0.02	0.2	0.2	0.08	0.06	0.06	1.7	0.3	8	<0.002
06...	0.01	3.5	0.02	0.3	0.2	0.05	0.04	0.03	2.1	0.3	29	<0.002
13...	0.01	3.5	<0.02	0.2	0.2	0.05	0.04	0.04	1.9	0.2	19	<0.002
21...	0.01	3.8	<0.02	0.3	0.2	0.07	0.05	0.04	2.0	0.4	42	E0.02
22...	0.03	3.1	0.03	2.9	0.5	0.64	0.06	0.04	6.8	>10	557	0.023
AUG												
12...	<0.01	3.6	<0.02	0.2	0.1	0.03	0.02	0.01	1.8	0.3	24	<0.002
SEP												
09...	0.02	4.0	<0.02	0.6	0.2	0.09	0.08	0.07	1.9	0.4	10	<0.002

Results from Selected Sites in the Great Miami and Little Miami River Basins
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WATER-QUALITY RECORDS—CONTINUED

03267900 MAD RIVER AT ST. PARIS PIKE NEAR EAGLE CITY, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

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DATE	ALA- CHLOR, WATER, DISS, REC, (UG/L) (46342)	ATRA- ZINE, WATER, DISS, REC, (UG/L) (39632)	DEETHYL ZINE, WATER, DISS, REC, (UG/L) (04040)	METHYL AZIN- PHOS WAT FLT 0.7 U (UG/L) (82686)	BEN- FLUR- ALIN WAT FLD 0.7 U (UG/L) (82673)	BUTYL- ATE, WATER, DISS, REC, (UG/L) (04028)	CAR- BARYL WATER FLTRD 0.7 U (UG/L) (82680)	CARBO- FURAN WATER FLTRD 0.7 U (UG/L) (82674)	CHLOR- PYRIFOS DIS- SOLVED (UG/L) (38933)	CYANA- ZINE, WATER, DISS, REC, (UG/L) (04041)	DCPA WATER FLTRD 0.7 U (UG/L) (82682)	P,P' DDE DISSOLV (UG/L) (34653)
OCT 19...	--	--	--	--	--	--	--	--	--	--	--	--
NOV 17...	--	--	--	--	--	--	--	--	--	--	--	--
DEC 17...	--	--	--	--	--	--	--	--	--	--	--	--
JAN 11...	--	--	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--	--	--
FEB 09...	--	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 03...	<0.002	0.054	E0.035	<0.001	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.006
10...	<0.002	0.027	E0.017	<0.001	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.006
17...	<0.002	0.045	E0.037	<0.001	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.006
25...	<0.002	0.013	E0.009	<0.001	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.006
APR 05...	<0.002	0.013	E0.005	<0.001	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.006
09...	<0.020	0.029	E0.008	<0.001	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.006
20...	<0.002	0.43	E0.047	<0.001	<0.002	<0.002	<0.003	<0.003	<0.004	0.022	<0.002	<0.006
21...	0.006	4.6	E0.15	<0.001	<0.002	<0.002	E0.003	<0.003	<0.004	<0.020	<0.002	<0.006
28...	0.009	E22	E0.30	<0.001	<0.002	<0.002	E0.023	<0.003	<0.004	<0.030	<0.002	<0.006
MAY 06...	<0.002	0.13	E0.015	<0.001	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.006
13...	<0.002	0.072	E0.006	<0.001	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.006
19...	<0.002	0.19	E0.014	<0.001	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.006
26...	<0.002	0.081	E0.014	<0.001	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.006
JUN 08...	<0.002	0.018	E0.003	<0.001	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.006
17...	<0.002	0.54	E0.087	<0.001	<0.002	<0.002	<0.003	<0.003	<0.004	0.008	<0.002	<0.006
24...	<0.002	0.074	E0.009	<0.001	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.006
JUL 01...	<0.002	0.020	<0.002	<0.001	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.006
06...	<0.002	0.024	E0.005	<0.001	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.006
13...	<0.002	0.024	E0.006	<0.001	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.006
21...	<0.002	0.11	E0.038	<0.001	<0.002	<0.002	<0.003	<0.003	<0.004	e0.003	<0.002	<0.006
22...	0.027	0.57	E0.19	<0.001	<0.002	<0.002	E0.16	<0.003	<0.004	0.014	<0.002	<0.006
AUG 12...	<0.002	0.008	<0.002	<0.001	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.006
SEP 09...	<0.002	<0.001	<0.002	<0.001	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.006

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basins
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WATER-QUALITY RECORDS—CONTINUED

03267900 MAD RIVER AT ST. PARIS PIKE NEAR EAGLE CITY, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

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DATE	DI- AZINON, DIS- SOLVED (UG/L) (39572)	DI- ELDRIN DIS- SOLVED (UG/L) (39381)	2,6-DI- ETHYL ANILINE WAT FLT 0.7 U GF, REC (UG/L) (82660)	DISUL- FOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677)	EPTC WATER FLTRD 0.7 U GF, REC (UG/L) (82668)	ETHAL- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82663)	ETHO- PROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	FONOFOS WATER DISS REC (UG/L) (04095)	ALPHA BHC DIS- SOLVED (UG/L) (34253)	LINDANE DIS- SOLVED (UG/L) (39341)	LIN- URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666)	MALA- THION, DIS- SOLVED (UG/L) (39532)
OCT												
19...	--	--	--	--	--	--	--	--	--	--	--	--
NOV												
17...	--	--	--	--	--	--	--	--	--	--	--	--
DEC												
17...	--	--	--	--	--	--	--	--	--	--	--	--
JAN												
11...	--	--	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--	--	--
FEB												
09...	--	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--	--
MAR												
03...	<0.002	<0.01	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
10...	<0.002	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
17...	<0.002	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
25...	<0.002	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
APR												
05...	<0.002	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
09...	<0.002	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
20...	<0.002	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.020
21...	0.014	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
28...	0.028	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
MAY												
06...	<0.002	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
13...	<0.002	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
19...	<0.002	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
26...	<0.002	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
JUN												
08...	<0.002	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
17...	<0.002	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
24...	<0.002	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
JUL												
01...	<0.002	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
06...	<0.002	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
13...	<0.002	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
21...	<0.002	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
22...	E0.003	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
AUG												
12...	<0.002	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
SEP												
09...	<0.002	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005

Results from Selected Sites in the Great Miami and Little Miami River Basins
(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 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value; K, value is estimated from a non-ideal colony count.]

DATE	METO- LACHLOR WATER DISSOLV (UG/L) (39415)	METRI- BUZIN SENCOR WATER DISSOLV (UG/L) (82630)	MOL- INATE WATER FLTRD 0.7 U (UG/L) (82671)	NAPROP- AMIDE WATER FLTRD 0.7 U (UG/L) (82684)	PARA- THION, DIS- SOLVED (UG/L) (39542)	METHYL PARA- THION WAT FLT 0.7 U (UG/L) (82667)	PEB- ULATE WATER FILTRD 0.7 U (UG/L) (82669)	PENDI- METH- ALIN WAT FLT 0.7 U (UG/L) (82683)	PER- CIS METHRIN WAT FLT 0.7 U (UG/L) (82687)	PHORATE WATER FLTRD 0.7 U (UG/L) (82664)	PRO- METON, WATER, DISS, REC (UG/L) (04037)
OCT 19...	--	--	--	--	--	--	--	--	--	--	--
NOV 17...	--	--	--	--	--	--	--	--	--	--	--
DEC 17...	--	--	--	--	--	--	--	--	--	--	--
JAN 11...	--	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--	--
FEB 09...	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--
MAR 03...	0.043	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	<0.018
10...	0.012	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	<0.018
17...	0.041	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	<0.018
25...	0.006	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	<0.018
APR 05...	0.007	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	<0.018
09...	0.032	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	<0.01	<0.005	<0.002	<0.018
20...	0.27	0.025	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	<0.018
21...	4.6	0.20	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	<0.018
28...	7.9	0.28	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	E0.006
MAY 06...	0.070	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	<0.018
13...	0.035	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	<0.018
19...	0.091	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	0.022
26...	0.036	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	<0.018
JUN 08...	0.008	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	<0.018
17...	0.22	0.006	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	<0.018
24...	0.030	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	<0.018
JUL 01...	0.008	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	<0.018
06...	0.02	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	<0.018
13...	0.012	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	<0.018
21...	0.18	0.007	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	E0.002
22...	0.58	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	E0.003
AUG 12...	0.005	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	<0.018
SEP 09...	<0.002	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	<0.018

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basins
(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 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value; K, value is estimated from a non-ideal colony count.]

DATE	PRON-AMIDE WATER FLTRD 0.7 U GF, REC (UG/L)	PROP-CHLOR, WATER, DISS, REC (UG/L)	PRO-PANIL WATER FLTRD 0.7 U GF, REC (UG/L)	PRO-PARGITE WATER FLTRD 0.7 U GF, REC (UG/L)	SI-MAZINE, WATER, DISS, REC (UG/L)	TEBU-THIURON WATER FLTRD 0.7 U GF, REC (UG/L)	TER-BACIL WATER FLTRD 0.7 U GF, REC (UG/L)	TER-BUFOS WATER FLTRD 0.7 U GF, REC (UG/L)	THIO-BENCARB WATER FLTRD 0.7 U GF, REC (UG/L)	TRIAL-LATE WATER FLTRD 0.7 U GF, REC (UG/L)	TRI-FLUR-ALIN WAT FLT 0.7 U GF, REC (UG/L)
OCT											
19...	--	--	--	--	--	--	--	--	--	--	--
NOV											
17...	--	--	--	--	--	--	--	--	--	--	--
DEC											
17...	--	--	--	--	--	--	--	--	--	--	--
JAN											
11...	--	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--	--
FEB											
09...	--	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--	--
MAR											
03...	<0.003	<0.007	<0.004	<0.013	<0.01	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
10...	<0.003	<0.007	<0.004	<0.013	<0.005	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
17...	<0.003	<0.007	<0.004	<0.013	<0.005	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
25...	<0.003	<0.007	<0.004	<0.013	<0.005	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
APR											
05...	<0.003	<0.007	<0.004	<0.013	<0.005	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
09...	<0.003	<0.007	<0.004	<0.013	0.006	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
20...	<0.003	<0.007	<0.004	<0.013	0.17	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
21...	<0.003	<0.007	<0.004	<0.013	0.054	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
28...	<0.003	<0.007	<0.004	<0.013	0.12	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
MAY											
06...	<0.003	<0.007	<0.004	<0.013	0.014	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
13...	<0.003	<0.007	<0.004	<0.013	<0.01	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
19...	<0.003	<0.007	<0.004	<0.013	0.014	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
26...	<0.003	<0.007	<0.004	<0.013	<0.005	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
JUN											
08...	<0.003	<0.007	<0.004	<0.013	<0.005	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
17...	<0.003	<0.007	<0.004	<0.013	0.085	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
24...	<0.003	<0.007	<0.004	<0.013	<0.005	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
JUL											
01...	<0.003	<0.007	<0.004	<0.013	<0.005	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
06...	<0.003	<0.007	<0.004	<0.013	<0.005	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
13...	<0.003	<0.007	<0.004	<0.013	<0.005	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
21...	<0.003	<0.007	<0.004	<0.013	E0.004	E0.007	<0.007	<0.013	<0.002	<0.001	<0.002
22...	<0.003	<0.007	<0.004	<0.013	0.27	0.011	E0.087	<0.013	<0.002	<0.001	<0.002
AUG											
12...	<0.003	<0.007	<0.004	<0.013	<0.005	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
SEP											
09...	<0.003	<0.007	<0.004	<0.013	<0.005	<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 Basins
(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", in NE 1/4 sec. 6, T.1 N., R.3 E., Butler County, Hydrologic Unit 05080002, on right bank 1,000 ft downstream from Columbia Bridge at Hamilton, 3 mi downstream from Four Mile Creek, 4.3 mi upstream from Pleasant Run, and at mile 34.8.

DRAINAGE AREA.--3,630 mi².

REMARKS.--Discharge data are furnished by Miami Conservancy District. Discharge data for this site are located in the surface-water section of this report.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value; K, value is estimated from a non-ideal colony count.]

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (MG/L) (00301)	E. COLI WATER WHOLE TOTAL UREASE (COL/ 100 ML) (31633)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)
OCT											
21...	1430	909	8.4	11	16.0	751	10.3	106	--	31	67
NOV											
19...	0945	900	8.2	14	11.0	747	10.8	100	104	32	59
DEC											
15...	0930	990	8.3	2	7.5	756	12.3	103	180	32	66
JAN											
13...	0930	1410	8.1	2	4.0	750	14.1	110	K80	31	140
21...	1000	527	7.8	6	2.5	744	17.5	132	900	18	22
FEB											
10...	0940	489	8.0	13	5.0	754	13.5	109	590	19	13
23...	1430	742	8.2	2	4.5	752	13.5	106	140	29	31
MAR											
08...	1400	497	7.9	0	3.0	760	13.4	100	--	20	14
24...	0920	682	8.5	3	8.0	750	7.0	61	--	28	26
APR											
07...	0920	768	8.4	13	16.5	753	--	--	--	30	37
22...	0900	497	7.7	22	13.5	742	10.3	101	--	19	16
MAY											
07...	0945	733	8.6	18	--	741	--	--	240	29	33
20...	1000	819	8.2	23	21.0	751	10.7	122	K100	30	41
JUN											
14...	1440	662	8.1	30	26.0	740	8.6	107	4800	25	37
29...	1230	826	8.6	27	26.5	741	8.1	104	420	30	58
JUL											
15...	1120	793	8.4	30	28.0	749	12.1	157	K162	30	54
27...	1315	773	8.1	31	30.0	744	7.1	96	--	25	49
AUG											
10...	1400	921	8.7	--	28.0	740	--	--	K60	31	73
24...	1140	981	8.4	22	26.5	741	7.9	101	180	31	85
SEP											
07...	1330	1020	8.5	26	28.0	743	8.2	106	120	33	93
30...	1030	1100	8.3	18	21.0	748	8.0	88	660	36	103

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basins
(National Water-Quality Assessment Program)
WATER-QUALITY RECORDS—CONTINUED

03274000 GREAT MIAMI RIVER AT HAMILTON, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value; K, value is estimated from a non-ideal colony count.]

DATE	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	ALKA- LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	SUL- FATE, DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)
OCT												
21...	5.6	261	237	79	99	75	E5	4	0.6	4.9	557	0.02
NOV												
19...	5.3	268	263	81	93	80	36	10	0.5	2.9	547	0.02
DEC												
15...	--	288	263	84	108	83	16	9	0.6	4.2	581	0.04
JAN												
13...	4.9	293	240	80	241	82	25	24	0.5	5.1	800	0.03
21...	3.4	149	124	35	46	50	21	4	0.2	5.2	300	0.03
FEB												
10...	3.4	159	132	34	32	53	16	E3	0.2	6.7	289	0.02
23...	3.2	293	243	62	58	78	11	13	0.3	6.5	460	0.02
MAR												
08...	3.0	168	140	36	29	55	14	E3	0.2	6.4	295	0.02
24...	2.8	234	211	56	49	74	13	6	0.3	3.9	463	0.08
APR												
07...	3.3	234	207	64	66	70	14	4	0.3	<0.05	417	0.04
22...	2.9	171	142	31	32	53	14	E2	0.2	4.5	296	0.05
MAY												
07...	3.3	271	225	58	58	72	E8	E2	0.4	2.1	443	0.02
20...	3.9	246	237	18	19	73	<10	<3	0.1	1.4	179	0.03
JUN												
14...	3.9	112	211	54	62	56	<10	<3	0.4	5.2	411	<0.01
29...	5.0	190	202	72	94	65	E8	E2	0.5	1.2	501	0.04
JUL												
15...	4.6	172	163	70	85	43	<10	<3	0.5	0.08	410	0.03
27...	4.6	237	196	--	83	57	E6	E3	0.5	4.9	432	0.05
AUG												
10...	5.6	188	205	87	109	68	10	E2	0.5	<0.05	515	0.04
24...	6.3	215	194	86	133	62	<10	E2	0.6	0.37	563	0.04
SEP												
07...	6.6	229	190	103	139	58	<10	E2	0.6	0.54	574	0.06
30...	7.2	205	203	106	158	71	E6	<2	0.6	1.6	632	0.06

Results from Selected Sites in the Great Miami and Little Miami River Basins
(National Water-Quality Assessment Program)

WATER-QUALITY RECORDS—CONTINUED

03274000 GREAT MIAMI RIVER AT HAMILTON, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[---, no data; <, concentration or value reported is less than that indicated; E, estimated value; K, value is estimated from a non-ideal colony count.]

DATE	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C) (00689)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	ACETO- CHLOR, WATER FLTRD REC (UG/L) (49260)	ALA- CHLOR, WATER, DISS, REC, (UG/L) (46342)
OCT												
21...	3.1	0.02	0.8	0.5	0.44	0.39	0.34	4.1	1.1	23	--	--
NOV												
19...	2.7	0.03	0.7	0.4	0.37	0.30	0.26	3.4	1.3	20	--	--
DEC												
15...	3.3	0.02	0.7	0.4	0.46	0.43	0.37	3.6	1.2	7	--	--
JAN												
13...	3.3	0.11	0.6	0.5	0.35	0.32	0.25	--	--	10	--	--
21...	5.2	0.19	1.1	0.7	0.32	0.18	0.16	5.5	2.2	78	--	--
FEB												
10...	7.6	0.07	1.1	0.5	0.32	0.16	0.16	4.9	2.9	108	--	--
23...	4.6	<0.02	0.5	0.3	0.18	0.14	0.13	2.9	0.4	7	--	--
MAR												
08...	5.9	0.07	1.2	0.6	0.33	0.14	0.14	4.5	2.0	116	<0.01	<0.002
24...	4.6	0.02	0.6	0.3	0.16	0.10	0.08	3.0	0.3	18	<0.002	<0.002
APR												
07...	2.2	<0.02	1.1	0.3	0.17	0.05	0.03	3.3	1.9	26	<0.002	<0.002
22...	4.7	0.01	2.1	0.7	0.52	0.12	0.09	4.8	5.7	296	0.45	0.097
MAY												
07...	3.3	0.04	0.9	0.3	0.18	0.10	0.08	3.6	1.8	16	0.057	0.005
20...	2.9	<0.02	0.9	0.4	0.27	0.14	0.11	3.9	2.1	34	0.34	0.28
JUN												
14...	<0.05	<0.02	1.3	0.5	0.37	0.17	0.01	4.2	4.7	99	0.12	0.011
29...	1.7	0.03	1.7	0.4	0.34	0.14	0.10	4.4	4.3	39	<0.002	<0.002
JUL												
15...	0.69	<0.02	1.7	0.5	0.20	0.02	<0.01	4.5	>5	27	<0.002	<0.002
27...	1.4	0.10	1.2	0.6	0.35	0.21	0.19	5.0	1.6	32	<0.002	<0.002
AUG												
10...	1.2	<0.02	1.7	0.4	0.30	0.14	0.10	5.5	5.0	84	<0.002	<0.002
24...	1.3	0.10	1.6	0.6	0.30	0.11	0.08	5.7	1.9	82	<0.002	<0.002
SEP												
07...	1.4	0.04	1.5	0.6	0.24	0.06	0.05	5.4	3.5	27	<0.002	<0.002
30...	2.0	0.19	1.6	0.7	0.36	0.17	0.13	5.4	1.4	--	<0.002	<0.002

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basins
(National Water-Quality Assessment Program)
WATER-QUALITY RECORDS—CONTINUED

03274000 GREAT MIAMI RIVER AT HAMILTON, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value; K, value is estimated from a non-ideal colony count.]

DATE	ATRA- ZINE, WATER, DISS, REC (UG/L) (39632)	DEETHYL ATRA- ZINE, WATER, DISS, REC (UG/L) (04040)	METHYL AZIN- PHOS FLTRD 0.7 U GF, REC (UG/L) (82686)	BEN- FLUR- ALIN FLTRD 0.7 U GF, REC (UG/L) (82673)	BUTYL- ATE, WATER, DISS, REC (UG/L) (04028)	CAR- BARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680)	CARBO- FURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674)	CHLOR- PYRIFOS DIS- SOLVED (UG/L) (38933)	CYANA- ZINE, WATER, DISS, REC (UG/L) (04041)	DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682)	P,P' DDE DIS- SOLVED (UG/L) (34653)	DI- AZINON, DIS- SOLVED (UG/L) (39572)
OCT												
21...	--	--	--	--	--	--	--	--	--	--	--	--
NOV												
19...	--	--	--	--	--	--	--	--	--	--	--	--
DEC												
15...	--	--	--	--	--	--	--	--	--	--	--	--
JAN												
13...	--	--	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--	--	--
FEB												
10...	--	--	--	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--	--	--	--
MAR												
08...	0.099	E0.053	<0.001	<0.002	<0.002	<0.003	<0.003	<0.004	0.019	<0.002	<0.006	<0.002
24...	0.074	E0.045	<0.001	<0.002	<0.002	<0.003	<0.003	<0.004	0.006	<0.002	<0.006	<0.002
APR												
07...	0.074	E0.026	<0.001	<0.002	<0.002	<0.003	<0.003	0.023	0.010	<0.002	<0.006	0.008
22...	3.5	E0.11	<0.001	<0.002	<0.002	E0.004	<0.003	0.040	0.90	<0.002	<0.006	0.053
MAY												
07...	0.61	E0.042	<0.001	<0.002	<0.002	<0.003	<0.003	<0.01	0.074	<0.002	<0.006	0.005
20...	4.8	E0.30	<0.001	<0.002	<0.002	<0.003	<0.003	<0.004	0.66	<0.002	<0.006	0.029
JUN												
14...	1.4	E0.14	<0.001	<0.002	<0.002	<0.01	<0.003	<0.004	0.071	<0.002	<0.006	0.063
29...	0.73	E0.11	<0.001	<0.002	<0.002	<0.003	<0.003	<0.004	0.085	<0.002	<0.006	0.006
JUL												
15...	0.23	E0.030	<0.001	<0.002	<0.002	<0.003	<0.003	<0.004	0.021	<0.002	<0.006	0.014
27...	0.18	E0.026	<0.001	<0.002	<0.002	<0.003	<0.003	<0.004	<0.02	<0.002	<0.006	0.024
AUG												
10...	0.19	E0.045	<0.001	<0.002	<0.002	<0.003	<0.003	<0.004	0.011	<0.002	<0.006	0.015
24...	0.092	E0.026	<0.001	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.006	<0.01
SEP												
07...	0.050	E0.014	<0.001	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.006	<0.01
30...	0.037	E0.013	<0.001	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.006	0.013

Results from Selected Sites in the Great Miami and Little Miami River Basins
(National Water-Quality Assessment Program)

WATER-QUALITY RECORDS—CONTINUED

03274000 GREAT MIAMI RIVER AT HAMILTON, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value; K, value is estimated from a non-ideal colony count.]

DATE	DI- ELDRIN DIS- SOLVED (39381)	2,6-DI- ETHYL ANILINE WAT FLT 0.7 U (82660)	DISUL- FOTON WATER FLTRD 0.7 U (82677)	EPTC WATER FLTRD 0.7 U (82668)	ETHAL- FLUR- ALIN WAT FLT 0.7 U (82663)	ETHO- PROP WATER FLTRD 0.7 U (82672)	FONOFOS WATER DISS REC (04095)	ALPHA BHC DIS- SOLVED (34253)	LINDANE DIS- SOLVED (39341)	LIN- URON WATER FLTRD 0.7 U (82666)	MALA- THION, DIS- SOLVED (39532)	METO- LACHLOR WATER DISSOLV (39415)
OCT												
21...	--	--	--	--	--	--	--	--	--	--	--	--
NOV												
19...	--	--	--	--	--	--	--	--	--	--	--	--
DEC												
15...	--	--	--	--	--	--	--	--	--	--	--	--
JAN												
13...	--	--	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--	--	--
FEB												
10...	--	--	--	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--	--	--	--
MAR												
08...	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005	0.099
24...	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005	0.035
APR												
07...	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005	0.046
22...	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005	1.3
MAY												
07...	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005	0.24
20...	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.01	<0.002	<0.005	3.9
JUN												
14...	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005	0.48
29...	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005	0.24
JUL												
15...	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005	0.091
27...	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005	0.080
AUG												
10...	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005	0.080
24...	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005	0.032
SEP												
07...	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005	0.019
30...	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005	0.01

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basins
(National Water-Quality Assessment Program)
WATER-QUALITY RECORDS—CONTINUED

03274000 GREAT MIAMI RIVER AT HAMILTON, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

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DATE	METRI- BUZIN SENCOR DIS- SOLVED (UG/L) (82630)	MOL- INATE WATER FLTRD 0.7 U GF, REC (UG/L) (82671)	NAPROP- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684)	PARA- THION, DIS- SOLVED (UG/L) (39542)	METHYL PARA- THION FLTRD 0.7 U GF, REC (UG/L) (82667)	PEB- ULATE WATER FLTRD 0.7 U GF, REC (UG/L) (82669)	PENDI- METH- ALIN FLTRD 0.7 U GF, REC (UG/L) (82683)	PER- METHRIN CIS FLTRD 0.7 U GF, REC (UG/L) (82687)	PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664)	PRO- METON, WATER, DISS, REC (UG/L) (04037)	PRON- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)	PROP- CHLOR, WATER, DISS, REC (UG/L) (04024)
OCT												
21...	--	--	--	--	--	--	--	--	--	--	--	--
NOV												
19...	--	--	--	--	--	--	--	--	--	--	--	--
DEC												
15...	--	--	--	--	--	--	--	--	--	--	--	--
JAN												
13...	--	--	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--	--	--
FEB												
10...	--	--	--	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--	--	--	--
MAR												
08...	<0.01	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	<0.018	<0.003	<0.007
24...	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	E0.004	<0.003	<0.007
APR												
07...	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	E0.008	<0.003	<0.007
22...	0.16	<0.004	<0.003	<0.004	<0.006	<0.004	<0.01	<0.005	<0.002	0.024	<0.003	<0.007
MAY												
07...	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	E0.014	<0.003	<0.007
20...	0.047	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	0.035	<0.003	<0.007
JUN												
14...	<0.01	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	0.20	<0.003	<0.007
29...	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	0.099	<0.003	<0.007
JUL												
15...	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	0.045	<0.003	<0.007
27...	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	0.061	<0.003	<0.007
AUG												
10...	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	0.032	<0.003	<0.007
24...	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	0.037	<0.003	<0.007
SEP												
07...	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	0.076	<0.003	<0.007
30...	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	0.035	<0.003	<0.007

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basins
(National Water-Quality Assessment Program)
WATER-QUALITY RECORDS—CONTINUED

03274000 GREAT MIAMI RIVER AT HAMILTON, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

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DATE	PRO- PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	PRO- PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	SI- MAZINE, WATER, DISS, REC (UG/L) (04035)	TEBU- THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)	TER- BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	TER- BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	THIO- BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	TRIAL- LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	TRI- FLUR- ALIN FLTRD 0.7 U GF, REC (UG/L) (82661)
OCT									
21...	--	--	--	--	--	--	--	--	--
NOV									
19...	--	--	--	--	--	--	--	--	--
DEC									
15...	--	--	--	--	--	--	--	--	--
JAN									
13...	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--
FEB									
10...	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--
MAR									
08...	<0.004	<0.013	0.018	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
24...	<0.004	<0.06	0.012	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
APR									
07...	<0.004	<0.013	0.024	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
22...	<0.004	<0.013	0.47	<0.01	<0.007	<0.013	<0.002	<0.001	E0.002
MAY									
07...	<0.004	<0.013	0.11	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
20...	<0.004	<0.013	0.78	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
JUN									
14...	<0.004	<0.013	0.16	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
29...	<0.004	<0.013	0.099	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
JUL									
15...	<0.004	<0.013	0.024	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
27...	<0.004	<0.013	0.033	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
AUG									
10...	<0.004	<0.013	0.022	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
24...	<0.004	<0.013	<0.005	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
SEP									
07...	<0.004	<0.013	0.027	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
30...	<0.004	<0.013	0.011	<0.01	<0.007	E0.002	<0.002	<0.001	<0.002

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basins
(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.--10 discharge measurements were made at this site. Streamflow computed from these measurements is reported below. Continuous stage data are collected at Holes Creek at Mad River Road (03271300), a station 0.6 miles upstream of the sampling site that is maintained by the Miami Conservancy District.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

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DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED SATUR- ATION (00301)	E. COLI WATER WHOLE TOTAL UREASE (COL/ 100 ML) (31633)	MAGNE- SIUM, DIS- SOLVED (MG/L) (00925)	SODIUM, DIS- SOLVED (MG/L) (00930)
OCT												
20...	1030	4.7	479	8.1	12	12.0	748	10.6	100	--	16	23
NOV												
18...	1300	5.5	676	8.2	16	6.5	746	7.9	66	K39	25	32
DEC												
16...	0900	--	750	8.1	-3	1.0	745	13.3	97	43	28	35
JAN												
12...	0900	--	2630	7.9	4	0.0	739	10.2	72	130	31	393
20...	0945	--	1150	8.1	6	3.0	743	12.9	98	150	21	116
FEB												
09...	1230	--	736	7.8	14	7.0	743	12.5	106	K180	21	51
24...	1045	6.8	976	8.3	2	2.5	749	14.1	105	--	30	72
MAR												
09...	1640	--	877	8.3	1	0.5	738	13.3	96	--	24	79
24...	1230	8.6	879	8.4	13	10.0	741	--	--	--	30	62
APR												
06...	1330	16	920	8.0	18	18.0	736	10.4	114	--	27	71
16...	1030	--	831	8.1	6	10.0	727	10.6	98	340	23	70
21...	0830	439	475	7.8	16	11.0	738	10.3	97	--	12	29
29...	1015	--	773	8.2	15	12.5	746	11.9	115	--	23	51
MAY												
06...	0930	--	800	8.1	19	17.0	730	8.1	88	7900	25	52
13...	1245	4.9	763	7.9	20	17.5	736	8.2	88	K5000	26	52
18...	1450	--	889	8.0	18	18.5	740	8.7	96	2900	31	50
26...	0910	--	784	7.9	13	13.5	740	9.1	90	220	23	45
JUN												
10...	0930	1.7	826	7.9	29	22.5	742	7.7	92	270	30	46
12...	1715	--	353	7.7	20	23.0	743	8.4	100	>8000	9.6	24
23...	0940	1.7	827	7.8	26	19.5	741	8.7	98	260	29	43
JUL												
01...	0930	--	698	8.1	25	21.5	737	9.5	111	630	23	40
07...	1230	--	712	8.1	30	27.5	741	7.9	103	330	25	43
14...	1220	--	687	7.9	26	21.5	743	8.1	95	73	25	40
20...	1000	53	251	8.1	25	23.5	744	8.6	104	K20000	7.4	18
27...	1000	--	351	7.9	25	25.0	740	7.9	98	--	8.7	20
AUG												
04...	0920	--	696	7.9	24	22.0	745	8.1	96	110	27	40
11...	0930	--	740	8.1	24	23.5	738	8.9	109	95	30	40
19...	1040	--	600	8.0	20	20.5	739	--	--	K13000	19	24
24...	1740	--	592	8.0	20	20.0	736	8.9	100	24000	12	23
SEP												
08...	0920	--	757	8.1	20	20.0	738	8.9	101	130	30	41

**Results from Selected Sites in the Great Miami and Little Miami River Basins
(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 1998 TO SEPTEMBER 1999—Continued

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DATE	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	CAR- BONATE WATER DIS IT FIELD (MG/L AS CO3) (00452)	BICAR- BONATE WATER DIS IT FIELD (MG/L AS HCO3) (00453)	ALKA- LINITY WAT DIS TOT IT FIELD (MG/L AS CACO3) (39086)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)
OCT												
20...	2.5	<1	173	144	29	41	46	E9.3	4.7	0.23	4.4	271
NOV												
18...	2.5	12	254	231	40	64	66	20	7.6	0.20	3.5	406
DEC												
16...	2.3	<1	298	247	42	74	74	23	7.3	0.35	3.8	433
JAN												
12...	2.1	<1	276	226	56	710	94	E21	17	0.24	6.5	1510
20...	3.5	<1	210	174	41	220	66	13	13	0.19	5.6	622
FEB												
09...	2.8	<1	215	178	40	95	64	15	12	0.22	6.1	420
24...	2.4	<1	303	251	53	150	77	15	12	0.21	3.0	555
MAR												
09...	2.2	48	161	215	42	140	71	13	16	0.15	5.0	526
24...	2.3	24	217	221	50	120	74	22	12	0.21	1.5	527
APR												
06...	2.5	<1	249	207	44	140	73	E6.6	14	0.21	1.9	500
16...	2.5	<1	212	176	40	130	67	E8.8	16	0.19	3.2	516
21...	2.0	<1	132	109	19	53	36	17	20	0.12	2.4	240
29...	2.3	<1	249	206	38	96	66	E7.0	9.1	0.23	3.5	440
MAY												
06...	3.3	<1	249	207	40	99	65	24	41	0.21	2.8	468
13...	3.7	<1	244	203	39	96	63	25	63	0.22	3.6	438
18...	3.1	24	261	257	39	96	76	19	26	0.24	7.1	464
26...	2.5	<1	232	192	31	84	63	11	22	0.19	6.0	419
JUN												
10...	2.6	<1	286	237	39	90	75	E5.6	12	0.26	7.8	434
12...	3.5	--	--	--	20	41	28	29	<3.0	0.16	3.2	232
23...	2.5	<1	266	221	38	84	65	<10	6.7	0.25	5.2	417
JUL												
01...	2.7	<1	234	194	34	75	60	<10	7.6	0.26	5.3	406
07...	2.7	24	190	198	35	81	61	<10	8.4	0.26	6.5	391
14...	2.4	<1	249	207	33	76	61	<10	8.9	0.26	5.4	367
20...	2.2	<1	76	63	15	29	25	E7.5	E2.5	<0.10	2.6	155
27...	2.7	<1	107	89	17	37	28	E7.0	<3.0	0.15	4.1	191
AUG												
04...	2.4	<1	242	201	36	73	63	<10	8.3	0.23	7.0	385
11...	2.1	24	193	201	40	78	60	E6.2	7.3	0.25	6.3	384
19...	3.0	<1	146	122	34	43	40	11	18	0.18	4.9	273
24...	2.9	<1	110	91	24	41	37	E7.8	5.2	0.22	4.2	224
SEP												
08...	2.6	<1	288	239	39	79	64	<10	8.1	0.29	6.7	397

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basins
(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 1998 TO SEPTEMBER 1999—Continued

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DATE	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, AM- MONIA + ORGANIC DIS- SOLVED (MG/L AS N) (00623)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C) (00689)	SEDI- MENT, SUS- PENDE (MG/L) (80154)	ACETO- CHLOR, WATER FLTRD REC (UG/L) (49260)
OCT												
20...	<0.01	0.54	<0.02	0.45	0.23	0.05	0.01	<0.01	3.8	0.8	11	--
NOV												
18...	<0.01	0.63	0.02	0.19	0.19	<0.05	0.01	0.01	2.8	0.3	10	--
DEC												
16...	0.02	0.88	0.03	0.15	0.13	<0.05	<0.05	0.01	2.3	0.2	14	--
JAN												
12...	0.02	1.4	0.19	0.79	0.71	0.03	0.02	0.01	--	--	13	--
20...	0.01	2.0	0.10	0.63	0.49	0.08	0.05	0.04	3.9	0.4	19	--
FEB												
09...	0.01	1.6	<0.02	0.48	0.33	0.08	0.03	0.03	3.8	1.0	39	--
24...	<0.01	1.2	<0.02	0.31	0.18	0.01	<0.004	<0.01	2.6	0.2	5	--
MAR												
09...	0.01	1.4	0.03	0.38	0.33	0.05	0.009	0.03	3.1	0.4	22	--
24...	<0.01	0.98	<0.02	0.31	0.18	0.02	0.004	<0.01	2.8	0.2	22	<0.002
APR												
06...	0.01	0.78	<0.02	0.36	0.26	0.02	0.006	<0.01	3.5	0.2	28	<0.002
16...	0.02	0.62	0.03	0.61	0.37	0.04	0.007	0.01	4.6	0.5	17	0.047
21...	0.01	0.61	0.13	4.4	0.65	1.11	0.03	0.02	5.1	>10	1660	0.028
29...	0.02	0.70	0.05	0.52	0.31	0.05	0.01	0.02	3.9	0.6	20	0.16
MAY												
06...	0.05	0.99	0.29	1.3	1.0	0.10	0.04	0.04	8.6	0.8	31	0.18
13...	0.12	1.2	0.38	1.2	1.0	0.11	0.05	0.03	7.2	0.6	6	0.13
18...	0.06	1.3	0.08	0.62	0.42	0.07	0.02	0.02	4.2	0.6	79	0.054
26...	0.02	1.0	0.04	0.37	0.32	0.04	0.02	0.02	3.3	0.6	51	0.087
JUN												
10...	0.02	1.2	0.03	0.33	0.25	0.02	0.01	0.02	2.2	0.3	31	<0.002
12...	<0.01	<0.05	<0.02	3.3	1.4	0.62	0.10	<0.01	9.8	>10	464	0.022
23...	<0.01	1.1	<0.02	0.22	0.20	0.02	0.006	<0.01	2.4	0.3	24	0.006
JUL												
01...	<0.01	0.83	0.02	0.32	0.28	0.03	0.01	0.02	4.0	0.5	30	0.010
07...	<0.01	0.99	<0.02	0.30	0.24	0.02	0.01	<0.01	3.0	0.2	30	<0.002
14...	<0.01	0.93	<0.02	0.24	0.22	0.02	0.01	0.01	2.9	0.4	10	<0.002
20...	0.02	0.58	0.08	0.84	0.53	0.20	0.05	0.03	5.8	2.9	129	<0.002
27...	0.02	0.56	0.07	1.1	0.43	0.21	0.02	0.01	5.6	3.5	160	0.005
AUG												
04...	<0.01	1.1	<0.02	0.25	0.13	0.02	0.01	<0.01	2.8	0.3	34	<0.002
11...	<0.01	1.2	<0.02	0.22	E.10	0.01	0.005	<0.01	1.9	0.3	24	<0.002
19...	0.02	1.4	0.23	2.0	1.0	0.27	0.05	0.04	9.8	--	326	<0.002
24...	0.03	0.95	0.16	1.4	0.67	0.26	0.03	0.03	6.9	3.7	283	<0.002
SEP												
08...	<0.01	1.2	<0.02	0.68	0.61	0.02	0.03	<0.01	2.4	0.8	23	<0.002

Results from Selected Sites in the Great Miami and Little Miami River Basins
(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 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value; K, value is estimated from a non-ideal colony count.]

DATE	ALA- CHLOR, WATER, DISS, REC, (UG/L) (46342)	ATRA- ZINE, WATER, DISS, REC, (UG/L) (39632)	DEETHYL ZINE, WATER, DISS, REC, (UG/L) (04040)	METHYL AZIN- PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)	BEN- FLUR- ALIN WAT FLD 0.7 U GF, REC (UG/L) (82673)	BUTYL- ATE, WATER, DISS, REC (UG/L) (04028)	CAR- BARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680)	CARBO- FURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674)	CHLOR- PYRIFOS DIS- SOLVED (UG/L) (38933)	CYANA- ZINE, WATER, DISS, REC (UG/L) (04041)	DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682)	P,P' DDE DISSOLV (UG/L) (34653)
OCT												
20...	--	--	--	--	--	--	--	--	--	--	--	--
NOV												
18...	--	--	--	--	--	--	--	--	--	--	--	--
DEC												
16...	--	--	--	--	--	--	--	--	--	--	--	--
JAN												
12...	--	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--	--
FEB												
09...	--	--	--	--	--	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--	--	--	--	--	--
MAR												
09...	--	--	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--	--	--
24...	<0.002	0.01	E0.005	<0.001	<0.002	<0.002	<0.003	<0.003	E0.002	<0.004	<0.002	<0.006
APR												
06...	<0.002	0.01	E0.004	<0.001	<0.002	<0.002	E0.010	<0.003	0.004	<0.004	<0.002	<0.006
16...	0.005	0.05	E0.012	<0.001	<0.002	<0.002	E0.021	<0.003	0.005	<0.004	<0.002	<0.006
21...	<0.002	0.03	E0.007	<0.001	0.006	<0.002	E0.01	<0.003	0.008	<0.004	<0.002	<0.006
29...	<0.002	0.18	E0.013	<0.001	<0.002	<0.002	E0.008	<0.003	0.009	0.014	<0.002	<0.006
MAY												
06...	0.01	0.22	E0.028	<0.001	<0.002	<0.002	E0.012	<0.003	<0.02	0.016	<0.002	<0.006
13...	<0.02	0.41	E0.052	<0.001	<0.002	<0.002	E0.045	<0.003	<0.02	0.029	<0.002	<0.006
18...	0.007	0.19	E0.038	<0.001	<0.002	<0.002	E0.15	<0.003	<0.004	0.013	<0.002	<0.006
26...	0.01	0.21	E0.056	<0.001	<0.002	<0.002	E0.053	<0.003	<0.004	<0.004	<0.002	<0.006
JUN												
10...	<0.002	0.05	E0.015	<0.001	<0.002	<0.002	<0.003	<0.003	<0.010	<0.004	<0.002	<0.006
12...	<0.002	0.14	E0.033	<0.001	<0.002	<0.002	E0.67	<0.003	0.057	<0.004	<0.002	<0.006
23...	<0.002	0.08	E0.010	<0.001	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.006
JUL												
01...	<0.002	0.18	E0.020	<0.001	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.006
07...	<0.002	0.07	E0.014	<0.001	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.006
14...	<0.002	0.04	E0.008	<0.001	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.006
20...	<0.002	0.03	E0.008	<0.001	<0.002	<0.002	E0.046	<0.003	0.014	<0.004	<0.002	<0.006
27...	<0.002	0.09	<0.02	<0.001	<0.002	<0.002	E0.040	<0.003	<0.010	<0.004	<0.002	<0.006
AUG												
04...	<0.002	0.02	E0.006	<0.001	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.006
11...	<0.002	0.02	E0.004	<0.001	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.006
19...	<0.002	0.01	<0.002	<0.001	<0.002	<0.002	E0.054	<0.003	<0.004	<0.004	<0.002	<0.006
24...	<0.002	0.02	<0.002	<0.001	<0.002	<0.002	E0.079	<0.003	<0.004	<0.004	<0.002	<0.006
SEP												
08...	<0.002	0.02	<0.002	<0.001	<0.002	<0.002	<0.003	<0.003	<0.004	<0.004	<0.002	<0.006

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basins
(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 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value; K, value is estimated from a non-ideal colony count.]

DATE	DI- AZINON, DIS- SOLVED (UG/L) (39572)	DI- ELDRIN DIS- SOLVED (UG/L) (39381)	2,6-DI- ETHYL ANILINE WAT FLT 0.7 U GF, REC (UG/L) (82660)	DISUL- FOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677)	EPTC WATER FLTRD 0.7 U GF, REC (UG/L) (82668)	ETHAL- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82663)	ETHO- PROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	FONOFOS WATER DISS REC (UG/L) (04095)	ALPHA BHC DIS- SOLVED (UG/L) (34253)	LINDANE DIS- SOLVED (UG/L) (39341)	LIN- URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666)	MALA- THION, DIS- SOLVED (UG/L) (39532)
OCT												
20...	--	--	--	--	--	--	--	--	--	--	--	--
NOV												
18...	--	--	--	--	--	--	--	--	--	--	--	--
DEC												
16...	--	--	--	--	--	--	--	--	--	--	--	--
JAN												
12...	--	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--	--
FEB												
09...	--	--	--	--	--	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--	--	--	--	--	--
MAR												
09...	--	--	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--	--	--
24...	E0.002	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
APR												
06...	0.014	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
16...	0.053	<0.001	<0.003	<0.017	0.008	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
21...	0.28	<0.001	<0.003	<0.017	<0.02	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
29...	0.032	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
MAY												
06...	0.071	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
13...	0.082	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	0.026
18...	0.022	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
26...	0.041	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
JUN												
10...	0.008	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
12...	0.56	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.02
23...	0.021	<0.001	<0.003	<0.017	0.004	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
JUL												
01...	0.099	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
07...	0.026	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
14...	0.017	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
20...	0.18	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	0.007
27...	0.31	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
AUG												
04...	0.030	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
11...	0.008	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
19...	0.091	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
24...	0.35	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005
SEP												
08...	0.009	<0.001	<0.003	<0.017	<0.002	<0.004	<0.003	<0.003	<0.002	<0.004	<0.002	<0.005

Results from Selected Sites in the Great Miami and Little Miami River Basins
(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 1998 TO SEPTEMBER 1999—Continued

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DATE	METO- LACHLOR WATER DISSOLV (UG/L) (39415)	METRI- BUZIN SENCOR WATER DISSOLV (UG/L) (82630)	MOL- INATE WATER FLTRD 0.7 U (UG/L) (82671)	NAPROP- AMIDE WATER FLTRD 0.7 U (UG/L) (82684)	PARA- THION, DIS- SOLVED (UG/L) (39542)	METHYL PARA- THION WAT FLT 0.7 U (UG/L) (82667)	PEB- ULATE WATER FILTRD 0.7 U (UG/L) (82669)	PENDI- METH- ALIN WAT FLT 0.7 U (UG/L) (82683)	PER- CIS WAT FLT 0.7 U (UG/L) (82687)	PHORATE WATER FLTRD 0.7 U (UG/L) (82664)	PRO- METON, WATER, DISS, REC (UG/L) (04037)
OCT											
20...	--	--	--	--	--	--	--	--	--	--	--
NOV											
18...	--	--	--	--	--	--	--	--	--	--	--
DEC											
16...	--	--	--	--	--	--	--	--	--	--	--
JAN											
12...	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--
FEB											
09...	--	--	--	--	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--	--	--	--	--
MAR											
09...	--	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--	--
24...	0.005	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	<0.01	<0.005	<0.002	E0.005
APR											
06...	0.006	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	0.03	<0.005	<0.002	E0.008
16...	0.040	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	0.03	<0.005	<0.002	E0.008
21...	0.022	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	0.12	<0.005	<0.002	E0.006
29...	0.116	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	0.02	<0.005	<0.002	E0.011
MAY											
06...	0.108	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	0.03	<0.005	<0.002	E0.013
13...	0.102	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	0.03	<0.005	<0.002	E0.016
18...	0.065	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	E0.015
26...	0.075	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	E0.012
JUN											
10...	0.011	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	E0.010
12...	0.028	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	<0.04	<0.005	<0.002	0.021
23...	0.006	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	E0.013
JUL											
01...	0.009	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	E0.009
07...	<0.002	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	<0.018
14...	<0.002	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	E0.008
20...	0.006	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	<0.02	<0.005	<0.002	0.032
27...	0.006	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	0.076
AUG											
04...	E0.004	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	0.020
11...	E0.004	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	E0.011
19...	<0.002	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	<0.018
24...	<0.01	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	0.022
SEP											
08...	<0.002	<0.004	<0.004	<0.003	<0.004	<0.006	<0.004	<0.004	<0.005	<0.002	E0.008

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basins
(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 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value; K, value is estimated from a non-ideal colony count.]

DATE	PRON-AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)	PROP-CHLOR, WATER, DISS, REC (UG/L) (04024)	PRO-PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	PRO-PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	SI-MAZINE, WATER, DISS, REC (UG/L) (04035)	TEBU-THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)	TER-BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	TER-BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	THIO-BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	TRIAL-LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	TRI-FLUR-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)
OCT											
20...	--	--	--	--	--	--	--	--	--	--	--
NOV											
18...	--	--	--	--	--	--	--	--	--	--	--
DEC											
16...	--	--	--	--	--	--	--	--	--	--	--
JAN											
12...	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--
FEB											
09...	--	--	--	--	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--	--	--	--	--
MAR											
09...	--	--	--	--	--	--	--	--	--	--	--
09...	--	--	--	--	--	--	--	--	--	--	--
24...	<0.003	<0.007	<0.004	<0.013	E0.005	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
APR											
06...	<0.003	<0.007	<0.004	<0.013	E0.005	<0.01	<0.007	<0.013	<0.002	<0.001	E0.004
16...	<0.003	<0.007	<0.004	<0.013	0.013	<0.077	<0.007	<0.013	<0.002	<0.001	E0.006
21...	<0.003	<0.007	<0.004	<0.013	<0.01	<0.01	<0.007	<0.013	<0.002	<0.001	0.008
29...	<0.003	<0.007	<0.004	<0.013	0.021	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
MAY											
06...	<0.003	<0.007	<0.004	<0.013	0.030	<0.01	<0.007	<0.013	<0.002	<0.001	E0.004
13...	<0.003	<0.007	<0.004	<0.013	0.048	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
18...	<0.003	<0.007	<0.004	<0.013	0.022	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
26...	<0.003	<0.007	<0.004	<0.013	<0.005	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
JUN											
10...	<0.003	<0.007	<0.004	<0.013	<0.01	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
12...	<0.003	<0.007	<0.004	<0.013	0.012	<0.01	<0.007	<0.013	<0.002	<0.001	0.012
23...	<0.003	<0.007	<0.004	<0.013	0.021	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
JUL											
01...	<0.003	<0.007	<0.004	<0.013	0.091	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
07...	<0.003	<0.007	<0.004	<0.013	0.041	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
14...	<0.003	<0.007	<0.004	<0.013	0.022	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
20...	<0.003	<0.007	<0.004	<0.013	0.032	<0.01	<0.007	<0.013	<0.002	<0.001	E0.003
27...	<0.003	<0.007	<0.004	<0.013	0.052	<0.01	<0.007	<0.013	<0.002	<0.001	0.006
AUG											
04...	<0.003	<0.007	<0.004	<0.013	<0.01	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
11...	<0.003	<0.007	<0.004	<0.013	0.011	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
19...	<0.003	<0.007	<0.004	<0.013	<0.005	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
24...	<0.003	<0.007	<0.004	<0.013	<0.01	<0.01	<0.007	<0.013	<0.002	<0.001	<0.002
SEP											
08...	<0.003	<0.007	<0.004	<0.013	<0.005	<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 Basins
(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, at mile 95.7.

DRAINAGE AREA.--1142 mi².

REMARKS.--Discharge measurements are not made at this site. Streamflow 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 1998 TO SEPTEMBER 1999

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value; K, value is estimated from a non-ideal colony count.]

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED SATUR- ATION (00301)	E. COLI WATER WHOLE TOTAL UREASE (COL/ 100 ML) (31633)	MAGNE- SIUM, DIS- SOLVED (MG/L) AS MG (00925)	SODIUM, DIS- SOLVED (MG/L) AS NA (00930)
OCT											
19...	1400	730	8.3	15	15.0	746	9.6	98	--	30	33
NOV											
17...	1330	772	8.4	10	9.5	744	9.3	83	K28	32	34
DEC											
16...	1440	776	8.5	5	4.0	742	15.8	123	180	32	36
JAN											
12...	1130	855	8.0	6	0.0	739	13.7	96	390	33	40
20...	1320	280	7.8	9	1.0	742	14.1	101	1300	16	16
FEB											
08...	1200	388	8.0	5	3.5	743	13.1	103	2200	15	8
25...	0900	711	8.1	1	3.0	743	12.9	98	800	28	18
MAR											
10...	0920	548	8.1	-4	1.5	747	13.4	96	--	22	14
25...	0830	658	8.2	0	6.0	748	--	--	--	28	17
APR											
06...	0920	670	8.0	20	15.0	737	8.8	90	--	30	22
20...	1620	535	7.9	16	12.0	740	12.1	112	--	24	12
MAY											
05...	1530	639	8.3	26	19.0	734	11.3	126	K16	28	16
18...	1100	741	8.0	20	20.5	740	7.9	90	100	31	24
JUN											
17...	1030	743	8.2	18	20.5	746	8.4	95	--	27	22
JUL											
02...	0930	575	7.8	24	23.0	741	6.7	80	1800	24	24
13...	0940	653	8.1	21	23.5	745	7.2	85	90	27	27
AUG											
11...	1420	690	8.3	28	25.5	738	11.1	140	K83	25	31
SEP											
08...	1020	774	8.2	22	22.5	738	7.7	92	82	31	40

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basins
(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 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value; K, value is estimated from a non-ideal colony count.]

DATE	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	CAR- BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	ALKA- LINITY WAT DIS TOT IT MG/L AS CACO3 (39086)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)
OCT 19...	4.6	7	273	239	66	50	72	E8	5	2.6	452
NOV 17...	3.6	<1	327	271	73	56	80	28	6	1.2	480
DEC 16...	4.0	17	276	257	74	59	83	22	7	1.6	487
JAN 12...	5.5	<1	351	288	72	66	90	20	12	5.1	522
20...	3.7	<1	159	132	34	37	46	28	8	4.5	275
FEB 08...	4.0	<1	112	93	29	20	42	33	E2	6.0	231
25...	2.5	<1	286	237	60	38	76	E6	12	5.8	414
MAR 10...	2.5	<1	215	178	46	30	62	E8	5	5.9	341
25...	2.5	<1	264	219	13	18	74	E8	6	3.2	389
APR 06...	2.6	24	210	215	61	40	72	16	4	2.8	395
20...	2.3	<1	205	170	45	28	68	E7	4	4.8	351
MAY 05...	2.5	<1	266	221	54	34	71	E10	4	1.9	389
18...	3.2	<1	283	235	62	41	74	11	5	1.2	415
JUN 17...	3.5	<1	278	231	51	38	71	E5	4	8.1	433
JUL 02...	3.5	<1	215	178	49	38	49	<10	<3	4.1	338
13...	3.7	12	226	208	55	44	65	<10	3	7.3	386
AUG 11...	4.7	14	205	194	60	48	69	E6	E2	8.0	404
SEP 08...	5.1	7	237	239	71	67	70	<10	3	4.1	452
DATE	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C) (00689)	SEDI- MENT, SUS- PENDE (MG/L) (80154)
OCT 19...	0.01	2.1	<0.02	0.5	0.4	0.35	0.36	0.33	3.6	0.4	5
NOV 17...	0.01	1.3	0.02	0.4	0.3	0.23	0.21	0.20	3.1	0.4	2
DEC 16...	0.04	1.8	0.02	0.6	0.1	0.32	0.26	0.24	3.1	1.5	2
JAN 12...	0.03	3.3	0.12	0.5	0.4	0.32	0.30	0.26	--	--	1
20...	0.03	4.8	0.19	1.1	0.8	0.30	0.19	0.16	6.5	--	67
FEB 08...	0.02	6.4	0.09	1.8	0.7	0.51	0.18	0.19	6.3	5.8	206
25...	0.03	4.1	0.05	0.4	0.3	0.14	0.10	0.10	2.7	0.5	5
MAR 10...	0.02	4.8	0.02	0.7	0.4	0.14	0.07	0.08	3.7	0.6	29
25...	0.04	3.9	<0.02	0.4	0.3	0.11	0.06	0.05	3.0	0.4	10
APR 06...	0.04	2.5	<0.02	1.0	0.3	0.13	0.05	0.03	3.7	1.1	15
20...	0.03	6.7	<0.02	2.3	0.4	0.14	0.05	0.04	4.8	1.4	32
MAY 05...	0.03	4.0	0.05	0.8	0.4	0.11	0.06	0.06	3.7	1.4	19
18...	0.04	2.8	<0.02	0.7	0.4	0.16	0.11	0.09	3.6	1.2	28
JUN 17...	0.03	4.7	<0.02	1.1	0.5	0.25	0.15	0.12	4.6	2.3	22
JUL 02...	0.02	0.69	<0.02	1.5	0.3	0.35	0.08	0.05	3.9	>5.0	93
13...	0.01	1.4	<0.02	0.8	1.0	0.28	0.18	0.15	4.1	1.7	29
AUG 11...	<0.01	2.2	<0.02	1.0	0.4	0.34	0.25	0.26	5.5	1.6	31
SEP 08...	0.02	1.2	<0.02	0.8	0.4	0.44	0.36	0.34	4.0	1.2	17

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basins
(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, 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 miles downstream at Stillwater River at Englewood, Ohio (03266000).

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value; K, value is estimated from a non-ideal colony count.]

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (MG/L) (00301)	E. COLI WATER TOTAL UREASE (COL/ 100 ML) (31633)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)
OCT											
20...	1330	669	8.2	16	13.5	747	10.6	105	--	31	21
NOV											
17...	0915	730	8.2	6	6.5	748	10.1	84	87	33	23
DEC											
16...	1200	740	8.3	5	3.5	742	12.7	98	48	34	24
JAN											
12...	1400	836	7.7	6	0.0	738	13.7	96	330	36	33
20...	1530	432	7.8	12	0.5	740	17.3	122	K800	16	11
FEB											
08...	1420	360	7.8	9	4.0	742	12.3	97	1500	14	6.4
24...	1530	685	8.2	3	2.5	747	13.4	100	--	30	15
MAR											
16...	1030	675	8.2	6	4.0	742	12.7	100	--	30	17
APR											
13...	1200	615	8.6	18	13.0	750	14.9	143	67	29	15
MAY											
14...	1250	694	8.2	19	17.5	745	8.8	94	77	32	16
JUN											
09...	1330	579	8.6	26	27.5	742	14.1	184	51	29	17
14...	1120	526	7.6	22	22.5	738	6.9	83	1500	21	12
JUL											
14...	1320	658	8.6	29	26.0	750	11.7	147	K36	30	19
AUG											
12...	1240	594	8.4	29	25.0	749	13.0	160	K92	29	23
SEP											
16...	1240	685	8.1	19	18.5	742	8.3	91	--	34	29

DATE	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	CAR- BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	ALKA- LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	SILICA, DIS- SOLVED (MG/L AS STO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)
OCT											
20...	3.7	<1	288	239	55	36	70	<10	E3	3.1	407
NOV											
17...	3.5	48	220	263	66	43	78	12	4	1.9	445
DEC											
16...	3.0	48	215	259	64	46	81	14	4	2.5	447
JAN											
12...	2.9	<1	381	312	69	62	91	13	E4	6.1	520
20...	3.6	<1	132	109	28	29	47	27	6	5.2	256
FEB											
08...	3.7	<1	115	95	23	19	40	41	E2	6.2	216
24...	1.8	<1	298	247	55	35	79	E7	11	6.3	422
MAR											
16...	1.8	<1	298	247	50	36	77	11	10	4.2	415
APR											
13...	1.7	<1	243	199	46	34	65	15	E3	0.2	371
MAY											
14...	2.2	<1	301	247	58	34	75	E9	E2	1.3	414
JUN											
09...	2.6	<1	215	176	49	36	50	<10	<3	0.4	343
14...	3.7	<1	171	142	37	24	54	E6	<3	8.0	339
JUL											
14...	2.8	<1	276	226	44	38	70	<10	E2	7.7	386
AUG											
12...	3.6	<1	204	167	50	40	44	E7	E2	0.3	319
SEP											
16...	3.8	<1	234	192	54	52	53	<10	6	3.5	384

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basins
(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 1998 TO SEPTEMBER 1999—Continued

[---, no data; <, concentration or value reported is less than that indicated; E, estimated value; K, value is estimated from a non-ideal colony count.]

DATE	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C) (00689)	SEDI- MENT, SUS- PENDED (MG/L) (80154)
OCT											
20...	0.02	1.7	0.10	0.5	0.4	0.16	0.16	0.14	3.2	0.40	8
NOV											
17...	0.02	1.4	0.08	0.4	0.4	0.14	0.12	0.11	--	0.40	7
DEC											
16...	0.04	1.7	0.16	0.5	0.3	0.15	0.14	0.13	2.7	0.40	7
JAN											
12...	0.03	3.3	0.46	0.9	0.7	0.19	0.16	0.14	--	--	4
20...	0.03	7.3	0.23	1.2	0.9	0.32	0.20	0.17	6.0	1.0	45
FEB											
08...	0.03	8.7	0.09	2.1	0.8	0.63	0.22	0.23	6.5	4.5	273
24...	0.02	5.5	0.05	0.4	0.3	0.08	0.06	0.06	2.3	0.2	6
MAR											
16...	0.02	5.2	0.04	0.4	0.3	0.06	0.05	0.04	2.6	0.2	4
APR											
13...	0.03	4.8	0.03	1.0	0.3	0.08	0.008	0.01	3.2	3.8	20
MAY											
14...	0.04	3.4	0.05	0.7	0.4	0.12	0.07	0.06	3.6	0.7	36
JUN											
09...	0.02	3.5	<0.02	1.4	0.6	0.14	0.02	0.01	3.5	4.6	26
14...	<0.01	8.7	<0.02	1.6	1.3	0.33	0.19	0.01	5.9	3.2	117
JUL											
14...	0.06	1.5	<0.02	1.0	0.4	0.20	0.10	0.08	4.2	3.9	25
AUG											
12...	<0.01	<0.05	<0.02	0.7	0.4	0.20	0.04	0.02	4.3	>5.0	--
SEP											
16...	0.04	1.3	0.11	0.7	0.5	0.21	0.17	0.14	3.9	1.2	--

Results from Selected Sites in the Great Miami and Little Miami River Basins
(National Water-Quality Assessment Program)

TRACE ELEMENTS AND ORGANIC COMPOUNDS IN STREAMBED SEDIMENTS

Streambed-sediment samples were collected during low-flow conditions in the Great Miami and Little Miami River Basins at eight sites in 1998. Bed-sediment samples were collected from the top 1 to 2 centimeters of material taken from at least five different depositional areas within the stream reach. A subsample from the composite sample collected at each site was shipped to the USGS Iowa sediment laboratory for particle-size analysis, and the results are reported at the end of this table. Additionally, subsamples from the composite were (1) processed using a 2.0-millimeter stainless-steel mesh wet sieve (WS, <2mm) for preparation of material for organic contaminant analysis, and (2) processed using a 63-micrometer nylon-cloth wet sieve (<63µm WS) for preparation of material for trace element analysis. More specific details describing the guidelines used in collection and in processing the streambed-sediment samples can be found in Shelton and Capel (1994). Bed-sediment constituent concentrations are provided on a percent (percent of dry weight) or a dry-weight (DW) basis.

Adult common carp (*Cyprinus carpio*) were collected for fish tissue analyses by electrofishing in a mapped reach at each site. More information regarding methods can be found in Crawford and Luoma (1994). Each sample for organochlorine analyses in fish tissue consists of a composite of four to eight whole fish. Laboratory procedures include (1) homogenization, (2) extractions by use of methylene chloride in a soxhlet apparatus, (3) clean-up by use of gel permeation chromatography, (4) fractionation by use of alumina/silica gel, and (5) analysis by gas chromatography with two dissimilar capillary columns coupled with an electron capture detector. Constituent concentrations are provided on a wet-weight (WW) basis and are not corrected for percent lipids. Each sample for trace element analyses consists of a composite of liver tissue taken from four to eight fish. Laboratory procedures include (1) drying, (2) digestion, and (3) analysis by use of inductively-coupled plasma-emission spectrometry (for Al, Ba, B, Cr, Cu, Fe, Mn, Sr, and Zn), inductively coupled plasma mass spectrometry (for Sb, As, Be, Cd, Co, Pb, Mo, Ni, Se, Ag, U, and V), and cold vapor atomic absorption (for Hg). Constituent concentrations are provided on a dry-weight (DRY WGT) basis. Concentrations are corrected for percent water.

CALENDAR YEAR 1998

STATION NUMBER	STATION NAME	LATITUDE	LONGITUDE	DRAINAGE AREA (mi ²)	DATE SEDIMENT SAMPLED	DATE FISH TISSUE SAMPLED
03245500	Little Miami River at Milford, Ohio	39°10'11"	84°17'52"	1,202	9/1/98	9/16/98
03246400	East Fork Little Miami River near Williamsburg, Ohio	39°03'32"	84°03'05"	234	9/1/98	9/8/98
392246084340100	Great Miami River Below Hamilton, Ohio	39°22'46"	84°34'01"	3,636	8/31/98	9/1/98
393259085101200	Whitewater River Near Nulltown, Indiana	39°32'59"	85°10'12"	533	9/8/98	9/15/98
393944084120700	Holes Creek At Huffman Park Near Kettering, Ohio	39°39'44"	84°12'07"	20	9/9/98	9/9/98
395433084175300	Stillwater River At Old Springfield Road Near Union, Ohio	39°54'33"	84°17'53"	643	9/10/98	9/17/98
395534084091400	Great Miami River Near Tipp City, Ohio	39°55'34"	84°09'14"	1,128	9/2/98	9/9/98
395650083504400	Mad River Near Highway 41 Near Springfield, Ohio	39°56'50"	83°50'44"	319	9/3/98	9/14/98

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basins
(National Water-Quality Assessment Program)
TRACE ELEMENTS AND ORGANIC COMPOUNDS IN STREAMBED SEDIMENTS—CONTINUED

[Constituent names are abbreviated as follows: DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethene; DCPA, dimethyl tetrachloroterephthalate; DDT, dichlorodiphenyltrichloroethane; HCH, hexachlorocyclohexane; PCB, polychlorinated biphenyls. Other abbreviations include: BED SED, bottom sediment; REC, recoverable; UG/G, micrograms per gram; UG/KG, micrograms per kilogram; G/KG, grams per kilogram; MM, millimeter; E, estimated; G, grams; WH ORG, whole organism; (55555), the USGS National Water Quality Laboratory parameter code.]

STATION NUMBER	SPE- CIFIC CON- DUCT- ANCE, (US/CM) (00095)	PH, WATER WHOLE (STAND- ARD UNITS) (00400)	TEMPER- ATURE, WATER (DEG C) (00010)	BARO- METRIC PRES- SURE, (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (MG/L) (00300)	ALUM- INUM, BED SED <63U WS PERCENT (34790)	CALCIUM, BED SED <63U WS PERCENT (34830)	IRON, BED SED <63U WS PERCENT (34880)	MAGNE- SIUM, BED SED <63U WS PERCENT (34900)	SODIUM, BED SED <63U WS PERCENT (34960)
03245500	848	8.3	25.5	746	9.15	5.1	4.8	3.2	1.5	0.46
03246400	516	8.3	25.8	--	7.75	6.4	2.8	3.5	1.4	0.49
392246084340100	731	8.4	27.5	--	10.4	4.7	11	2.9	2.7	0.40
393259085101200	651	7.7	19.0	741	9.61	4.3	7.0	2.4	1.9	0.51
393944084120700	739	7.8	16.9	745	8.20	5.6	9.4	3.5	3.5	0.40
395433084175300	709	7.6	18.3	747	9.12	5.7	8.8	3.2	1.8	0.34
395534084091400	709	7.9	21.6	736	8.84	5.2	6.2	3.2	2.6	0.47
395650083504400	752	8.0	15.4	735	10.6	4.5	6.8	2.7	2.7	0.51

STATION NUMBER	POTAS- SIUM, BED SED <63U WS PERCENT (34940)	PHOS- PHORUS, BED SED <63U WS PERCENT (34935)	ANTI- MONY, BED SED <63U WS (UG/G) (34795)	ARSENIC, BED SED <63U WS (UG/G) (34800)	BARIUM, BED SED <63U WS (UG/G) (34805)	BERYL- LIUM, BED SED <63U WS (UG/G) (34810)	BISMUTH, BED SED <63U WS (UG/G) (34816)	CADMIUM, BED SED <63U WS (UG/G) (34825)	CERIUM, BED SED <63U WS (UG/G) (34835)	CHRO- MIUM, BED SED <63U WS (UG/G) (34840)
03245500	1.8	0.16	0.6	7.7	430	1.6	<1.0	0.38	64	56
03246400	2.4	0.16	0.6	9.9	460	2.0	<1.0	0.25	74	65
392246084340100	1.6	0.13	1.2	8.9	420	1.4	<1.0	0.77	53	60
393259085101200	1.5	0.08	0.8	8.5	420	1.1	<1.0	0.30	49	46
393944084120700	2.2	0.06	0.6	14	400	1.5	<1.0	0.28	56	66
395433084175300	1.8	0.12	0.6	11	480	1.5	<1.0	0.46	55	64
395534084091400	1.7	0.13	0.8	11	460	1.5	<1.0	0.64	58	63
395650083504400	1.5	0.10	0.6	11	440	1.3	<1.0	0.51	52	50

STATION NUMBER	COBALT, BED SED <63U WS (UG/G) (34845)	COPPER, BED SED <63U WS (UG/G) (34850)	EURO- PIUM, BED SED <63U WS (UG/G) (34855)	GALLIUM, BED SED <63U WS (UG/G) (34860)	GOLD, BED SED <63U WS (UG/G) (34870)	HOLMIUM, BED SED <63U WS (UG/G) (34875)	LANTHA- NUM, BED SED <63U WS (UG/G) (34885)	LEAD, BED SED <63U WS (UG/G) (34890)	LITHIUM, BED SED <63U WS (UG/G) (34895)	MANGA- NESE, BED SED <63U WS (UG/G) (34905)
03245500	12	30	1.2	12	<1.0	1.1	35	38	36	1200
03246400	15	25	1.4	15	<1.0	1.4	41	26	46	1200
392246084340100	9.4	35	1.1	11	<1.0	1.0	30	36	30	450
393259085101200	8.8	23	1.0	9.4	<1.0	<1.0	27	20	25	640
393944084120700	14	31	1.1	14	<1.0	1.0	32	23	43	670
395433084175300	11	28	1.0	13	<1.0	1.0	32	25	38	850
395534084091400	11	32	1.1	12	<1.0	1.0	33	33	34	630
395650083504400	8.7	31	1.0	9.7	<1.0	<1.0	29	25	27	520

STATION NUMBER	MERCURY, BED SED <63U WS (UG/G) (34910)	MOLYB- DENUM, BED SED <63U WS (UG/G) (34915)	NEODYM- IUM, BED SED <63U WS (UG/G) (34920)	NICKEL, BED SED <63U WS (UG/G) (34925)	NIObIUM, BED SED <63U WS (UG/G) (34930)	SCAN- DIUM, BED SED <63U WS (UG/G) (34945)	SELE- NIUM, BED SED <63U WS (UG/G) (34950)	SILVER, BED SED <63U WS (UG/G) (34955)	STRON- TIUM, BED SED <63U WS (UG/G) (34965)	SULFUR, BED SED <63U WS PERCENT (34970)
03245500	0.08	1.6	30	31	13	8.6	0.56	0.76	160	0.10
03246400	0.05	1.2	35	32	16	11	0.42	0.65	120	0.14
392246084340100	0.09	2.7	26	34	11	7.7	0.71	0.62	340	0.12
393259085101200	0.04	1.5	23	27	9.5	6.3	0.54	0.47	150	0.05
393944084120700	0.06	4.3	27	42	11	9.6	0.33	0.54	190	0.10
395433084175300	0.05	3.1	26	37	11	9.2	0.93	0.56	340	0.08
395534084091400	0.07	3.5	28	37	11	8.6	0.70	0.66	320	0.09
395650083504400	0.07	2.6	25	28	9.7	6.8	0.88	0.48	200	0.10

Results from Selected Sites in the Great Miami and Little Miami River Basins
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TRACE ELEMENTS AND ORGANIC COMPOUNDS IN STREAMBED SEDIMENTS—CONTINUED

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STATION NUMBER	TANTA- LUM, BED SED <63U WS (UG/G) (34975)	THORIUM, BED SED <63U WS (UG/G) (34980)	TIN, BED SED <63U WS (UG/G) (34985)	TITA- NIUM, BED SED <63U WS PERCENT (49274)	URANIUM, BED SED <63U WS (UG/G) (35000)	VANA- DIUM, BED SED <63U WS (UG/G) (35005)	YTTR- IUM, BED SED <63U WS (UG/G) (35010)	YTTER- BIUM, BED SED <63U WS (UG/G) (35015)	ZINC, BED SED <63U WS (UG/G) (35020)	CARBON ORG + INORG, BED SED WS, <63U DW, REC PERCENT (49267)
03245500	<1.0	9.1	2.7	0.31	2.2	78	23	2.7	130	4.10
03246400	1.1	11.0	2.6	0.41	2.6	95	26	3.2	160	2.48
392246084340100	<1.0	7.5	3.6	0.27	2.5	75	19	2.3	140	6.32
393259085101200	<1.0	7.0	2.6	0.24	2.0	64	17	2.1	90	4.56
393944084120700	<1.0	8.1	2.0	0.26	2.8	95	21	2.6	99	5.14
395433084175300	<1.0	8.0	3.4	0.25	2.7	100	20	2.3	130	5.63
395534084091400	<1.0	8.5	2.6	0.26	3.0	92	21	2.4	150	5.12
395650083504400	<1.0	7.4	2.7	0.25	2.5	71	19	2.3	100	5.14

STATION NUMBER	CARBON ORGANIC, BED SED WS, <63U DW, REC PERCENT (49266)	CARBON INORG, BED SED WS, <63U DW, REC PERCENT (49269)	CARBON ORG + INORG, BED SED WS, <2MM DW, REC (G/KG) (49272)	CARBON ORGANIC, BED SED WS, <2MM DW, REC (G/KG) (49271)	CARBON INORG, BED SED WS, <2MM DW, REC (G/KG) (49270)	PCB, BED SED WS, <2MM DW, REC (UG/KG) (49459)	ACENAPH- THYLENE, BED SED WS, <2MM DW, REC (UG/KG) (49428)	ACENAPH- THENE, BED SED WS, <2MM DW, REC (UG/KG) (49429)	ACRI- DINE, BED SED, WS <2MM DW, REC (UG/KG) (49430)	ALDRIN, BED SED, WS <2MM DW, REC (UG/KG) (49319)
03245500	2.20	1.90	38	4	34	<50	e24	e11.1	e9.6	<1.0
03246400	1.49	0.99	6.7	1.2	5.5	<50	e8	<50	<50	<1.0
392246084340100	2.32	4.00	46	7	39	<50	e32.7	e34.9	<50	<1.0
393259085101200	1.79	2.77	50	7	43	<50	<50	<50	<50	<1.0
393944084120700	1.11	4.03	51	5	46	<50	e17.7	<50	<50	<1.0
395433084175300	2.62	3.01	39	7	32	<50	<50	<50	<50	<1.0
395534084091400	2.38	2.74	47	4	43	<50	e10.6	e12.7	<50	<1.0
395650083504400	2.14	3.00	43	12	31	<50	<50	<50	<50	<1.0

STATION NUMBER	C8-ALKYL PHENOL, BED SED, WS <2MM DW, REC (UG/KG) (49424)	ANTHRA- CENE, BED SED, WS <2MM DW, REC (UG/KG) (49434)	9,10 ANTHRA- QUINONE, BED SED, WS <2MM DW, REC (UG/KG) (49437)	AZO- BENZENE, BED SED, WS <2MM DW, REC (UG/KG) (49443)	BENZ (A) ANTHRA- CENE, BED SED, WS <2MM DW, REC (UG/KG) (49436)	BENZO- CINNOLINE, BED SED, WS <2MM DW, REC (UG/KG) (49468)	BENZO (B) FLUOR- ANTHENE, BED SED, WS <2MM DW, REC (UG/KG) (49458)	BENZO (K) FLUOR- ANTHENE, BED SED, WS <2MM DW, REC (UG/KG) (49397)	BENZO (G,H,I) PERYLENE, BED SED, WS <2MM DW, REC (UG/KG) (49408)
03245500	<50	53.6	e32	<50	203	<50	162	191	116
03246400	<50	e8	<50	<50	e18.3	<50	e23.8	e22.1	e17.5
392246084340100	<50	75.9	112	<50	252	<50	240	232	163
393259085101200	<50	<50	<50	<50	e19.7	<50	e28.5	e25.6	e23.5
393944084120700	<50	e49.8	56.5	<50	143	<50	165	116	115
395433084175300	<50	e12.2	<50	<50	e16.7	<50	e28.1	e21.6	e26.4
395534084091400	<50	e31.7	e45.8	<50	95.6	<50	105	68.1	68
395650083504400	<50	e34.1	<50	<50	86.8	<50	83.7	80.1	55.6

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basins
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TRACE ELEMENTS AND ORGANIC COMPOUNDS IN STREAMBED SEDIMENTS—CONTINUED

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STATION NUMBER	BENZO (A) PYRENE, BED SED, WS <2MM DW, REC (UG/KG) (49389)	2, 2'- BIQUINO- LINE, BED SED, WS <2MM DW, REC (UG/KG) (49391)	4-BROMO PHENYLPHENYL ETHER, BED SED, WS <2MM DW, REC (UG/KG) (49454)	BUTYL BENZYL- PHTHALATE, BED SED, WS <2MM DW, REC (UG/KG) (49427)	CARBAZOLE, BED SED, WS <2MM DW, REC (UG/KG) (49449)	CIS- CHLORDANE, BED SED, WS <2MM DW, REC (UG/KG) (49320)	TRANS- CHLORDANE, BED SED, WS <2MM DW, REC (UG/KG) (49321)	BIS 2-CHLORO- ETHOXY METHANE, BED SED, WS <2MM DW, REC (UG/KG) (49401)
03245500	197	<50	<50	<50	e17.	<1.0	<1.0	<50
03246400	e21.3	<50	<50	e12.9	<50.	<1.0	<1.0	<50
392246084340100	255	<50	<50	<50	51.	1.1	1.1	<50
393259085101200	e24.6	<50	<50	<50	<50.	<1.0	<1.0	<50
393944084120700	156	<50	<50	e15.2	e21.	1.6	1.6	<50
395433084175300	e25	<50	<50	<50	<50.	<1.0	<1.0	<50
395534084091400	80.6	<50	<50	<50	e29.	<1.0	<1.0	<50
395650083504400	90.6	<50	<50	<50	e26.2	<1.0	<1.0	<50

STATION NUMBER	4-CHLORO 3-METHYL- PHENOL, BED SED, WS <2MM DW, REC (UG/KG) (49422)	2-CHLORO- NAPHTHALENE, BED SED, WS <2MM DW, REC (UG/KG) (49407)	CHLORONEB, BED SED, WS <2MM DW, REC (UG/KG) (49322)	2-CHLORO- PHENOL, BED SED, WS <2MM DW, REC (UG/KG) (49467)	4-CHLORO- PHENYL ETHER, BED SED, WS <2MM DW, REC (UG/KG) (49455)	CHRYSENE, BED SED, WS <2MM DW, REC (UG/KG) (49450)	P-CRESOL, BED SED, WS <2MM DW, REC (UG/KG) (49451)
03245500	<50	<50	<5.0	<50	<50	230	<50
03246400	<50	<50	<5.0	<50	<50	e15.1	<50
392246084340100	<50	<50	<5.0	<50	<50	321	532
393259085101200	<50	<50	<5.0	<50	<50	e25.1	<50
393944084120700	<50	<50	<5.0	<50	<50	172	<50
395433084175300	<50	<50	<5.0	<50	<50	e18.6	<50
395534084091400	<50	<50	<5.0	<50	<50	113	<50
395650083504400	<50	<50	<5.0	<50	<50	110	e24.9

STATION NUMBER	DCPA, BED SED, WS <2MM DW, REC (UG/KG) (49324)	O, P'- DDD, BED SED, WS <2MM DW, REC (UG/KG) (49325)	P, P'- DDD, BED SED, WS <2MM DW, REC (UG/KG) (49326)	O, P'- DDE, BED SED, WS <2MM DW, REC (UG/KG) (49327)	P, P'- DDE, BED SED, WS <2MM DW, REC (UG/KG) (49328)	O, P'- DDT, BED SED, WS <2MM DW, REC (UG/KG) (49329)	P, P'- DDT, BED SED, WS <2MM DW, REC (UG/KG) (49330)
03245500	<5.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0
03246400	<5.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0
392246084340100	<5.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0
393259085101200	<5.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0
393944084120700	<5.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0
395433084175300	<5.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0
395534084091400	<5.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0
395650083504400	<5.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0

STATION NUMBER	DIBENZ (A,H) ANTHRACENE, BED SED, WS <2MM DW, REC (UG/KG) (49461)	DIBENZO- THIOPHENE, BED SED, WS <2MM DW, REC (UG/KG) (49452)	DI-N BUTYL PHTHALATE, BED SED, WS <2MM DW, REC (UG/KG) (49381)	1,2- DICHLORO- BENZENE, BED SED, WS <2MM DW, REC (UG/KG) (49439)	1,3- DICHLORO- BENZENE, BED SED, WS <2MM DW, REC (UG/KG) (49441)	1,4- DICHLORO- BENZENE, BED SED, WS <2MM DW, REC (UG/KG) (49442)	DIELDRIN, BED SED, WS <2MM DW, REC (UG/KG) (49331)
03245500	e42.7	e9.1	e31.6	<50	<50	<50	<1.0
03246400	<50	<50	e27	<50	<50	<50	<1.0
392246084340100	e44	e29.1	e24.2	<50	<50	<50	<1.0
393259085101200	<50	<50	e33.3	<50	<50	<50	1.2
393944084120700	e31.6	<50	e26.7	<50	<50	<50	<1.0
395433084175300	<50	<50	e28.6	<50	<50	<50	1.2
395534084091400	<50	<50	e25.6	<50	<50	<50	<1.0
395650083504400	<50	<50	e48	<50	<50	<50	<1.0

Results from Selected Sites in the Great Miami and Little Miami River Basins
(National Water-Quality Assessment Program)

TRACE ELEMENTS AND ORGANIC COMPOUNDS IN STREAMBED SEDIMENTS—CONTINUED

[Constituent names are abbreviated as follows: DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethene; DCPA, dimethyl tetrachloroterephthalate; DDT, dichlorodiphenyltrichloroethane; HCH, hexachlorocyclohexane; PCB, polychlorinated biphenyls. Other abbreviations include: BED SED, bottom sediment; REC, recoverable; UG/G, micrograms per gram; UG/KG, micrograms per kilogram; G/KG, grams per kilogram; MM, millimeter; E, estimated; G, grams; WH ORG, whole organism; (55555), the USGS National Water Quality Laboratory parameter code.]

STATION NUMBER	DIETHYL PHTHALATE, BED SED, WS <2MM DW, REC (UG/KG) (49383)	1,2-DIMETHYL- NAPHTHALENE, BED SED, WS <2MM DW, REC (UG/KG) (49403)	1,6-DIMETHYL- NAPHTHALENE, BED SED, WS <2MM DW, REC (UG/KG) (49404)	2,6-DIMETHYL- NAPHTHALENE, BED SED, WS <2MM DW, REC (UG/KG) (49406)	3,5-DIMETHYL- PHENOL, BED SED, WS <2MM DW, REC (UG/KG) (49421)	DIMETHYL PHTHALATE, BED SED, WS <2MM DW, REC (UG/KG) (49384)	2,4-DINITRO- TOLUENE, BED SED, WS <2MM DW, REC (UG/KG) (49395)
03245500	<50	<50	<50	e17.7	<50	<50	<50
03246400	e1.7	<50	<50	<50	<50	<50	<50
392246084340100	<50	<50	<50	e29.4	<50	<50	<50
393259085101200	<50	<50	<50	e41.4	<50	<50	<50
393944084120700	<50	<50	e6.6	<50	<50	<50	<50
395433084175300	<50	<50	<50	e11.6	<50	<50	<50
395534084091400	<50	<50	<50	e19.1	<50	<50	<50
395650083504400	<50	<50	<50	e43.2	<50	<50	<50

STATION NUMBER	2,6- DINITRO- TOLUENE, BED SED, WS <2MM DW, REC (UG/KG) (49396)	DI-N-OCTYL PHTHALATE, BED SED, WS <2MM DW, REC (UG/KG) (49382)	ALPHA- ENDOSULFAN, BED SED, WS <2MM DW, REC (UG/KG) (49332)	ENDRIN, BED SED, WS <2MM DW, REC (UG/KG) (49335)	BIS 2- ETHYLHEXYL PHTHALATE, BED SED, WS <2MM DW, REC (UG/KG) (49426)	2-ETHYL NAPHTHALENE, BED SED, WS <2MM DW, REC (UG/KG) (49490)	FLUOR- ANTHENE, BED SED, WS <2MM DW, REC (UG/KG) (49466)
03245500	e40.8	<50	<1.0	<2.0	e38.2	<50	451
03246400	196	<50	<1.0	<2.0	e18.4	<50	e35
392246084340100	<50	<50	<1.0	<2.0	e54.6	<50	714
393259085101200	<50	<50	<1.0	<2.0	e37.4	<50	e46.6
393944084120700	<50	<50	<1.0	<2.0	269	<50	388
395433084175300	<50	<50	<1.0	<2.0	e26.8	<50	e32.4
395534084091400	<50	<50	<1.0	<2.0	e31.6	<50	270
395650083504400	<50	<50	<1.0	<2.0	e47.2	<50	213

STATION NUMBER	FLUORENE, BED SED, WS <2MM DW, REC (UG/KG) (49399)	ALPHA-HCH, BED SED, WS <2MM DW, REC (UG/KG) (49338)	BETA-HCH, BED SED, WS <2MM DW, REC (UG/KG) (49339)	LINDANE, BED SED, WS <2MM DW, REC (UG/KG) (49345)	HEPTACHLOR, BED SED, WS <2MM DW, REC (UG/KG) (49341)	HEPTACHLOR EPOXIDE, BED SED, WS <2MM DW, REC (UG/KG) (49342)	HEXACHLORO- BENZENE, BED SED, WS <2MM DW, REC (UG/KG) (49343)
03245500	e6.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
03246400	<50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
392246084340100	e34.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
393259085101200	<50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
393944084120700	e7	<1.0	<1.0	<1.0	<1.0	1.1	<1.0
395433084175300	<50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
395534084091400	<50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
395650083504400	<50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

STATION NUMBER	INDENO (1,2,3- CD) PYRENE, BED SED, WS <2MM DW, REC (UG/KG) (49390)	ISODRIN, BED SED, WS <2MM DW, REC (UG/KG) (49344)	ISOPHORONE, BED SED, WS <2MM DW, REC (UG/KG) (49400)	ISOQUINO- LINE, BED SED, WS <2MM DW, REC (UG/KG) (49394)	O,P'- METHOXY- CHLOR, BED SED, WS <2MM DW, REC (UG/KG) (49347)	P,P'- METHOXY CHLOR, BED SED, WS <2MM DW, REC (UG/KG) (49346)	2-METHYL- ANTHRACENE, BED SED, WS <2MM DW, REC (UG/KG) (49435)
03245500	140	<1.0	<50	<50	<5.0	<5.0	e21
03246400	e17.8	<1.0	<50	<50	<5.0	<5.0	<50
392246084340100	196	<1.0	<50	<50	<5.0	<5.0	<50
393259085101200	e26.4	<1.0	<50	<50	<5.0	<5.0	<50
393944084120700	125	<1.0	<50	<50	<5.0	<5.0	e16.3
395433084175300	e26.4	<1.0	<50	<50	<5.0	<5.0	<50
395534084091400	74.3	<1.0	<50	<50	<5.0	<5.0	<50
395650083504400	68.6	<1.0	<50	<50	<5.0	<5.0	<50

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basins
(National Water-Quality Assessment Program)
TRACE ELEMENTS AND ORGANIC COMPOUNDS IN STREAMBED SEDIMENTS—CONTINUED

[Constituent names are abbreviated as follows: DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethene; DCPA, dimethyl tetrachloroterephthalate; DDT, dichlorodiphenyltrichloroethane; HCH, hexachlorocyclohexane; PCB, polychlorinated biphenyls. Other abbreviations include: BED SED, bottom sediment; REC, recoverable; UG/G, micrograms per gram; UG/KG, micrograms per kilogram; G/KG, grams per kilogram; MM, millimeter; E, estimated; G, grams; WH ORG, whole organism; (55555), the USGS National Water Quality Laboratory parameter code.]

STATION NUMBER	4,5- METHYLENE- PHEN ANTHRENE, BED SED, WS <2MM DW, REC (UG/KG) (49411)	1-METHYL- 9H-FLUORENE, BED SED, WS <2MM DW, REC (UG/KG) (49398)	1-METHYL- PHEN- ANTHRENE, BED SED, WS <2MM DW, REC (UG/KG) (49410)	1-METHYL- PYRENE, BED SED, WS <2MM DW, REC (UG/KG) (49388)	MIREX, BED SED, WS <2MM DW, REC (UG/KG) (49348)	NAPH- THALENE, BED SED, WS <2MM DW, REC (UG/KG) (49402)	NITRO- BENZENE, BED SED, WS <2MM DW, REC (UG/KG) (49444)
03245500	e27.1	<50	e11.9	e17.4	<1.0	<50	<50
03246400	<50	<50	<50	<50	<1.0	<50	<50
392246084340100	e46.3	<50	<50	<50	<1.0	<50	<50
393259085101200	<50	<50	<50	<50	<1.0	<50	<50
393944084120700	e28.5	<50	e12.7	e11.9	<1.0	<50	<50
395433084175300	<50	<50	<50	<50	<1.0	<50	<50
395534084091400	e19.5	<50	e9.5	e6	<1.0	<50	<50
395650083504400	e12.8	<50	<50	e17.7	<1.0	<50	<50

STATION NUMBER	N-NITROSO- DIPHENYL- AMINE, BED SED, WS <2MM DW, REC (UG/KG) (49433)	N-NITROSO- DI-N-PROPYL- AMINE, BED SED, WS <2MM DW, REC (UG/KG) (49431)	CIS- NONACHLOR, BED SED, WS <2MM DW, REC (UG/KG) (49316)	TRANS- NONACHLOR, BED SED, WS <2MM DW, REC (UG/KG) (49317)	OXY- CHLORDANE, BED SED, WS <2MM DW, REC (UG/KG) (49318)	PENTA- CHLORO- ANISOLE, BED SED, WS <2MM DW, REC (UG/KG) (49460)	PENTA- CHLORO- NITRO- BENZENE, BED SED, WS <2MM DW, REC (UG/KG) (49446)
03245500	<50	<50	<1.0	<1.0	<1.0	<1.0	<50
03246400	<50	<50	<1.0	<1.0	<1.0	<1.0	<50
392246084340100	<50	<50	<1.0	<1.0	<1.0	<1.0	<50
393259085101200	<50	<50	<1.0	<1.0	<1.0	<1.0	<50
393944084120700	<50	<50	<1.0	1.1	<1.0	<1.0	<50
395433084175300	<50	<50	<1.0	<1.0	<1.0	<1.0	<50
395534084091400	<50	<50	<1.0	<1.0	<1.0	<1.0	<50
395650083504400	<50	<50	<1.0	<1.0	<1.0	<1.0	<50

STATION NUMBER	CIS- PERMETHRIN, BED SED, WS <2MM DW, REC (UG/KG) (49349)	TRANS- PERMETHRIN, BED SED, WS <2MM DW, REC (UG/KG) (49350)	PHEN- ANTHRENE, BED SED, WS <2MM DW, REC (UG/KG) (49409)	PHEN- ANTHRIDINE, BED SED, WS <2MM DW, REC (UG/KG) (49393)	PHENOL, BED SED, WS <2MM DW, REC (UG/KG) (49413)	PYRENE, BED SED, WS <2MM DW, REC (UG/KG) (49387)	QUINOLINE, BED SED, WS <2MM DW, REC (UG/KG) (49392)
03245500	<5.0	<5.0	151	<50	e15.1	365	<50
03246400	<5.0	<5.0	9.3	<50	e4	e30.2	<50
392246084340100	<5.0	<5.0	516	<50	e31.2	518	<50
393259085101200	<5.0	<5.0	e10.6	<50	e18.8	e36.5	<50
393944084120700	<5.0	<5.0	175	<50	<50	292	<50
395433084175300	<5.0	<5.0	e7.8	<50	<50	e35.8	<50
395534084091400	<5.0	<5.0	159	<50	e13.8	214	<50
395650083504400	<5.0	<5.0	91.4	<50	e13.7	170	<50

**Results from Selected Sites in the Great Miami and Little Miami River Basins
(National Water-Quality Assessment Program)**

TRACE ELEMENTS AND ORGANIC COMPOUNDS IN STREAMBED SEDIMENTS—CONTINUED

[Constituent names are abbreviated as follows: DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethene; DCPA, dimethyl tetrachloroterephthalate; DDT, dichlorodiphenyltrichloroethane; HCH, hexachlorocyclohexane; PCB, polychlorinated biphenyls. Other abbreviations include: BED SED, bottom sediment; REC, recoverable; UG/G, micrograms per gram; UG/KG, micrograms per kilogram; G/KG, grams per kilogram; MM, millimeter; E, estimated; G, grams; WH ORG, whole organism; (55555), the USGS National Water Quality Laboratory parameter code.]

STATION NUMBER	TOXAPHENE, BED SED, WS <2MM DW, REC (UG/KG) (49351)	1,2,4-TRI- CHLORO BENZENE, BED SED, WS <2MM DW, REC (UG/KG) (49438)	2,3,6 TRIMETHYL- NAPHTHALENE, BED SED, WS <2MM DW, REC (UG/KG) (49405)
03245500	<200	<50	<50
03246400	<200	<50	<50
392246084340100	<200	<50	<50
393259085101200	<200	<50	<50
393944084120700	<200	<50	<50
395433084175300	<200	<50	<50
395534084091400	<200	<50	<50
395650083504400	<200	<50	<50

PARTICLE-SIZE SIEVE ANALYSIS OF STREAMBED

STATION NUMBER	% SAND BED MAT. <2 MM AND >.062 MM	% SILT BED MAT. <.062 MM AND >.004 MM	% CLAY BED MAT. <.004 MM
03245500	82.4	11.3	6.3
03246400	97.2	1.6	1.2
392246084340100	98.5	0.9	0.6
393259085101200	90.7	5.7	3.6
393944084120700	94.7	3.8	1.5
395433084175300	88.8	5.0	6.2
395534084091400	95.8	1.6	2.6
395650083504400	91.5	4.4	4.1

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basins
(National Water-Quality Assessment Program)
ORGANIC COMPOUNDS IN WHOLE FISH

[Constituent names are abbreviated as follows: DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethene; DCPA, dimethyl tetrachloroterephthalate; DDT, dichlorodiphenyltrichloroethane; HCH, hexachlorocyclohexane; PCB, polychlorinated biphenyls. Other abbreviations include: BED SED, bottom sediment; REC, recoverable; UG/G, micrograms per gram; UG/KG, micrograms per kilogram; G/KG, grams per kilogram; MM, millimeter; E, estimated; G, grams; WH ORG, whole organism; (55555), the USGS National Water Quality Laboratory parameter code.]

STATION NUMBER	NUMBER IN COMPOSITE			MEAN TOTAL LENGTH OF FISH (MM)	MEAN WEIGHT OF FISH (G)	MEAN AGE OF FISH (YEARS)
	TOTAL	MALE	FEMALE			
03245500	4	3	1	630	3807	9.3
03246400	8	4	4	465	1253	5.6
392246084340100	5	3	2	600	3218	9.6
393259085101200	7	5	2	583	2869	7.7
393944084120700	8	2	6	451	1366	5.1
395433084175300	8	3	5	541	2212	8.1
395534084091400	6	5	1	451	1368	5.3
395650083504400	7	6	1	315	670	3.9

STATION NUMBER	ALDRIN, BIOTA, WH ORG WW, REC (UG/KG) (49353)	ALPHA BHC, WH ORG, WW, REC (UG/KG) (49366)	HEXA-CHLORO-BENZENE, BIOTA, WH ORG WW, REC (UG/KG) (49367)	BETA BHC, WH ORG WW, REC (UG/KG) (49365)	CIS-CHLORDANE, BIOTA, WH ORG WW, REC (UG/KG) (49380)	CIS-NON-ACHLOR, BIOTA, WH ORG WW, REC (UG/KG) (49359)	DCPA, BIOTA, WH ORG WW, REC (UG/KG) (49378)	DELTA-BHC, BIOTA, WH ORG WW, REC (UG/KG) (49364)	DIELDRIN, BIOTA, WH ORG WW, REC (UG/KG) (49371)
03245500	<5.0	<5.0	<5.0	<5.0	77	27	<5.0	<5.0	88
03246400	<5.0	<5.0	<5.0	<5.0	5.1	<5.0	<5.0	<5.0	14
392246084340100	e10	<5.0	24	<5.0	55	13	<5.0	<5.0	43
393259085101200	<5.0	<5.0	<5.0	<5.0	21	1	<5.0	<5.0	32
393944084120700	<5.0	<5.0	<5.0	<5.0	51	14	<5.0	<5.0	11
395433084175300	<5.0	<5.0	<5.0	<5.0	27	e13	<5.0	<5.0	110
395534084091400	<5.0	<5.0	<5.0	<5.0	35	11	5.0	<14	53
395650083504400	<5.0	<5.0	<5.0	<5.0	130	40	<5.0	<27	31

STATION NUMBER	ENDRIN, BIOTA, WH ORG WW, REC (UG/KG) (49370)	HEPTA-CHLOR EPOXIDE, BIOTA, WH ORG WW, REC (UG/KG) (49368)	HEPTA-CHLOR, BIOTA, WH ORG WW, REC (UG/KG) (49369)	LINDANE, BIOTA, WH ORG WW, REC (UG/KG) (49363)	LIPIDS, BIOTA, WH ORG WW, REC (PERCENT) (49289)	O,P'-METHOXY-CHLOR, BIOTA, WH ORG WW, REC (UG/KG) (49362)	P,P'-METHOXY-CHLOR, BIOTA, WH ORG WW, REC (UG/KG) (49361)	MIREX, BIOTA, WH ORG WW, REC (UG/KG) (49360)	O,P' DDD, BIOTA, WH ORG WW, REC (UG/KG) (49374)
03245500	<5.0	8.4	<5.0	<5.0	7.8	<5.0	<5.0	<5.0	<5.0
03246400	<5.0	<5.0	<5.0	<5.0	3.9	<5.0	<5.0	<5.0	<5.0
392246084340100	<5.0	17	<5.0	<5.0	16.0	<5.0	<5.0	<5.0	<15
393259085101200	<5.0	9.8	<5.0	<5.0	9.8	<5.0	<5.0	<5.0	<5.0
393944084120700	<5.0	6.4	<5.0	<5.0	2.8	<5.0	<5.0	<5.0	<5.0
395433084175300	<5.0	12	<5.0	<5.0	7.9	<5.0	<5.0	<5.0	<5.0
395534084091400	<5.0	8.8	<5.0	<5.0	9	<5.0	<5.0	<5.0	<5.0
395650083504400	<5.0	<5.0	<5.0	<5.0	7.6	<5.0	<5.0	<5.0	<5.0

Results from Selected Sites in the Great Miami and Little Miami River Basins

(National Water-Quality Assessment Program)

ORGANIC COMPOUNDS IN WHOLE FISH—CONTINUED

[Constituent names are abbreviated as follows: DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethene; DCPA, dimethyl tetrachloroterephthalate; DDT, dichlorodiphenyltrichloroethane; HCH, hexachlorocyclohexane; PCB, polychlorinated biphenyls. Other abbreviations include: BED SED, bottom sediment; REC, recoverable; UG/G, micrograms per gram; UG/KG, micrograms per kilogram; G/KG, grams per kilogram; MM, millimeter; E, estimated; G, grams; H ORG, whole organism; (55555), the USGS National Water Quality Laboratory parameter code.]

STATION NUMBER	O,P' DDE, BIOTA, WH ORG WW, REC (UG/KG) (49373)	O,P' DDT, BIOTA, WH ORG WW, REC (UG/KG) (49377)	OXY- CHLOR- DANE, BIOTA, WH ORG WW, REC (UG/KG) (49357)	P,P' DDD, BIOTA, WH ORG WW, REC (UG/KG) (49375)	P,P' DDE, BIOTA, WH ORG WW, REC (UG/KG) (49375)	P,P' DDT, BIOTA, WH ORG WW, REC (UG/KG) (49376)	PCB, BIOTA, WH ORG WW, REC (UG/KG) (49354)	PENTA- CHLORAN- ISOLE, BIOTA, WH ORG WW, REC (UG/KG) (49356)	TOXA- PHENE, BIOTA, WH ORG WW, REC (UG/KG) (49355)
03245500	<5.0	<5.0	11	12	53	<5.0	300	<5.0	<200
03246400	<5.0	<5.0	<5.0	<5.0	7.2	<5.0	190	<5.0	<200
392246084340100	<6.5	<5.0	12	20	89	<5.0	2300	8.4	<200
393259085101200	<5.0	<5.0	7.4	<5.0	9.2	<5.0	240	<5.0	<200
393944084120700	<5.0	<5.0	7.0	<5.0	43	<5.0	670	<5.0	<200
395433084175300	<5.0	<5.0	<5.0	18	100	<5.0	160	<5.0	<200
395534084091400	<6.4	<5.0	49	6.7	33	<5.0	615	<5.0	<200
395650083504400	<5.0	<5.0	11	31	280	<5.0	<50	<5.0	<200

STATION NUMBER	TRANS- CHLOR- DANE, BIOTA, WH ORG WW, REC (UG/KG) (49379)	TRANS- NONA- CHLOR BIOTA, WH ORG WW, REC (UG/KG) (49358)
03245500	28	110
03246400	<5.0	9.1
392246084340100	25	e70
393259085101200	12	36
393944084120700	17	55
395433084175300	12	42
395534084091400	11	31
395650083504400	45	230

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basins
(National Water-Quality Assessment Program)
TRACE ELEMENTS IN FISH-LIVER COMPOSITES

[Constituent names are abbreviated as follows: DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethene; DCPA, dimethyl tetrachloroterephthalate; DDT, dichlorodiphenyltrichloroethane; HCH, hexachlorocyclohexane; PCB, polychlorinated biphenyls. Other abbreviations include: BED SED, bottom sediment; REC, recoverable; UG/G, micrograms per gram; UG/KG, micrograms per kilogram; G/KG, grams per kilogram; MM, millimeter; E, estimated; G, grams; H ORG, whole organism; (55555), the USGS National Water Quality Laboratory parameter code.]

STATION NUMBER	STATION NUMBER	NUMBER IN COMPOSITE			MEAN TOTAL LENGTH OF FISH (MM)	MEAN WEIGHT OF FISH (G)	MEAN AGE OF FISH (YEARS)		
		TOTAL	MALE	FEMALE					
		03245500	4	1	3	630	3807	9.3	
		03246400	8	2	6	454	1306	5	
		392246084340100	5	1	4	566	2288	9.2	
		393259085101200	5	3	2	568	2567	7.7	
		393944084120700	8	5	3	442	1175	5.6	
		395433084175300	8	2	6	517	1858	8.1	
		395534084091400	6	5	1	441	1260	5.8	
		395650083504400	5	3	2	345	854	4.6	

**Results from Selected Sites in the Great Miami and Little Miami River Basins
(National Water-Quality Assessment Program)**

TRACE ELEMENTS IN FISH-LIVER COMPOSITES—CONTINUED

[Constituent names are abbreviated as follows: DDD, dichlorodiphenyldichloroethane; DDE, dichlorodiphenyldichloroethene; DCPA, dimethyl tetrachloroterephthalate; DDT, dichlorodiphenyltrichloroethane; HCH, hexachlorocyclohexane; PCB, polychlorinated biphenyls. Other abbreviations include: BED SED, bottom sediment; REC, recoverable; UG/G, micrograms per gram; UG/KG, micrograms per kilogram; G/KG, grams per kilogram; MM, millimeter; E, estimated; G, grams; H ORG, whole organism; (55555), the USGS National Water Quality Laboratory parameter code.]

STATION NUMBER	MERCURY, BIOTA, TISSUE, DRY WGT, REC (UG/G) (49258)	MOLYBDENUM, BIOTA, TISSUE, DRY WGT, REC (UG/G) (49252)	NICKEL, BIOTA, TISSUE, DRY WGT, REC (UG/G) (49253)	SELENIUM, BIOTA, TISSUE, DRY WGT, REC (UG/G) (49254)	SILVER, BIOTA, TISSUE, DRY WGT, REC (UG/G) (49255)	STRONTIUM, BIOTA, TISSUE, DRY WGT, REC (UG/G) (49244)	VANADIUM, BIOTA, TISSUE, DRY WGT, REC (UG/G) (49465)
03245500	0.34	1.6	<0.2	5.9	1.5	1.0	0.5
03246400	0.31	1.7	<0.2	6.2	0.3	1.0	1.3
392246084340100	0.30	2.1	<0.2	10.2	0.3	1.4	1.5
393259085101200	0.32	2.2	<0.2	7.3	2.0	0.6	0.5
393944084120700	0.23	1.3	<0.2	8.7	0.3	0.8	0.9
395433084175300	0.35	1.4	<0.2	7.9	0.8	2.2	0.7
395534084091400	0.20	1.0	<0.2	5.9	0.6	1.4	0.6
395650083504400	0.31	1.1	<0.2	9.4	1.5	0.8	0.5

STATION NUMBER	ZINC, BIOTA, TISSUE, DRY WGT, REC (UG/G) (49245)	URANIUM, BIOTA, TISSUE, DRY WGT, REC (UG/G) (49257)
03245500	551	<0.2
03246400	761	<0.2
392246084340100	622	<0.2
393259085101200	1059	<0.2
393944084120700	1075	<0.2
395433084175300	767	<0.2
395534084091400	568	<0.2
395650083504400	438	<0.2

REFERENCES CITED:

Crawford, J.K., and Luoma, S.N., 1994, Guidelines for studies of contaminants in biological tissues for the National Water-Quality Assessment Program: U.S. Geological Survey Open-File Report 92-494, 69 p.
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 Basins
(National Water-Quality Assessment Program)

FISH COMMUNITY RESULTS

Fish community surveys were conducted at eight sites in the Great and Little Miami River Basins as part of the National Water-Quality Assessment Program (NAWQA). 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 sites excluding the Great Miami River below Hamilton, Ohio, where non-wadeable stream depths also required the use of a boat, and Holes Creek, where longline methods were used. 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 1999

STATION NAME	DATE SAMPLED	REACH LENGTH (METERS)	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH (00400)	WATER TEMPERATURE (DEG C) (00010)	DISSOLVED OXYGEN (MG/L) (00300)
Holes Creek at Kettering, Ohio	7/26/99	205	NA	NA	NA	NA
Whitewater River near Nulltown, Indiana	8/2/99	400	641	8.3	27	10
Stillwater River on Old Springfield Road near Union, Ohio	7/28/99	250	572	8.6	28	10.1
Great Miami River near Tipp City, Ohio	7/27/99	400	584	8.2	30	8.9
Mad River near Hwy 41 near Springfield, Ohio	7/29/99	300	707	8.2	22	11.5
Great Miami River below Hamilton, Ohio	8/3/99	500	865	8.7	30	10.1
Little Miami River at Milford, Ohio	8/4/99	265	929	8.4	28	9.3
East Fork Little Miami River near Williamsburg, Ohio	8/5/99	174	421	8.3	27	7.8

FISH COMMUNITY RESULTS—CONTINUED

[--, not present at indicated site; NA, not available; **, species were identified by voucher and weights were not recorded; G, grams]

STATION NAME:			Holes Creek at Huffman Park at Kettering, Ohio		Whitewater River near Nulltown, Indiana		Stillwater River on Springfield Road Near Union Ohio		Great Miami River near Tipp City, Ohio	
FAMILY	SCIENTIFIC NAME	COMMON NAME	ABUNDANCE	BATCH WEIGHT (G)	ABUNDANCE	BATCH WEIGHT (G)	ABUNDANCE	BATCH WEIGHT (G)	ABUNDANCE	BATCH WEIGHT (G)
Petromyzontidae	<i>Lampetra appendix</i>	American brook lamprey	--	--	3	28.7	--	--	--	--
Lepisosteidae	<i>Lepisosteus osseus</i>	longnose gar	--	--	--	--	--	--	--	--
	<i>Alosa chrysochloris</i>	skipjack herring	--	--	--	--	--	--	--	--
Clupeidae	<i>Dorosoma cepedianum</i>	gizzard shad	--	--	--	--	1	10.2	--	--
Cyprinidae	<i>Cyprinus carpio</i>	common carp	--	--	5	6230.7	8	12266.6	14	27013.8
	<i>Carassius auratus</i>	goldfish	--	--	--	--	1	178.0	--	--
	<i>Nocomis biguttatus</i>	hornyhead chub	--	--	--	--	--	--	--	--
	<i>Nocomis micropogon</i>	river chub	--	--	59	1781.3	114	3344.5	46	1064.0
	<i>Erimystax x-punctatus</i>	gravel chub	--	--	--	--	--	--	--	--
	<i>Exoglossum laurae</i>	tonguetied minnow	--	--	--	--	--	--	--	--
	<i>Rhinichthys atratulus</i>	blacknose dace	70	163.1	--	--	--	--	--	--
	<i>Semotilus atromaculatus</i>	creek chub	42	307.7	--	--	--	--	2	5.9
	<i>Phenacobius mirabilis</i>	suckermouth minnow	--	--	--	--	--	--	40	119.4
	<i>Clinostomus elongatus</i>	redside dace	--	--	--	--	--	--	--	--
	<i>Notropis atherinoides</i>	emerald shiner	--	--	15	234.2	2	5.8	4	6.6
	<i>Notropis photogenis</i>	silver shiner	--	--	44	104.8	61	137.5	--	--
	<i>Luxilus chrysocephalus</i>	striped shiner	18	34.2	45	670.4	16	162.9	15	139.1
	<i>Cyprinella whipplei</i>	steelcolor shiner	--	--	--	--	--	--	--	--
	<i>Cyprinella spiloptera</i>	spotfin shiner	--	--	16	85.3	135	476.1	195	1187.0
	<i>Notropis stramineus</i>	sand shiner	53	104.8	30	60.9	112	203.2	123	268.7
	<i>Notropis buccatus</i>	silverjaw minnow	12	27.4	1	2.3	--	--	--	--
	<i>Pimephales promelas</i>	fathead minnow	--	--	--	--	--	--	--	--
	<i>Pimephales notatus</i>	bluntnose minnow	280	619.2	55	175.9	43	110.7	67	341.5
	<i>Camptostoma anomalum</i>	central stoneroller	1624	3360.2	90	1130.6	187	1543.8	201	1024.7
Catostomidae	<i>Ictiobus niger</i>	black buffalo	--	--	--	--	--	--	--	--
	<i>Carpiodes cyprinus</i>	quillback carpsucker	--	--	3	1880.0	--	--	--	--
	<i>Carpiodes carpio</i>	river carpsucker	--	--	1	944.4	--	--	1	4.6
	<i>Carpiodes velifer</i>	highfin carpsucker	--	--	--	--	--	--	--	--
	<i>Moxostoma anisurum</i>	silver redhorse	--	--	--	--	--	--	--	--
	<i>Moxostoma duquesnei</i>	black redhorse	--	--	32	19056.6	6	1557.0	--	--
	<i>Moxostoma erythrurum</i>	golden redhorse	--	--	2	548.0	16	5022.0	64	22784.9
	<i>Moxostoma macrolepidotum</i>	shorthead redhorse	--	--	--	--	14	3134.0	26	7859.0
	<i>Moxostoma carinatum</i>	river redhorse	--	--	--	--	1	870.0	--	--
	<i>Hypentelium nigricans</i>	northern hog sucker	49	739.7	66	11374.6	138	13781.4	318	18291.1
	<i>Ictiobus bubalus</i>	smallmouth buffalo	--	--	--	--	--	--	--	--
	<i>Catostomus commersoni</i>	white sucker	40	553.4	37	7910.4	39	54.5	109	292.3
Ictaluridae	<i>Ictalurus punctatus</i>	channel catfish	--	--	--	--	--	--	12	16185.0
	<i>Ameiurus melas</i>	black bullhead	1	68	--	--	--	--	--	--
	<i>Ameiurus natalis</i>	yellow bullhead	3	144.6	--	--	--	--	4	568.0
	<i>Pylodictis olivaris</i>	flathead catfish	--	--	--	--	--	--	--	--
	<i>Noturus flavus</i>	stonecat	--	--	7	280.2	10	228.9	1	25.0
	<i>Noturus miurus</i>	brindled madtom	--	--	--	--	--	--	--	--
Umbridae	<i>Umbra limi</i>	central mudminnow	--	--	--	--	--	--	--	--

FISH COMMUNITY RESULTS—CONTINUED

[--, not present at indicated site; NA, not available; **, species were identified by voucher and weights were not recorded; G, grams]

STATION NAME:			Holes Creek at Huffman Park at Kettering, Ohio		Whitewater River near Nulltown, Indiana		Stillwater River on Springfield Road Near Union Ohio		Great Miami River near Tipp City, Ohio	
FAMILY	SCIENTIFIC NAME	COMMON NAME	ABUNDANCE	BATCH WEIGHT (G)	ABUNDANCE	BATCH WEIGHT (G)	ABUNDANCE	BATCH WEIGHT (G)	ABUNDANCE	BATCH WEIGHT (G)
Percichthyidae	<i>Morone chrysops</i>	white bass	--	--	--	--	--	--	--	--
Centrarchidae	<i>Pomoxis annularis</i>	white crappie	--	--	--	--	--	--	--	--
	<i>Ambloplites rupestris</i>	rock bass	--	--	8	559.1	9	651.0	23	1723.2
	<i>Micropterus dolomieu</i>	smallmouth bass	1	5.1	61	3220.6	62	1356.2	114	5889.1
	<i>Micropterus punctulatus</i>	spotted bass	--	--	--	--	--	--	--	--
	<i>Micropterus salmoides</i>	largemouth bass	16	265.9	--	--	1	200.0	16	137.2
	<i>Lepomis cyanellus</i>	green sunfish	3	76.0	--	--	4	82.8	26	745.5
	<i>Lepomis macrochirus</i>	bluegill	5	79.3	--	--	--	--	4	294.2
	<i>Lepomis humilis</i>	orangespotted sunfish	--	--	--	--	--	--	--	--
	<i>Lepomis megalotis</i>	longear sunfish	--	--	--	--	14	300.2	30	649.7
	<i>Lepomis gibbosus</i>	pumpkinseed	--	--	--	--	--	--	--	--
Percidae	<i>Stizostedion canadense</i>	sauger	--	--	--	--	--	--	--	--
	<i>Percina maculata</i>	blackside darter	--	--	--	--	--	--	1	1.7
	<i>Percina phoxocephala</i>	slenderhead darter	--	--	--	--	--	--	--	--
	<i>Percina caprodes</i>	logperch	--	--	--	--	35	417.9	4	29.8
	<i>Etheostoma blennioides</i>	greenside darter	--	--	9	20.8	45	111.6	68	170
	<i>Etheostoma zonale</i>	banded darter	--	--	16	12.1	10	115.8	13	23.3
	<i>Perca flavescens</i>	yellow perch	--	--	--	--	--	--	--	--
	<i>Etheostoma caeruleum</i>	rainbow darter	--	--	1	1.3	2	5.2	5	3.9
	<i>Etheostoma flabellare</i>	fantail darter	10	14.2	1	0.7	--	--	--	--
	<i>Etheostoma nigrum</i>	johnny darter	--	--	--	--	--	--	--	--
	<i>Percina sciera</i>	dusky darter	--	--	--	--	--	--	--	--
Sciaenidae	<i>Aplodinotus grunniens</i>	freshwater drum	--	--	--	--	--	--	--	--
Cottidae	<i>Cottus bairdi</i>	mottled sculpin	--	--	3	19.0	--	--	--	--
Atherinidae	<i>Labidesthes sicculus</i>	brook silverside	--	--	--	--	--	--	1	1.0
NUMBER OF SPECIES			16	--	25	--	27	--	30	--
HYBRIDS			--	--	--	--	--	--	1	--
TOTAL NUMBER OF FISH			2227		610		1086		1548	

FISH COMMUNITY RESULTS—CONTINUED

[--, not present at indicated site; NA, not available; **, species were identified by voucher and weights were not recorded;G, grams]

STATION NAME			Mad River near Hwy 41 near Springfield, Ohio		Great Miami River below Hamilton, Ohio		Little Miami River at Milford, Ohio		East Fork Little Miami River at Williamsburg, Ohio	
FAMILY	SCIENTIFIC NAME	COMMON NAME	ABUNDANCE	BATCH WEIGHT (G)	ABUNDANCE	BATCH WEIGHT (G)	ABUNDANCE	BATCH WEIGHT (G)	ABUNDANCE	BATCH WEIGHT (G)
Petromyzontidae	<i>Lampetra appendix</i>	american brook lamprey	4	35.6	--	--	--	--	--	--
Lepisosteidae	<i>Lepisosteus osseus</i>	longnose gar	--	--	7	**	3	74.8	--	--
	<i>Alosa chrysochloris</i>	skipjack herring	--	--	--	--	1	17.5	--	--
Clupeidae	<i>Dorosoma cepedianum</i>	gizzard shad	--	--	75	13742.2	58	4764.8	26	284.2
Cyprinidae	<i>Cyprinus carpio</i>	common carp	9	10505.9	16	27953.1	2	44.7	29	20241.6
	<i>Carassius auratus</i>	goldfish	--	--	--	--	--	--	--	--
	<i>Nocomis biguttatus</i>	hornyhead chub	--	--	--	--	--	--	--	--
	<i>Nocomis micropogon</i>	river chub	--	--	--	--	--	--	--	--
	<i>Erimystax x-punctatus</i>	gravel chub	--	--	--	--	11	72.6	--	--
	<i>Exoglossum laurae</i>	tonguetied minnow	1	14.9	--	--	--	--	--	--
	<i>Rhinichthys atratulus</i>	blacknose dace	133	481.9	--	--	--	--	--	--
	<i>Semotilus atromaculatus</i>	creek chub	409	5994.7	--	--	--	--	1	9.9
	<i>Phenacobius mirabilis</i>	suckermouth minnow	--	--	16	33.2	11	57.2	23	27.3
	<i>Clinostomus elongatus</i>	redside dace	4	33.5	--	--	--	--	--	--
	<i>Notropis atherinoides</i>	emerald shiner	--	--	46	23.5	503	447.7	97	70.8
	<i>Notropis photogenis</i>	silver shiner	12	6.7	--	--	--	--	1	5.6
	<i>Luxilus chrysocephalus</i>	striped shiner	2	11.6	299	189.2	2	3	--	--
	<i>Cyprinella whipplei</i>	steelcolor shiner	--	--	--	--	93	506.2	41	123.1
	<i>Cyprinella spiloptera</i>	spotfin shiner	--	--	50	110.3	118	371.4	32	69.0
	<i>Notropis stramineus</i>	sand shiner	--	--	1	0.4	9	13.4	55	68.5
	<i>Notropis buccatus</i>	silverjaw minnow	1	3.0	--	--	--	--	1	1.4
	<i>Pimephales promelas</i>	fathead minnow	2	4.1	--	--	--	--	--	--
	<i>Pimephales notatus</i>	bluntnose minnow	5	9.2	27	31.3	36	89.9	1070	1259.9
	<i>Camptostoma anomalum</i>	central stoneroller	247	1740.4	--	--	107	529.2	306	405.8
Catostomidae	<i>Ictiobus niger</i>	black buffalo	--	--	--	--	--	--	--	--
	<i>Carpiodes cyprinus</i>	quillback carpsucker	--	--	8	1174.8	1	10.5	66	6263.8
	<i>Carpiodes carpio</i>	river carpsucker	--	--	4	4559.0	--	--	7	4922.0
	<i>Carpiodes velifer</i>	highfin carpsucker	--	--	3	822.2	--	--	--	--
	<i>Moxostoma anisurum</i>	silver redhorse	--	--	--	--	--	--	3	1731.0
	<i>Moxostoma duquesnei</i>	black redhorse	--	--	40	16759.5	4	23.7	8	1603.6
	<i>Moxostoma erythrurum</i>	golden redhorse	--	--	85	34750.6	6	126	42	2205.6
	<i>Moxostoma macrolepidotum</i>	shorthead redhorse	--	--	6	2513.1	31	17510.0	3	624.0
	<i>Moxostoma carinatum</i>	river redhorse	--	--	--	--	1	3003.3	--	--
	<i>Hypentelium nigricans</i>	northern hog sucker	44	12900.4	--	--	182	10682.3	74	790.3
	<i>Ictiobus bubalus</i>	smallmouth buffalo	--	--	25	51345.5	22	393295	--	--
	<i>Catostomus commersoni</i>	white sucker	467	31710.1	2	3.6	--	--	--	--
Ictaluridae	<i>Ictalurus punctatus</i>	channel catfish	--	--	3	782.6	8	4595.6	7	3321.1
	<i>Ameiurus melas</i>	black bullhead	--	--	--	--	--	--	--	--
	<i>Ameiurus natalis</i>	yellow bullhead	--	--	--	--	--	--	1	48.5
	<i>Pylodictis olivaris</i>	flathead catfish	--	--	2	2926.3	1	1076.1	4	2024.1
	<i>Noturus flavus</i>	stonecat	--	--	--	--	103	466.9	--	--
	<i>Noturus miurus</i>	brindled madtom	--	--	--	--	2	7.6	--	--

FISH COMMUNITY RESULTS—CONTINUED

[--, not present at indicated site; NA, not available; **, species were identified by voucher and weights were not recorded;G, grams]

STATION NAME	FAMILY	SCIENTIFIC NAME	COMMON NAME	Mad River near Hwy 41 near Springfield, Ohio		Great Miami River below Hamilton, Ohio		Little Miami River at Milford, Ohio		East Fork Little Miami River at Williamsburg, Ohio	
				ABUNDANCE	BATCH WEIGHT (G)	ABUNDANCE	BATCH WEIGHT (G)	ABUNDANCE	BATCH WEIGHT (G)	ABUNDANCE	BATCH WEIGHT (G)
	Umbridae	<i>Umbra limi</i>	central mudminnow	1	6.5	--	--	--	--	--	--
	Percichthyidae	<i>Morone chrysops</i>	white bass	--	--	2	67.3	1	21.7	--	--
	Centrarchidae	<i>Pomoxis annularis</i>	white crappie	--	--	--	--	--	--	--	--
		<i>Ambloplites rupestris</i>	rock bass	1	12	--	--	--	--	--	--
		<i>Micropterus dolomieu</i>	smallmouth bass	--	--	14	2790.4	97	2667.3	126	1412.8
		<i>Micropterus punctulatus</i>	spotted bass	--	--	--	--	9	137.1	37	1374.8
		<i>Micropterus salmoides</i>	largemouth bass	4	71.7	--	--	1	11.7	1	278.0
		<i>Lepomis cyanellus</i>	green sunfish	3	22.4	--	--	--	--	20	609.6
		<i>Lepomis macrochirus</i>	bluegill	7	65.2	2	845.0	--	--	14	580.9
		<i>Lepomis humilis</i>	orangespotted sunfish	--	--	--	--	--	--	--	--
		<i>Lepomis megalotis</i>	longear sunfish	--	--	12	82.2	20	437.5	50	771.2
		<i>Lepomis gibbosus</i>	pumpkinseed	--	--	--	--	--	--	--	--
	Percidae	<i>Stizostedion canadense</i>	sauger	--	--	--	--	2	474	--	--
		<i>Percina maculata</i>	blackside darter	--	--	--	--	--	--	--	--
		<i>Percina phoxocephala</i>	slenderhead darter	--	--	--	--	--	--	1	1.1
		<i>Percina caprodes</i>	logperch	--	--	9	163.8	15	106.1	5	13.1
		<i>Etheostoma blennioides</i>	greenside darter	4	6.6	4	4	15	37.2	21	77.3
		<i>Etheostoma zonale</i>	banded darter	1	0.7	8	7	26	31.9	108	90.7
		<i>Perca flavescens</i>	yellow perch	1	315.0	--	--	--	--	9	6.8
		<i>Etheostoma caeruleum</i>	rainbow darter	23	13	1	2.7	1	5.3	--	--
		<i>Etheostoma flabellare</i>	fantail darter	--	--	--	--	--	--	1	2.6
		<i>Etheostoma nigrum</i>	johnny darter	--	--	--	--	--	--	6	5.1
		<i>Percina sciera</i>	dusky darter	--	--	5	19.2	1	2.4	3	1.5
	Sciaenidae	<i>Aplodinotus grunniens</i>	freshwater drum	--	--	13	1721.2	42	16123.5	--	--
	Cottidae	<i>Cottus bairdi</i>	mottled sculpin	33	219.2	--	--	--	--	--	--
	Atherinidae	<i>Labidesthes sicculus</i>	brook silverside	--	--	--	--	--	--	10	5.4
NUMBER OF SPECIES				24	--	30	--	36	--	37	--
HYBRIDS				--	--	1	--	--	--	--	--
TOTAL NUMBER OF FISH				1418		804		1545		2309	

REFERENCES CITED:

Robins, C.R., Bailey, R.M., Bond, C.E., Brooker, J.R., Lachner, E.A., Lea, R.N., and Scott, W.B., 1991, Common and Scientific names of fishes from the United States and Canada, Fifth Edition: American Fisheries Society Special Publication 20, Bethesda, MD, 183 p.

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 Basins

(National Water-Quality Assessment Program)

MACROINVERTEBRATE COMMUNITY RESULTS

Benthic macroinvertebrate community surveys were conducted at eight sites in the Great and Little Miami River Basins as part of the National Water-Quality Assessment Program (NAWQA). Quantitative benthic macroinvertebrates were collected by sampling five 0.25-m² areas representing the riffle rock habitat at these sites using a modified Slack sampler. These subsamples were composited to form one sample representing a 1.25-m² area. Qualitative multihabitat samples were made using methods described in Cuffney and others (1993). Identification and enumeration were done by the USGS National Water-Quality Lab.

Taxonomic arrangement includes Phylum, Class, and (or) Order; Family, and Tribe but not suborders, infraorders, or subfamilies unless the taxon was identified to that level. Field measurements of water quality and samples of algal chlorophyll A and B were taken on the same dates from riffles representing the richest-targeted habitat (RTH) and depositional-targeted habitat (DTH).

CALENDER YEAR 1999

[--, not present at indicated site; NA, not available; **, species were identified by voucher and weights were not recorded; (00095), USGS National Water-Quality Laboratory parameter code; DEG C, degrees Celsius, MG/L, milligrams per liter; US/CM, microseimens per centimeter; MG/M2, milligrams per square meter]

STATION NAME	DATE SAMPLED	SPECIFIC CONDUCT- ANCE (US/CM) (90095)	PH (00040)	WATER TEMPER- ATURE (DEG C) (00010)	DISSOLVED OXYGEN (MG/L) (00300)	PERIPHY- TON RTH CHL-A (MG/M2) (70957)	PERIPHY- TON RTH CHL-B (MG/M2) (70958)	PERIPHY- TON DTH CHL-A (MG/M2) (70957)	PERIPHY- TON DTH CHL-B (MG/M2) (70958)
Holes Creek at Kettering, Ohio	7/08/99	751	7.8	21	8.5	201	19	114	2.1
Whitewater River near Nulltown, Indiana	7/13/99	NA	NA	21	NA	332	75.8	89.1	6.9
Stillwater River on Old Springfield Road near Union, Ohio	7/09/99	631	8.0	25.3	7.0	175	15.6	10.9	0.9
Great Miami River near Tipp City, Ohio	7/07/99	662	8.1	25.5	5.0	99.7	16.2	76.2	6.5
Mad River near Hwy 41 near Springfield, Ohio	7/06/99	708	7.9	17.4	9.0	156	28	62.7	4.2
Great Miami River below Hamilton, Ohio	7/13/99	743	8.3	28	9.6	146	16.1	47.1	2.9
Little Miami River at Milford, Ohio	7/14/99	866	8.0	26	7.6	203	41.6	43.9	2.7
East Fork Little Miami River near Williamsburg, Ohio	7/15/99	523	7.7	24	3.6	39	4.5	5.9	0.5

MACROINVERTEBRATE COMMUNITY RESULTS—CONTINUED

[--, not sampled at site; Quant., Quantitative; Qual., Qualitative sample; +, taxon present;]

PHYLUM* or CLASS**	HOLES CREEK AT HUFFMAN PARK, KETTERING, OHIO		WHITEWATER RIVER NEAR NULLTOWN, INDIANA		STILLWATER RIVER NEAR UNION, OHIO		GREAT MIAMI RIVER NEAR TIPP CITY, OHIO		MAD RIVER NEAR SPRINGFIELD, OHIO		GREAT MIAMI RIVER AT HAMILTON, OHIO		LITTLE MIAMI RIVER AT MILFORD, OHIO		EAST FORK LITTLE MIAMI RIVER NEAR WILLIAMSBURG, OHIO	
ORDER SUBORDER or INFRAORDER FAMILY Subfamily or Tribe Genus species	Quant.	Qual.	Quant.	Qual.	Quant.	Qual.	Quant.	Qual.	Quant.	Qual.	Quant.	Qual.	Quant.	Qual.	Quant.	Qual.
TURBELLARIA**	34	+	--	+	--	+	134	+	--		--	+	1	+	--	
NEMATODA*	--		--		--		--		706		88		--		--	
BRYOZOA*	--		--		--	+	1	+	--		1	+	29	+	25	
MEGSOGASTROPODA	--		--		--		--		--		--		--		--	
HYDROBIIDAE	--		--	+	101	+	67		--		--		--		--	
PLEUROCERIDAE	--		--		--		--		--		--		--		--	
Elimia sp.	14		--		1	+	1	+	--		--	+	7	+	--	
BASOMMATOPHORA	--		--		--		--		--		--		--		--	
ANCYLIDAE	--		--		--		--		--		--		--		--	
Ferrissia sp.	--		--	+	--		--		--		--		1		25	+
LYMNAEIDAE	--		--		--		--		--		--		--		--	
Fossaria sp.	--	+	--	+	--		--		--		--		--		--	
Pseudosuccinea columella (Say)	--		--		--	+	--	+	--		--		--		--	
PHYSIDAE	--		--		--		--		--		--		--		--	
Physella sp.	2	+	--	+	--	+	67	+	--	+	--	+	--	+	--	
BIVALVIA**	--		--		202	+	806		--		--		--		--	
CORBICULIDAE	--		--		--		--		--		--		--		--	
Corbicula sp.	15		--		8	+	--		--		--		3	+	--	+
SPHAERIIDAE	--		--		--		--		--		--		--		101	
Pisidium sp.	--		--		--		--		--	+	--		--		--	
Sphaerium sp.	--		--		5	+	674	+	--		535	+	115	+	76	+
ANNELIDA*	--		--		--		--		--		--		--		--	
OLIGOCHAETA** (Megadrile)	--		--		--		--		--	+	--	+	--		--	
NAIDIDAE	--		--		--		403	+	--		--		--		--	
TUBIFICIDAE	--		--		--		--		--		--		--		--	
Branchiura sowerbyi Beddard	--		--		--		--		--		90	+	--		2	
HIRUDINEA**	--		--		--		--		--		1		--		--	
PISCICOLIDAE	--		--		--		--		--		1	+	1	+	--	
ERPOBDELLIDAE	--		--		36		--		--	+	--		--		--	
ARTHROPODA*	--		--		--		--		--		--		--		--	
HYDRACHNIDIA	448		235		134		1011		34		353		--		176	
DECAPODA	--		--		--		--		--		--		--		--	
CAMBARIDAE	--	+	--		--		3	+	--	+	--		--		--	
Orconectes sp.	2	+	1	+	--		--		1	+	--		--		2	
Orconectes rusticus (Girard)	2		--		1	+	1	+	--		--	+	1	+	2	+
ISOPODA	--		--		--		--		--		--		--		--	
ASELLIDAE	--		--		--		--		--		--		--		--	
Lirceus sp.	--		--	+	34	+	--	+	70	+	--		--		--	+
AMPHIPODA	--		--		--		--		--		--		--		--	
CRANGONYCTIDAE	--		--		--		--		--		--		--		--	
Crangonyx sp.	--	+	--	+	--	+	--	+	--	+	--		--	+	--	
HYALELLIDAE	--		--		--		--		--		--		--		--	
Hyaella azteca (Saussure)	--		--	+	34	+	--	+	--		--		--		--	+
INSECTA**	--		--		--		--		--		--		--		--	
EPHEMEROPTERA	--		--		--		--		--		--		--		--	
EPHEMERIDAE	--		--		--		--		--		--		--		--	
Ephemera sp.	--		--		--	+	--		--		--		--		--	

PROJECT DATA

Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)

[illegible]

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basin
(National Water-Quality Assessment Program)

[--, not sampled at site; Quant., Quantitative; Qual., Qualitative sample; +, taxon present;]

PHYLUM* or CLASS**	HOLES CREEK AT HUFFMAN PARK, KETTERING, OHIO		WHITEWATER RIVER NEAR NULLTOWN, INDIANA		STILLWATER RIVER NEAR UNION, OHIO		GREAT MIAMI RIVER NEAR TIPP CITY, OHIO		MAD RIVER NEAR SPRINGFIELD, OHIO		GREAT MIAMI RIVER AT HAMILTON, OHIO		LITTLE MIAMI RIVER AT MILFORD, OHIO		EAST FORK LITTLE MIAMI RIVER NEAR WILLIAMSBURG, OHIO	
ORDER	Quant. Qual.		Quant. Qual.		Quant. Qual.		Quant. Qual.		Quant. Qual.		Quant. Qual.		Quant. Qual.		Quant. Qual.	
SUBORDER or INFRAORDER																
FAMILY																
Subfamily or Tribe																
Genus species																
HEMIPTERA	--		--		--		--		--		--		--		--	
BELOSTOMATIDAE	--		--		--		--		--		--		--		--	
<i>Belostoma</i> sp.	--		--		--		--	+	--		--	+	--		--	
CORIXIDAE	--		--		--		--		--		176		--		--	
<i>Palmarcorixa</i> sp.	--		--		--		--	+	--		--		--		--	
<i>Sigara</i> sp.	--		--		--		--		--	+	--		--		--	
<i>Trichocorixa</i> sp.	--		--	+	--		--	+	--	+	2	+	1		--	
GERRIDAE	--		--		--		--		--		--		--		--	
<i>Aquarius remigis</i> (Say)	--	+	--	+	--		--		--	+	--		--		--	
<i>Gerris comatus</i> Drake and Hottes	--		--		--		--	+	--		--		--		--	
<i>Rheumatobates</i> sp.	--		--		--		--	+	--		--		--		101	
<i>Rheumatobates rileyi</i> Bergroth	--		--		--		--		--		--		--		1	
<i>Metrobates</i> sp.	--	+	--	+	36	+	--		--		--		--	+	--	
<i>Trepobates</i> sp.	--	+	--		--	+	--	+	--	+	--		--		25	+
MESOVELIIDAE	--		--		--		--		--		--		--		--	
<i>Mesovelia</i> sp.	--		--		--	+	--	+	--		--		--	+	--	
NEPIDAE	--		--		--		--		--		--		--		--	
<i>Ranatra nigra</i> Herrich-Schaeffer	--		--		--		--	+	--		--	+	--		--	
VELIIDAE	--		--		--		--		--		--		--		--	
<i>Rhagovelia obesa</i> Uhler	--		--		--	+	--	+	--		--		--	+	--	
MEGALOPTERA	--		--		--		--		--		--		--		--	
CORYDALIDAE	--		--		--		--		--		--		--		--	
<i>Corydalus cornutus</i> (Linnaeus)	--		1		--		1		--		--		--		2	+
SIALIDAE	--		--		--		--		--		--		--		--	
<i>Sialis</i> sp.	--		--		--		--		--		--		--		4	
TRICHOPTERA	--		--		--		--		--		--		--		--	
HYDROPTILIDAE	--		--		101		--		--		--		--		--	
<i>Hydroptila</i> sp.	56	+	235		269		67		--		264	+	144		--	
PHILOPOTAMIDAE	--		--		--		--		--		--		--		--	
<i>Chimarra</i> sp.	1		--		3		--		--		--		117	+	57	
HYDROPSYCHIDAE	616		1588		1277		3494		1378		2205		979		277	
<i>Ceratopsyche</i> sp.	238		5587		1311		2890		1008		795		1443		50	
<i>Ceratopsyche bronta</i> (Ross)	270	+	118		--		--		105	+	--		--		--	
<i>Ceratopsyche cheilonis</i> (Ross)	--	+	823	+	678	+	749	+	--		1		--	+	--	
<i>Ceratopsyche morosa</i> (Hagen)	--		2	+	--	+	--		--		--	+	433		50	
<i>Ceratopsyche sloossonae</i> (Banks)	--		--		--		--		1526	+	--		--		--	
<i>Ceratopsyche sparna</i> (Ross)	--		--		--		--		35		--		--		--	
<i>Cheumatopsyche</i> sp.	463	+	2118	+	2353	+	5242	+	202	+	5825	+	3630	+	1290	+
<i>Hydropsyche</i> sp.	672		--		--		--		--		--		58		--	
<i>Hydropsyche depravata</i> group	360	+	60	+	--		--		--		--		--		--	
<i>Hydropsyche aerata</i> Ross	14		--		34	+	477		--		445	+	147	+	--	
<i>Hydropsyche bidens</i> Ross	--		--		--		67	+	--		2	+	--		--	
<i>Hydropsyche dicantha</i> Ross	--	+	2534		--		--		--		--		--		--	
<i>Hydropsyche orris</i> Ross	--		--		--		--		--		88		--		--	
<i>Potamyia flava</i> (Hagen)	--		--		--		--		--		90	+	--		--	
POLYCENTROPIDIDAE	--		--		--		--		--		--		--		--	
<i>Neureclipsis</i> sp.	--		--	+	--		--		--		--		--	+	--	
<i>Polycentropus</i> sp.	--		--	+	34		--		--		--		--		--	+
LIMNPHILIDAE	--		--		--		--		--		--		--		--	
<i>Pycnopsyche</i> sp.	--		--		--		--		--	+	--		--		--	

[--, not sampled at site; Quant., Quantitative; Qual., Qualitative sample; +, taxon present;]

PHYLUM* or CLASS**	HOLES CREEK AT HUFFMAN PARK, KETTERING, OHIO		WHITewater RIVER NEAR NULLTOWN, INDIANA		STILLwater RIVER NEAR UNION, OHIO		GREAT MIAMI RIVER NEAR TIPP CITY, OHIO		MAD RIVER NEAR SPRINGFIELD, OHIO		GREAT MIAMI RIVER AT HAMILTON, OHIO		LITTLE MIAMI RIVER AT MILFORD, OHIO		EAST FORK LITTLE MIAMI RIVER NEAR WILLIAMSBURG, OHIO	
ORDER	Quant.	Qual.	Quant.	Qual.	Quant.	Qual.	Quant.	Qual.	Quant.	Qual.	Quant.	Qual.	Quant.	Qual.	Quant.	Qual.
SUBORDER or INFRAORDER																
FAMILY																
Subfamily or Tribe																
Genus species																
UENOIDEAE	--		--		--		--		--		--		--		--	
<i>Neophylax</i> sp.	--		--		--		--		+		--		--		--	
LEPTOCERIDAE	--		--		--		--		--		--		--		--	
<i>Ceraclea maculata</i> (Banks)	--		1		--		+		--		--		--		--	
<i>Nectopsyche candida</i> (Hagen)	--		--	+	--	+	--		--		--		--		--	
<i>Nectopsyche diarina</i> (Ross)	--		--		--		+		--	+	--		--		--	
<i>Nectopsyche exquisita</i> (Walker)	--		--		--		+		--		--		--		--	
<i>Oecetis</i> sp.	--		--		--		--		--		--		--		--	+
<i>Oecetis persimilis</i> (Banks)	--		--		--	+	--		--		--		--		--	
HELICOPSYCHIDAE																
<i>Helicopsyche borealis</i> (Hagen)	28	2	--		--	2	--		--		--		--		--	+
LEPIDOPTERA	--		--		--		--		--		--		--		--	
PYRALIDAE	--		--		--		--		--		--		--		--	
<i>Petrophila</i> sp.	--		--		1		--		--		--		29		26	+
COLEOPTERA	--		--		--		--		--		--		--		--	
DYTISCIDAE	--		--		--		--		--		--		--		--	
<i>Agabus</i> sp.	--		--		--		--		--	+	--		--		--	
GYRINIDAE	--		--		--		--		--		--		--		--	
<i>Gyrinus</i> sp.	--		--	+	--		+		--		--		+		--	
HALIPLIDAE	--		--		--		--		--		--		--		--	
<i>Haliphus</i> sp.	--		--		--		+		--	+	--		--		--	
<i>Peltodytes</i> sp.	--		--		--		+		--	+	--		--		--	
HYDROPHILIDAE	--		--		--		--		--		--		--		--	
<i>Berosus</i> sp.	--	+	--	2	--	+	--	+	--		--		--	+	--	+
<i>Sperchopsis tessellata</i> (Ziegler)	--		--	+	--		--		--	+	--		--		--	
<i>Tropisternus</i> sp.	--		--		--	+	--	2	--		--		--	+	--	2
SCIRTIDAE	--		--		--		+		--		--		--		--	+
DRYOPIDAE	--		--		--		--		--		--		--		--	
<i>Helichus lithophilus</i> (Germar)	--		--	+	--		--		--		--	+	--		--	+
ELMIDAE	--		--		--		--		--		--		--		--	
<i>Dubiraphia</i> sp.	--	+	--		--	+	--	+	--	+	--	+	--		--	2
<i>Macronychus glabratus</i> Say	--		--	+	--	2	--	+	--		--	+	--	+	--	+
<i>Optioservus</i> sp.	--		60		--		--		35		--		--		--	
<i>Optioservus fastiditus</i> (LeConte)	--		--		--		--	+	--		--		--		--	
<i>Stenelmis</i> sp.	1198	+	59		640	+	2017	+	--		4062	+	607	+	756	+
<i>Stenelmis crenata</i> (Say)	1	+	--		34		--		--		--		--		--	
<i>Stenelmis decorata</i> Sanderson	--		--	+	--		--		--		--		--		--	
<i>Stenelmis sexlineata</i> Sanderson	94	+	--		38	+	209	+	--		2	+	62	+	128	+
PSEPHENIDAE	--		--		--		--		--		--		--		--	
<i>Psephenus herricki</i> (DeKay)	300	+	--		69	+	69		--		--		--		27	+
DIPTERA	--		--		--		--		--		--		--		--	
CERATOPOGONIDAE	--		--		--		67		--		--		--		--	
<i>Probezzia</i> sp.	--		--		--		--		--		--		--		--	+
CHIRONOMIDAE	--		--		34		--	+	--		--	+	--	+	--	
Chironominae	--		--	+	34		134		34		441		29		50	
<i>Chironomus</i> sp.	--		--	+	--		--	+	--		--		--	+	--	+
<i>Cryptochironomus</i> sp.	--		--	+	--	+	--	+	--		--		--	+	--	+
<i>Dicrotendipes</i> sp.	--	+	--	+	--		67	+	67	+	--		--	+	25	+
<i>Endochironomus</i> sp.	--		--		--		--	+	--		--		--		--	+
<i>Glyptotendipes</i> sp.	--		--		--		134	+	--		353	+	--	+	--	+
<i>Microtendipes</i> sp.	--		118	+	101	+	538	+	--		--		144	+	76	
<i>Nilothauma</i> sp.	--		--		--		--		--		--		--		25	+
<i>Parachironomus</i> sp.	--		--		--	+	--	+	--		--		--	+	--	

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(National Water-Quality Assessment Program)

[--, not sampled at site; Quant., Quantitative; Qual., Qualitative sample; +, taxon present;]

PHYLUM* or CLASS**	HOLES CREEK AT HUFFMAN PARK, KETTERING, OHIO		WHITewater RIVER NEAR NULLTOWN, INDIANA		STILLwater RIVER NEAR UNION, OHIO		GREAT MIAMI RIVER NEAR TIPP CITY, OHIO		MAD RIVER NEAR SPRINGFIELD, OHIO		GREAT MIAMI RIVER AT HAMILTON, OHIO		LITTLE MIAMI RIVER AT MILFORD, OHIO		EAST FORK LITTLE MIAMI RIVER NEAR WILLIAMSBURG, OHIO	
ORDER	Quant.	Qual.	Quant.	Qual.	Quant.	Qual.	Quant.	Qual.	Quant.	Qual.	Quant.	Qual.	Quant.	Qual.	Quant.	Qual.
SUBORDER or INFRAORDER																
FAMILY																
Subfamily or Tribe																
Genus species																
<i>Phaenopsectra</i> sp.	--	+	--		--		--		--	+	--		--		--	
<i>Polypedilum</i> sp.	28	+	412	+	605	+	2486	+	1075	+	4322	+	173	+	479	+
<i>Saetheria</i> sp.	--		59		--		67		--		--		--		--	
<i>Tribelos</i> sp.	--		--		34		--		--		--		--		--	
<i>Pseudochironomini</i>	--		--		--		--		--		--		--		--	
<i>Pseudochironomus</i> sp.	14		--		--		--		--		--		--		--	
<i>Tanytarsini</i>	14		--		--		--		--		--		--		25	
<i>Cladotanytarsus</i> sp.	--		--		67	+	67		101		--		--		--	
<i>Paratanytarsus</i> sp.	--		--	+	--		--		--		--		--		--	
<i>Rheotanytarsus</i> sp.	14		353		34	+	67		34		6968		58		151	
<i>Stempellinella</i> sp.	--		--		--	+	--		--		--		--		--	
<i>Tanytarsus</i> sp.	--		118		--		--		67		--		--		76	+
<i>Orthoclaadiinae</i>	14		59		--		--		302		--		--	+	--	
<i>Cricotopus/Orthocladus</i> sp.	14		--		--		--		101		--		--		--	
<i>Brillia</i> sp.	--		--		--		--		--	+	--		--		--	
<i>Cardiocladius</i> sp.	--		59		--		--		571		--		86		--	
<i>Cricotopus</i> sp.	42		--		--		--		168		--		--	+	--	
<i>Cricotopus bicinctus</i> group	--	+	--	+	--	+	--		--		--		--	+	--	
<i>Cricotopus trifascia</i> group	--	+	--		--		--		34		--		--		--	
<i>Nanocladius</i> sp.	--		--		--		--		34		176		--		--	
<i>Parametriocnemus</i> sp.	14	+	--		--		--		269	+	--		--		--	
<i>Rheocricotopus</i> sp.	28	+	--		--		--		34	+	--		--		--	
<i>Tvetenia</i> sp.	--		1411		67	+	134		672	+	--		--		--	
<i>Tanypodinae</i>	--		--	+	--		--		--		--		--		--	
<i>Coelotanypodini</i>	--		--		--		--		--		--		--		--	
<i>Clinotanypus</i> sp.	--		--	+	--		--		--		--		--		--	
<i>Pentaneurini</i>	--		--		--		--		--		--		--		--	+
<i>Thienemannimyia</i> group sp.	84	+	353	+	--	+	202	+	202	+	1235	+	58	+	176	+
<i>Ablabesmyia</i> sp.	--		--	+	34	+	--		--	+	--		--	+	25	+
<i>Labrundinia</i> sp.	--		--		--		--		--		--		--		--	+
<i>Larsia</i> sp.	--		--	+	--	+	--		--		--		--		--	+
<i>Procladiini</i>	--		--		--		--		--		--		--		--	
<i>Procladius</i> sp.	--	+	--	+	--		--		--		--	+	--	+	25	+
<i>SIMULIIDAE</i>	--		--		134		--		--		88		--		--	
<i>Simulium</i> sp.	--		176	+	--		--	2	169	+	--		--		--	
<i>TIPULIDAE</i>	--		--		--		--		--		--		--		--	
<i>Tipula</i> sp.	1	+	2		1		--		67	+	--		--		--	
<i>Antocha</i> sp.	14	+	118		34		67		--		--		--		--	
<i>Limonia</i> sp.	1		59	+	--		--		--		--		--		--	
<i>Pilaria</i> sp.	--		--		--		--		--	+	--		--		--	
<i>ATHERICIDAE</i>	--		--		--		--		--		--		--		--	
<i>Atherix lantha</i> Webb	--		--		--		--		68	+	--		--		--	
<i>Hemerodromiinae</i>	14		--		--		--		--		--		--		25	
<i>Hemerodromia</i> sp.	--		--		34		--		--		176		--		--	
<i>TABANIDAE</i>	--		--	+	--		--		--		--		--		--	

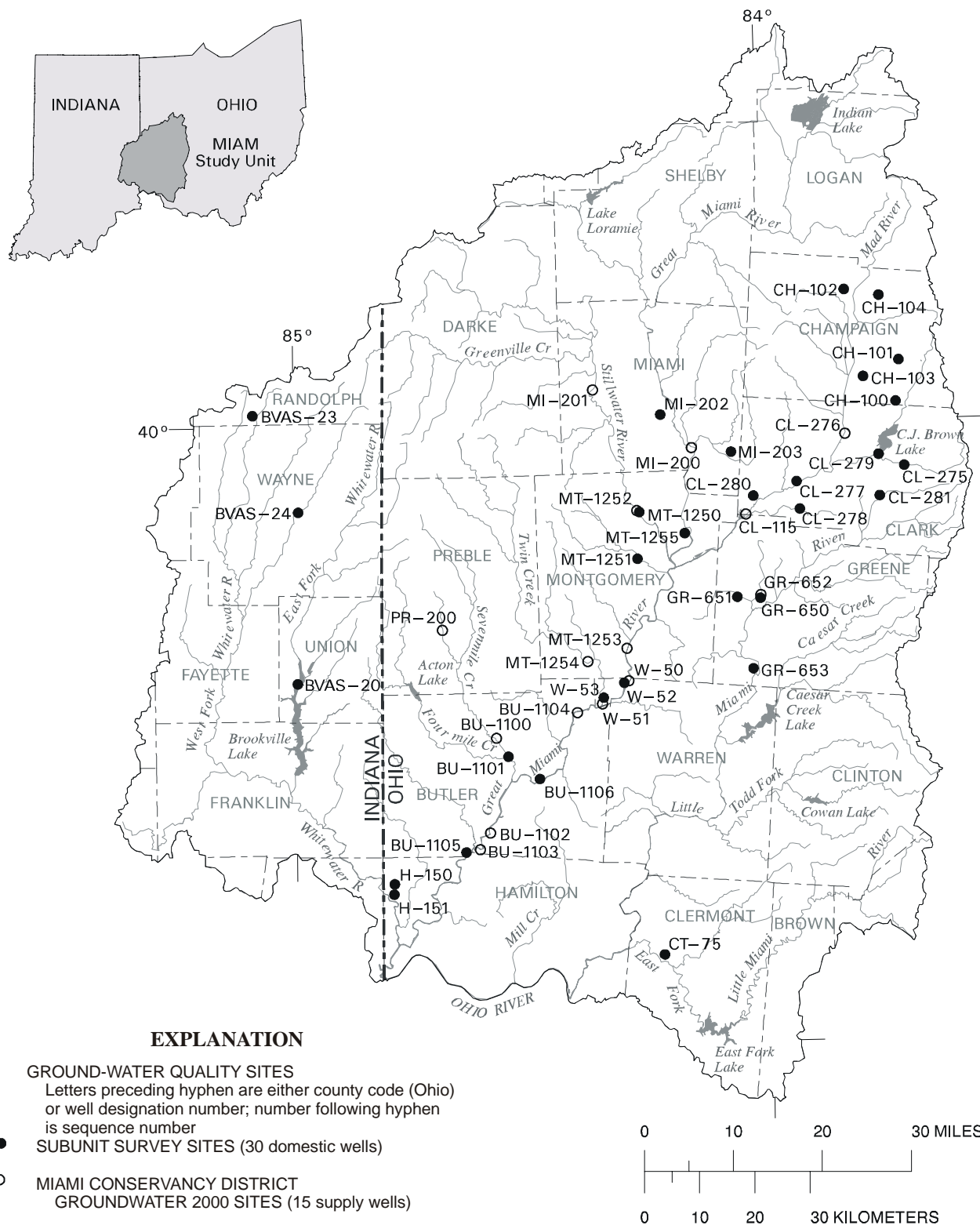
**Results from Selected Sites in the Great Miami and Little Miami River Basins
(National Water-Quality Assessment Program)**

**SUBUNIT SURVEY OF THE BURIED VALLEY AQUIFER SYSTEM AND
MIAMI CONSERVANCY DISTRICT GROUNDWATER 2000 COOPERATIVE PROJECT**

The following tables contain water-level and water-quality data collected for ground-water studies done as part of the NAWQA (National Water-Quality Assessment) of the Great and Little Miami River Basins. A network of thirty domestic wells was sampled as part of a Subunit Survey of the Buried Valley Aquifer System (BVAS). The goal of a Subunit Survey is to assess the quality of water in aquifers that serve as important sources of drinking water. The BVAS consists of highly permeable sand and gravel deposits that filled in buried ancestral river valleys (U.S. Geological Survey Ground Water Site Inventory data base aquifer code 1120TSH, Pleistocene outwash). 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. A network of fifteen public supply wells was sampled in cooperation with the Miami Conservancy District's Groundwater 2000 Program. The network was designed to target public supply wells in the BVAS that are vulnerable to induced infiltration. Induced infiltration occurs some fraction of the ground water pumped from a supply well is derived from a nearby surface-water body.

Water samples from the wells in both networks were tested for physical characteristics, nutrients, major and trace elements, and selected pesticides. Water-level records, physical characteristics, nutrient, amajor and trace element data are presented first for each network. These data are followed by the pesticide data.

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basins
(National Water-Quality Assessment Program)



PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basins
(National Water-Quality Assessment Program)

SUBUNIT SURVEY OF THE BURIED VALLEY AQUIFER SYSTEM AND
MIAMI CONSERVANCY DISTRICT GROUNDWATER 2000 COOPERATIVE PROJECT—CONTINUED

SUBUNIT SURVEY—WATER-QUALITY DATA

[US/CM, microsiemens per centimeter at 25 degrees Celsius; DEG C, degrees Celsius; MG/L, milligrams per liter; UG/L, micrograms per liter; PCI/L, picocuries per liter; ANC, acid-neutralizing capacity; --, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

SITE ID	LOCAL WELL NUMBER	MAP LOCATION NAME	ELEVATION OF LAND SURFACE (FEET)	DEPTH OF WELL (FEET)	SAMPLE DATE	SAMPLE TIME	WATER LEVEL BELOW LAND SURFACE (FEET)	PH WATER FIELD (STANDARD UNITS) (00400)	SPECIFIC CONDUCTANCE (US/CM) (00095)
BUTLER COUNTY, OHIO									
392756084330100	BU-1101	Hamilton, Ohio	625	86	6/7/99	1700	16.7	6.9	797
391843084383200	BU-1105	Shandon, Ohio	552	50	7/7/99	1100	26.2	6.8	686
392544084290300	BU-1106	Trenton, Ohio	612	40	7/7/99	1600	18.6	6.9	692
CHAMPAIGN COUNTY, OHIO									
400142083423900	CH-100	Urbana East, Ohio	1108	70	5/12/99	1500	35.5	6.9	660
400542083420900	CH-101	Urbana East, Ohio	1151	87	6/30/99	1100	53.6	6.7	772
401237083485800	CH-102	Northville, Ohio	1080	39	6/30/99	1500	17.0	6.8	690
400409083464500	CH-103	Urbana West, Ohio	995	45	6/29/99	1530	22.5	6.8	746
401200083443100	CH-104	Urbana East, Ohio	1115	65	6/30/99	1900	35.4	6.8	723
CLARK COUNTY, OHIO									
395528083414400	CL-275	New Moorefield, Ohio	1060	21	5/13/99	1200	18.0	6.7	866
395407083553400	CL-277	Donnelsville, Ohio	868	32	6/10/99	1100	10.1	6.8	713
395127083551300	CL-278	Yellow Springs, Ohio	912	65	6/10/99	1500	31.0	7.0	642
395635083445900	CL-279	New Moorefield, Ohio	978	56	6/24/99	1530	11.1	6.9	788
395248084010900	CL-280	New Carlisle, Ohio	841	33	6/29/99	1200	12.8	6.8	656
395235083445700	CL-281	New Moorefield, Ohio	1038	60	6/24/99	1130	13.0	6.8	710
CLERMONT COUNTY, OHIO									
390832084133300	CT-75	Batavia, Ohio	578	80	7/8/99	1100	43.7	7.1	534
GREENE COUNTY, OHIO									
394254084003000	GR-650	Bellbrook, Ohio	790	100	5/27/99	1100	33.7	7.2	869
394302084032700	GR-651	Bellbrook, Ohio	835	40	5/27/99	1630	12.0	6.8	888
393605084013400	GR-653	Waynesville, Ohio	663	60	6/22/99	1500	28.7	6.8	666
HAMILTON COUNTY, OHIO									
391544084474200	H-150	Harrison, Ohio	589	50	7/1/99	1430	33.0	6.9	680
391444084474600	H-151	Hooven, Ohio	518	68	7/1/99	1030	38.3	6.8	689
MIAMI COUNTY, OHIO									
400049084125300	MI-202	Troy, Ohio	849	45	6/23/99	1900	21.5	6.8	823
395706084035400	MI-203	New Carlisle, Ohio	880	78	6/28/99	1600	37.1	6.8	904
MONTGOMERY COUNTY, OHIO									
395125084154800	MT-1250	Trotwood, Ohio	821	101	5/20/99	1700	53.7	6.7	1120
394654084160800	MT-1251	Trotwood, Ohio	795	41	5/20/99	1030	8.7	6.9	737
394918084100100	MT-1255	Dayton North, Ohio	780	69	6/22/99	1030	29.3	6.9	655
RANDOLPH COUNTY, INDIANA									
400113085051300	BVAS-23	Carlos, Indiana	1150	71	6/3/99	1200	24.8	7.1	660
UNION COUNTY, INDIANA									
393512084594500	BVAS-20	New Fairfield, Indiana	749	121	7/9/99	1300	26.0	6.9	541
WARREN COUNTY, OHIO									
393455084180600	W-52	Franklin, Ohio	695	52	7/8/99	1730	23.2	6.8	756
393330084204500	W-53	Franklin, Ohio	665	38	6/23/99	1500	11.5	6.9	648
WAYNE COUNTY, INDIANA									
395149084592900	BVAS-24	Richmond, Indiana	1015	63	6/3/99	1530	25.8	6.9	785

PROJECT DATA

Results from Selected Sites in the Great Miami and Little Miami River Basins

(National Water-Quality Assessment Program)

SUBUNIT SURVEY OF THE BURIED VALLEY AQUIFER SYSTEM AND
MIAMI CONSERVANCY DISTRICT GROUNDWATER 2000 COOPERATIVE PROJECT—CONTINUED

SUBUNIT SURVEY—WATER-QUALITY DATA—Continued

[US/CM, microsiemens per centimeter at 25 degrees Celsius; DEG C, degrees Celsius; MG/L, milligrams per liter; UG/L, micrograms per liter; PCI/L, picocuries per liter; ANC, acid-neutralizing capacity; --, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

LOCAL WELL NUMBER	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	HARD- NESS TOTAL (MG/L) AS (CACO3) (00900)	CALCIUM DIS- SOLVED (MG/L) AS CA (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L) AS MG (00925)	SODIUM, DIS- SOLVED (MG/L) AS NA (00930)	POTAS- SIUM, DIS- SOLVED (MG/L) AS K (00935)	ANC BICAR- BONATE IT MG/L AS HCO3 (00450)	ANC WATER UNFLTRD FET MG/L AS CACO3 (00410)
BUTLER COUNTY, OHIO									
BU-1101	13.9	.1	420	110	33	10	1.7	409	326
BU-11	14.7	4.8	330	89	26	24	2.3	318	259
BU-1106	15.2	<.1	370	92	35	13	2.0	386	310
CHAMPAIGN COUNTY, OHIO									
CH-100	14.1	5.4	350	87	33	3.3	1.1	334	270
CH-101	13.1	.1	430	110	40	12	1.9	415	333
CH-102	13.3	<.1	390	96	37	3.2	1.3	392	317
CH-103	11.9	8.7	380	94	35	9.2	2.2	377	306
CH-104	13.0	<.1	400	98	39	4.2	2.0	403	325
CLARK COUNTY, OHIO									
CL-275	11.7	.1	380	94	34	40	1.7	417	335
CL-277	12.9	<.1	390	110	30	17	1.9	403	327
CL-278	12.9	<.1	350	86	33	3.3	.72	310	253
CL-279	13.5	6.9	390	86	42	24	.99	416	343
CL-280	12.5	.1	390	92	39	3.9	1.3	392	320
CL-281	12.9	<.1	400	95	39	6.4	1.6	320	258
CLERMONT COUNTY, OHIO									
CT-75	17.8	1.7	280	78	21	21	1.8	325	258
GREENE COUNTY, OHIO									
GR-650	14.2	<.1	460	100	49	11	1.0	478	384
GR-651	13.2	2.8	420	110	37	32	1.5	427	347
GR-653	13.2	3.7	400	100	35	6.5	1.5	377	304
HAMILTON COUNTY, OHIO									
H-150	13.6	5.1	340	90	28	15	5.1	334	272
H-151	15.0	.1	380	96	34	19	4.3	358	287
MIAMI COUNTY, OHIO									
MI-202	13.3	.1	390	94	37	21	1.4	370	303
MI-203	13.1	<.1	440	110	41	27	1.9	448	359
MONTGOMERY COUNTY, OHIO									
MT-1250	12.9	3.6	460	110	42	57	2.3	484	386
MT-1251	12.3	<.1	330	82	29	26	2.1	308	250
MT-1255	13.2	.3	310	81	26	26	2.7	321	260
RANDOLPH COUNTY, INDIANA									
BVAS-23	12.9	<.1	330	71	35	20	1.5	431	349
UNION COUNTY, INDIANA									
BVAS-20	14.5	9.8	280	76	23	4.1	4.2	299	241
WARREN COUNTY, OHIO									
W-52	14.6	5.8	380	97	33	26	2.1	369	301
W-53	12.5	5.6	320	80	28	12	2.4	312	251
WAYNE COUNTY, INDIANA									
W-53	12.5	5.6	320	80	28	12	2.4	312	251
BVAS-24	13.0	2.0	370	92	34	24	1.5	369	296

Results from Selected Sites in the Great Miami and Little Miami River Basins
(National Water-Quality Assessment Program)

SUBUNIT SURVEY OF THE BURIED VALLEY AQUIFER SYSTEM AND
MIAMI CONSERVANCY DISTRICT GROUNDWATER 2000 COOPERATIVE PROJECT—CONTINUED

SUBUNIT SURVEY—WATER-QUALITY DATA—Continued

[US/CM, microsiemens per centimeter at 25 degrees Celsius; DEG C, degrees Celsius; MG/L, milligrams per liter; UG/L, micrograms per liter; PCI/L, picocuries per liter; ANC, acid-neutralizing capacity; --, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

LOCAL WELL NUMBER	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C SOLVED (MG/L) (70300)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)
BUTLER COUNTY, OHIO									
BU-1101	75	23	.1	.05	12	439	<.01	<.05	.09
BU-1105	49	46	.1	.05	10	441	<.01	3.3	<.02
BU-1106	69	22	.1	.05	11	454	<.01	.49	<.02
CHAMPAIGN COUNTY, OHIO									
CH-100	33	16	.2	.04	10	435	<.01	15	<.02
CH-101	86	39	.2	.05	11	522	<.01	<.05	.03
CH-102	81	11	.5	.03	13	490	<.01	.19	.02
CH-103	37	22	.2	.04	11	<10	<.01	.06	<.02
CH-104	84	16	.2	.04	11	507	<.01	<.05	.02
CLARK COUNTY, OHIO									
CL-275	41	74	.2	.09	11	542	<.01	.94	<.02
CL-277	42	37	.2	.06	10	458	<.01	<.05	<.02
CL-278	73	15	.2	.02	13	388	<.01	<.05	.03
CL-279	22	38	.3	.14	17	489	<.01	2.5	<.02
CL-280	65	11	.2	.05	9.9	441	<.01	.10	.07
CL-281	94	29	.2	.04	10	407	<.01	<.05	<.02
CLERMONT COUNTY, OHIO									
CT-75	16	28	<.1	.17	11	356	.05	.22	.25
GREENE COUNTY, OHIO									
GR-650	84	21	.3	.23	14	529	<.01	<.05	1.4
GR-651	34	71	.2	.05	13	534	<.01	1.9	<.02
GR-653	36	19	<.1	.02	13	--	.01	1.3	<.02
HAMILTON COUNTY, OHIO									
H-150	43	20	<.1	.08	12	456	<.01	12	.02
H-151	58	67	.1	.04	11	--	<.01	<.05	.04
MIAMI COUNTY, OHIO									
MI-202	54	52	.8	.08	18	523	<.01	<.05	.20
MI-203	61	54	.4	.04	14	458	<.01	9.1	<.02
MONTGOMERY COUNTY, OHIO									
MT-1250	40	110	.1	.06	11	614	<.01	4.5	<.02
MT-1251	70	50	.2	.06	6.0	316	.02	.20	<.02
MT-1255	48	42	.3	.05	8.5	400	.01	1.3	<.02
RANDOLPH COUNTY, INDIANA									
BVAS-23	20	3.5	1.3	.13	18	288	<.01	<.05	.46
UNION COUNTY, INDIANA									
BVAS-20	16	9.8	.2	.03	9.1	228	<.01	2.0	<.02
WARREN COUNTY, OHIO									
W-52	32	50	.2	.03	11	345	<.01	4.2	<.02
W-53	37	27	.2	.04	7.2	357	<.01	4.5	<.02
WAYNE COUNTY, INDIANA									
BVAS-24	46	60	.2	.05	9.1	454	<.01	1.6	.02

PROJECT DATA
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SUBUNIT SURVEY OF THE BURIED VALLEY AQUIFER SYSTEM AND
MIAMI CONSERVANCY DISTRICT GROUNDWATER 2000 COOPERATIVE PROJECT—CONTINUED

SUBUNIT SURVEY—WATER-QUALITY DATA—Continued

[US/CM, microsiemens per centimeter at 25 degrees Celsius; DEG C, degrees Celsius; MG/L, milligrams per liter; UG/L, micrograms per liter; PCI/L, picocuries per liter; ANC, acid-neutralizing capacity; --, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

LOCAL WELL NUMBER	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	ANTI- MONY, DIS- SOLVED (UG/L AS SB) (01095)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	BORON, DIS- SOLVED (UG/L AS B) (01020)
BUTLER COUNTY, OHIO									
BU-1101	E.09	<.004	.01	1	<1	<1	253	<1	42.9
BU-1105	.7	<.004	.01	<1	<1	<1	52	<1	46.5
BU-1106	.1	<.004	<.01	<1	<1	<1	104	<1	66.6
CHAMPAIGN COUNTY, OHIO									
CH-100	<.1	<.004	<.01	<1	<1	<1	83	<1	E13.2
CH-101	E.06	<.004	.01	5	<1	1	203	<1	24.6
CH-102	<.1	<.004	.01	5	<1	<1	77	<1	29.5
CH-103	<.1	<.004	<.01	<1	<1	<1	130	<1	17.7
CH-104	<.1	<.004	.01	5	<1	<1	117	<1	25.5
CLARK COUNTY, OHIO									
CL-275	<.1	<.004	<.01	6	<1	<1	115	<1	45.3
CL-277	E.07	<.004	<.01	2	<1	5	219	<1	57.3
CL-278	E.09	<.004	<.01	1	<1	2	256	<1	E10.3
CL-279	.1	<.004	.01	5	<1	1	99	<1	33.0
CL-280	.1	.012	.02	5	<1	<1	267	<1	36.7
CL-281	E.09	<.004	.01	6	<1	<1	115	<1	34.6
CLERMONT COUNTY, OHIO									
CT-75	.3	.032	.04	<1	<1	<1	133	<1	79.3
GREENE COUNTY, OHIO									
GR-650	1.4	.014	.01	1	<1	53	287	<1	52.0
GR-651	E.06	<.004	<.01	2	<1	<1	176	<1	36.9
GR-653	.1	<.004	<.01	<1	<1	<1	127	<1	31.9
HAMILTON COUNTY, OHIO									
H-150	.2	.085	.07	6	<1	<1	53	<1	64.1
H-151	.1	<.004	<.01	<1	<1	<1	94	<1	E10.4
MIAMI COUNTY, OHIO									
MI-202	.3	<.004	.02	<1	<1	10	318	<1	30.4
MI-203	<.1	.006	.01	<1	<1	2	128	<1	30.9
MONTGOMERY COUNTY, OHIO									
MT-1250	E.06	<.004	<.01	<1	<1	<1	157	<1	64.9
MT-1251	<.1	<.004	<.01	<1	<1	<1	81	<1	39.4
MT-1255	E.09	<.004	<.01	<1	<1	<1	137	<1	42.0
RANDOLPH COUNTY, INDIANA									
BVAS-23	.4	<.004	.01	<1	<1	15	281	<1	94.4
UNION COUNTY, INDIANA									
BVAS-20	.1	<.004	<.01	<1	<1	<1	53	<1	41.7
WARREN COUNTY, OHIO									
W-52	E.09	<.004	<.01	<1	<1	<1	113	<1	40.6
W-53	E.07	<.004	<.01	1	<1	<1	102	<1	35.7
WAYNE COUNTY, INDIANA									
BVAS-24	E.09	<.004	.01	<1	<1	<1	106	<1	27.6

**Results from Selected Sites in the Great Miami and Little Miami River Basins
(National Water-Quality Assessment Program)**

**SUBUNIT SURVEY OF THE BURIED VALLEY AQUIFER SYSTEM AND
MIAMI CONSERVANCY DISTRICT GROUNDWATER 2000 COOPERATIVE PROJECT—CONTINUED**

SUBUNIT SURVEY—WATER-QUALITY DATA—Continued

[US/CM, microsiemens per centimeter at 25 degrees Celsius; DEG C, degrees Celsius; MG/L, milligrams per liter; UG/L, micrograms per liter; PCI/L, picocuries per liter; ANC, acid-neutralizing capacity; --, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

LOCAL WELL NUMBER	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)
BUTLER COUNTY, OHIO									
BU-1101	<1	--	<1	<1	3100	<1	--	83	2
BU-1105	<1	<1.0	<1	5	<10	<1	<6	<1	1
BU-1106	<1	<1.0	<1	<1	510	<1	<6	32	2
CHAMPAIGN COUNTY, OHIO									
CH-100	<1	<1.0	<1	3	<10	<1	E4	<1	2
CH-101	<1	<1.0	<1	<1	730	<1	<6	145	3
CH-102	<1	<1.0	<1	<1	140	<1	E4	100	6
CH-103	<1	<1.0	<1	7	E6	<1	E3	<1	2
CH-104	<1	<1.0	<1	<1	390	<1	E3	173	7
CLARK COUNTY, OHIO									
CL-275	<1	<1.0	<1	3	150	<1	E5	2	2
CL-277	<1	<1.0	<1	<1	2000	<1	E3	250	1
CL-278	<1	<1.0	<1	<1	2200	<1	E3	57	3
CL-279	<1	<1.0	1	10	37	<1	<6	414	21
CL-280	<1	<1.0	<1	<1	1800	<1	<6	283	2
CL-281	<1	<1.0	<1	<1	590	<1	<6	44	4
CLERMONT COUNTY, OHIO									
CT-75	<1	<1.0	<1	<1	400	<1	E4	108	<1
GREENE COUNTY, OHIO									
GR-650	<1	<1.0	<1	<1	3900	<1	<6	17	10
GR-651	<1	<1.0	<1	3	<10	<1	E5	<1	2
GR-653	<1	1.1	<1	2	<10	<1	E3	<1	1
HAMILTON COUNTY, OHIO									
H-150	<1	<1.0	<1	3	E6	<1	<6	<1	<1
H-151	<1	<1.0	<1	<1	1500	<1	<6	231	7
MIAMI COUNTY, OHIO									
MI-202	<1	<1.0	<1	<1	1900	<1	7	36	12
MI-203	<1	<1.0	<1	2	510	<1	7	58	6
MONTGOMERY COUNTY, OHIO									
MT-1250	<1	<1.0	<1	14	<10	1	E3	<1	1
MT-1251	<1	<1.0	<1	<1	140	<1	E3	177	3
MT-1255	<1	<1.0	<1	3	<10	<1	<6	5	2
RANDOLPH COUNTY, INDIANA									
BVAS-23	<1	<1.0	<1	<1	1800	<1	12	18	35
UNION COUNTY, INDIANA									
BVAS-20	<1	<1.0	<1	6	<10	<1	<6	46	<1
WARREN COUNTY, OHIO									
W-52	<1	<1.0	<1	3	<10	1	E3	<1	2
W-53	<1	<1.0	<1	2	<10	<1	<6	<1	2
WAYNE COUNTY, INDIANA									
BVAS-24	<1	<1.0	<1	10	<10	<1	E4	<1	2

PROJECT DATA
Results from Selected Sites in the Great Miami and Little Miami River Basins
(National Water-Quality Assessment Program)
SUBUNIT SURVEY OF THE BURIED VALLEY AQUIFER SYSTEM AND
MIAMI CONSERVANCY DISTRICT GROUNDWATER 2000 COOPERATIVE PROJECT—CONTINUED

SUBUNIT SURVEY—WATER-QUALITY DATA—Continued

[US/CM, microsiemens per centimeter at 25 degrees Celsius; DEG C, degrees Celsius; MG/L, milligrams per liter; UG/L, micrograms per liter; PCI/L, picocuries per liter; ANC, acid-neutralizing capacity; --, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

LOCAL WELL NUMBER	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	URANIUM NATURAL DIS- SOLVED (UG/L AS U) (22703)	RADON 222 TOTAL (PCI/L) (82303)	CARBON, ORGANIC DIS- SOLVED (MG/L) AS C) (00681)
BUTLER COUNTY, OHIO									
BU-1101	<1	<1	<1	--	--	50	<1	220	.6
BU-1105	<1	<1	<1	180	<10	1	<1	530	.9
BU-1106	<1	4	<1	220	<10	5	<1	500	1.0
CLARK COUNTY, OHIO									
CH-100	1	<1	<1	130	<10	57	<1	480	.6
CH-101	2	<1	<1	150	<10	2	2	220	1.0
CH-102	4	<1	<1	440	<10	45	2	270	1.0
CH-103	2	<1	<1	250	<10	3	<1	520	1.1
CH-104	5	<1	<1	230	<10	25	4	240	1.0
CHAMPAIGN COUNTY, OHIO									
CL-275	2	<1	<1	200	<10	170	2	1400	.9
CL-277	3	<1	<1	550	<10	4	1	340	1.3
CL-278	<1	<1	<1	250	<10	32	<1	190	1.2
CL-279	6	<1	<1	540	<10	<1	<1	430	2.3
CL-280	1	<1	<1	360	<10	27	3	500	1.4
CL-281	2	<1	<1	310	<10	<1	<1	170	.9
CLERMONT COUNTY, OHIO									
CT-75	<1	<1	<1	590	<10	3	<1	160	1.1
GREENE COUNTY, OHIO									
GR-650	2	<1	<1	2200	<10	69	<1	290	1.3
GR-651	1	<1	<1	510	<10	101	<1	700	1.2
GR-653	3	<1	<1	160	<10	3	<1	560	1.5
HAMILTON COUNTY, OHIO									
H-150	2	<1	<1	200	<10	1	<1	380	1.0
H-151	2	<1	<1	100	<10	2	<1	210	.9
MIAMI COUNTY, OHIO									
MI-202	<1	<1	<1	1500	<10	<1	<1	170	1.4
MI-203	3	<1	<1	1200	<10	4	2	200	1.0
MONTGOMERY COUNTY, OHIO									
MT-1250	3	<1	<1	160	<10	123	<1	640	.8
MT-1251	3	<1	<1	210	<10	110	3	270	.7
MT-1255	2	3	<1	880	<10	16	2	250	1.4
RANDOLPH COUNTY, INDIANA									
BVAS-23	<1	<1	<1	8100	<10	15	<1	230	1.1
UNION COUNTY, INDIANA									
BVAS-20	2	<1	<1	92	<10	191	<1	780	1.1
WARREN COUNTY, OHIO									
W-52	1	<1	<1	440	<10	117	<1	540	1.0
W-53	1	<1	<1	800	<10	40	<1	380	1.0
WAYNE COUNTY, INDIANA									
BVAS-24	1	<1	<1	500	<10	4	<1	560	.5

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Results from Selected Sites in the Great Miami and Little Miami River Basins

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SUBUNIT SURVEY OF THE BURIED VALLEY AQUIFER SYSTEM AND
MIAMI CONSERVANCY DISTRICT GROUNDWATER 2000 COOPERATIVE PROJECT—CONTINUED

MIAMI CONSERVANCY DISTRICT GROUNDWATER 2000 PROJECT—WATER-QUALITY DATA

[US/CM, microsiemens per centimeter at 25 degrees Celsius; DEG C, degrees Celsius; MG/L, milligrams per liter;
UG/L, micrograms per liter; PCI/L, picocuries per liter; ANC, acid-neutralizing capacity; --, no data;
<, concentration or value reported is less than that indicated; E, estimated value.]

SITE ID	LOCAL WELL NUMBER	MAP LOCATION NAME	ELEVATION OF LAND SURFACE (FEET)	DEPTH OF WELL (FEET)	SAMPLE DATE	SAMPLE TIME	WATER LEVEL BELOW LAND SURFACE (FEET)	PH WATER FIELD (STANDARD UNITS) (00400)	SPECIFIC CONDUCTANCE (US/CM) (00095)
BUTLER COUNTY, OHIO									
392944084343000	BU-1100	Hamilton, Ohio	670	89	06-02-99	1400	E21	6.8	739
392034084352700	BU-1102	Greenhills, Ohio	553	161	06-08-99	1030	--	7.1	752
391858084364600	BU-1103	Greenhills, Ohio	550	79	06-08-99	1500	--	7.1	650
393206084240800	BU-1104	Middletown, Ohio	649	49	06-23-99	1030	--	6.9	E649
CLARK COUNTY, OHIO									
395102084020900	CL-115	Fairborn, Ohio	820	78	05-19-99	1630	--	7.0	643
395839083491500	CL-276	Springfield, Ohio	922	104	05-25-99	1200	107	7.1	647
GREENE COUNTY, OHIO									
394312084002600	GR-652	Bellbrook, Ohio	801	73	05-19-99	1100	6	6.8	699
MIAMI COUNTY, OHIO									
395734084085800	MI-200	Tipp City, Ohio	795	85	05-25-99	1600	5	7.1	594
400319084213100	MI-201	Pleasant Hill, Ohio	853	58	06-09-99	1500	13	6.9	E739
MONTGOMERY COUNTY, OHIO									
395134084160700	MT-1252	Trotwood, Ohio	770	80	05-26-99	1200	E8	6.8	E738
393815084174100	MT-1253	Miamisburg, Ohio	685	96	05-26-99	1600	13	7.0	776
393702084224200	MT-1254	Middletown, Ohio	721	45	06-09-99	1030	--	7.0	666
PREBLE COUNTY, OHIO									
394016084411300	PR-200	Eaton South, Ohio	937	40	06-01-99	1500	--	7.1	616
WARREN COUNTY, OHIO									
393506084173100	W-50	Franklin, Ohio	675	66	05-18-99	1030	29	6.8	763
393254084205500	W-51	Franklin, Ohio	658	77	05-18-99	1500	13	7.1	568

PROJECT DATA

Results from Selected Sites in the Great Miami and Little Miami River Basins

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SUBUNIT SURVEY OF THE BURIED VALLEY AQUIFER SYSTEM AND
MIAMI CONSERVANCY DISTRICT GROUNDWATER 2000 COOPERATIVE PROJECT—CONTINUED

MIAMI CONSERVANCY DISTRICT GROUNDWATER 2000 PROJECT—WATER-QUALITY DATA—Continued

[US/CM, microsiemens per centimeter at 25 degrees Celsius; DEG C, degrees Celsius; MG/L, milligrams per liter; UG/L, micrograms per liter; PCI/L, picocuries per liter; ANC, acid-neutralizing capacity; --, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

LOCAL WELL NUMBER	TEMPER- ATURE WATER (DEG C) (00010)	OXYGEN, DIS- SOLVED (MG/L) (00300)	HARD- NESS TOTAL (MG/L) AS CACO3 (00900)	CALCIUM DIS- SOLVED (MG/L) AS CA (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L) AS MG (00925)	SODIUM, DIS- SOLVED (MG/L) AS NA (00930)	POTAS- SIUM, DIS- SOLVED (MG/L) AS K (00935)	ANC BICAR- BONATE IT MG/L AS HCO3 (00450)	ANC WATER UNFLTRD FET FIELD MG/L AS CACO3 (00410)
BUTLER COUNTY, OHIO									
BU-1100	12.4	4.5	370	97	31	13	2.3	378	302
BU-1102	15.0	<.1	300	77	27	42	4.1	265	212
BU-1103	17.9	.5	300	75	27	34	3.3	259	208
BU-1104	13.0	4.1	320	76	32	20	3.0	321	258
CLARK COUNTY, OHIO									
CL-115	12.9	<.1	320	79	30	13	1.9	306	250
CL-276	11.5	.5	330	80	32	11	2.0	332	268
GREENE COUNTY, OHIO									
GR-652	13.5	<.1	420	100	39	12	1.5	434	349
MIAMI COUNTY, OHIO									
MI-200	13.2	.1	340	87	28	8.4	2.0	344	277
MI-201	12.8	.4	390	96	37	12	1.9	383	310
MONTGOMERY COUNTY, OHIO									
MT-1252	12.5	.3	360	91	32	35	2.3	381	307
MT-1253	15.4	5.0	340	84	31	47	4.0	332	269
MT-1254	14.2	2.0	330	86	29	13	2.0	331	268
PREBLE COUNTY, OHIO									
PR-200	13.0	.1	320	75	30	20	2.8	334	270
WARREN COUNTY, OHIO									
W-50	13.9	.1	280	88	32	33	3.2	265	212
W-51	13.4	5.8	280	68	27	15	2.5	256	208

Results from Selected Sites in the Great Miami and Little Miami River Basins
(National Water-Quality Assessment Program)

SUBUNIT SURVEY OF THE BURIED VALLEY AQUIFER SYSTEM AND
 MIAMI CONSERVANCY DISTRICT GROUNDWATER 2000 COOPERATIVE PROJECT—CONTINUED

MIAMI CONSERVANCY DISTRICT GROUNDWATER 2000 PROJECT—WATER-QUALITY DATA—Continued

[US/CM, microsiemens per centimeter at 25 degrees Celsius; DEG C, degrees Celsius; MG/L, milligrams per liter; UG/L, micrograms per liter; PCI/L, picocuries per liter; ANC, acid-neutralizing capacity; --, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

LOCAL WELL NUMBER	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	BROMIDE DIS- SOLVED (MG/L AS BR) (71870)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)
BUTLER COUNTY, OHIO									
BU-1100	42	26	.2	.05	8.5	318	<.01	7.3	.03
BU-1102	73	81	.3	.20	8.5	486	<.01	.25	.09
BU-1103	69	65	.3	.14	7.5	449	.05	1.2	.04
BU-1104	47	33	.3	.06	8.5	413	<.01	2.3	<.02
CLARK COUNTY, OHIO									
CL-115	58	26	.4	.04	10	315	<.01	.09	.07
CL-276	60	23	.2	.03	8.2	417	.02	1.8	.19
GREENE COUNTY, OHIO									
GR-652	56	33	.3	.03	15	471	<.01	<.05	.35
MIAMI COUNTY, OHIO									
MI-200	66	19	.3	.04	9.1	417	<.01	<.05	.07
MI-201	54	30	.2	.04	11	414	<.01	1.3	<.02
MONTGOMERY COUNTY, OHIO									
MT-1252	52	63	.2	.04	9.4	497	<.01	.57	.05
MT-1253	56	77	.3	.09	8.5	524	.07	4.5	<.02
MT-1254	42	29	.3	.04	8.0	379	<.01	2.1	<.02
PREBLE COUNTY, OHIO									
PR-200	19	50	.8	.03	11	404	<.01	<.05	1.3
WARREN COUNTY, OIO									
W-50	65	65	.2	.09	10.1	484	<.01	.06	<.02
W-51	39	35	.3	.04	5.8	307	<.01	4.0	<.02

PROJECT DATA

Results from Selected Sites in the Great Miami and Little Miami River Basins

(National Water-Quality Assessment Program)

SUBUNIT SURVEY OF THE BURIED VALLEY AQUIFER SYSTEM AND
MIAMI CONSERVANCY DISTRICT GROUNDWATER 2000 COOPERATIVE PROJECT—CONTINUED

MIAMI CONSERVANCY DISTRICT GROUNDWATER 2000 PROJECT—WATER-QUALITY DATA—Continued

[US/CM, microsiemens per centimeter at 25 degrees Celsius; DEG C, degrees Celsius; MG/L, milligrams per liter; UG/L, micrograms per liter; PCI/L, picocuries per liter; ANC, acid-neutralizing capacity; --, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

LOCAL WELL NUMBER	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	ANTI- MONY, DIS- SOLVED (UG/L AS SB) (01095)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	BORON, DIS- SOLVED (UG/L AS B) (01020)
BUTLER COUNTY, OHIO									
BU-1100	.1	<.004	.02	3	<1	<1	238	<1	51.3
BU-1102	.2	.007	.02	<1	<1	2	248	<1	111
BU-1103	.1	.030	.04	<1	<1	<1	74	<1	82.8
BU-1104	.1	.092	.08	<1	<1	2	94	<1	64.3
CLARK COUNTY, OHIO									
CL-115	E.09	<.004	.01	1	<1	2	147	<1	44.3
CL-276	.3	<.004	.01	<1	<1	2	177	<1	46.4
GREENE COUNTY, OHIO									
GR-652	.3	<.004	.01	<1	<1	4	263	<1	21.0
MIAMI COUNTY, OHIO									
MI-200	.1	.039	.02	<1	<1	2	310	<1	36.9
MI-201	<.1	<.004	<.01	1	<1	<1	97	<1	30.7
MONTGOMERY COUNTY, OHIO									
MT-1252	.1	<.004	.01	<1	<1	<1	206	<1	68.7
MT-1253	.1	.036	.04	<1	<1	1	133	<1	75.9
MT-1254	E.09	<.004	<.01	<1	<1	<1	109	<1	36.1
PREBLE COUNTY, OHIO									
PR-200	1.3	.004	.02	<1	<1	<1	1630	<1	52.9
WARREN COUNTY, OHIO									
W-50	E.09	<.004	<.01	<1	<1	<1	189	<1	144
W-51	E.06	<.004	.01	<1	<1	<1	87	<1	47.0

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Results from Selected Sites in the Great Miami and Little Miami River Basins
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SUBUNIT SURVEY OF THE BURIED VALLEY AQUIFER SYSTEM AND
 MIAMI CONSERVANCY DISTRICT GROUNDWATER 2000 COOPERATIVE PROJECT—CONTINUED

MIAMI CONSERVANCY DISTRICT GROUNDWATER 2000 PROJECT—WATER-QUALITY DATA—Continued

[US/CM, microsiemens per centimeter at 25 degrees Celsius; DEG C, degrees Celsius; MG/L, milligrams per liter; UG/L, micrograms per liter; PCI/L, picocuries per liter; ANC, acid-neutralizing capacity; --, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

LOCAL WELL NUMBER	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)
BUTLER COUNTY, OHIO									
BU-1100	<1	<1.0	<1	2	E7	<1	E4	6	2
BU-1102	<1	--	<1	3	130	<1	E5	367	7
BU-1103	<1	--	<1	4	55	<1	E5	252	5
BU-1104	<1	<1.0	<1	1	<10	<1	<6	<1	4
CLARK COUNTY, OHIO									
CL-115	<1	13	<1	2	760	<1	E4	100	5
CL-276	<1	<1.0	<1	<1	270	<1	--	104	4
GREENE COUNTY, OHIO									
GR-652	<1	<1.0	<1	<1	3100	<1	E6	69	6
MIAMI COUNTY, OHIO									
MI-200	<1	<1.0	<1	<1	710	<1	<6	153	3
MI-201	<1	<1.0	<1	26	<10	<1	E5	10	2
MONTGOMERY COUNTY, OHIO									
MT-1252	<1	<1.0	<1	3	58	<1	<6	22	2
MT-1253	<1	<1.0	<1	7	E7	<1	E3	237	6
MT-1254	<1	<1.0	<1	3	E8	<1	<6	8	3
PREBLE COUNTY, OHIO									
PR-200	<1	<1.0	<1	<1	2300	<1	E5	71	6
WARREN COUNTY, OHIO									
W-50	<1	<1.0	<1	1	<10	<1	E6	<1	4
W-51	<1	<1.0	<1	1	<10	<1	--	<1	4

PROJECT DATA

Results from Selected Sites in the Great Miami and Little Miami River Basins

(National Water-Quality Assessment Program)

SUBUNIT SURVEY OF THE BURIED VALLEY AQUIFER SYSTEM AND
MIAMI CONSERVANCY DISTRICT GROUNDWATER 2000 COOPERATIVE PROJECT—CONTINUED

MIAMI CONSERVANCY DISTRICT GROUNDWATER 2000 PROJECT—WATER-QUALITY DATA—Continued

[US/CM, microsiemens per centimeter at 25 degrees Celsius; DEG C, degrees Celsius; MG/L, milligrams per liter; UG/L, micrograms per liter; PCI/L, picocuries per liter; ANC, acid-neutralizing capacity; --, no data; <, concentration or value reported is less than that indicated; E, estimated value.]

LOCAL WELL NUMBER	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	URANIUM NATURAL DIS- SOLVED (UG/L AS U) (22703)	RADON 222 TOTAL (PCI/L) (82303)	CARBON ORGANIC DIS- SOLVED (MG/L AS C) (00681)
BUTLER COUNTY, OHIO									
BU-1100	2	<1	<1	620	<10	2	<1	440	1.0
BU-1102	4	<1	<1	540	<10	1	2	340	1.4
BU-1103	2	<1	<1	510	<10	2	1	310	1.2
BU-1104	1	<1	<1	1200	<10	<1	2	570	1.3
CLARK COUNTY, OHIO									
CL-115	3	<1	<1	850	<10	1	2	250	.8
CL-276	3	2	<1	--	--	157	3	220	.8
GREENE COUNTY, OHIO									
GR-652	3	<1	<1	680	<10	5	<1	200	.7
MIAMI COUNTY, OHIO									
MI-200	2	<1	<1	1300	<10	2	2	210	.9
MI-201	1	<1	<1	560	<10	13	1	410	.8
MONTGOMERY COUNTY, OHIO									
MT-1252	2	<1	<1	360	<10	12	1	370	1.0
MT-1253	3	<1	<1	950	<10	3	1	430	1.1
MT-1254	1	<1	<1	1100	<10	1	1	480	.9
PREBLE COUNTY, OHIO									
PR-200	<1	<1	<1	1900	<10	<1	<1	180	2.1
WARREN COUNTY, OHIO									
W-50	3	<1	<1	630	<10	11	1	340	1.5
W-51	2	1	<1	--	--	1	1	510	.8

Results from Selected Sites in the Great Miami and Little Miami River Basins

(National Water-Quality Assessment Program)

SUBUNIT SURVEY OF THE BURIED VALLEY AQUIFER SYSTEM AND
MIAMI CONSERVANCY DISTRICT GROUNDWATER 2000 COOPERATIVE PROJECT—CONTINUED

PESTICIDE DATA

Water samples from 30 domestic wells and 15 public supply wells were tested for 45 pesticides and 2 pesticide metabolites. The table below lists the 47 pesticide compounds analyzed, the unit of measure (micrograms per liter, UG/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 efficiently 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.

Only pesticide compounds that were detected in one or more wells are listed in the water-quality tables that follow the list of analytes given below.

[<, concentration or value reported is less than that indicated; E, estimated value.]

ACETOCHLOR (UG/L) (49260)	ALACHLOR (UG/L) (46342)	ATRAZINE (UG/L) (39632)	DESETHYL- ATRAZINE (UG/L) (04040)	METHYL- AZINPHOS (UG/L) (82686)	BENFLURALIN (UG/L) (82673)
<0.002	<0.002	<0.001	<0.002	<0.001	<0.002
BUTYLATE (UG/L) (04028)	CARBARYL (UG/L) (82680)	CARBOFURAN (UG/L) (82674)	CHLORPYRIFOS (UG/L) (38933)	CYANAZINE (UG/L) (04041)	DCPA (UG/L) (82682)
<0.002	<0.003	<0.003	<0.004	<0.004	<0.002
DDE, p,p'- (UG/L) (34653)	DIAZINON (UG/L) (39572)	DIELDRIN (UG/L) (39381)	2,6-DIETHYL- ANILINE (UG/L) (82660)	DISULFOTON (UG/L) (82677)	EPTC (UG/L) (82668)
<0.006	<0.002	<0.001	<0.003	<0.017	<0.002
FLURALIN (UG/L) (82663)	ETHOPROP (UG/L) (82672)	FONOFOS (UG/L) (04095)	BHC (UG/L) (34253)	ETHAL- LINDANE (UG/L) (39341)	ALPHA LINURON (UG/L) (82666)
<0.004	<0.003	<0.003	<0.002	<0.004	<0.002
MALATHION (UG/L) (39532)	METOLACHLOR (UG/L) (39415)	METRIBUZIN SENCOR (UG/L) (82630)	MOLINATE (UG/L) (82671)	NAPROPAMIDE (UG/L) (82684)	PARATHION (UG/L) (39542)
<0.005	<0.002	<0.004	<0.004	<0.003	<0.004
METHYL PARATHION (UG/L) (82667)	PEBULATE (UG/L) (82669)	PENDI- METHALIN (UG/L) (82683)	PERMETHRIN (UG/L) (82687)	PHORATE (UG/L) (82664)	PRONAMIDE (UG/L) (82676)
<0.006	<0.004	<0.004	<0.005	<0.002	<0.003
PROMETON (UG/L) (04037)	PROPACHLOR (UG/L) (04024)	PROPANIL (UG/L) (82679)	PROPARGITE (UG/L) (82685)	SIMAZINE (UG/L) (04035)	THIOBENCARB (UG/L) (82681)
<0.018	<0.007	<0.004	<0.013	<0.005	<0.002
TEBUTHIURON (UG/L) (82670)	TERBACIL (UG/L) (82665)	TERBUFOS (UG/L) (82675)	TRIALATE (UG/L) (82678)	TRIFLURALIN (UG/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 Basins
(National Water-Quality Assessment Program)
 SUBUNIT SURVEY OF THE BURIED VALLEY AQUIFER SYSTEM AND
 MIAMI CONSERVANCY DISTRICT GROUNDWATER 2000 COOPERATIVE PROJECT—CONTINUED

SUBUNIT SURVEY—PESTICIDE DATA

Results listed below are for compounds that were detected in one or more domestic wells.

[<, concentration or value reported is less than that indicated; E, estimated value.]

LOCAL WELL NUMBER	DEETHYL ATRA- ZINE, WATER, DISS, REC (UG/L) (04040)
BUTLER COUNTY, OHIO	
BU-1101	<.002
BU-1105	<.002
BU-1106	<.002
CHAMPAIGN COUNTY, OHIO	
CH-100	<.002
CH-101	<.002
CH-102	<.002
CH-103	E.0078
CH-104	<.002
CLARK COUNTY, OHIO	
CL-27	<.087
CL-277	<.002
CL-278	<.002
CL-279	E.0044
CL-280	<.002
CL-281	<.002
CLERMONT COUNTY, OHIO	
CT-75	<.002
GREENE COUNTY, OHIO	
GR-650	<.002
GR-651	<.002
GR-653	E.0128
HAMILTON COUNTY, OHIO	
H-150	<.002
H-151	<.002
MIAMI COUNTY, OHIO	
MI-202	<.002
MI-203	<.002
MONTGOMERY COUNTY, OHIO	
MT-1250	<.002
MT-1251	<.002
MT-1255	<.002
RANDOLPH COUNTY, INDIANA	
BVAS-23	<.002
UNION COUNTY, INDIANA	
BVAS-20	<.002
WARREN COUNTY, OHIO	
W-52	<.002
W-53	E.0073
WAYNE COUNTY, INDIANA	
BVAS-24	<.002

PROJECT DATA
Ground-Water Records for City of Delphos, Ohio

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The following tables contain ground-water-level measurements and water-quality data from a network of monitoring wells near Delphos, Ohio. These data were collected as part of a cooperative study with the City of Delphos. The purpose of the study is to determine hydraulic characteristics of the carbonate aquifer.



PROJECT DATA

Ground-Water Records for City of Delphos, Ohio

404604084195100. LOCAL NUMBER, AL-55

LOCATION.--Latitude 40°46'04", longitude 84°19'51", Allen County, Hydrologic Unit 04100007.

AQUIFER.--Carbonate. Geologic Unit 351TMCT.

WELL CHARACTERISTICS.--Domestic well, depth 150 ft.

DATUM.--Altitude of land surface is 805 feet above National Geodetic Vertical Datum of 1929. Measuring point is top of casing, 1.10 ft above land-surface datum.

PERIOD OF RECORD.--Aug. 8, 1998 to Dec. 20, 1998.

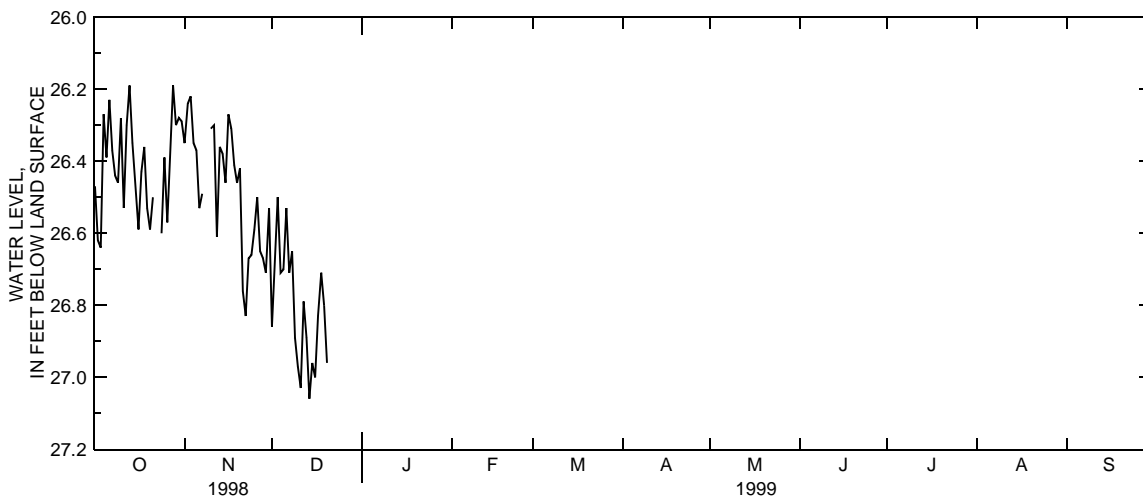
EXTREMES FOR PERIOD OF RECORD.--

WATER LEVEL: Maximum daily low, 27.06 ft below land-surface datum, Dec. 14, 1998; minimum daily low, 24.53 ft below land-surface datum, Aug. 8, 1998.

WATER TEMPERATURE: Maximum, 11.3 degrees Celsius, Aug. 20, 1998 and Sept. 16, 1998; minimum, 11.1 degrees Celsius, several days during period of record.

DEPTH BELOW LAND SURFACE (WATER LEVEL), FEET, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26.47	26.35	26.86	---	---	---	---	---	---	---	---	---
2	26.62	26.24	26.66	---	---	---	---	---	---	---	---	---
3	26.64	26.22	26.50	---	---	---	---	---	---	---	---	---
4	26.27	26.35	26.71	---	---	---	---	---	---	---	---	---
5	26.39	26.37	26.70	---	---	---	---	---	---	---	---	---
6	26.23	26.53	26.53	---	---	---	---	---	---	---	---	---
7	26.37	26.49	26.71	---	---	---	---	---	---	---	---	---
8	26.44	---	26.65	---	---	---	---	---	---	---	---	---
9	26.46	---	26.89	---	---	---	---	---	---	---	---	---
10	26.28	26.31	26.97	---	---	---	---	---	---	---	---	---
11	26.53	26.30	27.03	---	---	---	---	---	---	---	---	---
12	26.30	26.61	26.79	---	---	---	---	---	---	---	---	---
13	26.19	26.36	26.89	---	---	---	---	---	---	---	---	---
14	26.35	26.38	27.06	---	---	---	---	---	---	---	---	---
15	26.47	26.46	26.96	---	---	---	---	---	---	---	---	---
16	26.59	26.27	27.00	---	---	---	---	---	---	---	---	---
17	26.43	26.31	26.83	---	---	---	---	---	---	---	---	---
18	26.36	26.41	26.71	---	---	---	---	---	---	---	---	---
19	26.53	26.46	26.80	---	---	---	---	---	---	---	---	---
20	26.59	26.42	26.96	---	---	---	---	---	---	---	---	---
21	26.50	26.76	---	---	---	---	---	---	---	---	---	---
22	---	26.83	---	---	---	---	---	---	---	---	---	---
23	---	26.67	---	---	---	---	---	---	---	---	---	---
24	26.60	26.66	---	---	---	---	---	---	---	---	---	---
25	26.39	26.59	---	---	---	---	---	---	---	---	---	---
26	26.57	26.50	---	---	---	---	---	---	---	---	---	---
27	26.38	26.65	---	---	---	---	---	---	---	---	---	---
28	26.19	26.67	---	---	---	---	---	---	---	---	---	---
29	26.30	26.71	---	---	---	---	---	---	---	---	---	---
30	26.28	26.53	---	---	---	---	---	---	---	---	---	---
31	26.29	---	---	---	---	---	---	---	---	---	---	---
MAX	26.64	26.83	27.06	---	---	---	---	---	---	---	---	---



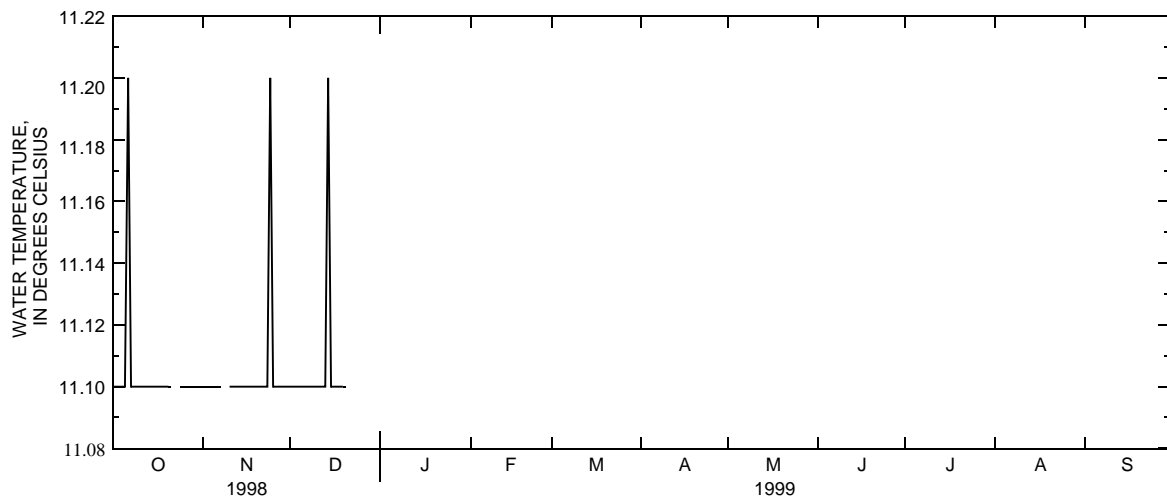
PROJECT DATA
Ground-Water Records for City of Delphos, Ohio

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404604084195100. LOCAL NUMBER, AL-55—Continued

TEMPERATURE, WATER, DEGREES CELSIUS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11.1	11.1	11.1	---	---	---	---	---	---	---	---	---
2	11.1	11.1	11.1	---	---	---	---	---	---	---	---	---
3	11.1	11.1	11.1	---	---	---	---	---	---	---	---	---
4	11.1	11.1	11.1	---	---	---	---	---	---	---	---	---
5	11.1	11.1	11.1	---	---	---	---	---	---	---	---	---
6	11.2	11.1	11.1	---	---	---	---	---	---	---	---	---
7	11.1	11.1	11.1	---	---	---	---	---	---	---	---	---
8	11.1	---	11.1	---	---	---	---	---	---	---	---	---
9	11.1	---	11.1	---	---	---	---	---	---	---	---	---
10	11.1	11.1	11.1	---	---	---	---	---	---	---	---	---
11	11.1	11.1	11.1	---	---	---	---	---	---	---	---	---
12	11.1	11.1	11.1	---	---	---	---	---	---	---	---	---
13	11.1	11.1	11.1	---	---	---	---	---	---	---	---	---
14	11.1	11.1	11.2	---	---	---	---	---	---	---	---	---
15	11.1	11.1	11.1	---	---	---	---	---	---	---	---	---
16	11.1	11.1	11.1	---	---	---	---	---	---	---	---	---
17	11.1	11.1	11.1	---	---	---	---	---	---	---	---	---
18	11.1	11.1	11.1	---	---	---	---	---	---	---	---	---
19	11.1	11.1	11.1	---	---	---	---	---	---	---	---	---
20	11.1	11.1	11.1	---	---	---	---	---	---	---	---	---
21	11.1	11.1	---	---	---	---	---	---	---	---	---	---
22	---	11.1	---	---	---	---	---	---	---	---	---	---
23	---	11.1	---	---	---	---	---	---	---	---	---	---
24	11.1	11.2	---	---	---	---	---	---	---	---	---	---
25	11.1	11.1	---	---	---	---	---	---	---	---	---	---
26	11.1	11.1	---	---	---	---	---	---	---	---	---	---
27	11.1	11.1	---	---	---	---	---	---	---	---	---	---
28	11.1	11.1	---	---	---	---	---	---	---	---	---	---
29	11.1	11.1	---	---	---	---	---	---	---	---	---	---
30	11.1	11.1	---	---	---	---	---	---	---	---	---	---
31	11.1	---	---	---	---	---	---	---	---	---	---	---
MAX	11.2	11.2	11.2	---	---	---	---	---	---	---	---	---



PROJECT DATA

Ground-Water Records for City of Delphos, Ohio

404548084205600. LOCAL NUMBER, AL-57

LOCATION.--Latitude 40°45'48", longitude 84°20'56", Allen County, Hydrologic Unit 04100007.

AQUIFER.--Carbonate. Geologic Unit 351TMCT.

WELL CHARACTERISTICS.--Domestic well, depth 113 ft.

DATUM.--Altitude of land surface is 811 feet above National Geodetic Vertical Datum of 1929. Measuring point is top of casing, 0.5 ft above land-surface datum.

PERIOD OF RECORD.--Aug. 7, 1998 to Dec. 20, 1998.

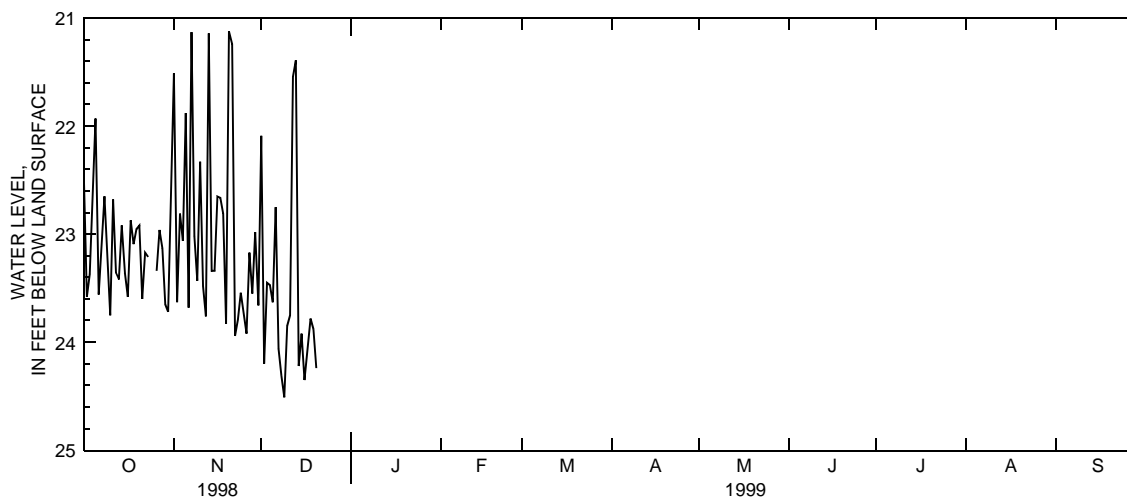
EXTREMES FOR PERIOD OF RECORD.--

WATER LEVEL: Maximum daily low, 24.51 ft below land-surface datum, Dec. 9, 1998; minimum daily low, 20.57 ft below land-surface datum, Aug. 31, 1998.

WATER TEMPERATURE: Maximum, 11.3 degrees Celsius, Aug. 7, 1998; minimum, 10.8 degrees Celsius, several days during period of record.

DEPTH BELOW LAND SURFACE (WATER LEVEL), FEET, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22.51	21.51	22.09	---	---	---	---	---	---	---	---	---
2	23.58	23.63	24.20	---	---	---	---	---	---	---	---	---
3	23.37	22.81	23.45	---	---	---	---	---	---	---	---	---
4	22.73	23.06	23.47	---	---	---	---	---	---	---	---	---
5	21.93	21.88	23.63	---	---	---	---	---	---	---	---	---
6	23.56	23.68	22.75	---	---	---	---	---	---	---	---	---
7	23.13	21.13	24.06	---	---	---	---	---	---	---	---	---
8	22.65	23.02	24.31	---	---	---	---	---	---	---	---	---
9	23.21	23.43	24.51	---	---	---	---	---	---	---	---	---
10	23.75	22.33	23.85	---	---	---	---	---	---	---	---	---
11	22.68	23.48	23.75	---	---	---	---	---	---	---	---	---
12	23.36	23.76	21.54	---	---	---	---	---	---	---	---	---
13	23.42	21.14	21.39	---	---	---	---	---	---	---	---	---
14	22.92	23.34	24.22	---	---	---	---	---	---	---	---	---
15	23.36	23.34	23.92	---	---	---	---	---	---	---	---	---
16	23.58	22.65	24.35	---	---	---	---	---	---	---	---	---
17	22.87	22.66	24.10	---	---	---	---	---	---	---	---	---
18	23.09	22.81	23.78	---	---	---	---	---	---	---	---	---
19	22.95	23.83	23.88	---	---	---	---	---	---	---	---	---
20	22.92	21.12	24.24	---	---	---	---	---	---	---	---	---
21	23.60	21.24	---	---	---	---	---	---	---	---	---	---
22	23.17	23.94	---	---	---	---	---	---	---	---	---	---
23	23.21	23.79	---	---	---	---	---	---	---	---	---	---
24	---	23.54	---	---	---	---	---	---	---	---	---	---
25	---	23.72	---	---	---	---	---	---	---	---	---	---
26	23.34	23.92	---	---	---	---	---	---	---	---	---	---
27	22.96	23.17	---	---	---	---	---	---	---	---	---	---
28	23.13	23.55	---	---	---	---	---	---	---	---	---	---
29	23.65	22.98	---	---	---	---	---	---	---	---	---	---
30	23.72	23.66	---	---	---	---	---	---	---	---	---	---
31	22.59	---	---	---	---	---	---	---	---	---	---	---
MAX	23.75	23.94	24.51	---	---	---	---	---	---	---	---	---



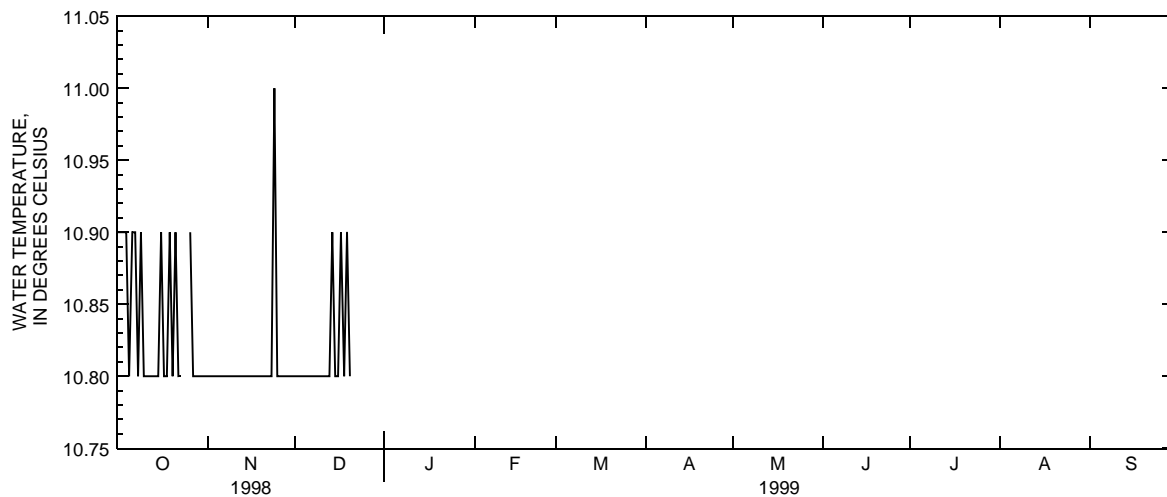
PROJECT DATA
Ground-Water Records for City of Delphos, Ohio

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404548084205600. LOCAL NUMBER, AL-57—Continued

TEMPERATURE, WATER, DEGREES CELSIUS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10.9	10.8	10.8	---	---	---	---	---	---	---	---	---
2	10.9	10.8	10.8	---	---	---	---	---	---	---	---	---
3	10.9	10.8	10.8	---	---	---	---	---	---	---	---	---
4	10.9	10.8	10.8	---	---	---	---	---	---	---	---	---
5	10.8	10.8	10.8	---	---	---	---	---	---	---	---	---
6	10.9	10.8	10.8	---	---	---	---	---	---	---	---	---
7	10.9	10.8	10.8	---	---	---	---	---	---	---	---	---
8	10.8	10.8	10.8	---	---	---	---	---	---	---	---	---
9	10.9	10.8	10.8	---	---	---	---	---	---	---	---	---
10	10.8	10.8	10.8	---	---	---	---	---	---	---	---	---
11	10.8	10.8	10.8	---	---	---	---	---	---	---	---	---
12	10.8	10.8	10.8	---	---	---	---	---	---	---	---	---
13	10.8	10.8	10.8	---	---	---	---	---	---	---	---	---
14	10.8	10.8	10.9	---	---	---	---	---	---	---	---	---
15	10.8	10.8	10.8	---	---	---	---	---	---	---	---	---
16	10.9	10.8	10.8	---	---	---	---	---	---	---	---	---
17	10.8	10.8	10.9	---	---	---	---	---	---	---	---	---
18	10.8	10.8	10.8	---	---	---	---	---	---	---	---	---
19	10.9	10.8	10.9	---	---	---	---	---	---	---	---	---
20	10.8	10.8	10.8	---	---	---	---	---	---	---	---	---
21	10.9	10.8	---	---	---	---	---	---	---	---	---	---
22	10.8	10.8	---	---	---	---	---	---	---	---	---	---
23	10.8	10.8	---	---	---	---	---	---	---	---	---	---
24	---	11.0	---	---	---	---	---	---	---	---	---	---
25	---	10.8	---	---	---	---	---	---	---	---	---	---
26	10.9	10.8	---	---	---	---	---	---	---	---	---	---
27	10.8	10.8	---	---	---	---	---	---	---	---	---	---
28	10.8	10.8	---	---	---	---	---	---	---	---	---	---
29	10.8	10.8	---	---	---	---	---	---	---	---	---	---
30	10.8	10.8	---	---	---	---	---	---	---	---	---	---
31	10.8	---	---	---	---	---	---	---	---	---	---	---
MAX	10.9	11.0	10.9	---	---	---	---	---	---	---	---	---



PROJECT DATA

Ground-Water Records for City of Delphos, Ohio

404517084195200. LOCAL NUMBER, AL-64

LOCATION.--Latitude 40°45'17", longitude 84°19'52", Allen County, Hydrologic Unit 04100007.

AQUIFER.--Carbonate. Geologic Unit 351TMCT.

WELL CHARACTERISTICS.--Production/observation well, depth 300 ft.

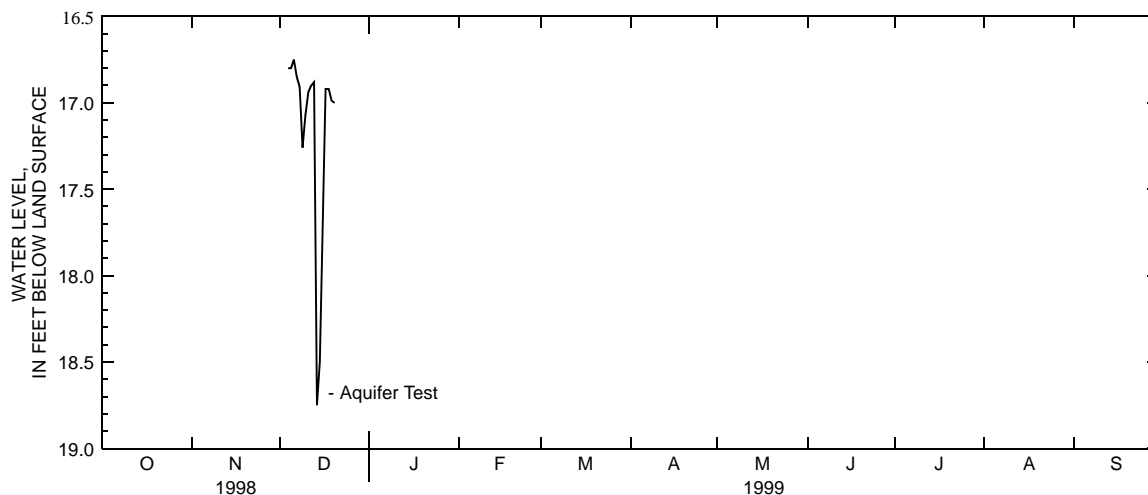
DATUM.--Altitude of land surface is 812 feet above National Geodetic Vertical Datum of 1929. Measuring point is top of casing, 2.3 ft above land-surface datum.

PERIOD OF RECORD.--Dec. 4, 1998 to Dec. 20, 1998.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily low, 18.75 ft below land-surface datum, Dec. 14, 1998; minimum daily low, 16.75 ft below land-surface datum, Dec. 6, 1998.

DEPTH BELOW LAND SURFACE (WATER LEVEL), FEET, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999 DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	16.80	---	---	---	---	---	---	---	---	---
5	---	---	16.80	---	---	---	---	---	---	---	---	---
6	---	---	16.75	---	---	---	---	---	---	---	---	---
7	---	---	16.85	---	---	---	---	---	---	---	---	---
8	---	---	16.91	---	---	---	---	---	---	---	---	---
9	---	---	17.26	---	---	---	---	---	---	---	---	---
10	---	---	17.07	---	---	---	---	---	---	---	---	---
11	---	---	16.94	---	---	---	---	---	---	---	---	---
12	---	---	16.90	---	---	---	---	---	---	---	---	---
13	---	---	16.88	---	---	---	---	---	---	---	---	---
14	---	---	18.75	---	---	---	---	---	---	---	---	---
15	---	---	18.50	---	---	---	---	---	---	---	---	---
16	---	---	17.57	---	---	---	---	---	---	---	---	---
17	---	---	16.92	---	---	---	---	---	---	---	---	---
18	---	---	16.92	---	---	---	---	---	---	---	---	---
19	---	---	16.99	---	---	---	---	---	---	---	---	---
20	---	---	17.00	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
MAX	---	---	18.75	---	---	---	---	---	---	---	---	---



PROJECT DATA
Ground-Water Records for City of Delphos, Ohio

401

404458084192500. LOCAL NUMBER, AL-65

LOCATION.--Latitude 40°44'58", longitude 84°19'25", Allen County, Hydrologic Unit 04100007.

AQUIFER.--Carbonate.

WELL CHARACTERISTICS.--Hand pump for supply at Kendrick Woods Metro Park, Allen County.

DATUM.--Altitude of land surface is 812 feet above National Geodetic Vertical Datum of 1929. Measuring point is top of casing, 2.0 ft above land-surface datum.

PERIOD OF RECORD.--Nov 10, 1998 to Dec. 20, 1998.

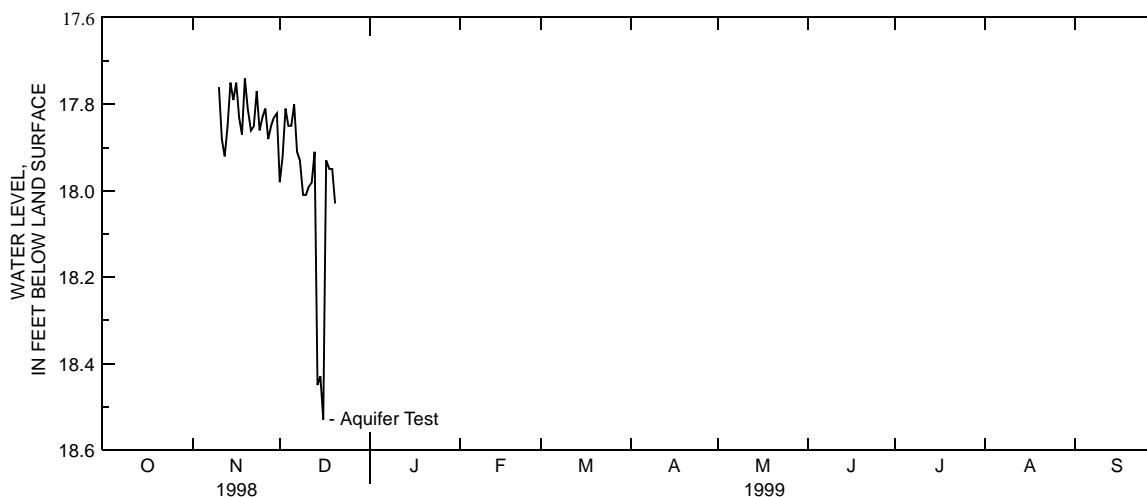
EXTREMES FOR PERIOD OF RECORD.--

WATER LEVEL: Maximum daily low, 18.53 ft below land-surface datum, Dec. 16, 1998; minimum daily low, 17.74 ft below land-surface datum, Dec 19, 1998.

WATER TEMPERATURE: Maximum, 10.9 degrees Celsius, Nov. 24, 1998; minimum, 10.7 degrees Celsius on Nov. 10,14 and 26, 1998.

DEPTH BELOW LAND SURFACE (WATER LEVEL), FEET, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	17.98	---	---	---	---	---	---	---	---	---
2	---	---	17.92	---	---	---	---	---	---	---	---	---
3	---	---	17.81	---	---	---	---	---	---	---	---	---
4	---	---	17.85	---	---	---	---	---	---	---	---	---
5	---	---	17.85	---	---	---	---	---	---	---	---	---
6	---	---	17.80	---	---	---	---	---	---	---	---	---
7	---	---	17.91	---	---	---	---	---	---	---	---	---
8	---	---	17.93	---	---	---	---	---	---	---	---	---
9	---	---	18.01	---	---	---	---	---	---	---	---	---
10	---	17.76	18.01	---	---	---	---	---	---	---	---	---
11	---	17.88	17.99	---	---	---	---	---	---	---	---	---
12	---	17.92	17.98	---	---	---	---	---	---	---	---	---
13	---	17.85	17.91	---	---	---	---	---	---	---	---	---
14	---	17.75	18.45	---	---	---	---	---	---	---	---	---
15	---	17.79	18.43	---	---	---	---	---	---	---	---	---
16	---	17.75	18.53	---	---	---	---	---	---	---	---	---
17	---	17.83	17.93	---	---	---	---	---	---	---	---	---
18	---	17.87	17.95	---	---	---	---	---	---	---	---	---
19	---	17.74	17.95	---	---	---	---	---	---	---	---	---
20	---	17.81	18.03	---	---	---	---	---	---	---	---	---
21	---	17.86	---	---	---	---	---	---	---	---	---	---
22	---	17.85	---	---	---	---	---	---	---	---	---	---
23	---	17.77	---	---	---	---	---	---	---	---	---	---
24	---	17.86	---	---	---	---	---	---	---	---	---	---
25	---	17.83	---	---	---	---	---	---	---	---	---	---
26	---	17.81	---	---	---	---	---	---	---	---	---	---
27	---	17.88	---	---	---	---	---	---	---	---	---	---
28	---	17.85	---	---	---	---	---	---	---	---	---	---
29	---	17.83	---	---	---	---	---	---	---	---	---	---
30	---	17.82	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
MAX	---	17.92	18.53	---	---	---	---	---	---	---	---	---

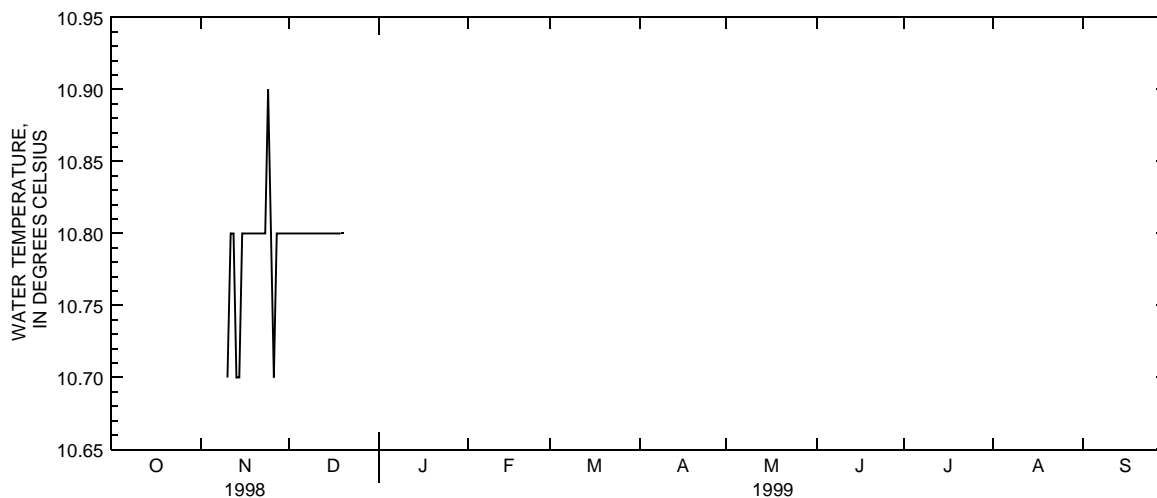


PROJECT DATA
Ground-Water Records for City of Delphos, Ohio

404458084192500. LOCAL NUMBER, AL-65—Continued

TEMPERATURE, WATER, DEGREES CELSIUS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	10.8	---	---	---	---	---	---	---	---	---
2	---	---	10.8	---	---	---	---	---	---	---	---	---
3	---	---	10.8	---	---	---	---	---	---	---	---	---
4	---	---	10.8	---	---	---	---	---	---	---	---	---
5	---	---	10.8	---	---	---	---	---	---	---	---	---
6	---	---	10.8	---	---	---	---	---	---	---	---	---
7	---	---	10.8	---	---	---	---	---	---	---	---	---
8	---	---	10.8	---	---	---	---	---	---	---	---	---
9	---	---	10.8	---	---	---	---	---	---	---	---	---
10	---	10.7	10.8	---	---	---	---	---	---	---	---	---
11	---	10.8	10.8	---	---	---	---	---	---	---	---	---
12	---	10.8	10.8	---	---	---	---	---	---	---	---	---
13	---	10.7	10.8	---	---	---	---	---	---	---	---	---
14	---	10.7	10.8	---	---	---	---	---	---	---	---	---
15	---	10.8	10.8	---	---	---	---	---	---	---	---	---
16	---	10.8	10.8	---	---	---	---	---	---	---	---	---
17	---	10.8	10.8	---	---	---	---	---	---	---	---	---
18	---	10.8	10.8	---	---	---	---	---	---	---	---	---
19	---	10.8	10.8	---	---	---	---	---	---	---	---	---
20	---	10.8	10.8	---	---	---	---	---	---	---	---	---
21	---	10.8	---	---	---	---	---	---	---	---	---	---
22	---	10.8	---	---	---	---	---	---	---	---	---	---
23	---	10.8	---	---	---	---	---	---	---	---	---	---
24	---	10.9	---	---	---	---	---	---	---	---	---	---
25	---	10.8	---	---	---	---	---	---	---	---	---	---
26	---	10.7	---	---	---	---	---	---	---	---	---	---
27	---	10.8	---	---	---	---	---	---	---	---	---	---
28	---	10.8	---	---	---	---	---	---	---	---	---	---
29	---	10.8	---	---	---	---	---	---	---	---	---	---
30	---	10.8	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
MAX	---	10.9	10.8	---	---	---	---	---	---	---	---	---



PROJECT DATA
Ground-Water Records for City of Delphos, Ohio

403

404526084191800. LOCAL NUMBER, AL-68

LOCATION.--Latitude 40°45'26", longitude 84°19'18", Allen County, Hydrologic Unit 04100007.

AQUIFER.--Carbonate.

WELL CHARACTERISTICS.--Agricultural well, depth 100 ft.

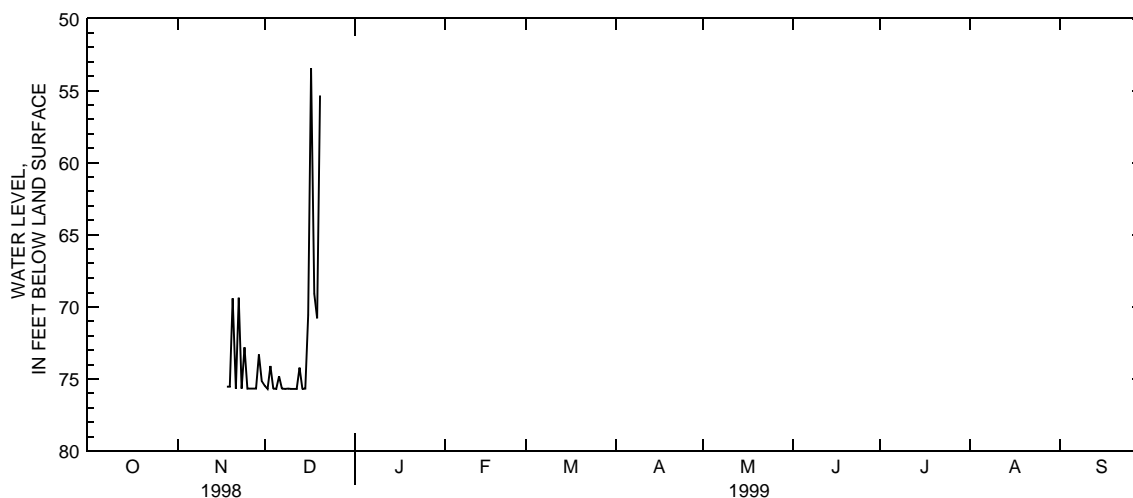
DATUM.--Altitude of land surface is 807 feet above National Geodetic Vertical Datum of 1929. Measuring point is top of casing, 0.55 ft below land-surface datum.

PERIOD OF RECORD.--Nov. 18, 1998 to Dec. 20, 1998.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily low, 75.71 ft below land-surface datum, Dec. 14, 1998; minimum daily low, 53.43 ft below land-surface datum, Dec. 17, 1998.

DEPTH BELOW LAND SURFACE (WATER LEVEL), FEET, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	75.48	---	---	---	---	---	---	---	---	---
2	---	---	75.69	---	---	---	---	---	---	---	---	---
3	---	---	74.09	---	---	---	---	---	---	---	---	---
4	---	---	75.68	---	---	---	---	---	---	---	---	---
5	---	---	75.70	---	---	---	---	---	---	---	---	---
6	---	---	74.81	---	---	---	---	---	---	---	---	---
7	---	---	75.67	---	---	---	---	---	---	---	---	---
8	---	---	75.69	---	---	---	---	---	---	---	---	---
9	---	---	75.68	---	---	---	---	---	---	---	---	---
10	---	---	75.69	---	---	---	---	---	---	---	---	---
11	---	---	75.69	---	---	---	---	---	---	---	---	---
12	---	---	75.69	---	---	---	---	---	---	---	---	---
13	---	---	74.20	---	---	---	---	---	---	---	---	---
14	---	---	75.71	---	---	---	---	---	---	---	---	---
15	---	---	75.68	---	---	---	---	---	---	---	---	---
16	---	---	70.56	---	---	---	---	---	---	---	---	---
17	---	---	53.43	---	---	---	---	---	---	---	---	---
18	---	75.54	69.07	---	---	---	---	---	---	---	---	---
19	---	75.54	70.79	---	---	---	---	---	---	---	---	---
20	---	69.41	55.33	---	---	---	---	---	---	---	---	---
21	---	75.66	---	---	---	---	---	---	---	---	---	---
22	---	69.37	---	---	---	---	---	---	---	---	---	---
23	---	75.66	---	---	---	---	---	---	---	---	---	---
24	---	72.80	---	---	---	---	---	---	---	---	---	---
25	---	75.67	---	---	---	---	---	---	---	---	---	---
26	---	75.68	---	---	---	---	---	---	---	---	---	---
27	---	75.68	---	---	---	---	---	---	---	---	---	---
28	---	75.68	---	---	---	---	---	---	---	---	---	---
29	---	73.29	---	---	---	---	---	---	---	---	---	---
30	---	75.16	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
MAX	---	75.68	75.71	---	---	---	---	---	---	---	---	---



PROJECT DATA

Ground-Water Records for City of Delphos, Ohio

404522084195800. LOCAL NUMBER, AL-85

LOCATION.--Latitude 40°45'22", longitude 84°19'58", Allen County, Hydrologic Unit 04100007.

AQUIFER.--Carbonate. Geologic Unit 351TMCT.

WELL CHARACTERISTICS.--Observation well, depth 315 ft.

DATUM.--Altitude of land surface is 815 feet above National Geodetic Vertical Datum of 1929. Measuring point is top of casing, 1.2 ft above land-surface datum.

PERIOD OF RECORD.--Aug. 8, 1998 to Dec. 13, 1998

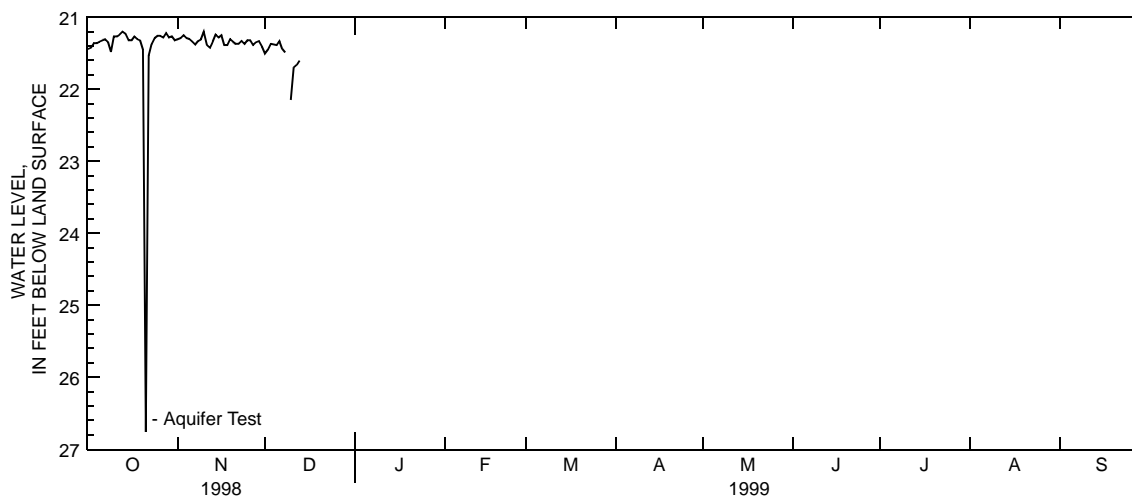
EXTREMES FOR PERIOD OF RECORD.--

WATER LEVEL: Maximum daily low, 26.76 ft below land-surface datum, Oct. 21, 1998; minimum daily low, 20.69 ft below land-surface datum, Aug. 10, 1998.

WATER TEMPERATURE: Maximum, 10.8 degrees Celsius, Oct. 6, 1998; minimum, 10.7 degrees Celsius, on several days during period of record.

DEPTH BELOW LAND SURFACE (WATER LEVEL), FEET, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21.44	21.31	21.50	---	---	---	---	---	---	---	---	---
2	21.42	21.29	21.45	---	---	---	---	---	---	---	---	---
3	21.36	21.25	21.37	---	---	---	---	---	---	---	---	---
4	21.36	21.29	21.38	---	---	---	---	---	---	---	---	---
5	21.34	21.30	21.39	---	---	---	---	---	---	---	---	---
6	21.32	21.34	21.33	---	---	---	---	---	---	---	---	---
7	21.31	21.38	21.44	---	---	---	---	---	---	---	---	---
8	21.35	21.33	21.49	---	---	---	---	---	---	---	---	---
9	21.48	21.31	---	---	---	---	---	---	---	---	---	---
10	21.27	21.20	22.15	---	---	---	---	---	---	---	---	---
11	21.27	21.39	21.70	---	---	---	---	---	---	---	---	---
12	21.24	21.42	21.66	---	---	---	---	---	---	---	---	---
13	21.20	21.34	21.60	---	---	---	---	---	---	---	---	---
14	21.23	21.24	---	---	---	---	---	---	---	---	---	---
15	21.32	21.28	---	---	---	---	---	---	---	---	---	---
16	21.32	21.25	---	---	---	---	---	---	---	---	---	---
17	21.27	21.39	---	---	---	---	---	---	---	---	---	---
18	21.30	21.39	---	---	---	---	---	---	---	---	---	---
19	21.32	21.30	---	---	---	---	---	---	---	---	---	---
20	21.45	21.34	---	---	---	---	---	---	---	---	---	---
21	26.76	21.37	---	---	---	---	---	---	---	---	---	---
22	21.53	21.37	---	---	---	---	---	---	---	---	---	---
23	21.37	21.33	---	---	---	---	---	---	---	---	---	---
24	21.29	21.37	---	---	---	---	---	---	---	---	---	---
25	21.26	21.32	---	---	---	---	---	---	---	---	---	---
26	21.26	21.32	---	---	---	---	---	---	---	---	---	---
27	21.28	21.39	---	---	---	---	---	---	---	---	---	---
28	21.22	21.35	---	---	---	---	---	---	---	---	---	---
29	21.28	21.33	---	---	---	---	---	---	---	---	---	---
30	21.27	21.41	---	---	---	---	---	---	---	---	---	---
31	21.32	---	---	---	---	---	---	---	---	---	---	---
MAX	26.76	21.42	22.15	---	---	---	---	---	---	---	---	---



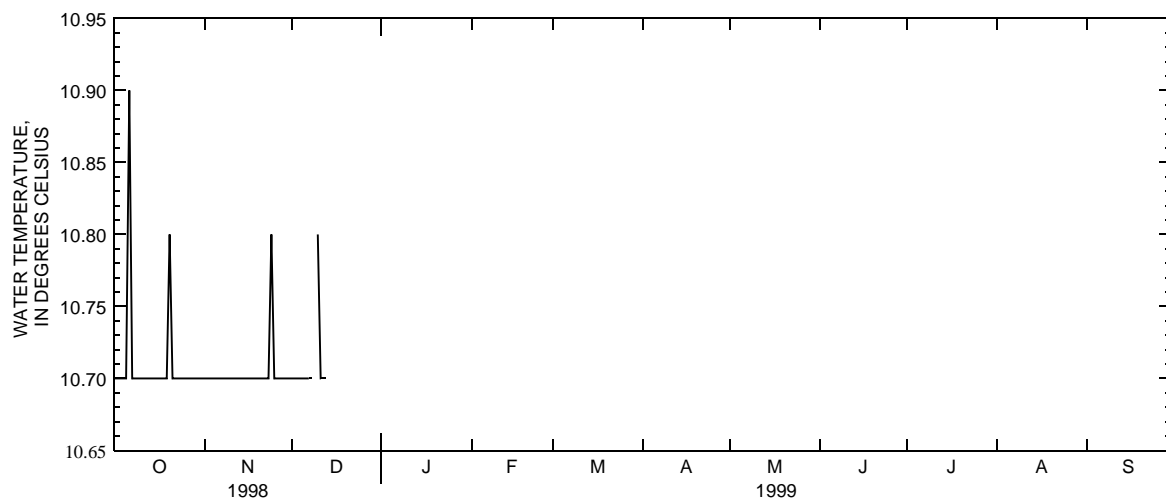
PROJECT DATA
Ground-Water Records for City of Delphos, Ohio

405

404522084195800. LOCAL NUMBER, AL-85—Continued

TEMPERATURE, WATER, DEGREES CELSIUS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10.7	10.7	10.7	---	---	---	---	---	---	---	---	---
2	10.7	10.7	10.7	---	---	---	---	---	---	---	---	---
3	10.7	10.7	10.7	---	---	---	---	---	---	---	---	---
4	10.7	10.7	10.7	---	---	---	---	---	---	---	---	---
5	10.7	10.7	10.7	---	---	---	---	---	---	---	---	---
6	10.9	10.7	10.7	---	---	---	---	---	---	---	---	---
7	10.7	10.7	10.7	---	---	---	---	---	---	---	---	---
8	10.7	10.7	10.7	---	---	---	---	---	---	---	---	---
9	10.7	10.7	---	---	---	---	---	---	---	---	---	---
10	10.7	10.7	10.8	---	---	---	---	---	---	---	---	---
11	10.7	10.7	10.7	---	---	---	---	---	---	---	---	---
12	10.7	10.7	10.7	---	---	---	---	---	---	---	---	---
13	10.7	10.7	10.7	---	---	---	---	---	---	---	---	---
14	10.7	10.7	---	---	---	---	---	---	---	---	---	---
15	10.7	10.7	---	---	---	---	---	---	---	---	---	---
16	10.7	10.7	---	---	---	---	---	---	---	---	---	---
17	10.7	10.7	---	---	---	---	---	---	---	---	---	---
18	10.7	10.7	---	---	---	---	---	---	---	---	---	---
19	10.7	10.7	---	---	---	---	---	---	---	---	---	---
20	10.8	10.7	---	---	---	---	---	---	---	---	---	---
21	10.7	10.7	---	---	---	---	---	---	---	---	---	---
22	10.7	10.7	---	---	---	---	---	---	---	---	---	---
23	10.7	10.7	---	---	---	---	---	---	---	---	---	---
24	10.7	10.8	---	---	---	---	---	---	---	---	---	---
25	10.7	10.7	---	---	---	---	---	---	---	---	---	---
26	10.7	10.7	---	---	---	---	---	---	---	---	---	---
27	10.7	10.7	---	---	---	---	---	---	---	---	---	---
28	10.7	10.7	---	---	---	---	---	---	---	---	---	---
29	10.7	10.7	---	---	---	---	---	---	---	---	---	---
30	10.7	10.7	---	---	---	---	---	---	---	---	---	---
31	10.7	---	---	---	---	---	---	---	---	---	---	---
MAX	10.9	10.8	10.8	---	---	---	---	---	---	---	---	---



PROJECT DATA

Ground-Water Records for City of Delphos, Ohio

404522084195800. LOCAL NUMBER, AL-85—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	TEMPER- ATURE WATER (DEG C) (00010)	TEMPER- ATURE AIR (DEG C) (00020)	AGENCY COL- LECTING SAMPLE (CODE NUMBER) (00027)	AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (00028)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	OXYGEN, DIS- SOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)
DEC 29...	12.0	8.0	1028	80020	1290	1.3	7.0	7.1	<.010	.064
DATE	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	ARSENIC DIS- SOLVED (MG/L AS AS) (01000)	BORON, DIS- SOLVED (MG/L AS B) (01020)
DEC 29...	150	66	32	4.6	14	400	1.8	13	<1	341
DATE	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	TRITIUM TOTAL (PCI/L) (07000)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	
DEC 29...	34	<1.0	3.6	<1.0	12000	49	1	<5.7	920	
DATE	ELEV. OF LAND SURFACE DATUM (FT. ABOVE NGVD) (72000)	DEPTH OF WELL, TOTAL (FEET) (72008)	DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET) (72019)	TRITIUM 2 SIGMA WATER, WHOLE TOTAL (PCI/L) (75985)	DRAIN- AGE AREA (SQ. MI.) (81024)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410)	ANC UNFLTRD CARBON- ATE IT-FLD (MG/L - CACO3) (99430)	SET NUMBER LAB CODE 2127 (NO.) (99760)	
DEC 29...	815	315.00	--	4.5	--	1240	303	286	98364.00	

PROJECT DATA
Ground-Water Records for City of Delphos, Ohio

407

404507084200300. LOCAL NUMBER, AL-101

LOCATION.--Latitude 40°45'07", longitude 84°20'03", Allen County, Hydrologic Unit 04100007.

AQUIFER.--Carbonate. Geologic Unit 351TMCT.

WELL CHARACTERISTICS.--Domestic well, depth 36 ft.

DATUM.--Altitude of land surface is 808 feet above National Geodetic Vertical Datum of 1929. Measuring point is top of casing, 0.95 ft above land-surface datum.

PERIOD OF RECORD.--Aug. 8, 1998 to Dec. 20, 1998.

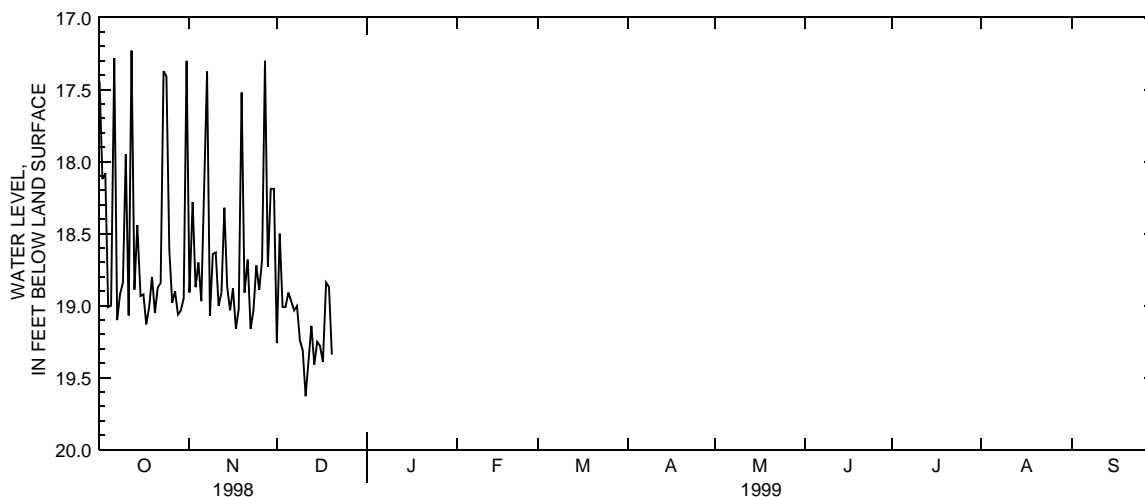
EXTREMES FOR PERIOD OF RECORD.--

WATER LEVEL: Maximum daily low, 19.63 degrees Celsius, Dec. 11, 1998; minimum daily low, 15.35 ft below land-surface datum, Aug. 14, 1998.

WATER TEMPERATURE: Maximum, 12.0 degrees Celsius, on Dec. 15, 1998; minimum, 11.4 degrees Celsius, several days during period of record.

DEPTH BELOW LAND SURFACE (WATER LEVEL), FEET, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17.44	18.91	19.26	---	---	---	---	---	---	---	---	---
2	18.12	18.28	18.50	---	---	---	---	---	---	---	---	---
3	18.08	18.87	19.01	---	---	---	---	---	---	---	---	---
4	19.01	18.70	19.01	---	---	---	---	---	---	---	---	---
5	19.00	18.97	18.91	---	---	---	---	---	---	---	---	---
6	17.28	18.36	18.97	---	---	---	---	---	---	---	---	---
7	19.10	17.37	19.03	---	---	---	---	---	---	---	---	---
8	18.92	19.07	19.00	---	---	---	---	---	---	---	---	---
9	18.84	18.64	19.24	---	---	---	---	---	---	---	---	---
10	17.95	18.63	19.31	---	---	---	---	---	---	---	---	---
11	19.07	19.00	19.63	---	---	---	---	---	---	---	---	---
12	17.23	18.91	19.36	---	---	---	---	---	---	---	---	---
13	18.89	18.32	19.14	---	---	---	---	---	---	---	---	---
14	18.44	18.87	19.41	---	---	---	---	---	---	---	---	---
15	18.93	19.03	19.25	---	---	---	---	---	---	---	---	---
16	18.92	18.88	19.28	---	---	---	---	---	---	---	---	---
17	19.13	19.16	19.39	---	---	---	---	---	---	---	---	---
18	19.01	19.02	18.84	---	---	---	---	---	---	---	---	---
19	18.80	17.52	18.87	---	---	---	---	---	---	---	---	---
20	19.05	18.91	19.34	---	---	---	---	---	---	---	---	---
21	18.87	18.68	---	---	---	---	---	---	---	---	---	---
22	18.84	19.16	---	---	---	---	---	---	---	---	---	---
23	17.37	19.03	---	---	---	---	---	---	---	---	---	---
24	17.41	18.72	---	---	---	---	---	---	---	---	---	---
25	18.61	18.89	---	---	---	---	---	---	---	---	---	---
26	18.98	18.68	---	---	---	---	---	---	---	---	---	---
27	18.90	17.30	---	---	---	---	---	---	---	---	---	---
28	19.06	18.73	---	---	---	---	---	---	---	---	---	---
29	19.03	18.19	---	---	---	---	---	---	---	---	---	---
30	18.95	18.19	---	---	---	---	---	---	---	---	---	---
31	17.30	---	---	---	---	---	---	---	---	---	---	---
MAX	19.13	19.16	19.63	---	---	---	---	---	---	---	---	---

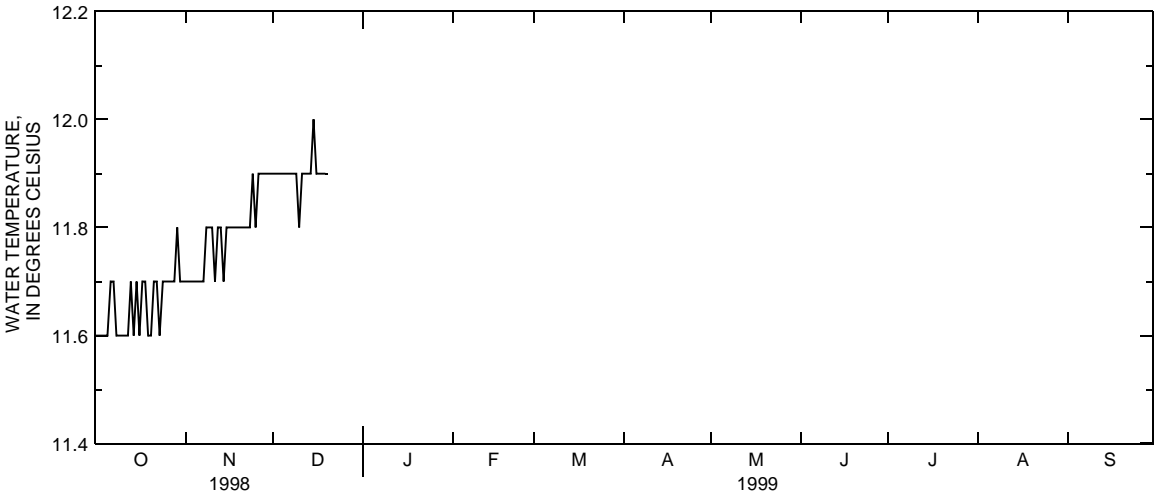


PROJECT DATA
Ground-Water Records for City of Delphos, Ohio

404507084200300. LOCAL NUMBER, AL-101—Continued

TEMPERATURE, WATER, DEGREES CELSIUS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11.6	11.7	11.9	---	---	---	---	---	---	---	---	---
2	11.6	11.7	11.9	---	---	---	---	---	---	---	---	---
3	11.6	11.7	11.9	---	---	---	---	---	---	---	---	---
4	11.6	11.7	11.9	---	---	---	---	---	---	---	---	---
5	11.6	11.7	11.9	---	---	---	---	---	---	---	---	---
6	11.7	11.7	11.9	---	---	---	---	---	---	---	---	---
7	11.7	11.7	11.9	---	---	---	---	---	---	---	---	---
8	11.6	11.8	11.9	---	---	---	---	---	---	---	---	---
9	11.6	11.8	11.9	---	---	---	---	---	---	---	---	---
10	11.6	11.8	11.8	---	---	---	---	---	---	---	---	---
11	11.6	11.7	11.9	---	---	---	---	---	---	---	---	---
12	11.6	11.8	11.9	---	---	---	---	---	---	---	---	---
13	11.7	11.8	11.9	---	---	---	---	---	---	---	---	---
14	11.6	11.7	11.9	---	---	---	---	---	---	---	---	---
15	11.7	11.8	12.0	---	---	---	---	---	---	---	---	---
16	11.6	11.8	11.9	---	---	---	---	---	---	---	---	---
17	11.7	11.8	11.9	---	---	---	---	---	---	---	---	---
18	11.7	11.8	11.9	---	---	---	---	---	---	---	---	---
19	11.6	11.8	11.9	---	---	---	---	---	---	---	---	---
20	11.6	11.8	11.9	---	---	---	---	---	---	---	---	---
21	11.7	11.8	---	---	---	---	---	---	---	---	---	---
22	11.7	11.8	---	---	---	---	---	---	---	---	---	---
23	11.6	11.8	---	---	---	---	---	---	---	---	---	---
24	11.7	11.9	---	---	---	---	---	---	---	---	---	---
25	11.7	11.8	---	---	---	---	---	---	---	---	---	---
26	11.7	11.9	---	---	---	---	---	---	---	---	---	---
27	11.7	11.9	---	---	---	---	---	---	---	---	---	---
28	11.7	11.9	---	---	---	---	---	---	---	---	---	---
29	11.8	11.9	---	---	---	---	---	---	---	---	---	---
30	11.7	11.9	---	---	---	---	---	---	---	---	---	---
31	11.7	---	---	---	---	---	---	---	---	---	---	---
MAX	11.8	11.9	12.0	---	---	---	---	---	---	---	---	---



PROJECT DATA
Ground-Water Records for City of Delphos, Ohio

409

404517084192200. LOCAL NUMBER, AL-122

LOCATION.--Latitude 40°45'17", longitude 84°19'22", Allen County, Hydrologic Unit 04100007.

AQUIFER.--Carbonate.

WELL CHARACTERISTICS.--Domestic well, depth 32 ft.

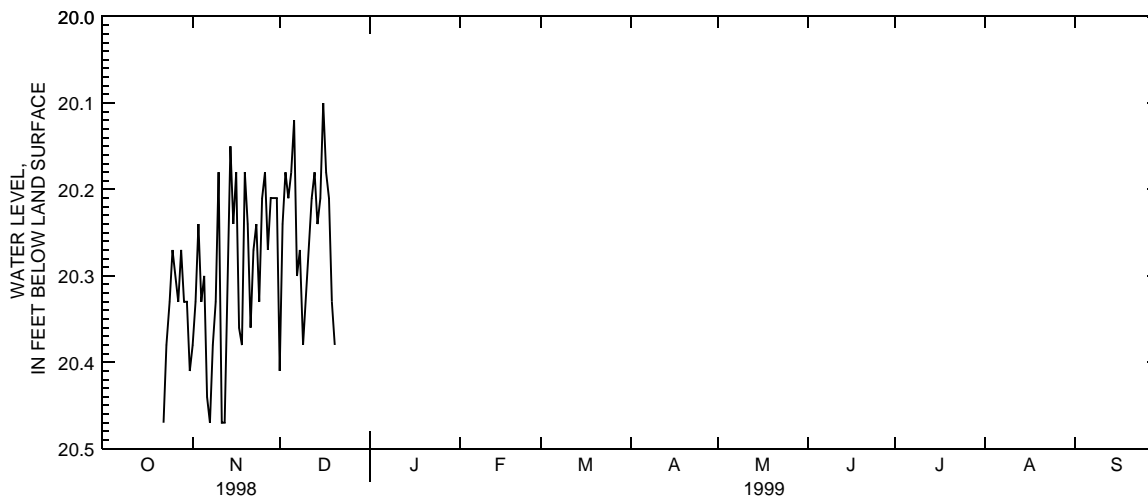
DATUM.--Altitude of land surface is 810 feet above National Geodetic Vertical Datum of 1929. Measuring point is top of casing, 1.5 ft below land-surface datum.

PERIOD OF RECORD.--Oct. 22, 1998 to Dec. 20, 1998.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily low, 20.47 ft below land-surface datum, Oct. 22, Nov. 7, 11 and 12, 1998; minimum daily low, 20.10 ft below land-surface datum, Dec. 16, 1998.

DEPTH BELOW LAND SURFACE (WATER LEVEL), FEET, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	20.38	20.41	---	---	---	---	---	---	---	---	---
2	---	20.33	20.24	---	---	---	---	---	---	---	---	---
3	---	20.24	20.18	---	---	---	---	---	---	---	---	---
4	---	20.33	20.21	---	---	---	---	---	---	---	---	---
5	---	20.30	20.18	---	---	---	---	---	---	---	---	---
6	---	20.44	20.12	---	---	---	---	---	---	---	---	---
7	---	20.47	20.30	---	---	---	---	---	---	---	---	---
8	---	20.38	20.27	---	---	---	---	---	---	---	---	---
9	---	20.33	20.38	---	---	---	---	---	---	---	---	---
10	---	20.18	20.33	---	---	---	---	---	---	---	---	---
11	---	20.47	20.27	---	---	---	---	---	---	---	---	---
12	---	20.47	20.21	---	---	---	---	---	---	---	---	---
13	---	20.33	20.18	---	---	---	---	---	---	---	---	---
14	---	20.15	20.24	---	---	---	---	---	---	---	---	---
15	---	20.24	20.21	---	---	---	---	---	---	---	---	---
16	---	20.18	20.10	---	---	---	---	---	---	---	---	---
17	---	20.36	20.18	---	---	---	---	---	---	---	---	---
18	---	20.38	20.21	---	---	---	---	---	---	---	---	---
19	---	20.18	20.33	---	---	---	---	---	---	---	---	---
20	---	20.24	20.38	---	---	---	---	---	---	---	---	---
21	---	20.36	---	---	---	---	---	---	---	---	---	---
22	20.47	20.27	---	---	---	---	---	---	---	---	---	---
23	20.38	20.24	---	---	---	---	---	---	---	---	---	---
24	20.33	20.33	---	---	---	---	---	---	---	---	---	---
25	20.27	20.21	---	---	---	---	---	---	---	---	---	---
26	20.30	20.18	---	---	---	---	---	---	---	---	---	---
27	20.33	20.27	---	---	---	---	---	---	---	---	---	---
28	20.27	20.21	---	---	---	---	---	---	---	---	---	---
29	20.33	20.21	---	---	---	---	---	---	---	---	---	---
30	20.33	20.21	---	---	---	---	---	---	---	---	---	---
31	20.41	---	---	---	---	---	---	---	---	---	---	---
MAX	20.47	20.47	20.41	---	---	---	---	---	---	---	---	---



PROJECT DATA

Ground-Water Records for City of Delphos, Ohio

404440084192100. LOCAL NUMBER, AL-125

LOCATION.--Latitude 40°44'40", longitude 84°19'21", Allen County, Hydrologic Unit 04100007, Kendrick Woods Metro Park, west off Defiance Trail.

DATUM.--Altitude of land surface is 790 feet above National Geodetic Vertical Datum of 1929.

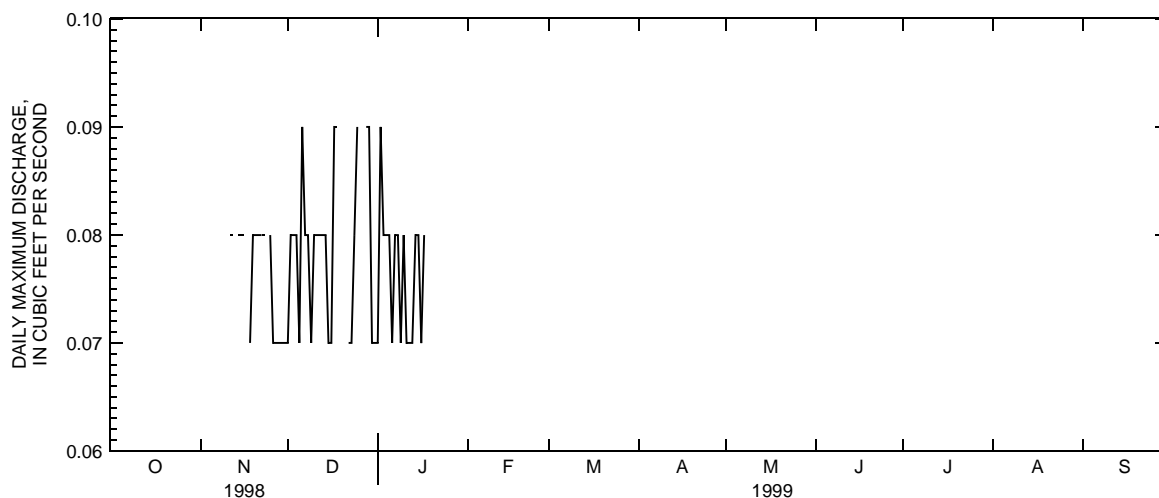
SITE CHARACTERISTICS.--Flowing well, Parshall Flume with water-stage recorder.

PERIOD OF RECORD.--Nov. 11, 1998 to Jan. 17, 1999.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily high, 0.09 cubic feet per second, several days during period of record; minimum daily high, 0.07 cubic feet per second, several days during period of record. Maximum daily low, 0.08 cubic feet per second, December 18 and 20, 1998; minimum daily low, 0.03 cubic feet per second, Dec. 14 and 15, 1998.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999 DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	.07	.07	---	---	---	---	---	---	---	---
2	---	---	.08	.09	---	---	---	---	---	---	---	---
3	---	---	.08	.08	---	---	---	---	---	---	---	---
4	---	---	.08	.08	---	---	---	---	---	---	---	---
5	---	---	.07	.08	---	---	---	---	---	---	---	---
6	---	---	.09	.07	---	---	---	---	---	---	---	---
7	---	---	.08	.08	---	---	---	---	---	---	---	---
8	---	---	.08	.08	---	---	---	---	---	---	---	---
9	---	---	.07	.07	---	---	---	---	---	---	---	---
10	---	---	.08	.08	---	---	---	---	---	---	---	---
11	---	.08	.08	.07	---	---	---	---	---	---	---	---
12	---	.08	.08	.07	---	---	---	---	---	---	---	---
13	---	---	.08	.07	---	---	---	---	---	---	---	---
14	---	.08	.08	.08	---	---	---	---	---	---	---	---
15	---	.08	.07	.08	---	---	---	---	---	---	---	---
16	---	.08	.07	.07	---	---	---	---	---	---	---	---
17	---	---	.09	.08	---	---	---	---	---	---	---	---
18	---	.07	.09	---	---	---	---	---	---	---	---	---
19	---	.08	---	---	---	---	---	---	---	---	---	---
20	---	.08	.09	---	---	---	---	---	---	---	---	---
21	---	.08	---	---	---	---	---	---	---	---	---	---
22	---	.08	.07	---	---	---	---	---	---	---	---	---
23	---	.08	.07	---	---	---	---	---	---	---	---	---
24	---	---	.08	---	---	---	---	---	---	---	---	---
25	---	.08	.09	---	---	---	---	---	---	---	---	---
26	---	.07	---	---	---	---	---	---	---	---	---	---
27	---	.07	---	---	---	---	---	---	---	---	---	---
28	---	.07	.09	---	---	---	---	---	---	---	---	---
29	---	.07	.09	---	---	---	---	---	---	---	---	---
30	---	.07	.07	---	---	---	---	---	---	---	---	---
31	---	---	.07	---	---	---	---	---	---	---	---	---
MAX	---	.08	.09	.09	---	---	---	---	---	---	---	---
MIN	---	.07	.07	.07	---	---	---	---	---	---	---	---



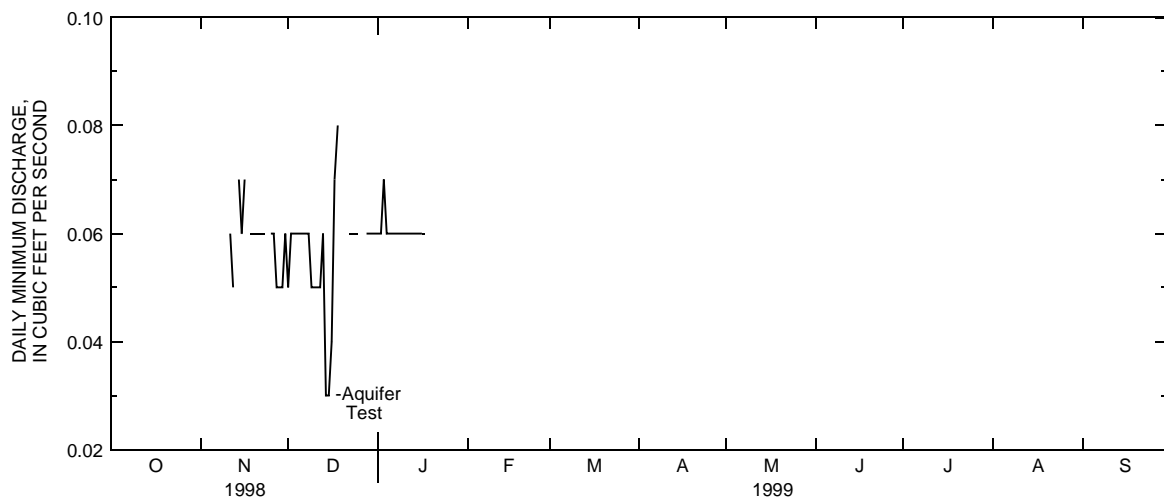
PROJECT DATA
Ground-Water Records for City of Delphos, Ohio

411

404440084192100. LOCAL NUMBER, AL-125—Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MINIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	.05	.06	---	---	---	---	---	---	---	---
2	---	---	.06	.06	---	---	---	---	---	---	---	---
3	---	---	.06	.07	---	---	---	---	---	---	---	---
4	---	---	.06	.06	---	---	---	---	---	---	---	---
5	---	---	.06	.06	---	---	---	---	---	---	---	---
6	---	---	.06	.06	---	---	---	---	---	---	---	---
7	---	---	.06	.06	---	---	---	---	---	---	---	---
8	---	---	.06	.06	---	---	---	---	---	---	---	---
9	---	---	.05	.06	---	---	---	---	---	---	---	---
10	---	---	.05	.06	---	---	---	---	---	---	---	---
11	---	.06	.05	.06	---	---	---	---	---	---	---	---
12	---	.05	.05	.06	---	---	---	---	---	---	---	---
13	---	---	.06	.06	---	---	---	---	---	---	---	---
14	---	.07	.03	.06	---	---	---	---	---	---	---	---
15	---	.06	.03	.06	---	---	---	---	---	---	---	---
16	---	.07	.04	.06	---	---	---	---	---	---	---	---
17	---	---	.07	.06	---	---	---	---	---	---	---	---
18	---	.06	.08	---	---	---	---	---	---	---	---	---
19	---	.06	---	---	---	---	---	---	---	---	---	---
20	---	.06	.08	---	---	---	---	---	---	---	---	---
21	---	.06	---	---	---	---	---	---	---	---	---	---
22	---	.06	.06	---	---	---	---	---	---	---	---	---
23	---	.06	.06	---	---	---	---	---	---	---	---	---
24	---	---	.06	---	---	---	---	---	---	---	---	---
25	---	.06	.06	---	---	---	---	---	---	---	---	---
26	---	.06	---	---	---	---	---	---	---	---	---	---
27	---	.05	---	---	---	---	---	---	---	---	---	---
28	---	.05	.06	---	---	---	---	---	---	---	---	---
29	---	.05	.06	---	---	---	---	---	---	---	---	---
30	---	.06	.06	---	---	---	---	---	---	---	---	---
31	---	---	.06	---	---	---	---	---	---	---	---	---
MAX	---	.07	.08	.07	---	---	---	---	---	---	---	---
MIN	---	.05	.03	.06	---	---	---	---	---	---	---	---



PROJECT DATA

Ground-Water Records for City of Delphos, Ohio

404440084192100. LOCAL NUMBER, AL-125—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	TEMPER- ATURE WATER (DEG C) (00010)	TEMPER- ATURE AIR (DEG C) (00020)	AGENCY COL- LECTING SAMPLE (CODE NUMBER) (00027)	AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (00028)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	OXYGEN, DIS- SOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)
	DEC 16... 16...	11.0 11.0	.0 .0	1028 1028	80020 80020	1320 1320	.2 .2	7.0 7.0	7.1 7.1	<.010 --
DATE	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BORON, DIS- SOLVED (UG/L AS B) (01020)
DEC 16... 16...	150 150	70 71	35 34	4.4 4.4	17 --	410 --	1.7 --	14 --	<1 <1	342 347
DATE	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	LITHIUM DIS- SOLVED (UG/L AS LI) (01130)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	TRITIUM TOTAL (PCI/L) (07000)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	
DEC 16... 16...	<10 16... 16...	<1.0 16... 16...	E2.8 16... 16...	<1.0 16... 16...	12100 16... 16...	49 16... 16...	<1 16... 16...	<5.7 16... 16...	946 16... 16...	
DATE	ELEV. OF LAND SURFACE DATUM (FT. ABOVE NGVD) (72000)	DEPTH OF WELL, TOTAL (FEET) (72008)	DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET) (72019)	TRITIUM 2 SIGMA WATER, WHOLE, TOTAL (PCI/L) (75985)	DRAIN- AGE AREA (SQ. MI.) (81024)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410)	ANC UNFLTRD CARBON- ATE IT-FLD (MG/L - CACO3) (99430)	SET NUMBER LAB CODE 2127 (NO.) (99760)	
DEC 16... 16...	790 790	-- --	.31 --	4.5 --	-- --	1280 1280	302 301	300 300	98351.00 --	

PROJECT DATA
Ground-Water Records for City of Delphos, Ohio

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404516084194400. LOCAL NUMBER, AL-126

LOCATION.--Latitude 40°45'16", longitude 84°19'44", Allen County, Hydrologic Unit 04100007.

AQUIFER.--Carbonate.

WELL CHARACTERISTICS.--Observation well.

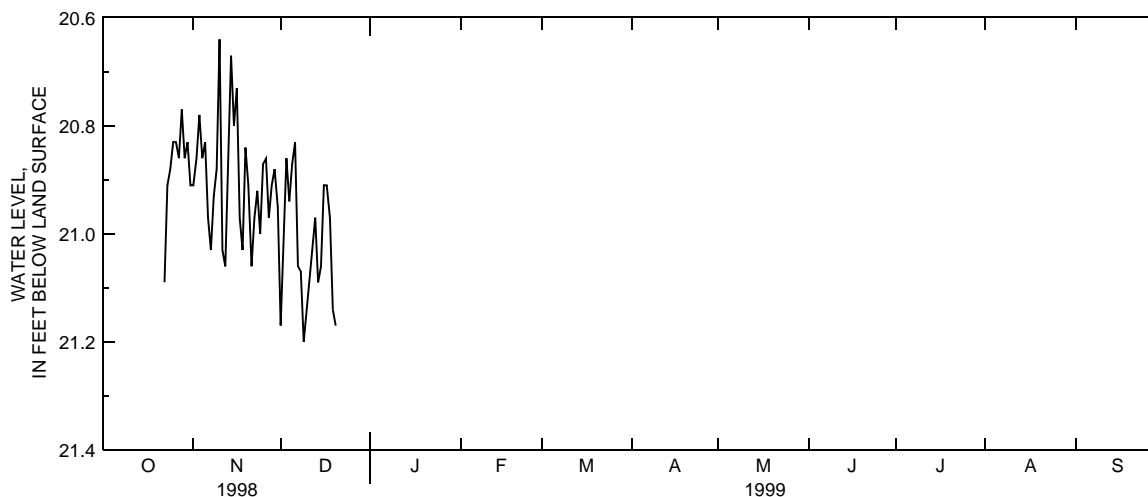
DATUM.--Altitude of land surface is 810 feet above National Geodetic Vertical Datum of 1929. Measuring point is top of casing, 2.6 ft above land-surface datum.

PERIOD OF RECORD.--Oct. 22, 1998 to Dec. 20, 1998.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily low, 21.20 ft below land-surface datum, Dec. 9, 1998; minimum daily low, 20.64 ft below land-surface datum, Nov. 10, 1998.

DEPTH BELOW LAND SURFACE (WATER LEVEL), FEET, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	20.91	21.17	---	---	---	---	---	---	---	---	---
2	---	20.86	20.99	---	---	---	---	---	---	---	---	---
3	---	20.78	20.86	---	---	---	---	---	---	---	---	---
4	---	20.86	20.94	---	---	---	---	---	---	---	---	---
5	---	20.83	20.87	---	---	---	---	---	---	---	---	---
6	---	20.97	20.83	---	---	---	---	---	---	---	---	---
7	---	21.03	21.06	---	---	---	---	---	---	---	---	---
8	---	20.93	21.07	---	---	---	---	---	---	---	---	---
9	---	20.88	21.20	---	---	---	---	---	---	---	---	---
10	---	20.64	21.14	---	---	---	---	---	---	---	---	---
11	---	21.03	21.09	---	---	---	---	---	---	---	---	---
12	---	21.06	21.03	---	---	---	---	---	---	---	---	---
13	---	20.91	20.97	---	---	---	---	---	---	---	---	---
14	---	20.67	21.09	---	---	---	---	---	---	---	---	---
15	---	20.80	21.06	---	---	---	---	---	---	---	---	---
16	---	20.73	20.91	---	---	---	---	---	---	---	---	---
17	---	20.97	20.91	---	---	---	---	---	---	---	---	---
18	---	21.03	20.97	---	---	---	---	---	---	---	---	---
19	---	20.84	21.14	---	---	---	---	---	---	---	---	---
20	---	20.91	21.17	---	---	---	---	---	---	---	---	---
21	---	21.06	---	---	---	---	---	---	---	---	---	---
22	21.09	20.97	---	---	---	---	---	---	---	---	---	---
23	20.91	20.92	---	---	---	---	---	---	---	---	---	---
24	20.88	21.00	---	---	---	---	---	---	---	---	---	---
25	20.83	20.87	---	---	---	---	---	---	---	---	---	---
26	20.83	20.86	---	---	---	---	---	---	---	---	---	---
27	20.86	20.97	---	---	---	---	---	---	---	---	---	---
28	20.77	20.91	---	---	---	---	---	---	---	---	---	---
29	20.86	20.88	---	---	---	---	---	---	---	---	---	---
30	20.83	20.95	---	---	---	---	---	---	---	---	---	---
31	20.91	---	---	---	---	---	---	---	---	---	---	---
MAX	21.09	21.06	21.20	---	---	---	---	---	---	---	---	---



PROJECT DATA
Ground-Water Records for City of Delphos, Ohio

GROUND-WATER LEVELS

LOCAL WELL NUMBER	LATITUDE (DEGREES)	LONGITUDE (DEGREES)	DEPTH OF WELL (FEET)	ALTITUDE OF LAND SURFACE (FEET)	WATER LEVEL (FEET)	MEASUREMENT TIME	WATER- LEVEL DATE
AL-50	404611	842001	120	805	22.80	1526	10/21/98
					22.89	1159	10/21/98
					23.20	1658	10/21/98
					23.39	1341	10/21/98
					24.53	1651	10/21/98
AL-52	404640	842004	171	802	26.68	0953	10/21/98
					16.62	1710	10/21/98
					16.65	1400	10/21/98
					16.68	1215	10/21/98
					16.70	1019	10/21/98
AL-53	404551	842018	100	810	18.90	1542	10/21/98
					28.18	0900	12/14/98
					28.18	1104	12/14/98
					28.19	0850	12/16/98
					28.19	1030	12/14/98
					28.19	1240	12/14/98
					28.19	1419	12/14/98
					28.19	1505	12/14/98
					28.20	1200	12/14/98
					28.20	1405	12/15/98
					28.21	1118	12/15/98
					28.21	1155	12/15/98
					28.21	1310	12/15/98
					28.21	1549	12/14/98
					28.23	0940	12/15/98
AL-54	404645	841918	27	798	28.24	1652	12/14/98
					28.38	1551	10/21/98
					28.50	1335	10/21/98
					28.60	1159	10/21/98
					28.78	0853	10/21/98
AL-55	404604	841951	150	805	10.52	1426	10/21/98
					10.53	1053	10/21/98
					10.53	1615	10/21/98
					10.56	1251	10/21/98
					10.56	1738	10/21/98
AL-56	404645	841949	124	800	26.14	1300	10/06/98
					26.24	0900	10/21/98
					26.24	1115	10/21/98
					26.25	1255	10/21/98
					26.25	1420	10/21/98
					26.44	1020	10/22/98
					26.56	1234	11/24/98
					26.56	1440	12/21/98
					26.74	0810	12/14/98
					27.01	1520	12/14/98
					27.94	1257	12/14/98
					19.50	1421	10/21/98
					19.52	1043	10/21/98
					19.52	1246	10/21/98
					19.57	1732	10/21/98
AL-57	404548	842056	113	811	19.61	1610	10/21/98
					20.70	1328	10/06/98
					20.81	1430	10/21/98
					20.82	0915	10/21/98
					20.83	1135	10/21/98
AL-58	404453	841836	65	810	20.83	1550	10/21/98
					20.84	1300	10/21/98
					20.84	1655	10/21/98
					20.99	1038	10/22/98
					21.03	1207	11/24/98
					21.05	1500	12/21/98
					21.27	1510	12/15/98
					21.32	0826	12/14/98
					21.32	1250	12/14/98
					21.34	1630	12/14/98
					19.94	1629	10/21/98
					19.94	1803	10/21/98
					19.96	1455	10/21/98
					19.99	1149	10/21/98
					19.99	1340	10/21/98
AL-59	404613	842005	32	805	20.58	1154	10/21/98
					20.59	1651	10/21/98
					20.61	1336	10/21/98
					20.67	1520	10/21/98
					20.69	0946	10/21/98
AL-60	404502	841831	34	806	21.05	1535	12/15/98
					21.15	1707	12/14/98
					21.48	0920	12/14/98
					19.02	1153	10/21/98
					19.03	1500	10/21/98
					19.04	1344	10/21/98
					19.05	1633	10/21/98
					19.11	1807	10/21/98

PROJECT DATA
Ground-Water Records for City of Delphos, Ohio

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GROUND-WATER LEVELS—CONTINUED

LOCAL WELL NUMBER	LATITUDE (DEGREES)	LONGITUDE (DEGREES)	DEPTH OF WELL (FEET)	ALTITUDE OF LAND SURFACE (FEET)	WATER LEVEL (FEET)	MEASUREMENT TIME	WATER- LEVEL DATE
AL-61	404438	841817	34	810	20.98	1200	10/21/98
					21.01	1811	10/21/98
					21.02	1349	10/21/98
					21.03	1506	10/21/98
					21.06	1640	10/21/98
AL-63	404424	842005	40.9	815	17.15	1412	10/21/98
					17.15	1543	10/21/98
					17.15	1716	10/21/98
					17.17	1248	10/21/98
					17.18	1058	10/21/98
					17.49	1721	12/15/98
					17.52	1455	12/15/98
					17.55	1701	12/14/98
AL-64	404517	841952	300	812	15.23	1220	10/20/98
					16.77	1255	12/21/98
					16.89	0801	12/14/98
					16.94	0930	12/14/98
					16.96	0837	12/15/98
					17.03	0700	12/16/98
					17.10	0456	12/16/98
					17.21	0259	12/16/98
					17.31	0145	12/16/98
					17.41	0049	12/16/98
					17.47	1027	12/14/98
					17.47	1059	12/15/98
					17.48	1028	12/14/98
					17.49	1030	12/14/98
					17.50	1032	12/14/98
					17.51	1035	12/14/98
					17.52	1038	12/14/98
					17.61	1738	12/14/98
					17.66	1131	12/14/98
					17.71	1226	12/14/98
					17.90	1140	12/15/98
					17.97	1308	12/14/98
					17.99	1317	12/14/98
					17.99	1358	12/14/98
					17.99	1410	12/14/98
					18.02	1433	12/14/98
					18.08	1240	12/15/98
					18.15	1440	12/14/98
					18.16	1400	12/15/98
					18.21	1440	12/15/98
					18.30	1630	12/15/98
					18.37	1458	12/14/98
					18.39	1828	12/15/98
					18.41	1504	12/14/98
					18.47	2014	12/15/98
					18.52	1525	12/14/98
					18.57	1529	12/14/98
					18.61	1556	12/14/98
					18.63	1601	12/14/98
					18.72	1635	12/14/98
					18.74	1639	12/14/98
AL-65	404458	841925	--	812	17.69	0800	10/21/98
					17.73	1615	10/20/98
					17.74	1500	10/20/98
					17.77	1230	12/16/98
					17.77	1415	11/17/98
					17.79	1520	11/24/98
					17.84	1230	10/21/98
					17.93	0822	12/14/98
					17.97	0820	12/15/98
					17.97	1015	12/14/98
					18.03	0744	12/16/98
					18.03	1100	12/15/98
					18.05	1105	12/14/98
					18.09	0440	12/16/98
					18.10	1353	10/21/98
					18.15	1315	12/14/98
					18.18	0239	12/16/98
					18.20	1235	12/15/98
					18.20	1425	12/14/98
					18.25	1420	12/15/98
					18.27	0126	12/16/98
					18.32	1550	12/15/98
					18.33	1730	10/21/98
					18.35	1600	12/14/98
					18.37	1725	12/14/98
					18.39	--	12/16/98
					18.40	1455	10/21/98
					18.41	1815	12/15/98
					18.46	1955	12/15/98
					18.50	2140	12/15/98
					18.66	1630	10/21/98

PROJECT DATA
Ground-Water Records for City of Delphos, Ohio

GROUND-WATER LEVELS—CONTINUED

LOCAL WELL NUMBER	LATITUDE (DEGREES)	LONGITUDE (DEGREES)	DEPTH OF WELL (FEET)	ALTITUDE OF LAND SURFACE (FEET)	WATER LEVEL (FEET)	MEASUREMENT TIME	WATER- LEVEL DATE
AL-66	404448	841913	82	803	12.11	1230	10/21/98
					12.26	1006	12/14/98
					12.27	1330	10/21/98
					12.53	1520	12/14/98
					12.53	1755	12/14/98
					12.57	1442	10/21/98
					12.60	1738	10/21/98
					12.62	1713	12/14/98
					12.76	1613	10/21/98
					14.68	1535	10/21/98
AL-67	404439	842002	31	813	14.68	1711	10/21/98
					14.69	1418	10/21/98
					14.70	1853	10/21/98
					14.72	1048	10/21/98
					14.72	1239	10/21/98
					15.08	0856	12/14/98
					15.11	1715	12/14/98
					43.00	1257	11/24/98
					32.84	0248	12/16/98
					35.38	2148	12/15/98
AL-68	404526	841918	100	807	36.55	1012	12/14/98
					37.60	0750	12/14/98
					38.05	0739	12/15/98
					38.05	1125	12/15/98
					38.20	-	12/16/98
					38.45	1245	12/15/98
					38.55	1025	12/15/98
					38.85	1037	12/14/98
					39.35	1822	12/15/98
					40.50	0915	12/16/98
					42.00	2006	12/15/98
					43.45	1410	12/15/98
					43.55	1630	10/21/98
					43.90	1444	12/14/98
					45.00	1354	12/14/98
					45.25	1211	12/14/98
					45.28	1010	10/21/98
					48.80	1809	12/14/98
					49.00	1524	12/14/98
					49.75	1320	10/21/98
					51.55	1730	10/21/98
					52.57	1200	10/21/98
					55.55	1230	10/21/98
					56.55	1445	10/21/98
					56.70	1052	12/14/98
					57.55	1600	10/21/98
					58.45	1400	12/21/98
					59.70	1600	12/14/98
					66.55	1410	10/21/98
					71.05	1124	12/14/98
					76.09	1535	12/15/98
					79.45	1735	12/14/98
AL-69	404435	841959	50	815	16.93	1726	12/14/98
					16.99	1709	12/14/98
AL-70	404639	842130	130	814	16.99	0913	12/14/98
					25.03	1536	10/21/98
					25.16	1322	10/21/98
					25.39	0825	10/21/98
AL-71	404420	842005	--	815	30.92	1745	10/21/98
					20.57	1407	10/21/98
					20.57	1550	10/21/98
					20.57	1720	10/21/98
					20.59	1255	10/21/98
					20.61	1105	10/21/98
AL-72	404617	842134	45	810	20.65	1846	10/21/98
					17.67	1315	10/21/98
					17.67	1531	10/21/98
					17.70	1016	10/21/98
AL-73	404556	842001	62	805	17.75	1736	10/21/98
					20.74	1150	10/21/98
					20.80	1646	10/21/98
					20.83	0937	10/21/98
					21.24	1520	12/15/98
					21.35	0910	12/14/98
AL-74	404603	842133	77	810	21.39	1704	12/14/98
					21.58	1515	10/21/98
					21.63	1000	12/15/98
					17.20	1722	10/21/98
					17.30	1522	10/21/98
					17.32	1307	10/21/98
					17.35	1003	10/21/98

PROJECT DATA
Ground-Water Records for City of Delphos, Ohio

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GROUND-WATER LEVELS—CONTINUED

LOCAL WELL NUMBER	LATITUDE (DEGREES)	LONGITUDE (DEGREES)	DEPTH OF WELL (FEET)	ALTITUDE OF LAND SURFACE (FEET)	WATER LEVEL (FEET)	MEASUREMENT TIME	WATER- LEVEL DATE
AL-75	404553	841810	--	805	20.38	1430	10/21/98
					20.39	1340	10/21/98
					20.40	1045	10/21/98
					20.40	1255	10/21/98
					20.45	1700	10/21/98
					20.49	1755	10/21/98
AL-76	404552	842057	--	810	20.70	1530	10/21/98
					20.73	1359	10/21/98
					20.73	1602	10/21/98
					20.76	1212	10/21/98
					20.80	0901	10/21/98
					21.23	1505	12/15/98
AL-77	404551	842100	--	810	21.29	0840	12/14/98
					21.31	1640	12/14/98
					16.54	1607	10/21/98
					16.56	1216	10/21/98
					16.69	0910	10/21/98
					16.69	1403	10/21/98
AL-78	404546	841814	83	805	17.21	1500	12/15/98
					17.27	0845	12/14/98
					17.27	1644	12/14/98
					17.31	0950	12/15/98
					17.87	1300	10/21/98
					17.87	1425	10/21/98
AL-79	404437	842213	67	815	17.88	1345	10/21/98
					17.89	1050	10/21/98
					17.90	1705	10/21/98
					17.91	1805	10/21/98
					17.95	1535	10/21/98
					19.60	1232	10/21/98
AL-80	404526	842157	64	810	19.60	1440	10/21/98
					19.60	1628	10/21/98
					19.63	1028	10/21/98
					17.68	1458	10/21/98
					17.70	1250	10/21/98
					17.71	0929	10/21/98
AL-81	404647	842054	142	802	17.75	1659	10/21/98
					39.19	0833	10/21/98
					39.19	1150	10/21/98
					39.21	1327	10/21/98
					39.27	1542	10/21/98
					23.32	0916	12/14/98
AL-82	404507	842039	78	815	23.62	1643	12/14/98
					22.39	0859	12/16/98
AL-83	404508	842036	45	815	22.41	1055	12/14/98
					22.42	0920	12/14/98
					22.43	1425	12/15/98
					22.45	1230	12/15/98
					22.45	1345	12/15/98
					22.46	1045	12/15/98
AL-84	404645	841839	148	805	22.48	1145	12/14/98
					22.48	1632	12/14/98
					22.49	1326	12/14/98
					22.50	1538	12/14/98
					22.51	1410	12/14/98
					22.53	1453	12/14/98
AL-85	404522	841958	315	815	22.54	1244	12/14/98
					22.98	1430	10/21/98
					22.98	1619	10/21/98
					22.99	1743	10/21/98
					23.00	1100	10/21/98
					23.00	1255	10/21/98
AL-86	404502	842152	74	805	21.25	1145	10/21/98
					21.35	1130	11/24/98
					21.38	1215	10/06/98
					21.41	1545	10/20/98
					22.63	1235	10/21/98
					23.64	1430	10/21/98
AL-86	404502	842152	74	805	23.74	1330	10/21/98
					26.32	1550	10/21/98
					20.47	1448	10/21/98
					20.49	0946	10/21/98
					20.49	1239	10/21/98
					20.56	1636	10/21/98

PROJECT DATA
Ground-Water Records for City of Delphos, Ohio

GROUND-WATER LEVELS—CONTINUED

LOCAL WELL NUMBER	LATITUDE (DEGREES)	LONGITUDE (DEGREES)	DEPTH OF WELL (FEET)	ALTITUDE OF LAND SURFACE (FEET)	WATER LEVEL (FEET)	MEASUREMENT TIME	WATER- LEVEL DATE
AL-87	404513	841958	--	807	16.14	1245	10/21/98
					16.16	1030	10/21/98
					16.16	1210	10/21/98
					16.16	1317	10/21/98
					16.17	1412	10/21/98
					16.17	1525	10/21/98
					16.25	0826	12/16/98
					16.32	1715	10/21/98
					16.42	1005	12/14/98
					16.48	0940	12/15/98
					16.53	1112	12/14/98
					16.53	1214	12/15/98
					16.60	1158	12/14/98
					16.60	1333	12/15/98
					16.60	1413	12/15/98
					16.64	1309	12/14/98
					16.69	1355	12/14/98
					16.76	1437	12/14/98
					16.83	1731	12/14/98
					16.87	1520	12/14/98
					16.92	1608	12/14/98
					17.56	1240	10/21/98
					17.56	1313	10/21/98
					17.58	1025	10/21/98
					17.58	1205	10/21/98
AL-88	404512	842001	--	810	17.60	1409	10/21/98
					17.60	1520	10/21/98
					17.73	1713	10/21/98
					17.78	1000	12/14/98
					17.86	0930	12/15/98
					17.92	1108	12/14/98
					17.94	1210	12/15/98
					17.98	1154	12/14/98
					18.01	1330	12/15/98
					18.02	1306	12/14/98
					18.03	1410	12/15/98
					18.11	1351	12/14/98
					18.15	0833	12/16/98
					18.16	1431	12/14/98
					18.25	1516	12/14/98
					18.25	1727	12/14/98
					18.31	1603	12/14/98
					17.53	1714	10/21/98
					17.54	1302	10/21/98
					17.54	1514	10/21/98
					17.57	0956	10/21/98
					21.42	1643	10/21/98
					21.44	1246	10/21/98
					21.45	0922	10/21/98
					21.55	1454	10/21/98
AL-92	404555	841952	90	805	18.21	1642	10/21/98
					18.27	1145	10/21/98
					18.35	1309	10/21/98
					18.76	1543	12/15/98
AL-93	404514	842001	--	812	18.78	0930	12/14/98
					18.78	1721	12/14/98
					15.25	1020	10/21/98
					15.26	1215	10/21/98
					15.26	1250	10/21/98
					15.27	1416	10/21/98
					15.31	1319	10/21/98
					15.33	1530	10/21/98
AL-94	404447	841836	32	807	15.45	1720	10/21/98
					20.29	1448	10/21/98
					20.29	1618	10/21/98
					20.30	1335	10/21/98
					20.30	1742	10/21/98
					20.40	1142	10/21/98
AL-95	404556	841843	--	804	19.97	1515	10/21/98
					19.98	1325	10/21/98
					19.98	1415	10/21/98
					20.01	1645	10/21/98
					20.07	1735	10/21/98
					20.11	1225	10/21/98
					20.14	1020	10/21/98
AL-96	404554	841948	--	805	16.66	1305	10/21/98
					16.66	1639	10/21/98
					16.91	0915	10/21/98
					17.03	1141	10/21/98
					17.13	1535	12/15/98
					17.20	0925	12/14/98
					17.21	1723	12/14/98
					19.50	1005	12/15/98

PROJECT DATA
Ground-Water Records for City of Delphos, Ohio

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GROUND-WATER LEVELS—CONTINUED

LOCAL WELL NUMBER	LATITUDE (DEGREES)	LONGITUDE (DEGREES)	DEPTH OF WELL (FEET)	ALTITUDE OF LAND SURFACE (FEET)	WATER LEVEL (FEET)	MEASUREMENT TIME	WATER- LEVEL DATE
AL-97	404427	841649	30	810	13.11	1212	10/21/98
					13.13	1353	10/21/98
					13.14	1512	10/21/98
					13.14	1818	10/21/98
					13.17	1652	10/21/98
AL-98	404547	841814	--	802	16.25	1535	10/21/98
					16.25	1705	10/21/98
					16.25	1800	10/21/98
					16.26	1300	10/21/98
					16.26	1345	10/21/98
					16.26	1435	10/21/98
					16.27	1055	10/21/98
AL-99	404517	842049	215	813	22.32	1510	12/15/98
					22.41	0945	12/14/98
					22.41	1655	12/14/98
AL-100	404611	842001	69	805	20.97	1528	10/21/98
					21.06	1344	10/21/98
					21.06	1657	10/21/98
					21.25	1200	10/21/98
					21.31	1655	12/14/98
					21.38	1745	12/14/98
AL-101	404507	842003	--	808	21.44	0955	10/21/98
					21.71	0830	12/14/98
					17.13	1715	10/06/98
					17.16	0950	10/21/98
					17.16	1200	10/21/98
					17.17	1100	10/21/98
					17.17	1406	10/21/98
					17.18	1150	11/24/98
					17.18	1308	10/21/98
					17.19	1235	10/21/98
					17.20	1330	12/21/98
					17.20	1517	10/21/98
					17.31	0838	12/16/98
					17.32	0900	12/14/98
					17.35	1735	10/21/98
					17.37	1010	10/22/98
					17.38	1259	12/14/98
					17.39	1055	12/14/98
					17.41	1344	12/14/98
					17.43	0915	12/15/98
					17.44	1428	12/14/98
					17.45	1155	12/14/98
					17.47	1511	12/14/98
					17.48	1220	12/15/98
					17.49	1335	12/15/98
					17.51	1415	12/15/98
					17.71	1721	12/14/98
AL-102	404700	842008	30	795	15.99	1403	10/21/98
					15.99	1545	10/21/98
					16.02	1713	10/21/98
					16.03	1219	10/21/98
AL-103	404659	842008	112	795	16.06	1025	10/21/98
					19.40	1715	10/21/98
					19.41	1406	10/21/98
					19.41	1547	10/21/98
					19.42	1025	10/21/98
AL-104	404627	842003	--	805	19.43	1221	10/21/98
					21.64	1701	10/21/98
					21.66	1532	10/21/98
					21.72	1205	10/21/98
					21.85	1348	10/21/98
AL-105	404627	842004	--	805	22.62	1006	10/21/98
					26.50	1355	10/21/98
					26.50	1537	10/21/98
					26.51	1003	10/21/98
					26.51	1211	10/21/98
AL-106	404626	842004	--	805	26.51	1706	10/21/98
					21.30	1703	10/21/98
					21.34	1534	10/21/98
					21.40	1208	10/21/98
					21.54	1350	10/21/98
AL-107	404615	841836	--	800	21.68	1009	10/21/98
					12.22	1425	10/21/98
					12.24	1335	10/21/98
					12.26	1040	10/21/98
					12.26	1525	10/21/98
					12.27	1250	10/21/98
					12.30	1750	10/21/98

PROJECT DATA
Ground-Water Records for City of Delphos, Ohio

GROUND-WATER LEVELS—CONTINUED

LOCAL WELL NUMBER	LATITUDE (DEGREES)	LONGITUDE (DEGREES)	DEPTH OF WELL (FEET)	ALTITUDE OF LAND SURFACE (FEET)	WATER LEVEL (FEET)	MEASUREMENT TIME	WATER- LEVEL DATE					
AL-108	404549	841913	--	812	32.07	0940	10/21/98					
					32.07	1640	10/21/98					
					32.10	1220	10/21/98					
					32.10	1545	10/21/98					
					32.11	1400	10/21/98					
					32.11	1720	10/21/98					
					32.13	1455	10/21/98					
					32.17	1135	10/21/98					
					32.21	1310	10/21/98					
					32.48	0955	12/14/98					
					32.58	1751	12/14/98					
AL-109	404555	841925	142	807	24.98	0925	10/21/98					
					25.01	1130	10/21/98					
					25.01	1540	10/21/98					
					25.01	1625	10/21/98					
					25.02	1215	10/21/98					
					25.02	1355	10/21/98					
					25.02	1715	10/21/98					
					25.03	1510	10/21/98					
					25.04	1305	10/21/98					
					25.47	1535	12/15/98					
					25.58	1010	12/15/98					
AL-111	404600	841836	29	800	25.62	1727	12/14/98					
					26.05	0937	12/14/98					
					12.46	1420	10/21/98					
					12.48	1330	10/21/98					
					12.50	1520	10/21/98					
					12.50	1650	10/21/98					
					12.52	1240	10/21/98					
					12.67	1740	10/21/98					
					12.81	1030	10/21/98					
					AL-112	404428	842135	95	815	18.82	1600	10/06/98
										18.89	1617	10/21/98
18.91	1411	10/21/98										
18.92	1223	10/21/98										
AL-113	404430	842135	66	815	21.55	1038	10/21/98					
					20.91	1043	10/21/98					
					21.65	1555	10/06/98					
					21.70	1225	10/21/98					
AL-114	404607	841837	--	798	21.72	1413	10/21/98					
					22.01	1619	10/21/98					
					22.22	1041	10/21/98					
					10.16	1245	10/21/98					
					10.16	1425	10/21/98					
					10.17	1335	10/21/98					
					10.18	1525	10/21/98					
					10.19	1035	10/21/98					
					10.24	1745	10/21/98					
					10.85	1655	10/21/98					
					AL-115	404553	842045	--	812	22.76	1355	10/21/98
22.77	1206	10/21/98										
22.78	0844	10/21/98										
22.78	1558	10/21/98										
23.23	1456	12/15/98										
23.24	0850	12/14/98										
23.26	0945	12/15/98										
23.32	1648	12/14/98										
AL-116	404536	841917	100	805	23.07	1725	10/21/98					
					23.36	1450	10/21/98					
					23.40	1315	10/21/98					
					23.50	1405	10/21/98					
					23.66	1225	10/21/98					
					23.69	1555	10/21/98					
					24.30	1635	10/21/98					
					24.44	1000	10/21/98					
					24.70	1005	10/21/98					
					24.76	1550	10/21/98					
					25.24	0955	10/21/98					
					26.86	0950	10/21/98					
					29.08	1015	10/07/98					
29.76	1145	10/21/98										
AL-117	404530	842231	48	815	22.40	--	10/06/98					
AL-118	404355	841836	40	810	15.31	--	10/06/98					
AL-119	404722	842007	44	795	15.31	1731	10/21/98					
					15.32	1436	10/21/98					
					15.33	1603	10/21/98					
					15.34	1325	10/21/98					
					15.39	1135	10/21/98					
					18.75	--	10/06/98					
					18.93	1032	10/21/98					
					18.93	1225	10/21/98					
					18.95	1719	10/21/98					
					18.96	1551	10/21/98					
					19.04	1410	10/21/98					

PROJECT DATA
Ground-Water Records for City of Delphos, Ohio

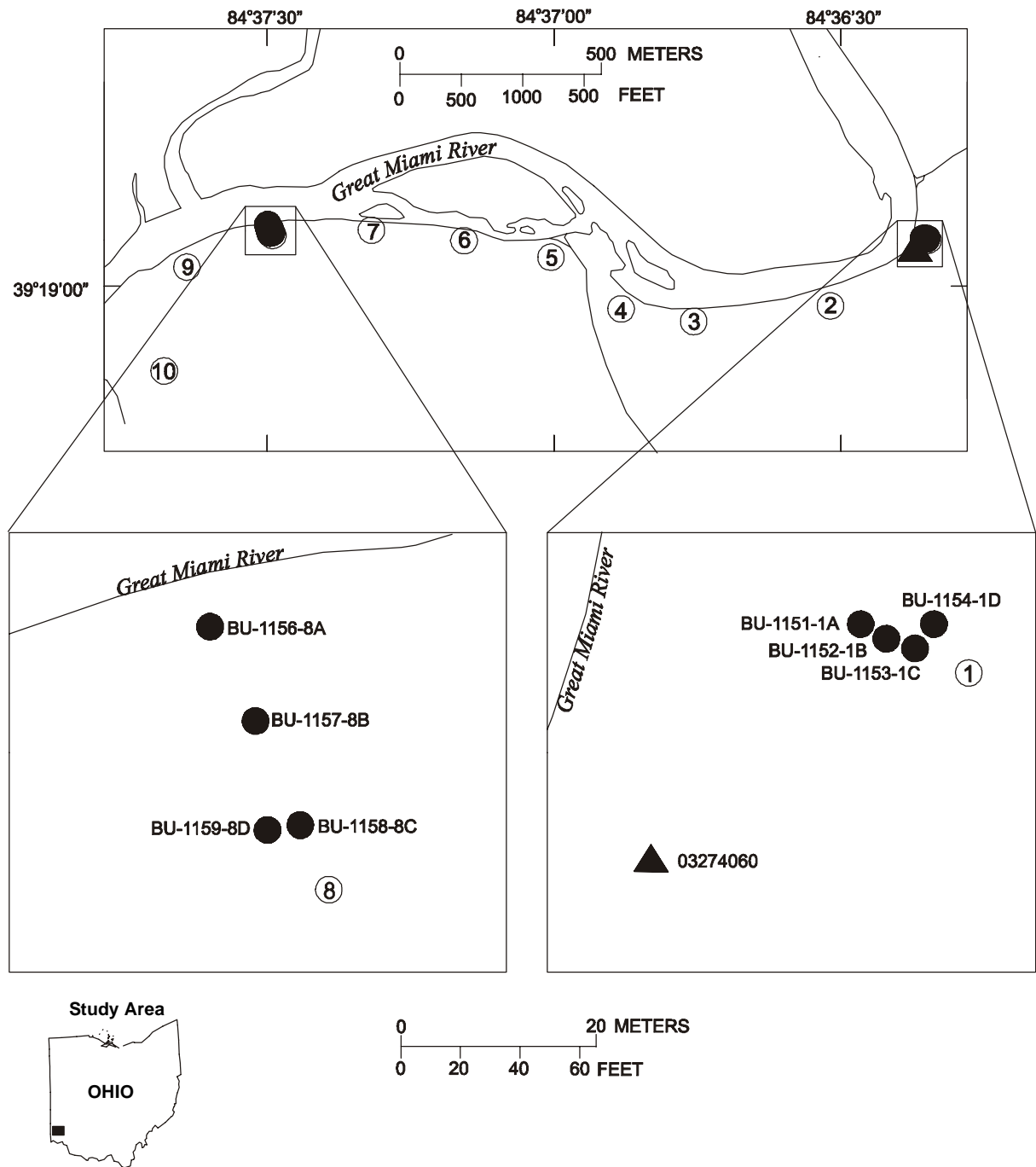
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GROUND-WATER LEVELS—CONTINUED

LOCAL WELL NUMBER	LATITUDE (DEGREES)	LONGITUDE (DEGREES)	DEPTH OF WELL (FEET)	ALTITUDE OF LAND SURFACE (FEET)	WATER LEVEL (FEET)	MEASUREMENT TIME	WATER- LEVEL DATE
AL-120	404729	842007	44	795	20.21	--	10/06/98
					20.41	1415	10/21/98
					20.41	1554	10/21/98
					20.41	1723	10/21/98
					20.42	1037	10/21/98
					20.43	1234	10/21/98
AL-121	404411	841922	33	800	12.31	--	10/07/98
					12.39	1556	10/21/98
					12.40	1430	10/21/98
					12.42	1726	10/21/98
					12.46	1355	10/20/98
					12.48	1320	10/21/98
AL-122	404517	841922	32	810	12.61	1128	10/21/98
					19.90	0910	12/16/98
					19.93	1115	12/21/98
					19.94	0930	10/07/98
					19.98	1545	12/15/98
					19.99	1415	12/15/98
					20.01	1357	10/21/98
					20.02	1504	10/21/98
					20.03	1635	10/21/98
					20.04	1220	10/21/98
					20.04	1241	12/15/98
					20.05	0930	10/21/98
					20.06	1000	10/21/98
					20.06	1130	12/15/98
					20.07	1030	12/15/98
					20.10	1454	12/14/98
					20.10	1528	12/14/98
					20.11	0920	12/14/98
					20.11	1315	11/24/98
					20.12	1415	12/14/98
					20.14	1318	12/14/98
AL-123	404528	842227	30	810	20.15	0920	12/14/98
					20.15	1020	12/14/98
					20.15	1139	12/14/98
					14.19	1300	10/07/98
					14.31	1255	10/21/98
					14.31	1504	10/21/98
AL-124	404646	842036	180	801	14.31	1705	10/21/98
					14.33	938	10/21/98
AL-126	404516	841944	--	810	37.57	--	10/20/98
					20.78	1334	10/21/98
					20.78	1432	10/21/98
					20.80	1603	10/21/98
					20.81	1235	10/21/98
					20.84	1155	10/21/98
					20.90	1310	12/21/98
					20.98	0716	12/16/98
					20.99	0501	12/16/98
					21.02	1435	12/15/98
					21.02	1621	12/15/98
					21.02	1831	12/15/98
					21.04	1355	12/15/98
					21.05	0053	12/16/98
					21.05	0149	12/16/98
					21.05	0303	12/16/98
					21.05	2020	12/15/98
					21.07	1110	11/24/98
					21.07	1240	12/15/98
					21.10	1138	12/15/98
					21.13	0805	12/14/98
					21.15	0804	12/15/98
					21.16	1101	12/15/98
					21.16	1401	12/14/98
					21.17	1437	12/14/98
					21.17	1501	12/14/98
					21.18	1312	12/14/98
					21.18	1522	12/14/98
					21.18	1637	12/14/98
					21.19	1747	12/14/98
					21.20	1559	12/14/98
					21.21	0935	12/14/98

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 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. These data are presented in tabular form followed by a graph.



PROJECT DATA
Water Data for Bolton Well Field

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391904084362101. LOCAL NUMBER, BU-1151-1A

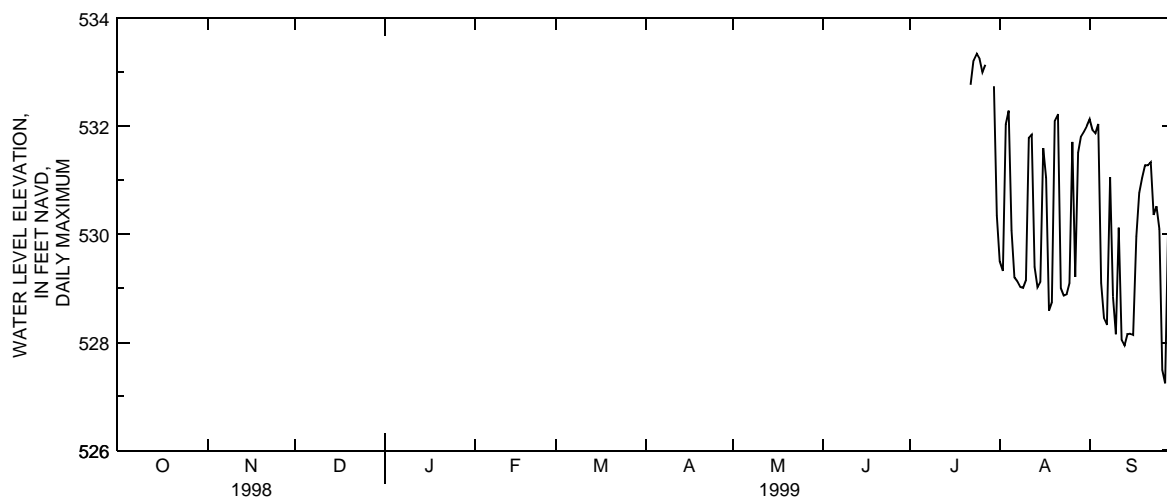
LOCATION.--Latitude 39°19'04", longitude 84°36'21", Butler County, Hydrologic Unit 05080002.
AQUIFER.--Glacial outwash, sand and gravel; 1120TSH.
WELL CHARACTERISTICS.--Observation well drilled by rotasonic techniques, diameter 4.0 in., depth 30 ft. from land surface to bottom of screen.
INSTRUMENTATION.--YSI 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 (NAVD88). 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 22, 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: Current year
SPECIFIC CONDUCTANCE: Current year
pH: Current year
WATER TEMPERATURE: Current Year
TURBIDITY: Current Year
DISSOLVED OXYGEN: Current Year
EXTREMES FOR PERIOD OF RECORD.--
WATER LEVEL ELEVATION: Maximum daily low, 526.94 ft. above NAVD88, September 28, 1999; Maximum daily high, 533.35 ft. above NAVD88, July 24, 1999.
SPECIFIC CONDUCTANCE: Maximum, 1,170 microsiemens per centimeter, September 28 and 29, 1999; Minimum, 834 microsiemens per centimeter, July 3, 1999.
pH: Maximum, 7.5, August 18, 1999; Minimum, 7.1, July 22 to July 28, 1999.
WATER TEMPERATURE: Maximum, 28.7°C, August 10, 11 and 12, 1999; Minimum, 11.8°C, July 22, 23 and 24, 1999.
TURBIDITY: Maximum, 2.0 NTU, July 24, 1999; Minimum, -1.0 NTU, August 5 to August 11, 1999.
DISSOLVED OXYGEN: Maximum, 1.0 milligrams per liter, August 4, 1999; Minimum, 0.0 milligrams per liter, July 26, 27 and 31, and August 1-4, 1999.
EXTREMES FOR CURRENT YEAR.--
WATER LEVEL ELEVATION: Maximum daily low, 526.94 ft. above NAVD88, September 28, 1999; Maximum daily high, 533.35 ft. above NAVD88, July 24, 1999.
SPECIFIC CONDUCTANCE: Maximum, 1,170 microsiemens per centimeter, September 28 and 29, 1999; Minimum, 834 microsiemens per centimeter, July 3, 1999.
pH: Maximum, 7.5, August 18, 1999; Minimum, 7.1, July 22 to July 28, 1999.
WATER TEMPERATURE: Maximum, 28.7°C, August 10, 11 and 12, 1999; Minimum, 11.8°C, July 22, 23 and 24, 1999.
TURBIDITY: Maximum, 2.0 NTU, July 24, 1999; Minimum, -1.0 NTU, August 5 to August 11, 1999.
DISSOLVED OXYGEN: Maximum, 1.0 milligrams per liter, August 4, 1999; Minimum, 0.0 milligrams per liter, July 26, 27 and 31, and August 1-4, 1999.

PROJECT DATA **Water Data for Bolton Well Field**

391904084362101. LOCAL NUMBER, BU-1151-1A—Continued

WATER LEVEL ELEVATION, FEET NAVD, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	---	---	529.50	529.31	532.13	531.93
2	---	---	---	---	---	---	---	---	529.32	529.15	531.93	531.87
3	---	---	---	---	---	---	---	---	532.04	529.09	531.87	531.78
4	---	---	---	---	---	---	---	---	532.29	529.51	532.04	529.10
5	---	---	---	---	---	---	---	---	530.07	529.20	529.10	528.44
6	---	---	---	---	---	---	---	---	529.20	529.03	528.44	528.30
7	---	---	---	---	---	---	---	---	529.13	528.91	528.32	528.12
8	---	---	---	---	---	---	---	---	529.03	528.87	531.06	528.12
9	---	---	---	---	---	---	---	---	529.01	528.86	528.84	528.15
10	---	---	---	---	---	---	---	---	529.15	529.01	528.15	527.94
11	---	---	---	---	---	---	---	---	531.79	529.07	530.12	527.90
12	---	---	---	---	---	---	---	---	531.85	529.34	528.04	527.89
13	---	---	---	---	---	---	---	---	529.40	528.87	527.94	527.77
14	---	---	---	---	---	---	---	---	529.03	528.94	528.15	527.92
15	---	---	---	---	---	---	---	---	529.13	528.90	528.16	528.14
16	---	---	---	---	---	---	---	---	531.60	528.90	528.14	528.06
17	---	---	---	---	---	---	---	---	531.05	528.59	529.96	527.99
18	---	---	---	---	---	---	---	---	528.59	528.45	530.77	529.96
19	---	---	---	---	---	---	---	---	528.74	528.51	531.05	530.77
20	---	---	---	---	---	---	---	---	532.11	528.74	531.28	530.93
21	---	---	---	---	---	---	---	---	532.23	529.00	531.28	531.03
22	---	---	---	---	---	---	532.77	532.49	529.00	528.85	531.34	528.05
23	---	---	---	---	---	---	533.22	532.77	528.87	527.73	530.36	527.73
24	---	---	---	---	---	---	533.35	533.14	528.89	528.61	530.52	527.95
25	---	---	---	---	---	---	533.25	533.00	529.10	528.88	530.10	527.49
26	---	---	---	---	---	---	533.00	532.82	531.71	529.10	527.49	527.24
27	---	---	---	---	---	---	533.14	532.92	529.21	528.91	527.24	527.03
28	---	---	---	---	---	---	---	---	531.52	528.92	530.05	526.94
29	---	---	---	---	---	---	---	---	531.82	531.52	531.20	530.05
30	---	---	---	---	---	---	532.74	530.35	531.91	529.43	---	---
31	---	---	---	---	---	---	530.35	529.49	532.01	531.85	---	---
MONTH	---	---	---	---	---	---	533.35	529.49	532.29	527.73	532.13	526.94
YEAR	533.35	526.94										

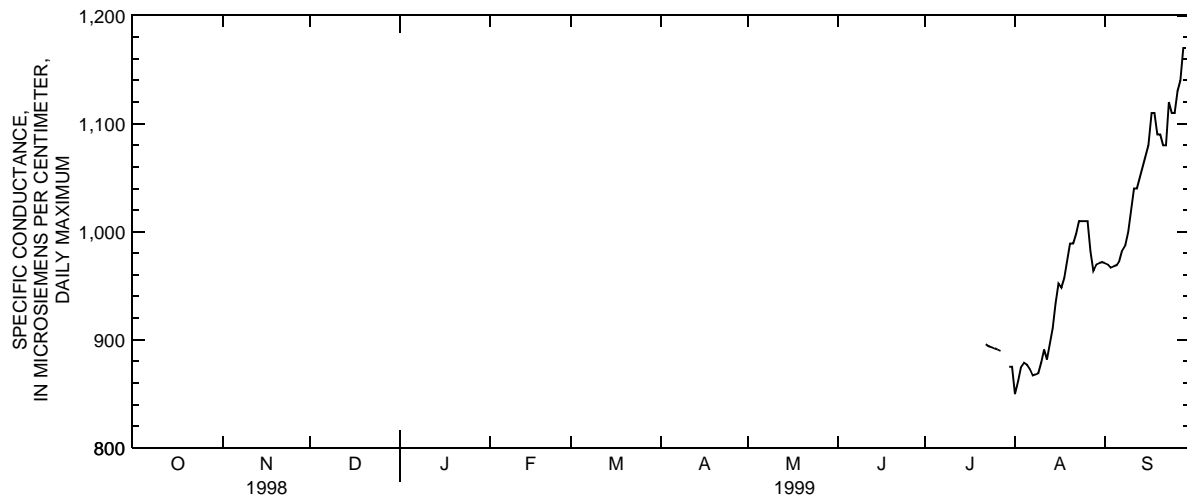


PROJECT DATA
Water Data for Bolton Well Field

425

391904084362101. LOCAL NUMBER, BU-1151-1A—Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999												
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	---	---	850	840	971	963
2	---	---	---	---	---	---	---	---	862	848	970	967
3	---	---	---	---	---	---	---	---	875	861	967	963
4	---	---	---	---	---	---	---	---	879	863	968	962
5	---	---	---	---	---	---	---	---	877	869	969	967
6	---	---	---	---	---	---	---	---	873	865	973	968
7	---	---	---	---	---	---	---	---	867	862	983	973
8	---	---	---	---	---	---	---	---	868	863	988	982
9	---	---	---	---	---	---	---	---	869	864	1000	986
10	---	---	---	---	---	---	---	---	879	867	1020	1000
11	---	---	---	---	---	---	---	---	891	875	1040	1020
12	---	---	---	---	---	---	---	---	882	878	1040	1040
13	---	---	---	---	---	---	---	---	897	882	1050	1040
14	---	---	---	---	---	---	---	---	911	897	1060	1050
15	---	---	---	---	---	---	---	---	934	911	1070	1050
16	---	---	---	---	---	---	---	---	952	934	1080	1050
17	---	---	---	---	---	---	---	---	948	939	1110	1080
18	---	---	---	---	---	---	---	---	957	947	1110	1090
19	---	---	---	---	---	---	---	---	973	956	1090	1090
20	---	---	---	---	---	---	---	---	989	972	1090	1080
21	---	---	---	---	---	---	---	---	989	985	1080	1080
22	---	---	---	---	---	---	896	892	998	988	1080	1070
23	---	---	---	---	---	---	894	891	1010	998	1120	1080
24	---	---	---	---	---	---	893	891	1010	1000	1110	1100
25	---	---	---	---	---	---	892	889	1010	1000	1110	1100
26	---	---	---	---	---	---	891	889	1010	963	1130	1110
27	---	---	---	---	---	---	890	888	982	961	1140	1120
28	---	---	---	---	---	---	---	---	964	946	1170	1140
29	---	---	---	---	---	---	---	---	970	964	1170	1160
30	---	---	---	---	---	---	875	859	971	954	---	---
31	---	---	---	---	---	---	875	834	972	969	---	---
MONTH	---	---	---	---	---	---	896	834	1010	840	1170	962
YEAR	1170	834										

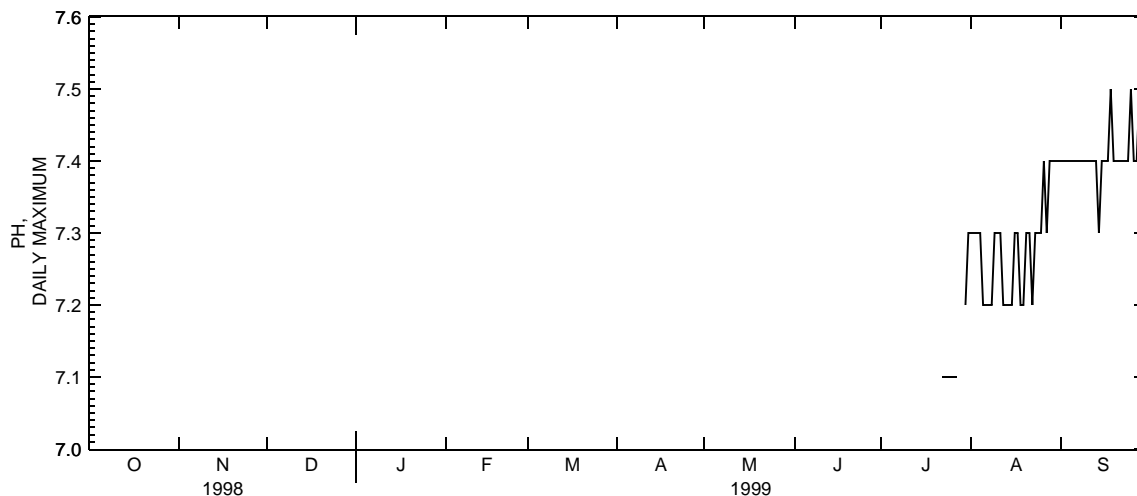


PROJECT DATA **Water Data for Bolton Well Field**

391904084362101. LOCAL NUMBER, BU-1151-1A—Continued

PH, WATER, WHOLE, FIELD, STANDARD UNITS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	---	---	7.3	7.3	7.4	7.4
2	---	---	---	---	---	---	---	---	7.3	7.3	7.4	7.4
3	---	---	---	---	---	---	---	---	7.3	7.3	7.4	7.3
4	---	---	---	---	---	---	---	---	7.3	7.2	7.4	7.3
5	---	---	---	---	---	---	---	---	7.2	7.2	7.4	7.3
6	---	---	---	---	---	---	---	---	7.2	7.2	7.4	7.3
7	---	---	---	---	---	---	---	---	7.2	7.2	7.4	7.4
8	---	---	---	---	---	---	---	---	7.2	7.2	7.4	7.4
9	---	---	---	---	---	---	---	---	7.3	7.2	7.4	7.4
10	---	---	---	---	---	---	---	---	7.3	7.2	7.4	7.4
11	---	---	---	---	---	---	---	---	7.3	7.2	7.4	7.4
12	---	---	---	---	---	---	---	---	7.2	7.2	7.4	7.3
13	---	---	---	---	---	---	---	---	7.2	7.2	7.4	7.3
14	---	---	---	---	---	---	---	---	7.2	7.2	7.3	7.3
15	---	---	---	---	---	---	---	---	7.2	7.2	7.4	7.3
16	---	---	---	---	---	---	---	---	7.3	7.2	7.4	7.4
17	---	---	---	---	---	---	---	---	7.3	7.2	7.4	7.4
18	---	---	---	---	---	---	---	---	7.2	7.2	7.5	7.4
19	---	---	---	---	---	---	---	---	7.2	7.2	7.4	7.4
20	---	---	---	---	---	---	---	---	7.3	7.2	7.4	7.4
21	---	---	---	---	---	---	---	---	7.3	7.2	7.4	7.4
22	---	---	---	---	---	---	7.1	7.1	7.2	7.2	7.4	7.4
23	---	---	---	---	---	---	7.1	7.1	7.3	7.2	7.4	7.4
24	---	---	---	---	---	---	7.1	7.1	7.3	7.2	7.4	7.4
25	---	---	---	---	---	---	7.1	7.1	7.3	7.3	7.5	7.4
26	---	---	---	---	---	---	7.1	7.1	7.4	7.3	7.4	7.4
27	---	---	---	---	---	---	7.1	7.1	7.3	7.3	7.4	7.4
28	---	---	---	---	---	---	---	---	7.4	7.3	7.5	7.4
29	---	---	---	---	---	---	---	---	7.4	7.4	7.5	7.5
30	---	---	---	---	---	---	7.2	7.2	7.4	7.4	---	---
31	---	---	---	---	---	---	7.3	7.2	7.4	7.4	---	---
MONTH	---	---	---	---	---	---	7.3	7.1	7.4	7.2	7.5	7.3
YEAR	7.5	7.1										

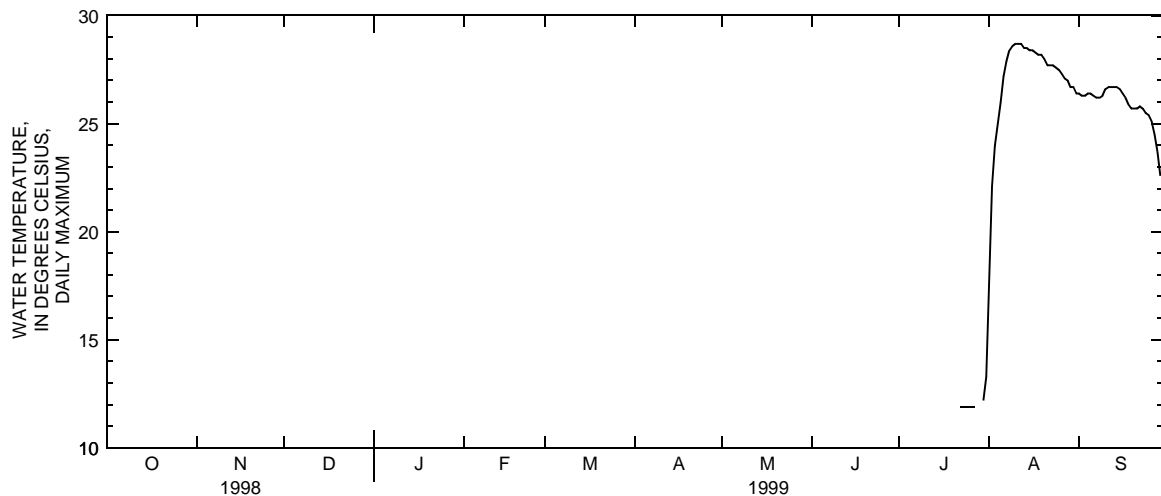


PROJECT DATA
Water Data for Bolton Well Field

427

391904084362101. LOCAL NUMBER, BU-1151-1A—Continued

TEMPERATURE, WATER, DEGREES CELSIUS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999												
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	---	---	18.6	13.3	26.4	26.3
2	---	---	---	---	---	---	---	---	22.1	18.6	26.3	26.3
3	---	---	---	---	---	---	---	---	24.0	22.1	26.3	26.3
4	---	---	---	---	---	---	---	---	25.0	24.0	26.4	26.3
5	---	---	---	---	---	---	---	---	26.0	24.8	26.4	26.3
6	---	---	---	---	---	---	---	---	27.2	26.0	26.3	26.2
7	---	---	---	---	---	---	---	---	27.9	27.1	26.2	26.1
8	---	---	---	---	---	---	---	---	28.4	27.9	26.2	26.1
9	---	---	---	---	---	---	---	---	28.6	28.4	26.3	26.2
10	---	---	---	---	---	---	---	---	28.7	28.6	26.6	26.3
11	---	---	---	---	---	---	---	---	28.7	28.5	26.7	26.6
12	---	---	---	---	---	---	---	---	28.7	28.3	26.7	26.7
13	---	---	---	---	---	---	---	---	28.5	28.5	26.7	26.7
14	---	---	---	---	---	---	---	---	28.5	28.4	26.7	26.6
15	---	---	---	---	---	---	---	---	28.4	28.4	26.6	26.4
16	---	---	---	---	---	---	---	---	28.4	28.1	26.4	26.2
17	---	---	---	---	---	---	---	---	28.3	28.2	26.2	25.9
18	---	---	---	---	---	---	---	---	28.2	28.2	25.9	25.7
19	---	---	---	---	---	---	---	---	28.2	28.0	25.7	25.7
20	---	---	---	---	---	---	---	---	28.0	27.5	25.7	25.7
21	---	---	---	---	---	---	---	---	27.7	27.5	25.7	25.7
22	---	---	---	---	---	---	11.9	11.8	27.7	27.7	25.8	25.7
23	---	---	---	---	---	---	11.9	11.8	27.7	27.6	25.7	25.5
24	---	---	---	---	---	---	11.9	11.8	27.6	27.5	25.5	25.3
25	---	---	---	---	---	---	11.9	11.9	27.5	27.3	25.4	25.1
26	---	---	---	---	---	---	11.9	11.9	27.3	27.0	25.1	24.5
27	---	---	---	---	---	---	11.9	11.9	27.1	27.0	24.5	23.7
28	---	---	---	---	---	---	---	---	27.0	26.7	23.7	22.5
29	---	---	---	---	---	---	---	---	26.7	26.5	22.6	22.5
30	---	---	---	---	---	---	12.2	12.0	26.7	26.4	---	---
31	---	---	---	---	---	---	13.3	12.2	26.4	26.4	---	---
MONTH	---	---	---	---	---	---	13.3	11.8	28.7	13.3	26.7	22.5
YEAR	28.7	11.8										

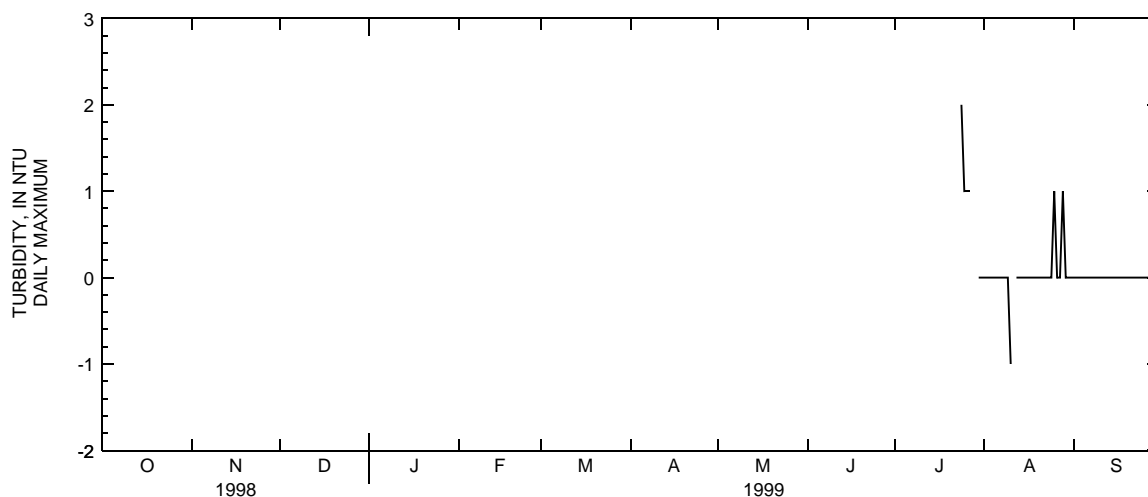


PROJECT DATA **Water Data for Bolton Well Field**

391904084362101. LOCAL NUMBER, BU-1151-1A—Continued

TURBIDITY, NTU, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	---	---	.00	.00	.00	.00
2	---	---	---	---	---	---	---	---	.00	.00	.00	.00
3	---	---	---	---	---	---	---	---	.00	.00	.00	.00
4	---	---	---	---	---	---	---	---	.00	.00	.00	.00
5	---	---	---	---	---	---	---	---	.00	-1.0	.00	.00
6	---	---	---	---	---	---	---	---	.00	-1.0	.00	.00
7	---	---	---	---	---	---	---	---	.00	-1.0	.00	.00
8	---	---	---	---	---	---	---	---	.00	-1.0	.00	.00
9	---	---	---	---	---	---	---	---	.00	-1.0	.00	.00
10	---	---	---	---	---	---	---	---	-1.0	-1.0	.00	.00
11	---	---	---	---	---	---	---	---	---	---	.00	.00
12	---	---	---	---	---	---	---	---	.00	.00	.00	.00
13	---	---	---	---	---	---	---	---	.00	.00	.00	.00
14	---	---	---	---	---	---	---	---	.00	.00	.00	.00
15	---	---	---	---	---	---	---	---	.00	.00	.00	.00
16	---	---	---	---	---	---	---	---	.00	.00	.00	.00
17	---	---	---	---	---	---	---	---	.00	.00	.00	.00
18	---	---	---	---	---	---	---	---	.00	.00	.00	.00
19	---	---	---	---	---	---	---	---	.00	.00	.00	.00
20	---	---	---	---	---	---	---	---	.00	.00	.00	.00
21	---	---	---	---	---	---	---	---	.00	.00	.00	.00
22	---	---	---	---	---	---	---	---	.00	.00	.00	.00
23	---	---	---	---	---	---	---	---	.00	.00	.00	.00
24	---	---	---	---	---	---	2.0	1.0	.00	.00	.00	.00
25	---	---	---	---	---	---	1.0	1.0	1.0	.00	.00	.00
26	---	---	---	---	---	---	1.0	1.0	.00	.00	.00	.00
27	---	---	---	---	---	---	1.0	.00	.00	.00	.00	.00
28	---	---	---	---	---	---	---	---	1.0	.00	.00	.00
29	---	---	---	---	---	---	---	---	.00	.00	.00	.00
30	---	---	---	---	---	---	.00	.00	.00	.00	---	---
31	---	---	---	---	---	---	.00	.00	.00	.00	---	---
MONTH	---	---	---	---	---	---	2.0	.00	1.0	-1.0	.00	.00
YEAR	2.0	-1.0										



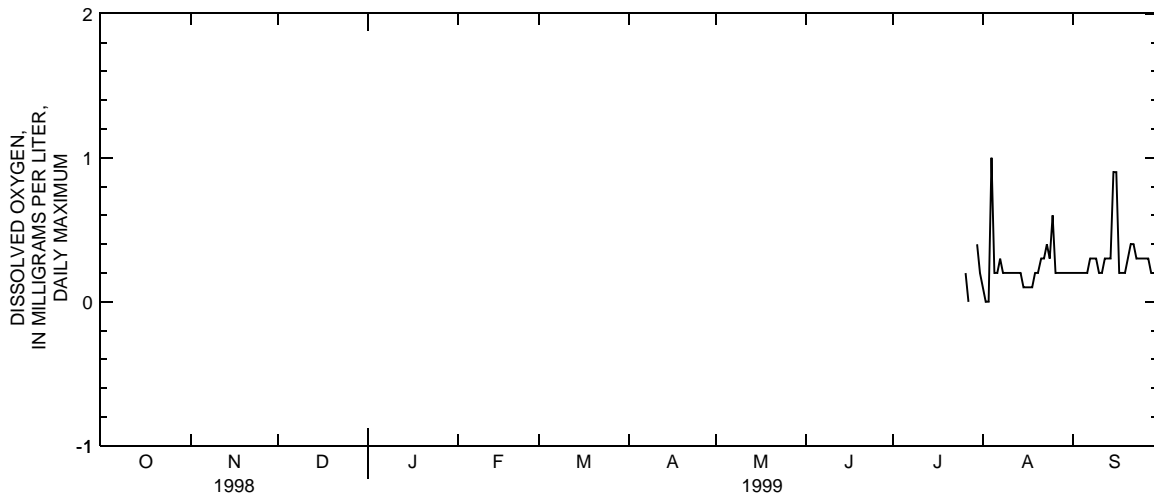
PROJECT DATA
Water Data for Bolton Well Field

429

391904084362101. LOCAL NUMBER, BU-1151-1A—Continued

OXYGEN, DISSOLVED, MILLIGRAMS PER LITER, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	---	---	.1	.0	.2	.2
2	---	---	---	---	---	---	---	---	.0	.0	.2	.2
3	---	---	---	---	---	---	---	---	.0	.0	.2	.2
4	---	---	---	---	---	---	---	---	1.0	.0	.2	.2
5	---	---	---	---	---	---	---	---	.2	.2	.2	.2
6	---	---	---	---	---	---	---	---	.2	.2	.2	.2
7	---	---	---	---	---	---	---	---	.3	.2	.3	.2
8	---	---	---	---	---	---	---	---	.2	.2	.3	.3
9	---	---	---	---	---	---	---	---	.2	.2	.3	.2
10	---	---	---	---	---	---	---	---	.2	.2	.2	.2
11	---	---	---	---	---	---	---	---	.2	.2	.2	.2
12	---	---	---	---	---	---	---	---	.2	.2	.3	.2
13	---	---	---	---	---	---	---	---	.2	.2	.3	.3
14	---	---	---	---	---	---	---	---	.2	.1	.3	.3
15	---	---	---	---	---	---	---	---	.1	.1	.9	.3
16	---	---	---	---	---	---	---	---	.1	.1	.9	.2
17	---	---	---	---	---	---	---	---	.1	.1	.2	.2
18	---	---	---	---	---	---	---	---	.1	.1	.2	.2
19	---	---	---	---	---	---	---	---	.2	.1	.2	.2
20	---	---	---	---	---	---	---	---	.2	.2	.3	.2
21	---	---	---	---	---	---	---	---	.3	.2	.4	.3
22	---	---	---	---	---	---	---	---	.3	.3	.4	.3
23	---	---	---	---	---	---	---	---	.4	.3	.3	.3
24	---	---	---	---	---	---	---	---	.3	.3	.3	.3
25	---	---	---	---	---	---	---	---	.6	.2	.3	.2
26	---	---	---	---	---	---	.2	.0	.2	.2	.3	.3
27	---	---	---	---	---	---	.0	.0	.2	.2	.3	.2
28	---	---	---	---	---	---	---	---	.2	.2	.2	.2
29	---	---	---	---	---	---	---	---	.2	.2	.2	.2
30	---	---	---	---	---	---	.4	.1	.2	.2	---	---
31	---	---	---	---	---	---	.2	.0	.2	.2	---	---
MONTH	---	---	---	---	---	---	.4	.0	1.0	.0	.9	.2
YEAR	1.0	.0										



PROJECT DATA
Water Data for Bolton Well Field

WATER-QUALITY DATA

391904084362101. LOCAL NUMBER, BU-1151-1A—Continued

DATE	AGENCY COL- LECTING SAMPLE (CODE NUMBER)	AGENCY ANA- LYZING SAMPLE (CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH WATER WHOLE FIELD (STAND- ARD UNITS)	PH WATER WHOLE LAB (STAND- ARD UNITS)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)
SEP 1999 22...	1028	80020	1080	7.4	7.7	.133	<.050	68	32	98
DATE	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	SULFATE DIS- SOLVED (MG/L AS SO4)	SILICA, DIS- SOLVED (MG/L AS SIO2)	BORON, DIS- SOLVED (UG/L AS B)	ALKA- LINITY WAT.DIS FET LAB CACO3 (MG/L)	ELEV. OF LAND SURFACE DATUM (FT. ABOVE NGVD)	DEPTH OF WELL, TOTAL (FEET)	DRAIN- AGE AREA (SQ. MI.)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM)
SEP 1999 22...	6.0	150	110	6.2	--	210	--	--	--	1030

PROJECT DATA
Water Data for Bolton Well Field

431

391904084362101. LOCAL NUMBER, BU-1151-1B

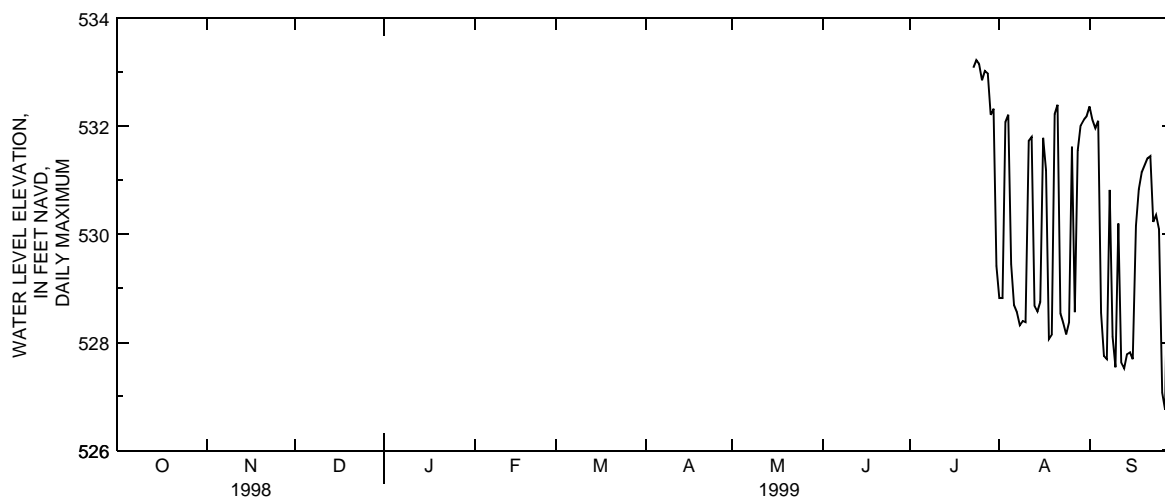
LOCATION.--Latitude 39°19'04", longitude 84°36'21", Butler County, Hydrologic Unit 05080002.
AQUIFER.--Glacial outwash, sand and gravel; 1120TSH.
WELL CHARACTERISTICS.--Observation well drilled by rotasonic techniques, diameter 4.0 in., depth 45 ft. from land surface to bottom of screen.
INSTRUMENTATION.--YSI Model 6920 data sonde with turbidity probe 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 (NAVD88). 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 23, 1999. Negative dissolved oxygen values are due to the resolution of the data sonde.
PERIOD OF RECORD.--
WATER LEVEL ELEVATION: Current year
SPECIFIC CONDUCTANCE: Current year
pH: Current year
WATER TEMPERATURE: Current Year
DISSOLVED OXYGEN: Current Year
EXTREMES FOR PERIOD OF RECORD.--
WATER LEVEL ELEVATION: Maximum daily low, 526.45 ft. above NAVD88, September 28, 1999; Maximum daily high, 533.22 ft. above NAVD88, July 24, 1999.
SPECIFIC CONDUCTANCE: Maximum, 1,150 microsiemens per centimeter, September 28, 1999; Minimum, 780 microsiemens per centimeter, July 30 and 31, 1999.
pH: Maximum, 7.5, several days during period of record; Minimum, 7.0, July 28, 1999.
WATER TEMPERATURE: Maximum, 29.8°C, August 6 and 7, 1999; Minimum, 12.0°C, July 29, 30 and 31, 1999.
DISSOLVED OXYGEN: Maximum, 0.3 milligrams per liter, September 9 and 29, 1999; Minimum -0.7 milligrams per liter, August 4, 1999.
EXTREMES FOR CURRENT YEAR.--
WATER LEVEL ELEVATION: Maximum daily low, 526.45 ft. above NAVD88, September 28, 1999; Maximum daily high, 533.22 ft. above NAVD88, July 24, 1999.
SPECIFIC CONDUCTANCE: Maximum, 1,150 microsiemens per centimeter, September 28, 1999; Minimum, 780 microsiemens per centimeter, July 30 and 31, 1999.
pH: Maximum, 7.5, several days during period of record; Minimum, 7.0, July 28, 1999.
WATER TEMPERATURE: Maximum, 29.8°C, August 6 and 7, 1999; Minimum, 12.0°C, July 29, 30 and 31, 1999.
DISSOLVED OXYGEN: Maximum, 0.3 milligrams per liter, September 9 and 29, 1999; Minimum -0.7 milligrams per liter, August 4, 1999.

PROJECT DATA **Water Data for Bolton Well Field**

391904084362101. LOCAL NUMBER, BU-1151-1B—Continued

WATER LEVEL ELEVATION, FEET NAVD, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	---	---	528.82	528.54	532.37	532.09
2	---	---	---	---	---	---	---	---	528.82	528.62	532.12	531.95
3	---	---	---	---	---	---	---	---	532.08	528.64	531.97	531.79
4	---	---	---	---	---	---	---	---	532.22	528.96	532.10	528.55
5	---	---	---	---	---	---	---	---	529.45	528.68	528.55	527.75
6	---	---	---	---	---	---	---	---	528.69	528.50	527.75	527.59
7	---	---	---	---	---	---	---	---	528.56	528.26	527.69	527.43
8	---	---	---	---	---	---	---	---	528.32	528.20	530.82	527.45
9	---	---	---	---	---	---	---	---	528.40	527.55	528.11	527.50
10	---	---	---	---	---	---	---	---	528.38	527.71	527.54	527.28
11	---	---	---	---	---	---	---	---	531.74	528.34	530.20	527.34
12	---	---	---	---	---	---	---	---	531.81	528.67	527.62	527.37
13	---	---	---	---	---	---	---	---	528.67	528.00	527.52	527.23
14	---	---	---	---	---	---	---	---	528.57	528.19	527.78	527.50
15	---	---	---	---	---	---	---	---	528.75	528.55	527.82	527.66
16	---	---	---	---	---	---	---	---	531.79	528.58	527.69	527.63
17	---	---	---	---	---	---	---	---	531.19	528.06	530.16	527.62
18	---	---	---	---	---	---	---	---	528.07	527.88	530.84	530.16
19	---	---	---	---	---	---	---	---	528.15	527.90	531.15	530.84
20	---	---	---	---	---	---	---	---	532.23	528.15	531.28	530.90
21	---	---	---	---	---	---	---	---	532.40	528.54	531.41	531.11
22	---	---	---	---	---	---	---	---	528.54	528.29	531.45	527.57
23	---	---	---	---	---	---	533.09	532.76	528.36	527.99	530.23	527.24
24	---	---	---	---	---	---	533.22	532.99	528.15	527.84	530.36	527.36
25	---	---	---	---	---	---	533.15	532.86	528.38	528.12	530.10	526.96
26	---	---	---	---	---	---	532.86	532.63	531.62	528.38	527.07	526.76
27	---	---	---	---	---	---	533.03	532.81	528.56	528.29	526.76	526.58
28	---	---	---	---	---	---	532.98	530.68	531.55	528.36	530.05	526.45
29	---	---	---	---	---	---	532.22	530.52	532.02	531.55	531.30	530.05
30	---	---	---	---	---	---	532.33	529.42	532.13	529.12	531.57	531.30
31	---	---	---	---	---	---	529.42	528.64	532.19	532.03	---	---
MONTH	---	---	---	---	---	---	533.22	528.64	532.40	527.55	532.37	526.45
YEAR	533.22	526.45										

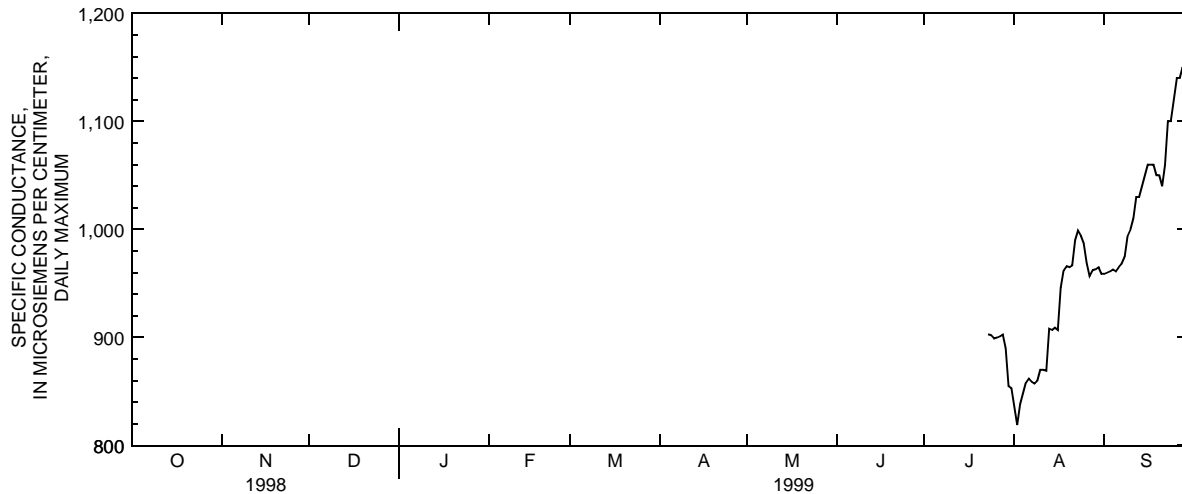


PROJECT DATA
Water Data for Bolton Well Field

433

391904084362101. LOCAL NUMBER, BU-1151-1B—Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999												
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	---	---	836	812	959	958
2	---	---	---	---	---	---	---	---	819	794	960	959
3	---	---	---	---	---	---	---	---	838	807	961	959
4	---	---	---	---	---	---	---	---	848	824	963	951
5	---	---	---	---	---	---	---	---	858	847	961	933
6	---	---	---	---	---	---	---	---	862	858	965	940
7	---	---	---	---	---	---	---	---	859	857	968	964
8	---	---	---	---	---	---	---	---	857	853	975	968
9	---	---	---	---	---	---	---	---	860	853	994	974
10	---	---	---	---	---	---	---	---	870	858	1000	992
11	---	---	---	---	---	---	---	---	870	861	1010	993
12	---	---	---	---	---	---	---	---	869	860	1030	1010
13	---	---	---	---	---	---	---	---	908	862	1030	1010
14	---	---	---	---	---	---	---	---	907	898	1040	1030
15	---	---	---	---	---	---	---	---	909	906	1050	1040
16	---	---	---	---	---	---	---	---	907	889	1060	1050
17	---	---	---	---	---	---	---	---	946	895	1060	1060
18	---	---	---	---	---	---	---	---	962	946	1060	1050
19	---	---	---	---	---	---	---	---	966	960	1050	1050
20	---	---	---	---	---	---	---	---	965	959	1050	1040
21	---	---	---	---	---	---	---	---	967	955	1040	1040
22	---	---	---	---	---	---	---	---	990	967	1060	1040
23	---	---	---	---	---	---	903	899	999	985	1100	1060
24	---	---	---	---	---	---	902	898	994	978	1100	1060
25	---	---	---	---	---	---	899	896	987	961	1120	1070
26	---	---	---	---	---	---	900	897	969	952	1140	1120
27	---	---	---	---	---	---	901	898	957	947	1140	1130
28	---	---	---	---	---	---	903	890	962	955	1150	1140
29	---	---	---	---	---	---	890	804	963	962	1140	1140
30	---	---	---	---	---	---	855	780	965	958	1140	1140
31	---	---	---	---	---	---	853	780	959	958	---	---
MONTH	---	---	---	---	---	---	903	780	999	794	1150	933
YEAR	1150	780										

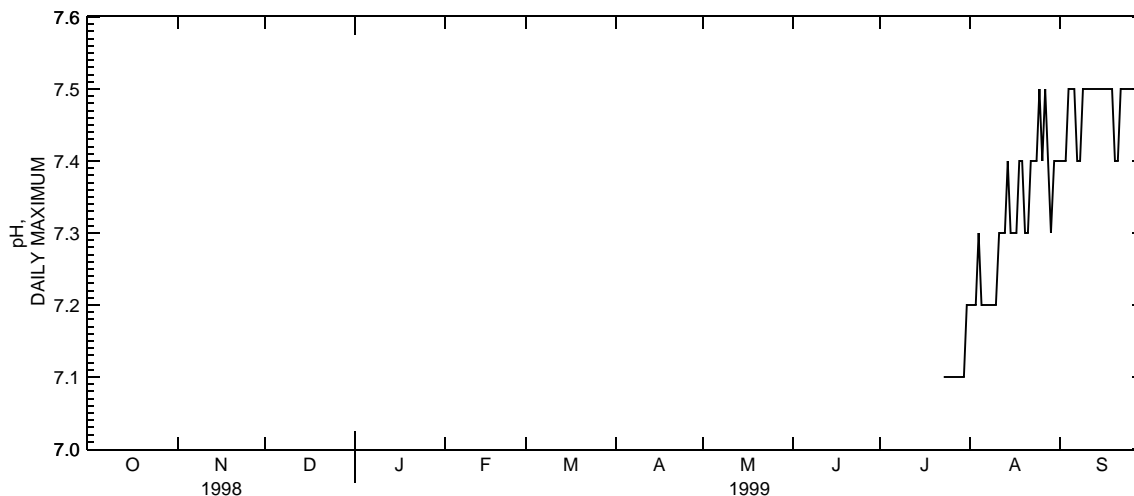


PROJECT DATA **Water Data for Bolton Well Field**

391904084362101. LOCAL NUMBER, BU-1151-1B—Continued

PH, WATER, WHOLE, FIELD, STANDARD UNITS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	---	---	7.2	7.1	7.4	7.4
2	---	---	---	---	---	---	---	---	7.2	7.2	7.4	7.4
3	---	---	---	---	---	---	---	---	7.2	7.2	7.4	7.4
4	---	---	---	---	---	---	---	---	7.3	7.1	7.5	7.4
5	---	---	---	---	---	---	---	---	7.2	7.1	7.5	7.4
6	---	---	---	---	---	---	---	---	7.2	7.1	7.5	7.4
7	---	---	---	---	---	---	---	---	7.2	7.1	7.4	7.4
8	---	---	---	---	---	---	---	---	7.2	7.2	7.4	7.4
9	---	---	---	---	---	---	---	---	7.2	7.2	7.5	7.4
10	---	---	---	---	---	---	---	---	7.2	7.2	7.5	7.4
11	---	---	---	---	---	---	---	---	7.3	7.2	7.5	7.4
12	---	---	---	---	---	---	---	---	7.3	7.2	7.5	7.4
13	---	---	---	---	---	---	---	---	7.3	7.2	7.5	7.4
14	---	---	---	---	---	---	---	---	7.4	7.3	7.5	7.5
15	---	---	---	---	---	---	---	---	7.3	7.3	7.5	7.5
16	---	---	---	---	---	---	---	---	7.3	7.2	7.5	7.5
17	---	---	---	---	---	---	---	---	7.3	7.3	7.5	7.5
18	---	---	---	---	---	---	---	---	7.4	7.3	7.5	7.5
19	---	---	---	---	---	---	---	---	7.4	7.3	7.5	7.4
20	---	---	---	---	---	---	---	---	7.3	7.3	7.4	7.4
21	---	---	---	---	---	---	---	---	7.3	7.3	7.4	7.4
22	---	---	---	---	---	---	---	---	7.4	7.3	7.5	7.4
23	---	---	---	---	---	---	7.1	7.1	7.4	7.3	7.5	7.4
24	---	---	---	---	---	---	7.1	7.1	7.4	7.4	7.5	7.4
25	---	---	---	---	---	---	7.1	7.1	7.5	7.4	7.5	7.4
26	---	---	---	---	---	---	7.1	7.1	7.4	7.3	7.5	7.4
27	---	---	---	---	---	---	7.1	7.1	7.5	7.3	7.5	7.5
28	---	---	---	---	---	---	7.1	7.0	7.4	7.3	7.5	7.5
29	---	---	---	---	---	---	7.1	7.1	7.3	7.3	7.5	7.5
30	---	---	---	---	---	---	7.1	7.1	7.4	7.3	7.5	7.5
31	---	---	---	---	---	---	7.2	7.1	7.4	7.4	---	---
MONTH	---	---	---	---	---	---	7.2	7.0	7.5	7.1	7.5	7.4
YEAR	7.5	7.0										

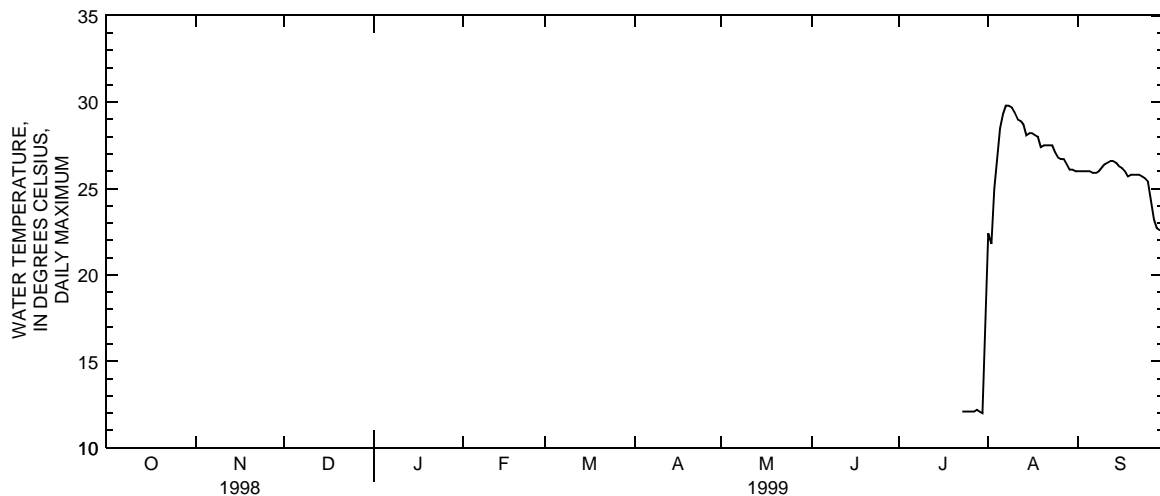


PROJECT DATA **Water Data for Bolton Well Field**

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391904084362101. LOCAL NUMBER, BU-1151-1B—Continued

TEMPERATURE, WATER, DEGREES CELSIUS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999												
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	---	---	22.4	17.0	26.0	26.0
2	---	---	---	---	---	---	---	---	21.8	20.3	26.0	26.0
3	---	---	---	---	---	---	---	---	25.0	21.8	26.0	26.0
4	---	---	---	---	---	---	---	---	26.7	25.0	26.0	25.9
5	---	---	---	---	---	---	---	---	28.5	26.7	26.0	25.8
6	---	---	---	---	---	---	---	---	29.3	28.5	25.9	25.8
7	---	---	---	---	---	---	---	---	29.8	29.3	25.9	25.9
8	---	---	---	---	---	---	---	---	29.8	29.7	26.0	25.9
9	---	---	---	---	---	---	---	---	29.7	29.4	26.2	26.0
10	---	---	---	---	---	---	---	---	29.4	29.0	26.4	26.2
11	---	---	---	---	---	---	---	---	29.0	28.9	26.5	26.4
12	---	---	---	---	---	---	---	---	28.9	28.7	26.6	26.5
13	---	---	---	---	---	---	---	---	28.7	28.1	26.6	26.5
14	---	---	---	---	---	---	---	---	28.1	28.0	26.5	26.3
15	---	---	---	---	---	---	---	---	28.2	28.0	26.3	26.2
16	---	---	---	---	---	---	---	---	28.2	28.1	26.2	26.0
17	---	---	---	---	---	---	---	---	28.1	28.0	26.0	25.7
18	---	---	---	---	---	---	---	---	28.0	27.4	25.7	25.7
19	---	---	---	---	---	---	---	---	27.4	27.4	25.8	25.7
20	---	---	---	---	---	---	---	---	27.5	27.4	25.8	25.8
21	---	---	---	---	---	---	---	---	27.5	27.5	25.8	25.8
22	---	---	---	---	---	---	---	---	27.5	27.5	25.8	25.7
23	---	---	---	---	---	---	12.1	12.1	27.5	27.1	25.7	25.6
24	---	---	---	---	---	---	12.1	12.1	27.1	26.8	25.6	25.4
25	---	---	---	---	---	---	12.1	12.1	26.8	26.7	25.4	24.3
26	---	---	---	---	---	---	12.1	12.1	26.7	26.7	24.3	23.2
27	---	---	---	---	---	---	12.1	12.1	26.7	26.4	23.2	22.6
28	---	---	---	---	---	---	12.2	12.1	26.4	26.1	22.7	22.6
29	---	---	---	---	---	---	12.1	12.0	26.1	26.1	22.6	22.6
30	---	---	---	---	---	---	12.0	12.0	26.1	26.0	22.6	22.6
31	---	---	---	---	---	---	17.0	12.0	26.0	26.0	---	---
MONTH	---	---	---	---	---	---	17.0	12.0	29.8	17.0	26.6	22.6
YEAR	29.8	12.0										

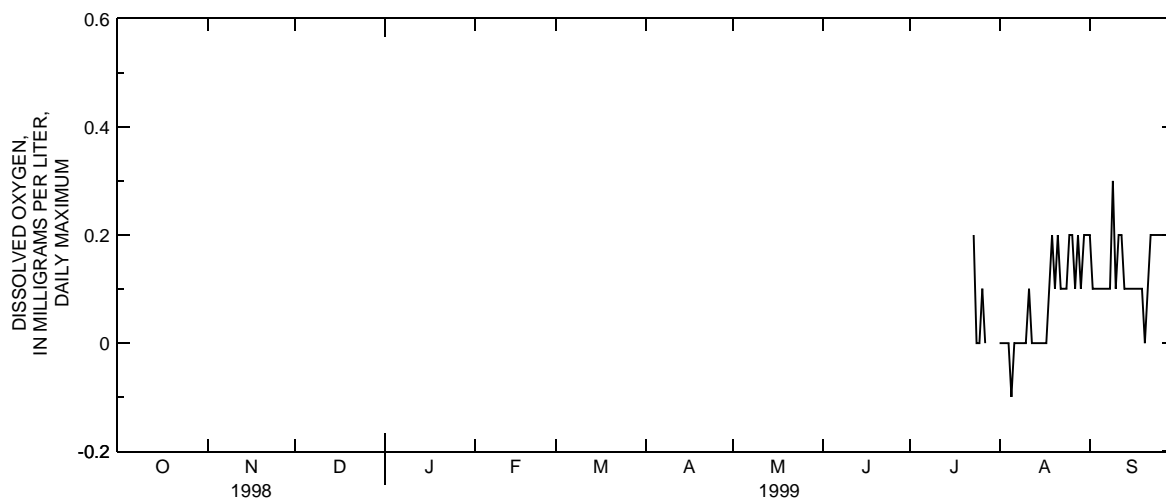


PROJECT DATA
Water Data for Bolton Well Field

391904084362101. LOCAL NUMBER, BU-1151-1B—Continued

OXYGEN, DISSOLVED, MILLIGRAMS PER LITER, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	---	---	.0	.0	.2	.1
2	---	---	---	---	---	---	---	---	.0	.0	.1	.1
3	---	---	---	---	---	---	---	---	.0	.0	.1	.1
4	---	---	---	---	---	---	---	---	.0	-.7	.1	.1
5	---	---	---	---	---	---	---	---	-.1	-.2	.1	.1
6	---	---	---	---	---	---	---	---	.0	-.1	.1	.1
7	---	---	---	---	---	---	---	---	.0	.0	.1	.1
8	---	---	---	---	---	---	---	---	.0	.0	.1	.1
9	---	---	---	---	---	---	---	---	.0	.0	.3	.1
10	---	---	---	---	---	---	---	---	.0	.0	.1	.1
11	---	---	---	---	---	---	---	---	.1	-.2	.2	.1
12	---	---	---	---	---	---	---	---	.0	.0	.2	.1
13	---	---	---	---	---	---	---	---	.0	.0	.1	.1
14	---	---	---	---	---	---	---	---	.0	.0	.1	.1
15	---	---	---	---	---	---	---	---	.0	.0	.1	.1
16	---	---	---	---	---	---	---	---	.0	-.1	.1	.1
17	---	---	---	---	---	---	---	---	.0	.0	.1	.1
18	---	---	---	---	---	---	---	---	.1	.0	.1	.1
19	---	---	---	---	---	---	---	---	.2	.1	.1	.0
20	---	---	---	---	---	---	---	---	.1	.1	.0	.0
21	---	---	---	---	---	---	---	---	.2	.1	.1	.0
22	---	---	---	---	---	---	---	---	.1	.1	.2	.1
23	---	---	---	---	---	---	.2	.0	.1	.1	.2	.1
24	---	---	---	---	---	---	.0	.0	.1	.1	.2	.2
25	---	---	---	---	---	---	.0	.0	.2	.1	.2	.2
26	---	---	---	---	---	---	.1	.0	.2	.0	.2	.2
27	---	---	---	---	---	---	.0	.0	.1	.0	.2	.1
28	---	---	---	---	---	---	---	.0	.2	.1	.2	.1
29	---	---	---	---	---	---	---	.0	.1	.0	.3	.1
30	---	---	---	---	---	---	---	.0	.2	.1	.2	.1
31	---	---	---	---	---	---	---	.0	.2	.1	---	---
MONTH	---	---	---	---	---	---	.2	.0	.2	-.7	.3	.0
YEAR	0.3	-.7										



PROJECT DATA
Water Data for Bolton Well Field

437

391904084362103. LOCAL NUMBER, BU-1153-1C

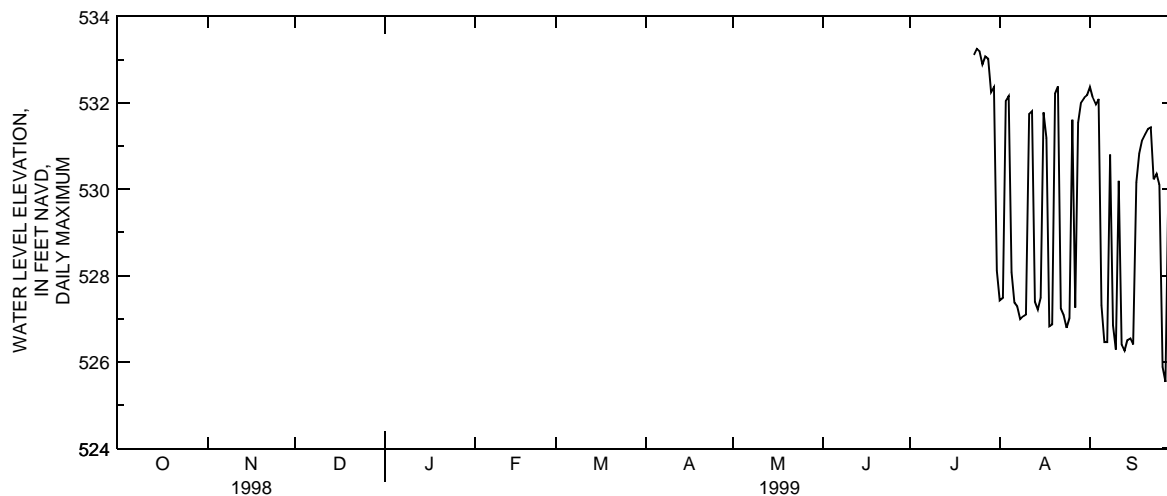
LOCATION.--Latitude 39°19'04", longitude 84°36'21", Butler County, Hydrologic Unit 05080002.
AQUIFER.--Glacial outwash, sand and gravel; 1120TSH.
WELL CHARACTERISTICS.--Observation well drilled by rotasonic techniques, diameter 4.0 in., depth 57 ft. from land surface to bottom of screen.
INSTRUMENTATION.--YSI Model 6920 data sonde with turbidity probe 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 (NAVD88). 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 23, 1999.
PERIOD OF RECORD.--
 WATER LEVEL ELEVATION: Current year
 SPECIFIC CONDUCTANCE: Current year
 pH: Current year
 WATER TEMPERATURE: Current Year
 DISSOLVED OXYGEN: Current Year
EXTREMES FOR PERIOD OF RECORD.--
 WATER LEVEL ELEVATION: Maximum daily low, 525.15 ft. above NAVD88, September 28, 1999; Maximum daily high, 533.25 ft. above NAVD88, July 24, 1999.
 SPECIFIC CONDUCTANCE: Maximum, 1,140 microsiemens per centimeter, September 28, 29 and 30, 1999; Minimum, 815 microsiemens per centimeter, August 1, 1999.
 pH: Maximum, 7.4, September 7-19 and September 22-30, 1999; Minimum, 7.0, July 26-31, 1999.
 WATER TEMPERATURE: Maximum, 30.1°C, August 8 and 9, 1999; Minimum, 12.0°C, July 31 and August 1, 1999.
 DISSOLVED OXYGEN: Maximum, 2.0 milligrams per liter, August 6, 1999; Minimum 0.0 milligrams per liter, many days during period of record.
EXTREMES FOR CURRENT YEAR.--
 WATER LEVEL ELEVATION: Maximum daily low, 525.15 ft. above NAVD88, September 28, 1999; Maximum daily high, 533.25 ft. above NAVD88, July 24, 1999.
 SPECIFIC CONDUCTANCE: Maximum, 1,140 microsiemens per centimeter, September 28, 29 and 30, 1999; Minimum, 815 microsiemens per centimeter, August 1, 1999.
 pH: Maximum, 7.4, September 7-19 and September 22-30, 1999; Minimum, 7.0, July 26-31, 1999.
 WATER TEMPERATURE: Maximum, 30.1°C, August 8 and 9, 1999; Minimum, 12.0°C, July 31 and August 1, 1999.
 DISSOLVED OXYGEN: Maximum, 2.0 milligrams per liter, August 6, 1999; Minimum 0.0 milligrams per liter, many days during period of record.

PROJECT DATA **Water Data for Bolton Well Field**

391904084362103. LOCAL NUMBER, BU-1153-1C

WATER LEVEL ELEVATION, FEET NAVD, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	---	---	527.43	527.07	532.36	532.08
2	---	---	---	---	---	---	---	---	527.49	527.21	532.11	531.94
3	---	---	---	---	---	---	---	---	532.05	527.23	531.96	531.79
4	---	---	---	---	---	---	---	---	532.16	527.64	532.09	527.31
5	---	---	---	---	---	---	---	---	528.08	527.36	527.31	526.46
6	---	---	---	---	---	---	---	---	527.37	527.10	526.46	526.34
7	---	---	---	---	---	---	---	---	527.28	526.91	526.46	526.14
8	---	---	---	---	---	---	---	---	526.99	526.83	530.80	526.18
9	---	---	---	---	---	---	---	---	527.06	526.93	526.85	526.21
10	---	---	---	---	---	---	---	---	527.10	526.86	526.29	526.00
11	---	---	---	---	---	---	---	---	531.74	527.06	530.19	526.08
12	---	---	---	---	---	---	---	---	531.81	527.39	526.40	526.10
13	---	---	---	---	---	---	---	---	527.39	526.65	526.26	525.92
14	---	---	---	---	---	---	---	---	527.22	526.83	526.51	526.19
15	---	---	---	---	---	---	---	---	527.49	527.19	526.55	526.39
16	---	---	---	---	---	---	---	---	531.78	527.31	526.41	526.35
17	---	---	---	---	---	---	---	---	531.18	526.76	530.16	526.35
18	---	---	---	---	---	---	---	---	526.83	526.55	530.83	530.16
19	---	---	---	---	---	---	---	---	526.87	526.56	531.14	530.83
20	---	---	---	---	---	---	---	---	532.22	526.81	531.27	530.89
21	---	---	---	---	---	---	---	---	532.38	527.24	531.40	531.10
22	---	---	---	---	---	---	---	---	527.24	526.95	531.44	526.35
23	---	---	---	---	---	---	533.11	532.79	527.08	526.16	530.23	526.02
24	---	---	---	---	---	---	533.25	533.02	526.79	526.50	530.36	526.17
25	---	---	---	---	---	---	533.19	532.89	527.02	526.77	530.10	525.77
26	---	---	---	---	---	---	532.89	532.67	531.61	527.02	525.89	525.50
27	---	---	---	---	---	---	533.07	532.84	527.26	526.96	525.54	525.30
28	---	---	---	---	---	---	533.02	529.97	531.54	527.03	530.05	525.15
29	---	---	---	---	---	---	532.25	529.80	532.01	531.54	531.30	530.05
30	---	---	---	---	---	---	532.37	528.12	532.12	527.83	531.56	531.30
31	---	---	---	---	---	---	528.12	527.27	532.18	532.03	---	---
MONTH	---	---	---	---	---	---	533.25	527.27	532.38	526.16	532.36	525.15
YEAR	533.25	525.15										



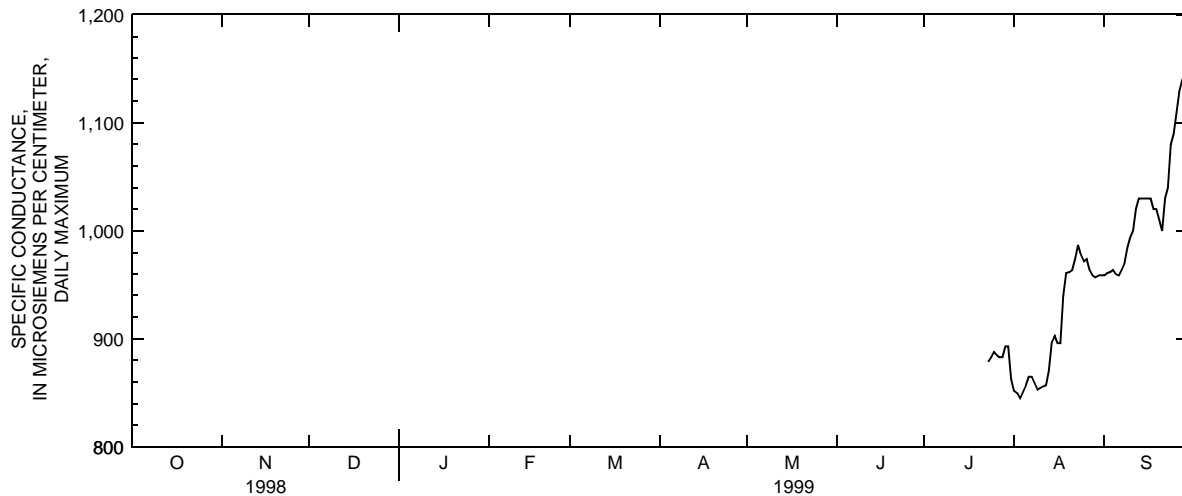
PROJECT DATA
Water Data for Bolton Well Field

439

391904084362103. LOCAL NUMBER, BU-1153-1C—Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	---	---	852	815	959	958
2	---	---	---	---	---	---	---	---	850	829	961	959
3	---	---	---	---	---	---	---	---	845	833	962	960
4	---	---	---	---	---	---	---	---	851	841	964	958
5	---	---	---	---	---	---	---	---	857	844	960	938
6	---	---	---	---	---	---	---	---	865	855	959	926
7	---	---	---	---	---	---	---	---	865	859	964	959
8	---	---	---	---	---	---	---	---	859	852	970	964
9	---	---	---	---	---	---	---	---	853	852	984	969
10	---	---	---	---	---	---	---	---	855	852	994	983
11	---	---	---	---	---	---	---	---	856	854	1000	989
12	---	---	---	---	---	---	---	---	857	855	1020	1000
13	---	---	---	---	---	---	---	---	871	854	1030	1020
14	---	---	---	---	---	---	---	---	897	871	1030	1020
15	---	---	---	---	---	---	---	---	903	893	1030	1020
16	---	---	---	---	---	---	---	---	896	888	1030	1020
17	---	---	---	---	---	---	---	---	896	882	1030	1020
18	---	---	---	---	---	---	---	---	940	883	1020	1020
19	---	---	---	---	---	---	---	---	961	940	1020	1010
20	---	---	---	---	---	---	---	---	962	959	1010	1000
21	---	---	---	---	---	---	---	---	964	950	1000	999
22	---	---	---	---	---	---	---	---	974	944	1030	993
23	---	---	---	---	---	---	879	870	987	938	1040	1030
24	---	---	---	---	---	---	883	879	978	966	1080	1030
25	---	---	---	---	---	---	888	882	972	964	1090	1040
26	---	---	---	---	---	---	885	880	974	964	1110	1080
27	---	---	---	---	---	---	883	881	964	954	1130	1110
28	---	---	---	---	---	---	883	851	959	949	1140	1130
29	---	---	---	---	---	---	893	879	957	956	1140	1140
30	---	---	---	---	---	---	893	863	959	956	1140	1140
31	---	---	---	---	---	---	863	819	959	957	---	---
MONTH	---	---	---	---	---	---	893	819	987	815	1140	926
YEAR	1140	815										

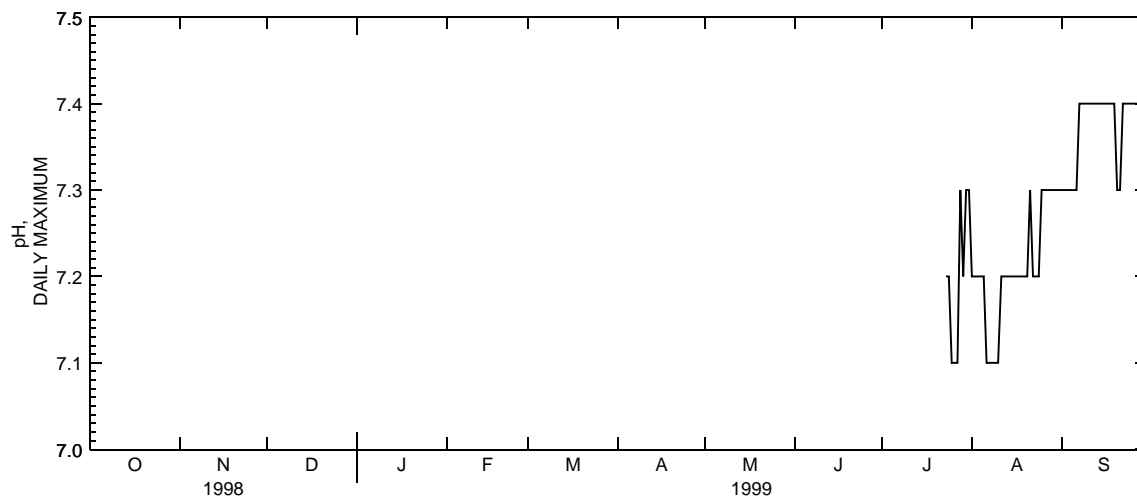


PROJECT DATA **Water Data for Bolton Well Field**

391904084362103. LOCAL NUMBER, BU-1153-1C—Continued

PH, WATER, WHOLE, FIELD, STANDARD UNITS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	---	---	7.2	7.1	7.3	7.3
2	---	---	---	---	---	---	---	---	7.2	7.1	7.3	7.3
3	---	---	---	---	---	---	---	---	7.2	7.2	7.3	7.3
4	---	---	---	---	---	---	---	---	7.2	7.1	7.3	7.3
5	---	---	---	---	---	---	---	---	7.2	7.1	7.3	7.3
6	---	---	---	---	---	---	---	---	7.1	7.1	7.3	7.3
7	---	---	---	---	---	---	---	---	7.1	7.1	7.4	7.3
8	---	---	---	---	---	---	---	---	7.1	7.1	7.4	7.3
9	---	---	---	---	---	---	---	---	7.1	7.1	7.4	7.3
10	---	---	---	---	---	---	---	---	7.1	7.1	7.4	7.4
11	---	---	---	---	---	---	---	---	7.2	7.1	7.4	7.3
12	---	---	---	---	---	---	---	---	7.2	7.1	7.4	7.4
13	---	---	---	---	---	---	---	---	7.2	7.1	7.4	7.4
14	---	---	---	---	---	---	---	---	7.2	7.2	7.4	7.3
15	---	---	---	---	---	---	---	---	7.2	7.2	7.4	7.3
16	---	---	---	---	---	---	---	---	7.2	7.2	7.4	7.4
17	---	---	---	---	---	---	---	---	7.2	7.2	7.4	7.4
18	---	---	---	---	---	---	---	---	7.2	7.2	7.4	7.4
19	---	---	---	---	---	---	---	---	7.2	7.2	7.4	7.3
20	---	---	---	---	---	---	---	---	7.2	7.2	7.3	7.3
21	---	---	---	---	---	---	---	---	7.3	7.2	7.3	7.3
22	---	---	---	---	---	---	---	---	7.2	7.2	7.4	7.3
23	---	---	---	---	---	---	7.2	7.2	7.2	7.2	7.4	7.4
24	---	---	---	---	---	---	7.2	7.1	7.2	7.2	7.4	7.4
25	---	---	---	---	---	---	7.1	7.1	7.3	7.2	7.4	7.4
26	---	---	---	---	---	---	7.1	7.0	7.3	7.3	7.4	7.4
27	---	---	---	---	---	---	7.1	7.0	7.3	7.3	7.4	7.4
28	---	---	---	---	---	---	7.3	7.0	7.3	7.3	7.4	7.4
29	---	---	---	---	---	---	7.2	7.0	7.3	7.3	7.4	7.4
30	---	---	---	---	---	---	7.3	7.0	7.3	7.3	7.4	7.4
31	---	---	---	---	---	---	7.3	7.0	7.3	7.3	---	---
MONTH	---	---	---	---	---	---	7.3	7.0	7.3	7.1	7.4	7.3
YEAR	7.4	7.0										



PROJECT DATA

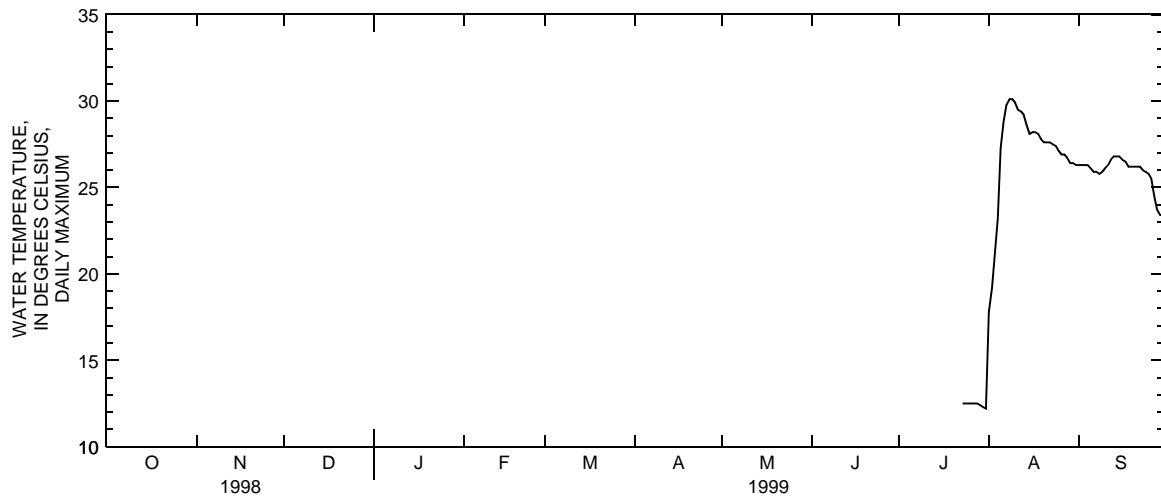
Water Data for Bolton Well Field

441

391904084362103. LOCAL NUMBER, BU-1153-1C—Continued

TEMPERATURE, WATER, DEGREES CELSIUS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	---	---	17.8	12.0	26.3	26.3
2	---	---	---	---	---	---	---	---	19.2	17.8	26.3	26.3
3	---	---	---	---	---	---	---	---	21.0	17.9	26.3	26.3
4	---	---	---	---	---	---	---	---	23.2	19.7	26.3	26.1
5	---	---	---	---	---	---	---	---	27.3	23.2	26.1	25.9
6	---	---	---	---	---	---	---	---	28.8	27.3	25.9	25.7
7	---	---	---	---	---	---	---	---	29.8	28.8	25.9	25.8
8	---	---	---	---	---	---	---	---	30.1	29.8	25.8	25.7
9	---	---	---	---	---	---	---	---	30.1	29.9	25.9	25.7
10	---	---	---	---	---	---	---	---	29.9	29.4	26.1	25.9
11	---	---	---	---	---	---	---	---	29.5	29.4	26.3	26.1
12	---	---	---	---	---	---	---	---	29.4	29.2	26.6	26.3
13	---	---	---	---	---	---	---	---	29.2	28.6	26.8	26.6
14	---	---	---	---	---	---	---	---	28.6	28.0	26.8	26.8
15	---	---	---	---	---	---	---	---	28.1	28.0	26.8	26.6
16	---	---	---	---	---	---	---	---	28.2	28.0	26.6	26.5
17	---	---	---	---	---	---	---	---	28.2	28.1	26.5	26.2
18	---	---	---	---	---	---	---	---	28.1	27.8	26.2	26.1
19	---	---	---	---	---	---	---	---	27.8	27.5	26.2	26.2
20	---	---	---	---	---	---	---	---	27.6	27.5	26.2	26.2
21	---	---	---	---	---	---	---	---	27.6	27.5	26.2	26.2
22	---	---	---	---	---	---	---	---	27.6	27.5	26.2	26.0
23	---	---	---	---	---	---	12.5	12.5	27.5	27.4	26.0	25.9
24	---	---	---	---	---	---	12.5	12.5	27.4	27.1	25.9	25.8
25	---	---	---	---	---	---	12.5	12.5	27.1	26.9	25.8	25.5
26	---	---	---	---	---	---	12.5	12.5	26.9	26.9	25.5	24.5
27	---	---	---	---	---	---	12.5	12.5	26.9	26.7	24.5	23.7
28	---	---	---	---	---	---	12.5	12.4	26.7	26.4	23.7	23.2
29	---	---	---	---	---	---	12.4	12.3	26.4	26.4	23.4	23.3
30	---	---	---	---	---	---	12.3	12.2	26.4	26.3	23.4	23.4
31	---	---	---	---	---	---	12.2	12.0	26.3	26.3	---	---
MONTH	---	---	---	---	---	---	12.5	12.0	30.1	12.0	26.8	23.2
YEAR	30.1	12.0										

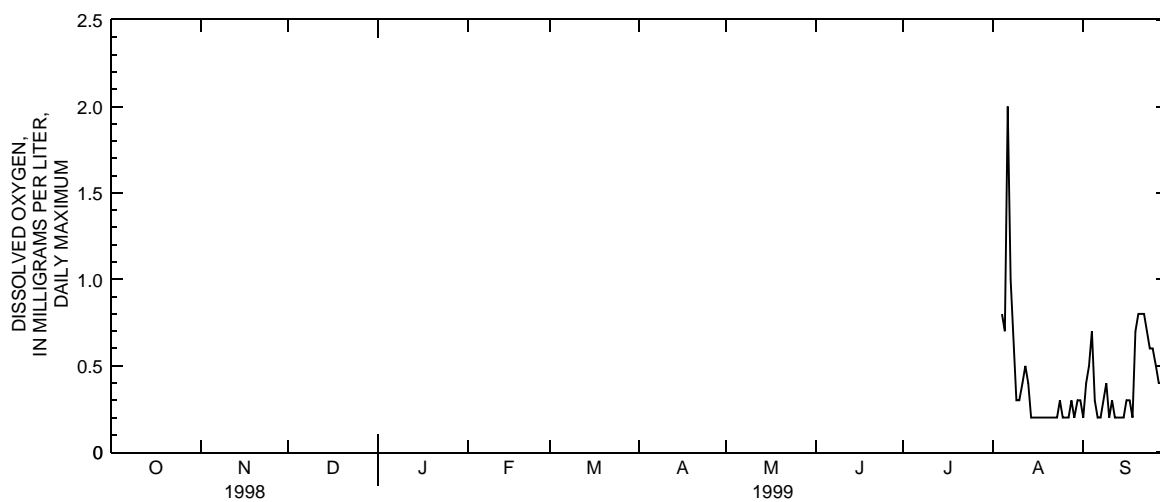


PROJECT DATA **Water Data for Bolton Well Field**

391904084362103. LOCAL NUMBER, BU-1153-1C—Continued

OXYGEN, DISSOLVED, MILLIGRAMS PER LITER, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	---	---	---	---	.2	.1
2	---	---	---	---	---	---	---	---	---	---	.4	.2
3	---	---	---	---	---	---	---	---	---	---	.5	.3
4	---	---	---	---	---	---	---	---	.8	.4	.7	.3
5	---	---	---	---	---	---	---	---	.7	.3	.3	.1
6	---	---	---	---	---	---	---	---	2.0	.7	.2	.1
7	---	---	---	---	---	---	---	---	1.0	.5	.2	.0
8	---	---	---	---	---	---	---	---	.6	.3	.3	.0
9	---	---	---	---	---	---	---	---	.3	.3	.4	.0
10	---	---	---	---	---	---	---	---	.3	.2	.2	.0
11	---	---	---	---	---	---	---	---	.4	.0	.3	.0
12	---	---	---	---	---	---	---	---	.5	.3	.2	.0
13	---	---	---	---	---	---	---	---	.4	.2	.2	.0
14	---	---	---	---	---	---	---	---	.2	.1	.2	.0
15	---	---	---	---	---	---	---	---	.2	.1	.2	.1
16	---	---	---	---	---	---	---	---	.2	.1	.3	.0
17	---	---	---	---	---	---	---	---	.2	.1	.3	.1
18	---	---	---	---	---	---	---	---	.2	.1	.2	.0
19	---	---	---	---	---	---	---	---	.2	.1	.7	.1
20	---	---	---	---	---	---	---	---	.2	.1	.8	.7
21	---	---	---	---	---	---	---	---	.2	.1	.8	.7
22	---	---	---	---	---	---	---	---	.2	.1	.8	.7
23	---	---	---	---	---	---	---	---	.2	.1	.7	.5
24	---	---	---	---	---	---	---	---	.3	.1	.6	.5
25	---	---	---	---	---	---	---	---	.2	.1	.6	.3
26	---	---	---	---	---	---	---	---	.2	.0	.5	.2
27	---	---	---	---	---	---	.6	.3	.2	.1	.4	.2
28	---	---	---	---	---	---	---	---	.3	.0	.4	.2
29	---	---	---	---	---	---	---	---	.2	.0	.4	.2
30	---	---	---	---	---	---	---	---	.3	.0	.4	.2
31	---	---	---	---	---	---	---	---	.3	.1	---	---
MONTH	---	---	---	---	---	---	.6	.3	2.0	.0	.8	.0
YEAR	2.0	.0										



PROJECT DATA
Water Data for Bolton Well Field

443

391904084362104. LOCAL NUMBER, BU-1154-1D

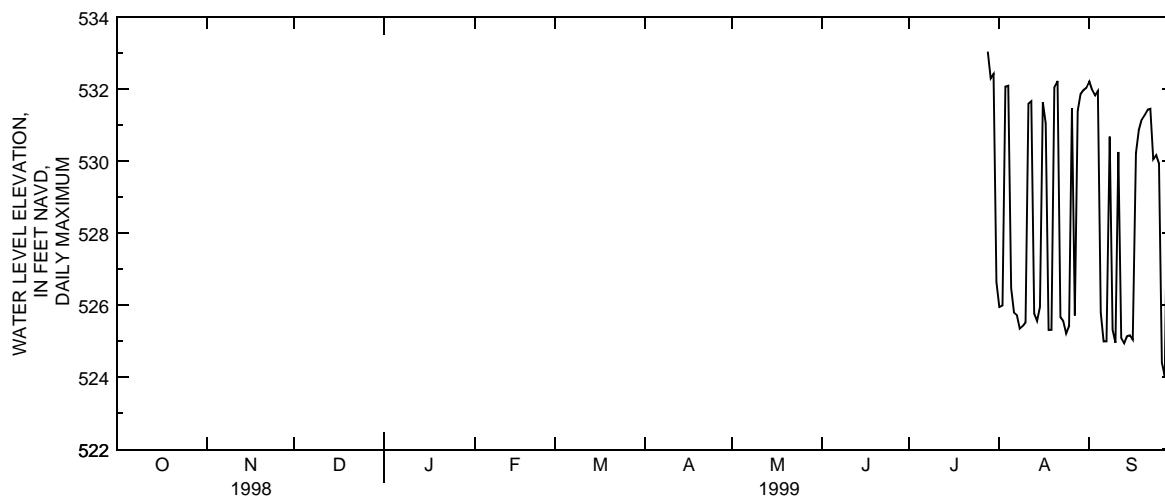
LOCATION.--Latitude 39°19'04", longitude 84°36'21", Butler County, Hydrologic Unit 05080002.
AQUIFER.--Glacial outwash, sand and gravel; 1120TSH.
WELL CHARACTERISTICS.--Observation well drilled by rotasonic techniques, diameter 4.0 in., depth 87 ft. from land surface to bottom of screen.
INSTRUMENTATION.--YSI Model 6920 data sonde with turbidity probe 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 (NAVD88). 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 28, 1999. Negative dissolved oxygen values are due to the resolution of the data sonde.
PERIOD OF RECORD.--
WATER LEVEL ELEVATION: Current year
SPECIFIC CONDUCTANCE: Current year
pH: Current year
WATER TEMPERATURE: Current Year
DISSOLVED OXYGEN: Current Year
EXTREMES FOR PERIOD OF RECORD.--
WATER LEVEL ELEVATION: Maximum daily low, 523.56 ft. above NAVD88, September 28, 1999; Maximum daily high, 533.05 ft. above NAVD88, July 28, 1999.
SPECIFIC CONDUCTANCE: Maximum, 775 microsiemens per centimeter, September 21 and 22, 1999; Minimum, 717 microsiemens per centimeter, August 5, 1999.
pH: Maximum, 7.3, August 12-18, 1999; Minimum, 7.2, many days during period of record.
WATER TEMPERATURE: Maximum, 13.0°C, August 4, 1999; Minimum, 12.7°C, many days during period of record.
DISSOLVED OXYGEN: Maximum, 0.4 milligrams per liter, August 4, 1999; Minimum -0.1 milligrams per liter, August 19, September 9, 10 and 11, 1999.
EXTREMES FOR CURRENT YEAR.--
WATER LEVEL ELEVATION: Maximum daily low, 523.56 ft. above NAVD88, September 28, 1999; Maximum daily high, 533.05 ft. above NAVD88, July 28, 1999.
SPECIFIC CONDUCTANCE: Maximum, 775 microsiemens per centimeter, September 21 and 22, 1999; Minimum, 717 microsiemens per centimeter, August 5, 1999.
pH: Maximum, 7.3, August 12-18, 1999; Minimum, 7.2, many days during period of record.
WATER TEMPERATURE: Maximum, 13.0°C, August 4, 1999; Minimum, 12.7°C, many days during period of record.
DISSOLVED OXYGEN: Maximum, 0.4 milligrams per liter, August 4, 1999; Minimum -0.1 milligrams per liter, August 19, September 9, 10 and 11, 1999.

PROJECT DATA **Water Data for Bolton Well Field**

391904084362104. LOCAL NUMBER, BU-1154-1D—Continued

WATER LEVEL ELEVATION, FEET NAVD, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	---	---	525.95	525.47	532.22	531.95
2	---	---	---	---	---	---	---	---	526.00	525.62	531.98	531.81
3	---	---	---	---	---	---	---	---	532.07	525.65	531.83	531.66
4	---	---	---	---	---	---	---	---	532.10	526.13	531.96	525.81
5	---	---	---	---	---	---	---	---	526.48	525.79	525.81	524.93
6	---	---	---	---	---	---	---	---	525.79	525.42	524.99	524.81
7	---	---	---	---	---	---	---	---	525.72	525.25	524.99	524.62
8	---	---	---	---	---	---	---	---	525.35	525.16	530.69	524.69
9	---	---	---	---	---	---	---	---	525.42	525.26	525.33	524.77
10	---	---	---	---	---	---	---	---	525.53	525.19	524.96	524.62
11	---	---	---	---	---	---	---	---	531.60	525.49	530.26	524.75
12	---	---	---	---	---	---	---	---	531.67	525.77	525.09	524.68
13	---	---	---	---	---	---	---	---	525.77	525.00	524.94	524.51
14	---	---	---	---	---	---	---	---	525.57	525.18	525.14	524.77
15	---	---	---	---	---	---	---	---	525.95	525.54	525.17	525.01
16	---	---	---	---	---	---	---	---	531.65	525.77	525.04	524.96
17	---	---	---	---	---	---	---	---	531.06	525.17	530.23	524.97
18	---	---	---	---	---	---	---	---	525.31	524.95	530.87	530.23
19	---	---	---	---	---	---	---	---	525.31	524.94	531.17	530.87
20	---	---	---	---	---	---	---	---	532.07	525.17	531.29	530.93
21	---	---	---	---	---	---	---	---	532.23	525.66	531.43	531.14
22	---	---	---	---	---	---	---	---	525.66	525.33	531.46	524.81
23	---	---	---	---	---	---	---	---	525.55	525.03	530.06	524.50
24	---	---	---	---	---	---	---	---	525.22	524.91	530.18	524.66
25	---	---	---	---	---	---	---	---	525.42	525.16	529.94	524.27
26	---	---	---	---	---	---	---	---	531.47	525.41	524.41	523.89
27	---	---	---	---	---	---	---	---	525.71	525.36	524.03	523.70
28	---	---	---	---	---	---	533.05	529.24	531.41	525.43	529.91	523.56
29	---	---	---	---	---	---	532.31	529.08	531.88	531.41	531.13	529.91
30	---	---	---	---	---	---	532.43	526.65	531.98	526.19	---	---
31	---	---	---	---	---	---	526.65	525.77	532.05	531.89	---	---
MONTH	---	---	---	---	---	---	533.05	525.77	532.23	524.91	532.22	523.56
YEAR	533.05	523.56										

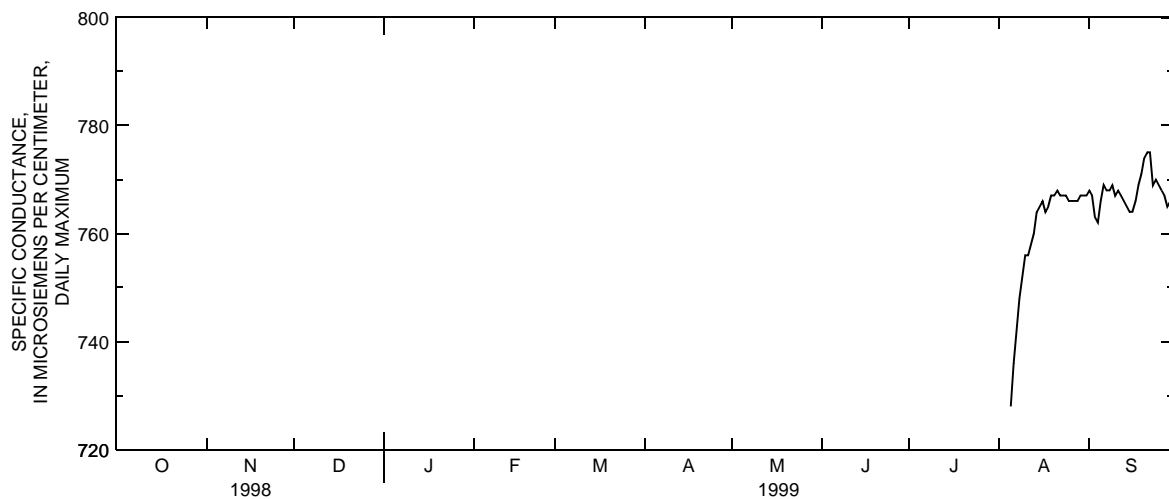


PROJECT DATA
Water Data for Bolton Well Field

445

391904084362104. LOCAL NUMBER, BU-1154-1D—Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999												
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	---	---	---	---	768	765
2	---	---	---	---	---	---	---	---	---	---	767	763
3	---	---	---	---	---	---	---	---	---	---	763	758
4	---	---	---	---	---	---	---	---	---	---	762	745
5	---	---	---	---	---	---	---	---	728	717	766	756
6	---	---	---	---	---	---	---	---	736	728	769	766
7	---	---	---	---	---	---	---	---	742	736	768	767
8	---	---	---	---	---	---	---	---	748	742	768	767
9	---	---	---	---	---	---	---	---	752	747	769	766
10	---	---	---	---	---	---	---	---	756	751	767	766
11	---	---	---	---	---	---	---	---	756	753	768	765
12	---	---	---	---	---	---	---	---	758	750	767	764
13	---	---	---	---	---	---	---	---	760	750	766	764
14	---	---	---	---	---	---	---	---	764	760	765	763
15	---	---	---	---	---	---	---	---	765	763	764	763
16	---	---	---	---	---	---	---	---	766	761	764	762
17	---	---	---	---	---	---	---	---	764	761	766	762
18	---	---	---	---	---	---	---	---	765	764	769	766
19	---	---	---	---	---	---	---	---	767	765	771	769
20	---	---	---	---	---	---	---	---	767	765	774	771
21	---	---	---	---	---	---	---	---	768	764	775	773
22	---	---	---	---	---	---	---	---	767	764	775	765
23	---	---	---	---	---	---	---	---	767	765	769	765
24	---	---	---	---	---	---	---	---	767	765	770	768
25	---	---	---	---	---	---	---	---	766	765	769	767
26	---	---	---	---	---	---	---	---	766	764	768	766
27	---	---	---	---	---	---	---	---	766	764	767	765
28	---	---	---	---	---	---	---	---	766	764	765	763
29	---	---	---	---	---	---	---	---	767	765	766	764
30	---	---	---	---	---	---	---	---	767	764	---	---
31	---	---	---	---	---	---	---	---	767	765	---	---
MONTH	---	---	---	---	---	---	---	---	768	717	775	745
YEAR	775	717										

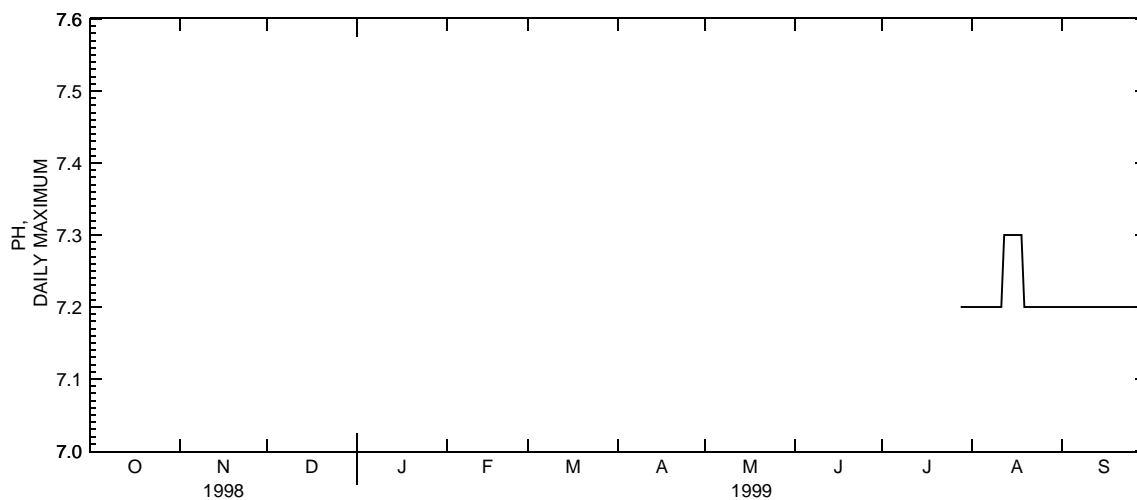


PROJECT DATA **Water Data for Bolton Well Field**

391904084362104. LOCAL NUMBER, BU-1154-1D—Continued

PH, WATER, WHOLE, FIELD, STANDARD UNITS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	---	---	7.2	7.2	7.2	7.2
2	---	---	---	---	---	---	---	---	7.2	7.2	7.2	7.2
3	---	---	---	---	---	---	---	---	7.2	7.2	7.2	7.2
4	---	---	---	---	---	---	---	---	7.2	7.2	7.2	7.2
5	---	---	---	---	---	---	---	---	7.2	7.2	7.2	7.2
6	---	---	---	---	---	---	---	---	7.2	7.2	7.2	7.2
7	---	---	---	---	---	---	---	---	7.2	7.2	7.2	7.2
8	---	---	---	---	---	---	---	---	7.2	7.2	7.2	7.2
9	---	---	---	---	---	---	---	---	7.2	7.2	7.2	7.2
10	---	---	---	---	---	---	---	---	7.2	7.2	7.2	7.2
11	---	---	---	---	---	---	---	---	7.2	7.2	7.2	7.2
12	---	---	---	---	---	---	---	---	7.3	7.2	7.2	7.2
13	---	---	---	---	---	---	---	---	7.3	7.2	7.2	7.2
14	---	---	---	---	---	---	---	---	7.3	7.3	7.2	7.2
15	---	---	---	---	---	---	---	---	7.3	7.3	7.2	7.2
16	---	---	---	---	---	---	---	---	7.3	7.3	7.2	7.2
17	---	---	---	---	---	---	---	---	7.3	7.3	7.2	7.2
18	---	---	---	---	---	---	---	---	7.3	7.2	7.2	7.2
19	---	---	---	---	---	---	---	---	7.2	7.2	7.2	7.2
20	---	---	---	---	---	---	---	---	7.2	7.2	7.2	7.2
21	---	---	---	---	---	---	---	---	7.2	7.2	7.2	7.2
22	---	---	---	---	---	---	---	---	7.2	7.2	7.2	7.2
23	---	---	---	---	---	---	---	---	7.2	7.2	7.2	7.2
24	---	---	---	---	---	---	---	---	7.2	7.2	7.2	7.2
25	---	---	---	---	---	---	---	---	7.2	7.2	7.2	7.2
26	---	---	---	---	---	---	---	---	7.2	7.2	7.2	7.2
27	---	---	---	---	---	---	---	---	7.2	7.2	7.2	7.2
28	---	---	---	---	---	---	7.2	7.2	7.2	7.2	7.2	7.2
29	---	---	---	---	---	---	7.2	7.2	7.2	7.2	7.2	7.2
30	---	---	---	---	---	---	7.2	7.2	7.2	7.2	---	---
31	---	---	---	---	---	---	7.2	7.2	7.2	7.2	---	---
MONTH	---	---	---	---	---	---	7.2	7.2	7.3	7.2	7.2	7.2
YEAR	7.3	7.2										



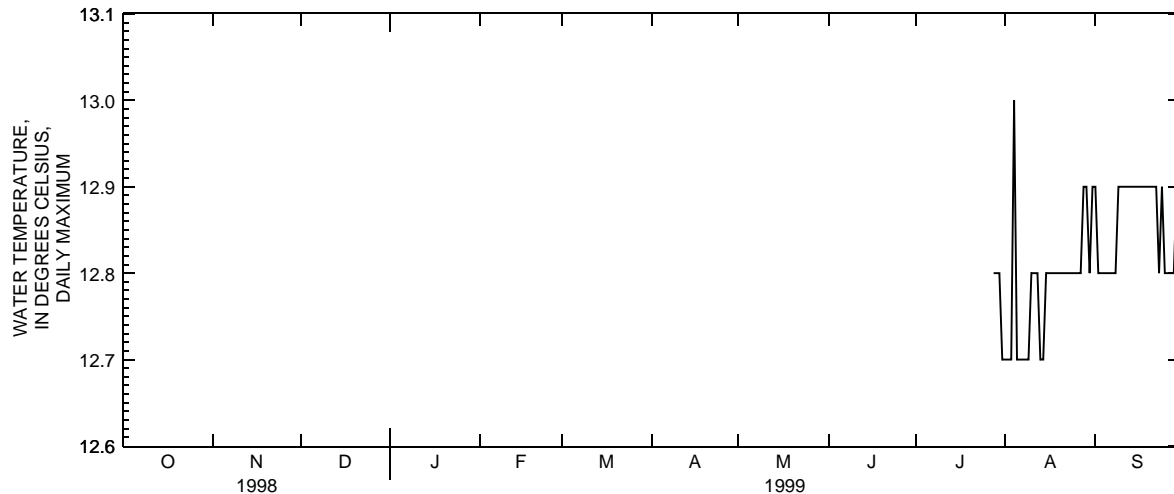
PROJECT DATA
Water Data for Bolton Well Field

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391904084362104. LOCAL NUMBER, BU-1154-1D—Continued

TEMPERATURE, WATER, DEGREES CELSIUS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	---	---	12.7	12.7	12.9	12.8
2	---	---	---	---	---	---	---	---	12.7	12.7	12.8	12.8
3	---	---	---	---	---	---	---	---	12.7	12.7	12.8	12.8
4	---	---	---	---	---	---	---	---	13.0	12.7	12.8	12.7
5	---	---	---	---	---	---	---	---	12.7	12.7	12.8	12.8
6	---	---	---	---	---	---	---	---	12.7	12.7	12.8	12.8
7	---	---	---	---	---	---	---	---	12.7	12.7	12.8	12.8
8	---	---	---	---	---	---	---	---	12.7	12.7	12.8	12.8
9	---	---	---	---	---	---	---	---	12.7	12.7	12.9	12.8
10	---	---	---	---	---	---	---	---	12.8	12.7	12.9	12.9
11	---	---	---	---	---	---	---	---	12.8	12.7	12.9	12.9
12	---	---	---	---	---	---	---	---	12.8	12.7	12.9	12.9
13	---	---	---	---	---	---	---	---	12.7	12.7	12.9	12.9
14	---	---	---	---	---	---	---	---	12.7	12.7	12.9	12.9
15	---	---	---	---	---	---	---	---	12.8	12.7	12.9	12.9
16	---	---	---	---	---	---	---	---	12.8	12.7	12.9	12.9
17	---	---	---	---	---	---	---	---	12.8	12.8	12.9	12.9
18	---	---	---	---	---	---	---	---	12.8	12.8	12.9	12.9
19	---	---	---	---	---	---	---	---	12.8	12.8	12.9	12.9
20	---	---	---	---	---	---	---	---	12.8	12.8	12.9	12.9
21	---	---	---	---	---	---	---	---	12.8	12.8	12.9	12.9
22	---	---	---	---	---	---	---	---	12.8	12.8	12.9	12.8
23	---	---	---	---	---	---	---	---	12.8	12.8	12.8	12.8
24	---	---	---	---	---	---	---	---	12.8	12.8	12.9	12.8
25	---	---	---	---	---	---	---	---	12.8	12.8	12.8	12.8
26	---	---	---	---	---	---	---	---	12.8	12.8	12.8	12.8
27	---	---	---	---	---	---	---	---	12.8	12.8	12.8	12.8
28	---	---	---	---	---	---	12.8	12.8	12.9	12.8	12.8	12.8
29	---	---	---	---	---	---	12.8	12.8	12.9	12.8	12.9	12.8
30	---	---	---	---	---	---	12.8	12.7	12.8	12.8	---	---
31	---	---	---	---	---	---	12.7	12.7	12.9	12.8	---	---
MONTH	---	---	---	---	---	---	12.8	12.7	13.0	12.7	12.9	12.7
YEAR	13.0	12.7										

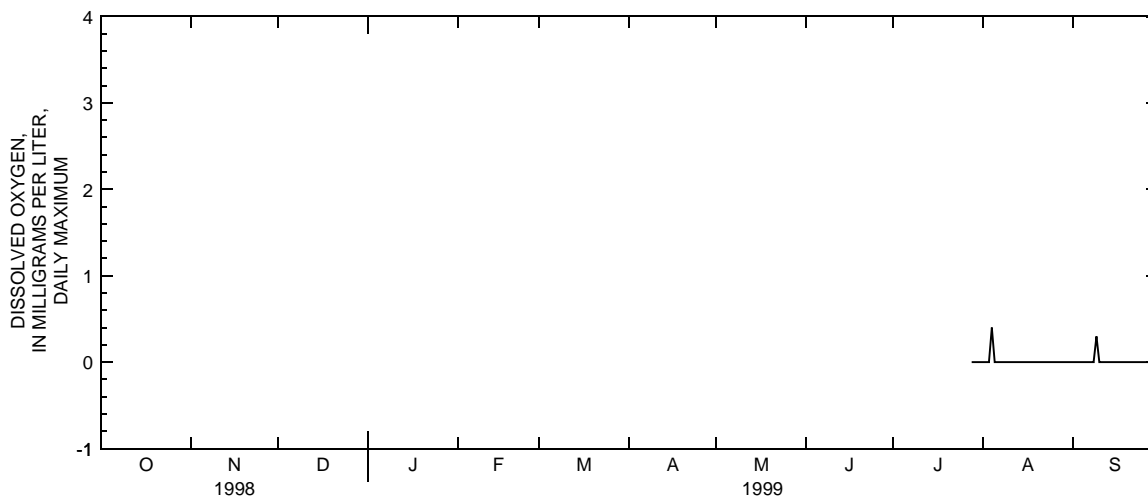


PROJECT DATA **Water Data for Bolton Well Field**

391904084362104. LOCAL NUMBER, BU-1154-1D—Continued

OXYGEN, DISSOLVED, MILLIGRAMS PER LITER, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	---	---	.0	.0	.0	.0
2	---	---	---	---	---	---	---	---	.0	.0	.0	.0
3	---	---	---	---	---	---	---	---	.0	.0	.0	.0
4	---	---	---	---	---	---	---	---	.4	.0	.0	.0
5	---	---	---	---	---	---	---	---	.0	.0	.0	.0
6	---	---	---	---	---	---	---	---	.0	.0	.0	.0
7	---	---	---	---	---	---	---	---	.0	.0	.0	.0
8	---	---	---	---	---	---	---	---	.0	.0	.0	.0
9	---	---	---	---	---	---	---	---	.0	.0	.3	-.1
10	---	---	---	---	---	---	---	---	.0	.0	.0	-.1
11	---	---	---	---	---	---	---	---	.0	.0	.0	-.1
12	---	---	---	---	---	---	---	---	.0	.0	.0	.0
13	---	---	---	---	---	---	---	---	.0	.0	.0	.0
14	---	---	---	---	---	---	---	---	.0	.0	.0	.0
15	---	---	---	---	---	---	---	---	.0	.0	.0	.0
16	---	---	---	---	---	---	---	---	.0	.0	.0	.0
17	---	---	---	---	---	---	---	---	.0	.0	.0	.0
18	---	---	---	---	---	---	---	---	.0	.0	.0	.0
19	---	---	---	---	---	---	---	---	.0	-.1	.0	.0
20	---	---	---	---	---	---	---	---	.0	.0	.0	.0
21	---	---	---	---	---	---	---	---	.0	.0	.0	.0
22	---	---	---	---	---	---	---	---	.0	.0	.0	.0
23	---	---	---	---	---	---	---	---	.0	.0	.0	.0
24	---	---	---	---	---	---	---	---	.0	.0	.0	.0
25	---	---	---	---	---	---	---	---	.0	.0	.0	.0
26	---	---	---	---	---	---	---	---	.0	.0	.0	.0
27	---	---	---	---	---	---	---	---	.0	.0	.0	.0
28	---	---	---	---	---	---	.0	.0	.0	.0	.0	.0
29	---	---	---	---	---	---	.0	.0	.0	.0	.0	.0
30	---	---	---	---	---	---	.0	.0	.0	.0	---	---
31	---	---	---	---	---	---	.0	.0	.0	.0	---	---
MONTH	---	---	---	---	---	---	.0	.0	.4	-.1	.3	-.1
YEAR	.4	-.1										



PROJECT DATA
Water Data for Bolton Well Field

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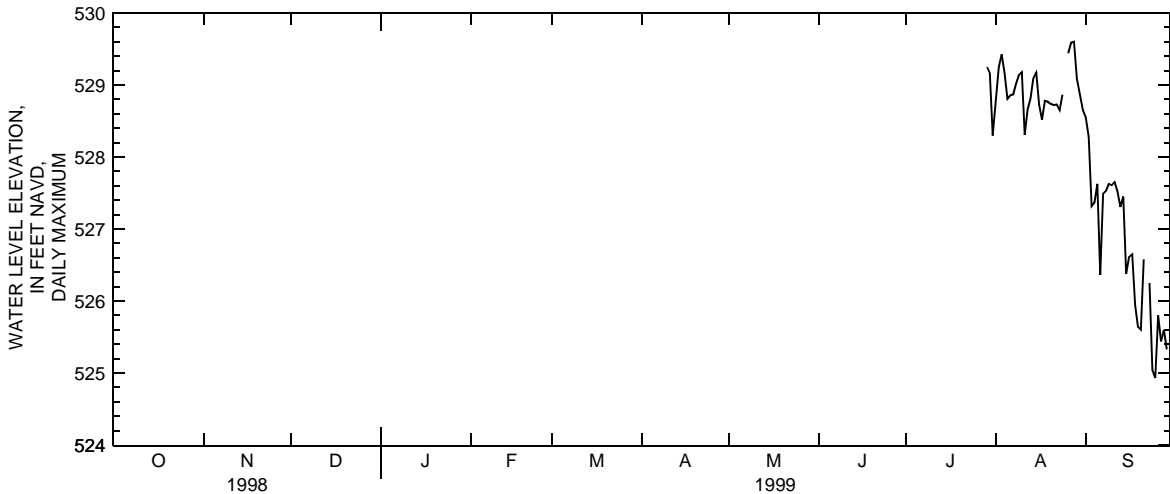
391905084372901. LOCAL NUMBER, BU-1156-8A

LOCATION.--Latitude 39°19'05", longitude 84°37'29", Butler County, Hydrologic Unit 05080002.
AQUIFER.--Glacial outwash, sand and gravel; 1120TSH.
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 (NAVD88). 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 29, 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 September 7, 1999.
PERIOD OF RECORD.--
WATER LEVEL ELEVATION: Current year
SPECIFIC CONDUCTANCE: Current year
pH: Current year
WATER TEMPERATURE: Current Year
TURBIDITY: Current Year
DISSOLVED OXYGEN: Current Year
EXTREMES FOR PERIOD OF RECORD.--
WATER LEVEL ELEVATION: Maximum daily low, 524.65 ft. above NAVD88, September 24 and 25, 1999; Maximum daily high, 529.60 ft. above NAVD88, August 28, 1999.
SPECIFIC CONDUCTANCE: Maximum, 1,120 microsiemens per centimeter, September 29, 1999; Minimum, 719 microsiemens per centimeter, September 9, 1999.
pH: Maximum, 7.5, several days during period of record; Minimum, 6.7, September 11, 12, 13 and 14, 1999.
WATER TEMPERATURE: Maximum, 30.2°C, August 26, 29, 30 and 31, 1999; Minimum, 26.0°C, September 26, 27, 28 and 29, 1999.
TURBIDITY: Maximum, 10 NTU, September 13, 1999; Minimum, -2.0 NTU, July 29 to August 11, 1999.
DISSOLVED OXYGEN: Maximum, 3.7 milligrams per liter, September 14, 1999; Minimum 0.1 milligrams per liter, August 2, 1999.
EXTREMES FOR CURRENT YEAR.--
WATER LEVEL ELEVATION: Maximum daily low, 524.65 ft. above NAVD88, September 24 and 25, 1999; Maximum daily high, 529.60 ft. above NAVD88, August 28, 1999.
SPECIFIC CONDUCTANCE: Maximum, 1,120 microsiemens per centimeter, September 29, 1999; Minimum, 719 microsiemens per centimeter, September 9, 1999.
pH: Maximum, 7.5, several days during period of record; Minimum, 6.7, September 11, 12, 13 and 14, 1999.
WATER TEMPERATURE: Maximum, 30.2°C, August 26, 29, 30 and 31, 1999; Minimum, 26.0°C, September 26, 27, 28 and 29, 1999.
TURBIDITY: Maximum, 10 NTU, September 13, 1999; Minimum, -2.0 NTU, July 29 to August 11, 1999.
DISSOLVED OXYGEN: Maximum, 3.7 milligrams per liter, September 14, 1999; Minimum 0.1 milligrams per liter, August 2, 1999.

PROJECT DATA
Water Data for Bolton Well Field

391905084372901. LOCAL NUMBER, BU-1156-8A—Continued

WATER LEVEL ELEVATION, FEET NAVD, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999												
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	---	---	528.79	527.68	528.55	528.14
2	---	---	---	---	---	---	---	---	529.25	527.94	528.28	527.32
3	---	---	---	---	---	---	---	---	529.43	528.55	527.32	526.58
4	---	---	---	---	---	---	---	---	529.17	528.29	527.37	526.61
5	---	---	---	---	---	---	---	---	528.81	528.19	527.63	526.36
6	---	---	---	---	---	---	---	---	528.86	528.48	526.36	526.08
7	---	---	---	---	---	---	---	---	528.87	527.72	527.49	526.10
8	---	---	---	---	---	---	---	---	529.02	528.44	527.53	527.19
9	---	---	---	---	---	---	---	---	529.14	528.95	527.63	527.23
10	---	---	---	---	---	---	---	---	529.18	528.31	527.61	527.30
11	---	---	---	---	---	---	---	---	528.31	527.71	527.65	527.39
12	---	---	---	---	---	---	---	---	528.66	527.61	527.52	527.08
13	---	---	---	---	---	---	---	---	528.81	528.59	527.31	527.05
14	---	---	---	---	---	---	---	---	529.10	528.75	527.45	526.38
15	---	---	---	---	---	---	---	---	529.18	528.73	526.38	525.99
16	---	---	---	---	---	---	---	---	528.73	527.59	526.61	525.88
17	---	---	---	---	---	---	---	---	528.52	527.43	526.65	525.95
18	---	---	---	---	---	---	---	---	528.78	528.50	525.95	525.46
19	---	---	---	---	---	---	---	---	528.77	528.58	525.64	525.41
20	---	---	---	---	---	---	---	---	528.74	527.89	525.60	525.38
21	---	---	---	---	---	---	---	---	528.72	527.88	526.58	525.54
22	---	---	---	---	---	---	---	---	528.73	528.64	---	---
23	---	---	---	---	---	---	---	---	528.65	528.43	526.25	525.04
24	---	---	---	---	---	---	---	---	528.87	528.39	525.04	524.65
25	---	---	---	---	---	---	---	---	---	---	524.93	524.65
26	---	---	---	---	---	---	---	---	529.44	528.25	525.80	524.68
27	---	---	---	---	---	---	---	---	529.59	529.44	525.44	524.73
28	---	---	---	---	---	---	---	---	529.60	529.09	525.60	524.80
29	---	---	---	---	---	---	529.25	528.24	529.09	528.07	525.33	524.67
30	---	---	---	---	---	---	529.16	528.03	528.87	527.85	---	---
31	---	---	---	---	---	---	528.30	527.69	528.65	527.82	---	---
MONTH	---	---	---	---	---	---	529.25	527.69	529.60	527.43	528.55	524.65
YEAR	529.60	524.65										

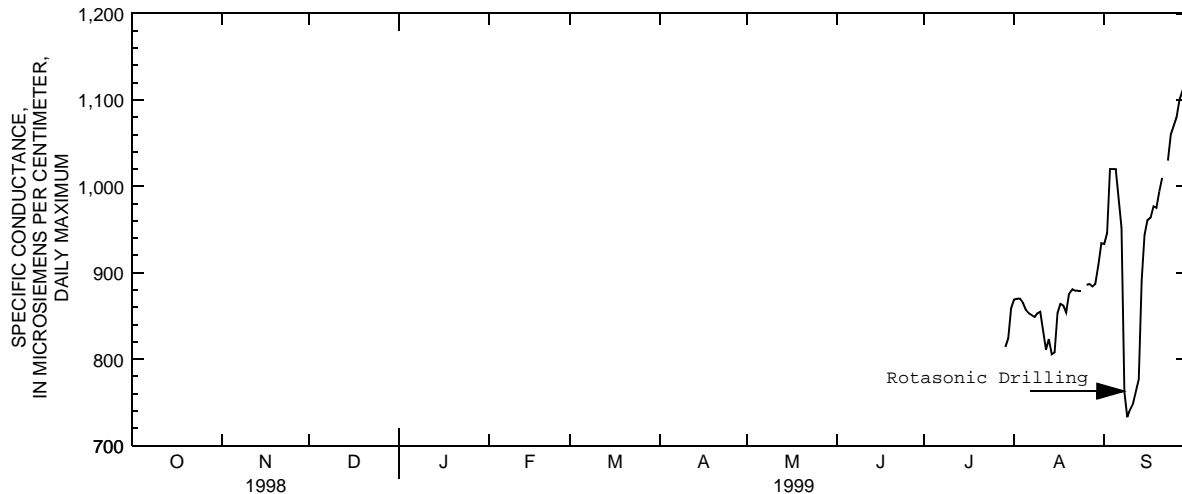


PROJECT DATA
Water Data for Bolton Well Field

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391905084372901. LOCAL NUMBER, BU-1156-8A—Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999												
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	---	---	869	858	933	907
2	---	---	---	---	---	---	---	---	870	867	946	913
3	---	---	---	---	---	---	---	---	870	864	1020	946
4	---	---	---	---	---	---	---	---	865	856	1020	1010
5	---	---	---	---	---	---	---	---	857	851	1020	988
6	---	---	---	---	---	---	---	---	853	850	988	948
7	---	---	---	---	---	---	---	---	851	830	952	762
8	---	---	---	---	---	---	---	---	849	844	762	727
9	---	---	---	---	---	---	---	---	853	847	733	719
10	---	---	---	---	---	---	---	---	855	833	742	723
11	---	---	---	---	---	---	---	---	833	799	749	726
12	---	---	---	---	---	---	---	---	811	796	763	733
13	---	---	---	---	---	---	---	---	823	806	777	760
14	---	---	---	---	---	---	---	---	806	804	891	775
15	---	---	---	---	---	---	---	---	808	804	944	891
16	---	---	---	---	---	---	---	---	853	807	961	943
17	---	---	---	---	---	---	---	---	864	852	964	952
18	---	---	---	---	---	---	---	---	862	854	977	964
19	---	---	---	---	---	---	---	---	854	851	975	968
20	---	---	---	---	---	---	---	---	876	849	994	973
21	---	---	---	---	---	---	---	---	881	876	1010	992
22	---	---	---	---	---	---	---	---	879	878	---	---
23	---	---	---	---	---	---	---	---	879	877	1030	1000
24	---	---	---	---	---	---	---	---	879	877	1060	1030
25	---	---	---	---	---	---	---	---	---	---	1070	1060
26	---	---	---	---	---	---	---	---	886	878	1080	1070
27	---	---	---	---	---	---	---	---	887	880	1100	1080
28	---	---	---	---	---	---	---	---	884	881	1110	1100
29	---	---	---	---	---	---	814	783	887	877	1120	1110
30	---	---	---	---	---	---	824	814	910	878	---	---
31	---	---	---	---	---	---	859	824	934	903	---	---
MONTH	---	---	---	---	---	---	859	783	934	796	1120	719
YEAR	1120	719										

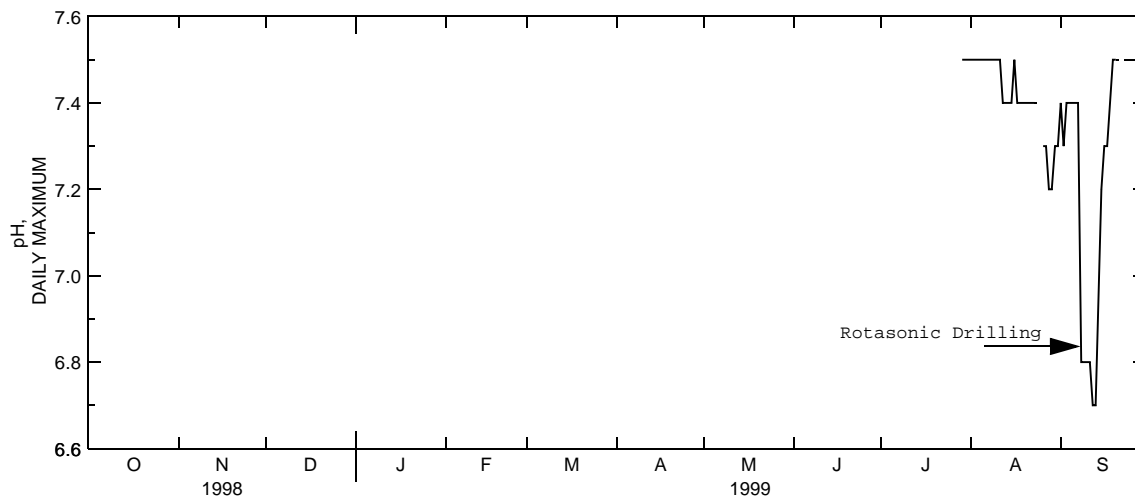


PROJECT DATA **Water Data for Bolton Well Field**

391905084372901. LOCAL NUMBER, BU-1156-8A—Continued

PH, WATER, WHOLE, FIELD, STANDARD UNITS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	---	---	7.5	7.5	7.4	7.3
2	---	---	---	---	---	---	---	---	7.5	7.5	7.3	7.3
3	---	---	---	---	---	---	---	---	7.5	7.4	7.4	7.3
4	---	---	---	---	---	---	---	---	7.5	7.5	7.4	7.3
5	---	---	---	---	---	---	---	---	7.5	7.5	7.4	7.2
6	---	---	---	---	---	---	---	---	7.5	7.5	7.4	7.4
7	---	---	---	---	---	---	---	---	7.5	7.5	7.4	6.8
8	---	---	---	---	---	---	---	---	7.5	7.5	6.8	6.8
9	---	---	---	---	---	---	---	---	7.5	7.4	6.8	6.8
10	---	---	---	---	---	---	---	---	7.5	7.4	6.8	6.8
11	---	---	---	---	---	---	---	---	7.5	7.4	6.8	6.7
12	---	---	---	---	---	---	---	---	7.4	7.4	6.7	6.7
13	---	---	---	---	---	---	---	---	7.4	7.4	6.7	6.7
14	---	---	---	---	---	---	---	---	7.4	7.4	7.0	6.7
15	---	---	---	---	---	---	---	---	7.4	7.4	7.2	7.0
16	---	---	---	---	---	---	---	---	7.5	7.4	7.3	7.2
17	---	---	---	---	---	---	---	---	7.4	7.4	7.3	7.2
18	---	---	---	---	---	---	---	---	7.4	7.4	7.4	7.3
19	---	---	---	---	---	---	---	---	7.4	7.4	7.5	7.4
20	---	---	---	---	---	---	---	---	7.4	7.3	7.5	7.5
21	---	---	---	---	---	---	---	---	7.4	7.4	7.5	7.5
22	---	---	---	---	---	---	---	---	7.4	7.4	---	---
23	---	---	---	---	---	---	---	---	7.4	7.4	7.5	7.5
24	---	---	---	---	---	---	---	---	7.4	7.4	7.5	7.5
25	---	---	---	---	---	---	---	---	---	---	7.5	7.5
26	---	---	---	---	---	---	---	---	7.3	7.2	7.5	7.5
27	---	---	---	---	---	---	---	---	7.3	7.2	7.5	7.5
28	---	---	---	---	---	---	---	---	7.2	7.2	7.5	7.5
29	---	---	---	---	---	---	7.5	7.4	7.2	7.2	7.5	7.5
30	---	---	---	---	---	---	7.5	7.5	7.3	7.2	---	---
31	---	---	---	---	---	---	7.5	7.5	7.3	7.3	---	---
MONTH	---	---	---	---	---	---	7.5	7.4	7.5	7.2	7.5	6.7
YEAR	7.5	6.7										

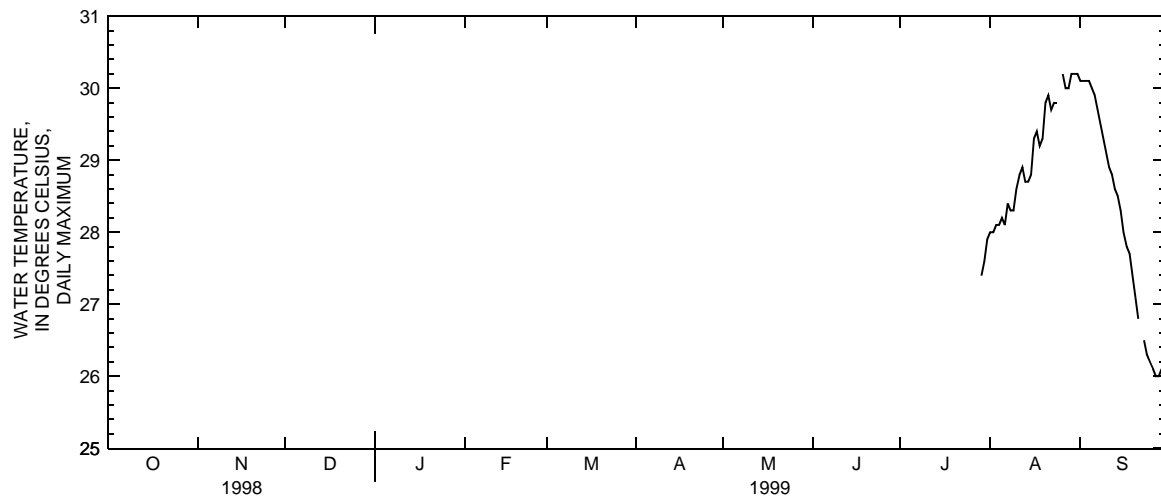


PROJECT DATA
Water Data for Bolton Well Field

453

391905084372901. LOCAL NUMBER, BU-1156-8A—Continued

TEMPERATURE, WATER, DEGREES CELSIUS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999												
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	---	---	28.0	27.7	30.1	30.0
2	---	---	---	---	---	---	---	---	28.0	27.9	30.1	30.0
3	---	---	---	---	---	---	---	---	28.1	27.9	30.1	30.1
4	---	---	---	---	---	---	---	---	28.1	28.0	30.1	30.0
5	---	---	---	---	---	---	---	---	28.2	28.1	30.0	29.9
6	---	---	---	---	---	---	---	---	28.1	28.1	29.9	29.7
7	---	---	---	---	---	---	---	---	28.4	28.1	29.7	29.5
8	---	---	---	---	---	---	---	---	28.3	28.2	29.5	29.3
9	---	---	---	---	---	---	---	---	28.3	28.2	29.3	29.1
10	---	---	---	---	---	---	---	---	28.6	28.3	29.1	28.9
11	---	---	---	---	---	---	---	---	28.8	28.5	28.9	28.8
12	---	---	---	---	---	---	---	---	28.9	28.7	28.8	28.6
13	---	---	---	---	---	---	---	---	28.7	28.6	28.6	28.5
14	---	---	---	---	---	---	---	---	28.7	28.7	28.5	28.3
15	---	---	---	---	---	---	---	---	28.8	28.7	28.3	28.0
16	---	---	---	---	---	---	---	---	29.3	28.8	28.0	27.8
17	---	---	---	---	---	---	---	---	29.4	29.2	27.8	27.7
18	---	---	---	---	---	---	---	---	29.2	29.2	27.7	27.4
19	---	---	---	---	---	---	---	---	29.3	29.2	27.4	27.1
20	---	---	---	---	---	---	---	---	29.8	29.3	27.1	26.8
21	---	---	---	---	---	---	---	---	29.9	29.7	26.8	26.6
22	---	---	---	---	---	---	---	---	29.7	29.7	---	---
23	---	---	---	---	---	---	---	---	29.8	29.7	26.5	26.3
24	---	---	---	---	---	---	---	---	29.8	29.7	26.3	26.2
25	---	---	---	---	---	---	---	---	---	---	26.2	26.1
26	---	---	---	---	---	---	---	---	30.2	29.8	26.1	26.0
27	---	---	---	---	---	---	---	---	30.0	29.9	26.0	26.0
28	---	---	---	---	---	---	---	---	30.0	29.9	26.0	26.0
29	---	---	---	---	---	---	27.4	27.0	30.2	29.9	26.1	26.0
30	---	---	---	---	---	---	27.6	27.4	30.2	30.1	---	---
31	---	---	---	---	---	---	27.9	27.6	30.2	30.1	---	---
MONTH	---	---	---	---	---	---	27.9	27.0	30.2	27.7	30.1	26.0
YEAR	30.2	26.0										

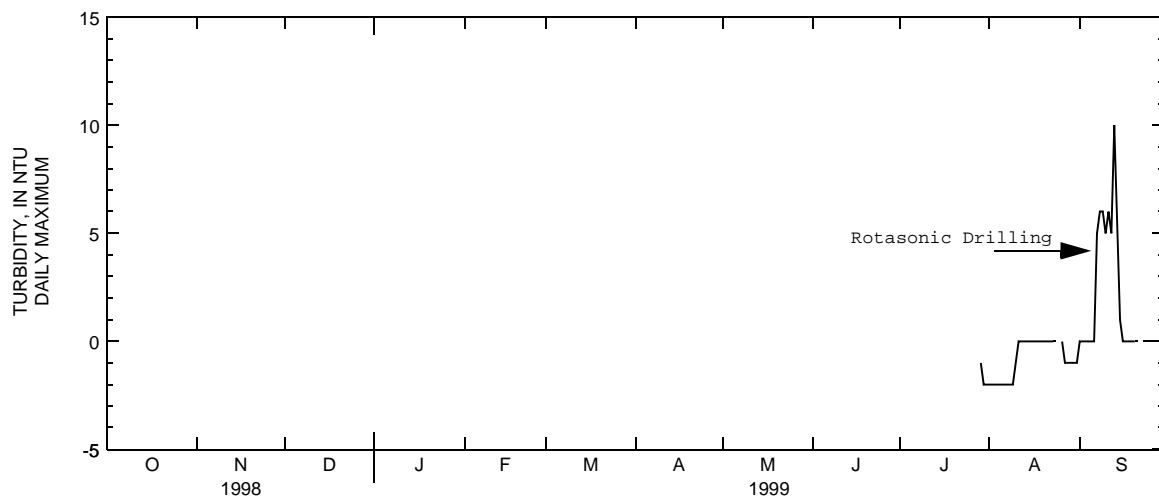


PROJECT DATA **Water Data for Bolton Well Field**

391905084372901. LOCAL NUMBER, BU-1156-8A—Continued

TURBIDITY, NTU, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	---	---	-2.0	-2.0	.00	-1.0
2	---	---	---	---	---	---	---	---	-2.0	-2.0	.00	.00
3	---	---	---	---	---	---	---	---	-2.0	-2.0	.00	.00
4	---	---	---	---	---	---	---	---	-2.0	-2.0	.00	.00
5	---	---	---	---	---	---	---	---	-2.0	-2.0	.00	.00
6	---	---	---	---	---	---	---	---	-2.0	-2.0	.00	.00
7	---	---	---	---	---	---	---	---	-2.0	-2.0	5.0	.00
8	---	---	---	---	---	---	---	---	-2.0	-2.0	6.0	5.0
9	---	---	---	---	---	---	---	---	-2.0	-2.0	6.0	5.0
10	---	---	---	---	---	---	---	---	-1.0	-2.0	5.0	5.0
11	---	---	---	---	---	---	---	---	.00	-2.0	6.0	5.0
12	---	---	---	---	---	---	---	---	.00	.00	5.0	5.0
13	---	---	---	---	---	---	---	---	.00	.00	10	4.0
14	---	---	---	---	---	---	---	---	.00	.00	5.0	1.0
15	---	---	---	---	---	---	---	---	.00	.00	1.0	.00
16	---	---	---	---	---	---	---	---	.00	.00	.00	.00
17	---	---	---	---	---	---	---	---	.00	.00	.00	.00
18	---	---	---	---	---	---	---	---	.00	.00	.00	.00
19	---	---	---	---	---	---	---	---	.00	.00	.00	.00
20	---	---	---	---	---	---	---	---	.00	.00	.00	.00
21	---	---	---	---	---	---	---	---	.00	.00	.00	.00
22	---	---	---	---	---	---	---	---	.00	.00	---	---
23	---	---	---	---	---	---	---	---	.00	.00	.00	.00
24	---	---	---	---	---	---	---	---	.00	.00	.00	.00
25	---	---	---	---	---	---	---	---	---	---	.00	.00
26	---	---	---	---	---	---	---	---	.00	-1.0	.00	.00
27	---	---	---	---	---	---	---	---	-1.0	-1.0	.00	.00
28	---	---	---	---	---	---	---	---	-1.0	-1.0	.00	.00
29	---	---	---	---	---	---	-1.0	-2.0	-1.0	-1.0	.00	.00
30	---	---	---	---	---	---	-2.0	-2.0	-1.0	-1.0	---	---
31	---	---	---	---	---	---	-2.0	-2.0	-1.0	-1.0	---	---
MONTH	---	---	---	---	---	---	-1.0	-2.0	.00	-2.0	10	-1.0
YEAR	10	-2.0										



PROJECT DATA

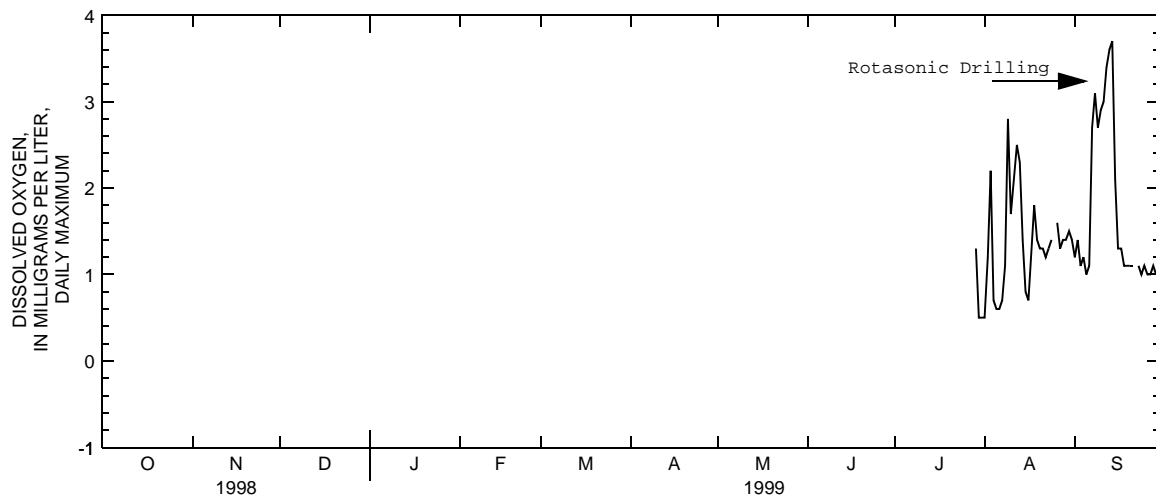
Water Data for Bolton Well Field

455

391905084372901. LOCAL NUMBER, BU-1156-8A—Continued

OXYGEN, DISSOLVED, MILLIGRAMS PER LITER, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	---	---	.5	.2	1.2	.4
2	---	---	---	---	---	---	---	---	1.2	.1	1.4	.9
3	---	---	---	---	---	---	---	---	2.2	.6	1.1	.8
4	---	---	---	---	---	---	---	---	.7	.5	1.2	.9
5	---	---	---	---	---	---	---	---	.6	.5	1.0	.9
6	---	---	---	---	---	---	---	---	.6	.5	1.1	.8
7	---	---	---	---	---	---	---	---	.7	.5	2.7	.9
8	---	---	---	---	---	---	---	---	1.1	.7	3.1	2.5
9	---	---	---	---	---	---	---	---	2.8	1.1	2.7	2.2
10	---	---	---	---	---	---	---	---	1.7	1.0	2.9	2.2
11	---	---	---	---	---	---	---	---	2.1	.5	3.0	2.0
12	---	---	---	---	---	---	---	---	2.5	.7	3.4	2.5
13	---	---	---	---	---	---	---	---	2.3	1.1	3.6	2.0
14	---	---	---	---	---	---	---	---	1.4	.7	3.7	2.1
15	---	---	---	---	---	---	---	---	.8	.5	2.1	1.2
16	---	---	---	---	---	---	---	---	.7	.5	1.3	1.0
17	---	---	---	---	---	---	---	---	1.3	.5	1.3	1.1
18	---	---	---	---	---	---	---	---	1.8	1.1	1.1	1.0
19	---	---	---	---	---	---	---	---	1.4	1.2	1.1	1.0
20	---	---	---	---	---	---	---	---	1.3	1.0	1.1	.9
21	---	---	---	---	---	---	---	---	1.3	1.1	1.1	.8
22	---	---	---	---	---	---	---	---	1.2	1.1	---	---
23	---	---	---	---	---	---	---	---	1.3	1.0	1.1	.9
24	---	---	---	---	---	---	---	---	1.4	1.1	1.0	.9
25	---	---	---	---	---	---	---	---	---	---	1.1	.9
26	---	---	---	---	---	---	---	---	1.6	.9	1.0	.8
27	---	---	---	---	---	---	---	---	1.3	1.1	1.0	.8
28	---	---	---	---	---	---	---	---	1.4	1.1	1.1	.8
29	---	---	---	---	---	---	1.3	.4	1.4	1.0	1.0	.6
30	---	---	---	---	---	---	.5	.2	1.5	1.2	---	---
31	---	---	---	---	---	---	.5	.2	1.4	1.2	---	---
MONTH	---	---	---	---	---	---	1.3	.2	2.8	.1	3.7	.4
YEAR	3.7	.1										



PROJECT DATA
Water Data for Bolton Well Field

WATER-QUALITY DATA

391905084372901. LOCAL NUMBER, BU-1156-8A—Continued

DATE	AGENCY COL- LECTING SAMPLE (CODE NUMBER)	AGENCY ANA- LYZING SAMPLE (CODE NUMBER)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH WATER WHOLE FIELD (STAND- ARD UNITS)	PH WATER WHOLE LAB (STAND- ARD UNITS)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)
SEP 1999 29...	1028	80020	1110	7.5	7.6	.057	<.050	76	29	100

DATE	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	SULFATE DIS- SOLVED (MG/L AS SO4)	SILICA, DIS- SOLVED (MG/L AS SIO2)	BORON, DIS- SOLVED (UG/L AS B)	ALKA- LINITY WAT.DIS FET LAB CACO3 (MG/L)	ELEV. OF LAND SURFACE DATUM (FT. ABOVE NGVD)	DEPTH OF WELL, TOTAL (FEET)	DRAIN- AGE AREA (SQ. MI.)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM)
SEP 1999 29...	7.1	160	120	8.4	169	230	--	--	--	1110

PROJECT DATA
Water Data for Bolton Well Field

457

391905084372902. LOCAL NUMBER, BU-1157-8B

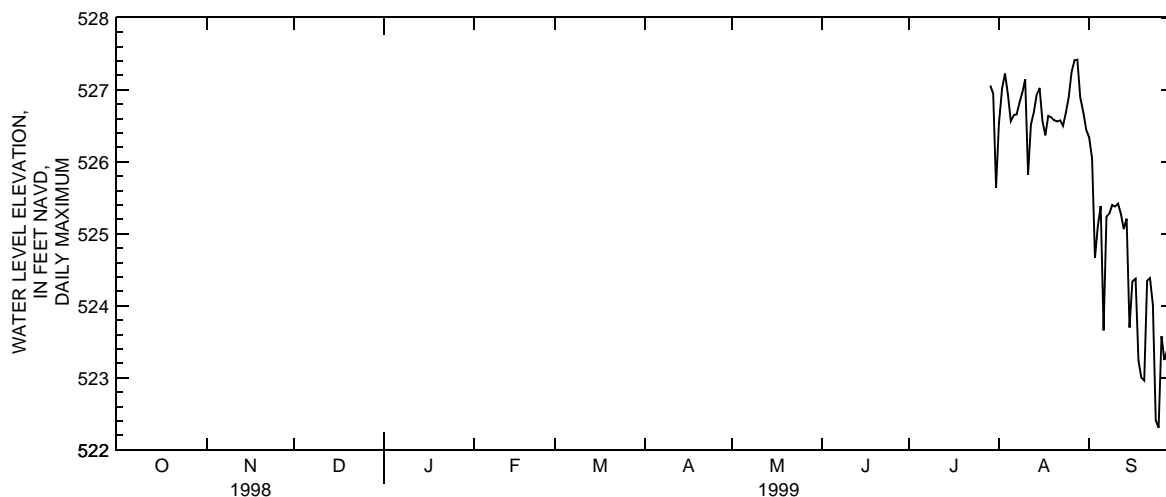
LOCATION.--Latitude 39°19'05", longitude 84°37'29", Butler County, Hydrologic Unit 05080002.
AQUIFER.--Glacial outwash, sand and gravel; 1120TSH.
WELL CHARACTERISTICS.--Observation well drilled by rotasonic techniques, diameter 4.0 in., depth 60 ft. from land surface to bottom of screen.
INSTRUMENTATION.--YSI Model 6920 data sonde with turbidity probe 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 (NAVD88). 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 29, 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.
PERIOD OF RECORD.--
WATER LEVEL ELEVATION: Current year
SPECIFIC CONDUCTANCE: Current year
pH: Current year
WATER TEMPERATURE: Current Year
DISSOLVED OXYGEN: Current Year
EXTREMES FOR PERIOD OF RECORD.--
WATER LEVEL ELEVATION: Maximum daily low, 522.02 ft. above NAVD88, September 25 AND 29, 1999; Maximum daily high, 527.42 ft. above NAVD88, August 28, 1999.
SPECIFIC CONDUCTANCE: Maximum, 950 microsiemens per centimeter, September 29, 1999; Minimum, 767 microsiemens per centimeter, July 29, 1999.
pH: Maximum, 7.6, August 10, 1999; Minimum, 7.2, September 25, 26, 27, 28, 29 and 30.
WATER TEMPERATURE: Maximum, 29.0°C, September 24, 25, 26 and 29, 1999; Minimum, 21.4°C, July 29, 1999.
DISSOLVED OXYGEN: Maximum, 9.8 milligrams per liter, August 10, 1999; Minimum 0.0 milligrams per liter, July 29 and September 1, 1999.
EXTREMES FOR CURRENT YEAR.--
WATER LEVEL ELEVATION: Maximum daily low, 522.02 ft. above NAVD88, September 25 AND 29, 1999; Maximum daily high, 527.42 ft. above NAVD88, August 28, 1999.
SPECIFIC CONDUCTANCE: Maximum, 950 microsiemens per centimeter, September 29, 1999; Minimum, 767 microsiemens per centimeter, July 29, 1999.
pH: Maximum, 7.6, August 10, 1999; Minimum, 7.2, September 25, 26, 27, 28, 29 and 30.
WATER TEMPERATURE: Maximum, 29.0°C, September 24, 25, 26 and 29, 1999; Minimum, 21.4°C, July 29, 1999.
DISSOLVED OXYGEN: Maximum, 9.8 milligrams per liter, August 10, 1999; Minimum 0.0 milligrams per liter, July 29 and September 1, 1999.

PROJECT DATA **Water Data for Bolton Well Field**

391905084372902. LOCAL NUMBER, BU-1157-8B—Continued

WATER LEVEL ELEVATION, FEET NAVD, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	---	---	526.54	524.98	526.34	525.91
2	---	---	---	---	---	---	---	---	527.03	525.22	526.05	524.65
3	---	---	---	---	---	---	---	---	527.23	525.90	524.67	523.89
4	---	---	---	---	---	---	---	---	526.94	525.62	525.11	523.91
5	---	---	---	---	---	---	---	---	526.57	525.53	525.39	523.64
6	---	---	---	---	---	---	---	---	526.65	526.24	523.66	523.40
7	---	---	---	---	---	---	---	---	526.66	525.04	525.24	523.38
8	---	---	---	---	---	---	---	---	526.82	526.20	525.28	524.93
9	---	---	---	---	---	---	---	---	526.96	526.73	525.40	524.97
10	---	---	---	---	---	---	---	---	527.15	525.82	525.38	525.05
11	---	---	---	---	---	---	---	---	525.82	525.13	525.42	525.15
12	---	---	---	---	---	---	---	---	526.52	524.97	525.28	524.82
13	---	---	---	---	---	---	---	---	526.69	526.44	525.07	524.79
14	---	---	---	---	---	---	---	---	526.94	526.59	525.21	523.70
15	---	---	---	---	---	---	---	---	527.03	526.57	523.70	523.31
16	---	---	---	---	---	---	---	---	526.57	524.98	524.34	523.20
17	---	---	---	---	---	---	---	---	526.37	524.84	524.38	523.24
18	---	---	---	---	---	---	---	---	526.64	526.36	523.24	522.81
19	---	---	---	---	---	---	---	---	526.62	526.42	523.00	522.74
20	---	---	---	---	---	---	---	---	526.58	525.27	522.96	522.70
21	---	---	---	---	---	---	---	---	526.56	525.27	524.35	522.89
22	---	---	---	---	---	---	---	---	526.58	526.49	524.39	524.00
23	---	---	---	---	---	---	---	---	526.50	526.27	524.02	522.41
24	---	---	---	---	---	---	---	---	526.68	526.24	522.41	522.03
25	---	---	---	---	---	---	---	---	526.90	526.56	522.31	522.02
26	---	---	---	---	---	---	---	---	527.25	525.57	523.58	522.05
27	---	---	---	---	---	---	---	---	527.41	527.25	523.25	522.08
28	---	---	---	---	---	---	---	---	527.42	526.90	523.39	522.14
29	---	---	---	---	---	---	527.06	525.57	526.90	525.46	522.62	522.02
30	---	---	---	---	---	---	526.95	525.36	526.68	525.16	522.65	522.44
31	---	---	---	---	---	---	525.64	525.00	526.44	525.13	---	---
MONTH	---	---	---	---	---	---	527.06	525.00	527.42	524.84	526.34	522.02
YEAR	527.42	522.02										

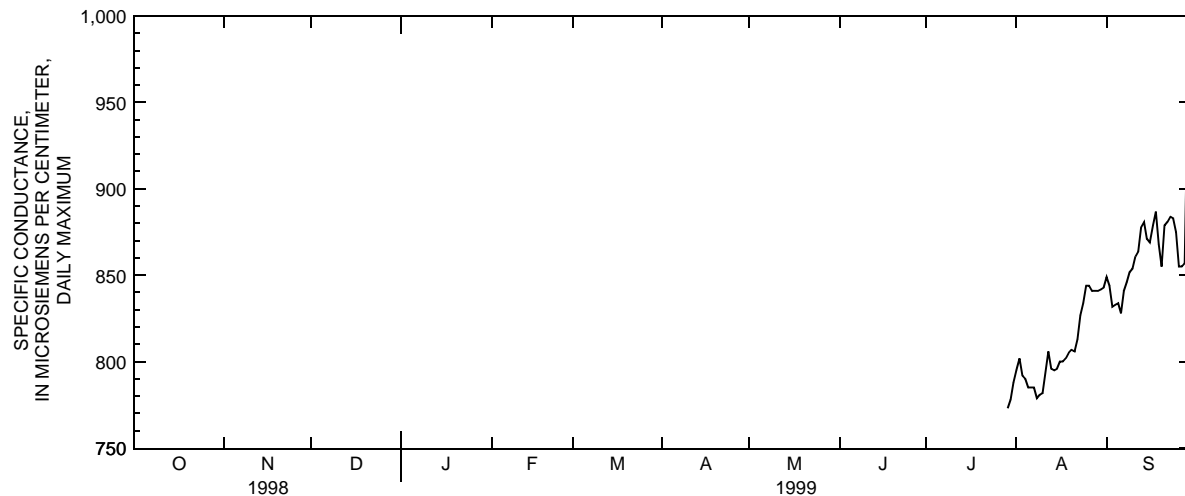


PROJECT DATA
Water Data for Bolton Well Field

459

391905084372902. LOCAL NUMBER, BU-1157-8B—Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999												
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	---	---	795	784	849	842
2	---	---	---	---	---	---	---	---	802	791	844	827
3	---	---	---	---	---	---	---	---	792	782	832	822
4	---	---	---	---	---	---	---	---	790	782	833	818
5	---	---	---	---	---	---	---	---	785	783	834	811
6	---	---	---	---	---	---	---	---	785	783	828	812
7	---	---	---	---	---	---	---	---	785	778	841	828
8	---	---	---	---	---	---	---	---	779	777	846	840
9	---	---	---	---	---	---	---	---	781	778	852	846
10	---	---	---	---	---	---	---	---	782	769	854	852
11	---	---	---	---	---	---	---	---	794	773	861	853
12	---	---	---	---	---	---	---	---	806	794	864	861
13	---	---	---	---	---	---	---	---	796	794	878	864
14	---	---	---	---	---	---	---	---	795	794	881	847
15	---	---	---	---	---	---	---	---	796	794	871	861
16	---	---	---	---	---	---	---	---	800	795	869	863
17	---	---	---	---	---	---	---	---	800	796	879	868
18	---	---	---	---	---	---	---	---	802	799	887	868
19	---	---	---	---	---	---	---	---	805	802	868	855
20	---	---	---	---	---	---	---	---	807	799	855	853
21	---	---	---	---	---	---	---	---	806	798	879	855
22	---	---	---	---	---	---	---	---	813	806	881	879
23	---	---	---	---	---	---	---	---	827	813	884	880
24	---	---	---	---	---	---	---	---	834	826	883	874
25	---	---	---	---	---	---	---	---	844	831	875	837
26	---	---	---	---	---	---	---	---	844	835	855	837
27	---	---	---	---	---	---	---	---	841	839	855	837
28	---	---	---	---	---	---	---	---	841	840	857	841
29	---	---	---	---	---	---	773	767	841	834	950	846
30	---	---	---	---	---	---	778	770	842	834	884	876
31	---	---	---	---	---	---	788	773	843	840	---	---
MONTH	---	---	---	---	---	---	788	767	844	769	950	811
YEAR	950	767										

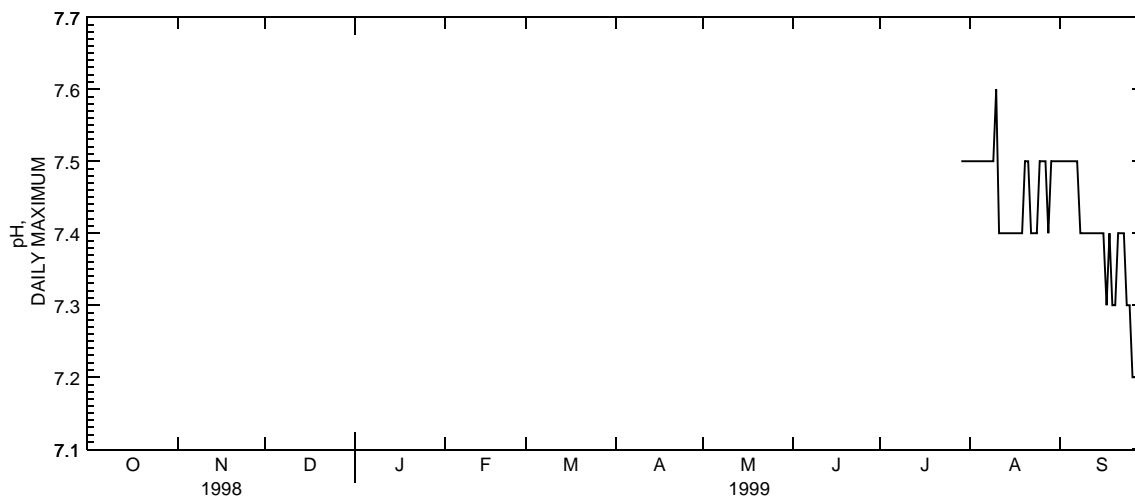


PROJECT DATA **Water Data for Bolton Well Field**

391905084372902. LOCAL NUMBER, BU-1157-8B—Continued

PH, WATER, WHOLE, FIELD, STANDARD UNITS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	---	---	7.5	7.5	7.5	7.4
2	---	---	---	---	---	---	---	---	7.5	7.5	7.5	7.3
3	---	---	---	---	---	---	---	---	7.5	7.5	7.5	7.4
4	---	---	---	---	---	---	---	---	7.5	7.5	7.5	7.4
5	---	---	---	---	---	---	---	---	7.5	7.5	7.5	7.4
6	---	---	---	---	---	---	---	---	7.5	7.5	7.5	7.5
7	---	---	---	---	---	---	---	---	7.5	7.5	7.5	7.4
8	---	---	---	---	---	---	---	---	7.5	7.5	7.4	7.4
9	---	---	---	---	---	---	---	---	7.5	7.5	7.4	7.4
10	---	---	---	---	---	---	---	---	7.6	7.4	7.4	7.4
11	---	---	---	---	---	---	---	---	7.4	7.4	7.4	7.4
12	---	---	---	---	---	---	---	---	7.4	7.4	7.4	7.4
13	---	---	---	---	---	---	---	---	7.4	7.4	7.4	7.4
14	---	---	---	---	---	---	---	---	7.4	7.4	7.4	7.3
15	---	---	---	---	---	---	---	---	7.4	7.4	7.4	7.4
16	---	---	---	---	---	---	---	---	7.4	7.4	7.4	7.3
17	---	---	---	---	---	---	---	---	7.4	7.4	7.3	7.3
18	---	---	---	---	---	---	---	---	7.4	7.4	7.4	7.3
19	---	---	---	---	---	---	---	---	7.4	7.4	7.3	7.3
20	---	---	---	---	---	---	---	---	7.5	7.4	7.3	7.3
21	---	---	---	---	---	---	---	---	7.5	7.4	7.4	7.3
22	---	---	---	---	---	---	---	---	7.4	7.4	7.4	7.3
23	---	---	---	---	---	---	---	---	7.4	7.4	7.4	7.3
24	---	---	---	---	---	---	---	---	7.4	7.4	7.3	7.3
25	---	---	---	---	---	---	---	---	7.5	7.4	7.3	7.2
26	---	---	---	---	---	---	---	---	7.5	7.4	7.2	7.2
27	---	---	---	---	---	---	---	---	7.5	7.4	7.2	7.2
28	---	---	---	---	---	---	---	---	7.4	7.4	7.2	7.2
29	---	---	---	---	---	---	7.5	7.5	7.5	7.4	7.3	7.2
30	---	---	---	---	---	---	7.5	7.5	7.5	7.4	7.2	7.2
31	---	---	---	---	---	---	7.5	7.5	7.5	7.5	---	---
MONTH	---	---	---	---	---	---	7.5	7.5	7.6	7.4	7.5	7.2
YEAR	7.6	7.2										



PROJECT DATA

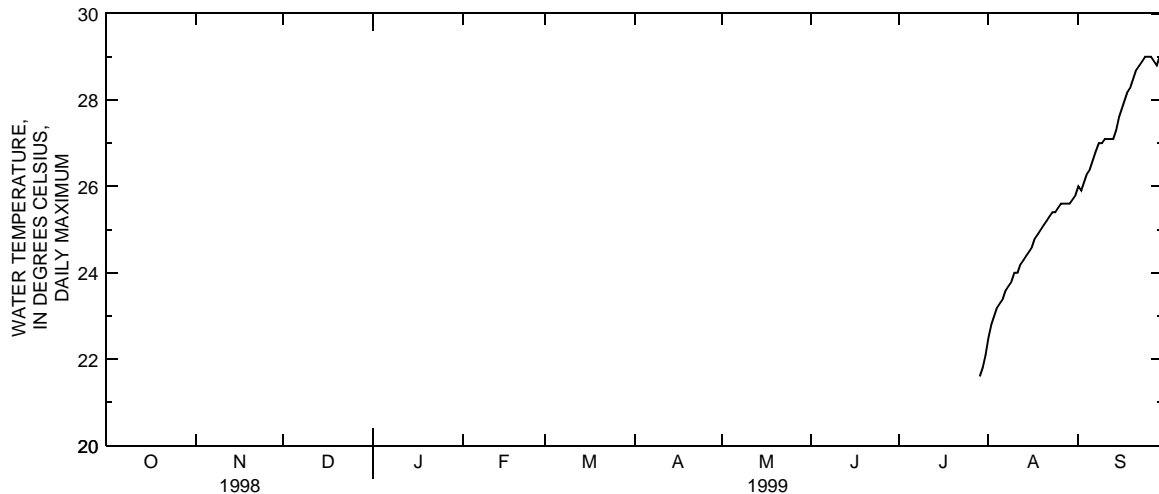
Water Data for Bolton Well Field

461

391905084372902. LOCAL NUMBER, BU-1157-8B—Continued

TEMPERATURE, WATER, DEGREES CELSIUS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	---	---	22.5	22.1	26.0	25.8
2	---	---	---	---	---	---	---	---	22.8	22.5	25.9	25.9
3	---	---	---	---	---	---	---	---	23.0	22.8	26.1	25.9
4	---	---	---	---	---	---	---	---	23.2	23.0	26.3	26.1
5	---	---	---	---	---	---	---	---	23.3	23.2	26.4	26.3
6	---	---	---	---	---	---	---	---	23.4	23.3	26.6	26.4
7	---	---	---	---	---	---	---	---	23.6	23.4	26.8	26.6
8	---	---	---	---	---	---	---	---	23.7	23.6	27.0	26.8
9	---	---	---	---	---	---	---	---	23.8	23.7	27.0	27.0
10	---	---	---	---	---	---	---	---	24.0	23.8	27.1	27.0
11	---	---	---	---	---	---	---	---	24.0	23.9	27.1	27.1
12	---	---	---	---	---	---	---	---	24.2	24.0	27.1	27.1
13	---	---	---	---	---	---	---	---	24.3	24.2	27.1	27.1
14	---	---	---	---	---	---	---	---	24.4	24.3	27.3	27.1
15	---	---	---	---	---	---	---	---	24.5	24.4	27.6	27.3
16	---	---	---	---	---	---	---	---	24.6	24.5	27.8	27.6
17	---	---	---	---	---	---	---	---	24.8	24.6	28.0	27.8
18	---	---	---	---	---	---	---	---	24.9	24.8	28.2	28.0
19	---	---	---	---	---	---	---	---	25.0	24.9	28.3	28.1
20	---	---	---	---	---	---	---	---	25.1	25.0	28.5	28.3
21	---	---	---	---	---	---	---	---	25.2	25.1	28.7	28.5
22	---	---	---	---	---	---	---	---	25.3	25.2	28.8	28.7
23	---	---	---	---	---	---	---	---	25.4	25.3	28.9	28.8
24	---	---	---	---	---	---	---	---	25.4	25.4	29.0	28.9
25	---	---	---	---	---	---	---	---	25.5	25.4	29.0	28.9
26	---	---	---	---	---	---	---	---	25.6	25.5	29.0	28.9
27	---	---	---	---	---	---	---	---	25.6	25.6	28.9	28.8
28	---	---	---	---	---	---	---	---	25.6	25.6	28.8	28.7
29	---	---	---	---	---	---	21.6	21.4	25.6	25.6	29.0	28.6
30	---	---	---	---	---	---	21.8	21.6	25.7	25.6	28.6	28.4
31	---	---	---	---	---	---	22.1	21.8	25.8	25.7	---	---
MONTH	---	---	---	---	---	---	22.1	21.4	25.8	22.1	29.0	25.8
YEAR	29.0	21.4										

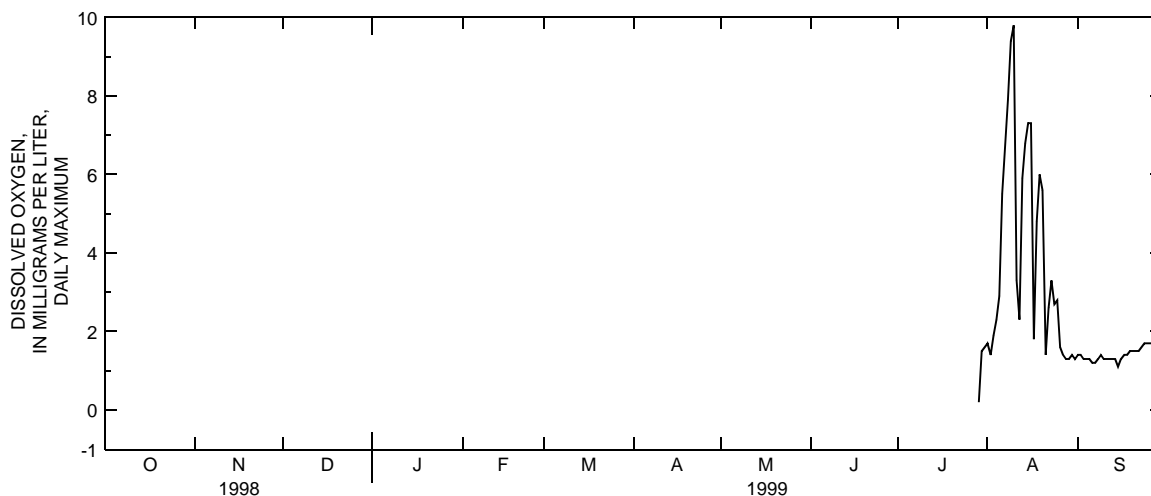


PROJECT DATA **Water Data for Bolton Well Field**

391905084372902. LOCAL NUMBER, BU-1157-8B—Continued

OXYGEN, DISSOLVED, MILLIGRAMS PER LITER, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	---	---	1.7	1.4	1.4	.0
2	---	---	---	---	---	---	---	---	1.4	1.3	1.4	.7
3	---	---	---	---	---	---	---	---	1.9	1.3	1.3	.9
4	---	---	---	---	---	---	---	---	2.3	1.6	1.3	1.1
5	---	---	---	---	---	---	---	---	2.9	1.9	1.3	1.2
6	---	---	---	---	---	---	---	---	5.5	2.9	1.2	1.1
7	---	---	---	---	---	---	---	---	6.8	5.5	1.2	1.0
8	---	---	---	---	---	---	---	---	7.9	5.5	1.3	1.2
9	---	---	---	---	---	---	---	---	9.4	7.8	1.4	1.0
10	---	---	---	---	---	---	---	---	9.8	1.5	1.3	1.1
11	---	---	---	---	---	---	---	---	3.3	.9	1.3	1.1
12	---	---	---	---	---	---	---	---	2.3	.9	1.3	1.0
13	---	---	---	---	---	---	---	---	5.9	2.3	1.3	1.0
14	---	---	---	---	---	---	---	---	6.8	5.9	1.3	1.1
15	---	---	---	---	---	---	---	---	7.3	6.8	1.1	1.0
16	---	---	---	---	---	---	---	---	7.3	1.7	1.3	1.1
17	---	---	---	---	---	---	---	---	1.8	1.4	1.4	1.3
18	---	---	---	---	---	---	---	---	4.8	1.8	1.4	1.3
19	---	---	---	---	---	---	---	---	6.0	4.8	1.5	1.4
20	---	---	---	---	---	---	---	---	5.6	1.3	1.5	1.4
21	---	---	---	---	---	---	---	---	1.4	1.2	1.5	1.4
22	---	---	---	---	---	---	---	---	2.6	1.4	1.5	1.1
23	---	---	---	---	---	---	---	---	3.3	2.6	1.6	1.5
24	---	---	---	---	---	---	---	---	2.7	2.5	1.7	1.6
25	---	---	---	---	---	---	---	---	2.8	1.4	1.7	1.6
26	---	---	---	---	---	---	---	---	1.6	1.3	1.7	1.6
27	---	---	---	---	---	---	---	---	1.4	1.2	1.7	1.6
28	---	---	---	---	---	---	---	---	1.3	1.3	1.8	1.6
29	---	---	---	---	---	---	.2	.0	1.3	1.1	1.7	1.3
30	---	---	---	---	---	---	1.5	.2	1.4	1.0	1.7	1.6
31	---	---	---	---	---	---	1.6	1.5	1.3	1.1	---	---
MONTH	---	---	---	---	---	---	1.6	.0	9.8	.9	1.8	.0
YEAR	9.8	.0										



PROJECT DATA
Water Data for Bolton Well Field

463

391905084372903. LOCAL NUMBER, BU-1158-8C

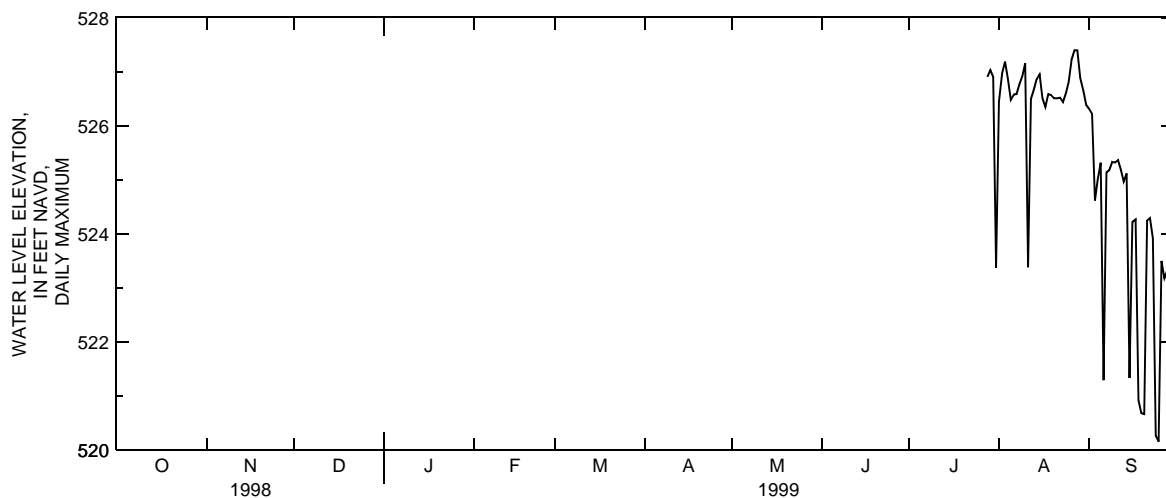
LOCATION.--Latitude 39°19'05", longitude 84°37'29", Butler County, Hydrologic Unit 05080002.
AQUIFER.--Glacial outwash, sand and gravel; 1120TSH.
WELL CHARACTERISTICS.--Observation well drilled by rotasonic techniques, diameter 4.0 in., depth 96 ft. from land surface to bottom of screen.
INSTRUMENTATION.--YSI Model 6920 data sonde with turbidity probe 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 (NAVD88). 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 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.
PERIOD OF RECORD.--
WATER LEVEL ELEVATION: Current year
SPECIFIC CONDUCTANCE: Current year
pH: Current year
WATER TEMPERATURE: Current Year
DISSOLVED OXYGEN: Current Year
EXTREMES FOR PERIOD OF RECORD.--
WATER LEVEL ELEVATION: Maximum daily low, 519.62 ft. above NAVD88, September 25, 1999; Maximum daily high, 527.40 ft. above NAVD88, August 27 and 28, 1999.
SPECIFIC CONDUCTANCE: Maximum, 972 microsiemens per centimeter, September 26 and 27, 1999; Minimum, 626 microsiemens per centimeter, August 29, 1999.
pH: Maximum, 7.6, July 29, 1999; Minimum, 7.3, many days during period of record.
WATER TEMPERATURE: Maximum, 22.7°C, September 30, 1999; Minimum, 12.0°C, July 28-31 and August 9-10, 1999.
DISSOLVED OXYGEN: Maximum, 0.2 milligrams per liter, September 2, 1999; Minimum -0.4 milligrams per liter, July 28 and 29, 1999.
EXTREMES FOR CURRENT YEAR.--
WATER LEVEL ELEVATION: Maximum daily low, 519.62 ft. above NAVD88, September 25, 1999; Maximum daily high, 527.40 ft. above NAVD88, August 27 and 28, 1999.
SPECIFIC CONDUCTANCE: Maximum, 972 microsiemens per centimeter, September 26 and 27, 1999; Minimum, 626 microsiemens per centimeter, August 29, 1999.
pH: Maximum, 7.6, July 29, 1999; Minimum, 7.3, many days during period of record.
WATER TEMPERATURE: Maximum, 22.7°C, September 30, 1999; Minimum, 12.0°C, July 28-31 and August 9-10, 1999.
DISSOLVED OXYGEN: Maximum, 0.2 milligrams per liter, September 2, 1999; Minimum -0.4 milligrams per liter, July 28 and 29, 1999.

PROJECT DATA
Water Data for Bolton Well Field

391905084372903. LOCAL NUMBER, BU-1158-8C—Continued

WATER LEVEL ELEVATION, FEET NAVD, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	---	---	526.45	522.59	526.31	526.21
2	---	---	---	---	---	---	---	---	526.98	522.68	526.22	522.30
3	---	---	---	---	---	---	---	---	527.19	523.65	524.62	521.39
4	---	---	---	---	---	---	---	---	526.87	523.24	525.02	521.40
5	---	---	---	---	---	---	---	---	526.49	523.14	525.32	521.06
6	---	---	---	---	---	---	---	---	526.58	526.14	521.29	521.00
7	---	---	---	---	---	---	---	---	526.59	522.64	525.14	520.80
8	---	---	---	---	---	---	---	---	526.77	526.10	525.18	524.83
9	---	---	---	---	---	---	---	---	526.92	526.65	525.33	524.88
10	---	---	---	---	---	---	---	---	527.16	523.38	525.32	524.95
11	---	---	---	---	---	---	---	---	523.38	522.66	525.37	525.06
12	---	---	---	---	---	---	---	---	526.50	522.45	525.19	524.72
13	---	---	---	---	---	---	---	---	526.67	526.38	524.97	524.68
14	---	---	---	---	---	---	---	---	526.87	526.54	525.12	521.33
15	---	---	---	---	---	---	---	---	526.96	526.51	521.33	520.95
16	---	---	---	---	---	---	---	---	526.51	522.57	524.22	520.84
17	---	---	---	---	---	---	---	---	526.35	522.34	524.27	520.73
18	---	---	---	---	---	---	---	---	526.59	526.33	520.92	520.60
19	---	---	---	---	---	---	---	---	526.57	526.36	520.68	520.26
20	---	---	---	---	---	---	---	---	526.51	522.76	520.66	520.23
21	---	---	---	---	---	---	---	---	526.51	522.76	524.25	520.55
22	---	---	---	---	---	---	---	---	526.52	526.43	524.29	523.91
23	---	---	---	---	---	---	---	---	526.44	526.20	523.92	520.26
24	---	---	---	---	---	---	---	---	526.60	526.18	520.26	519.90
25	---	---	---	---	---	---	---	---	526.82	526.49	520.15	519.62
26	---	---	---	---	---	---	---	---	527.23	523.03	523.50	519.78
27	---	---	---	---	---	---	---	---	527.40	527.23	523.18	519.78
28	---	---	---	---	---	---	526.91	523.36	527.40	526.89	523.32	519.83
29	---	---	---	---	---	---	527.03	523.14	526.89	523.23	520.19	519.63
30	---	---	---	---	---	---	526.91	523.07	526.65	522.60	520.23	520.02
31	---	---	---	---	---	---	523.37	522.61	526.38	522.58	---	---
MONTH	---	---	---	---	---	---	527.03	522.61	527.40	522.34	526.31	519.62
YEAR	527.40	519.62										



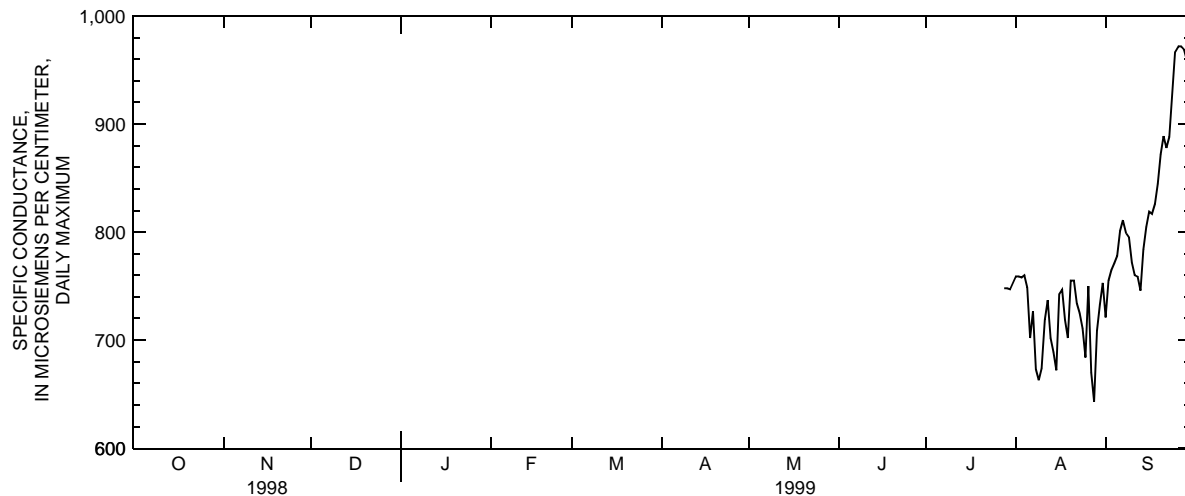
PROJECT DATA
Water Data for Bolton Well Field

465

391905084372903. LOCAL NUMBER, BU-1158-8C—Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	---	---	759	727	721	700
2	---	---	---	---	---	---	---	---	759	742	755	689
3	---	---	---	---	---	---	---	---	758	729	765	747
4	---	---	---	---	---	---	---	---	760	713	771	762
5	---	---	---	---	---	---	---	---	749	702	778	759
6	---	---	---	---	---	---	---	---	702	677	801	778
7	---	---	---	---	---	---	---	---	727	659	811	799
8	---	---	---	---	---	---	---	---	673	648	799	795
9	---	---	---	---	---	---	---	---	663	635	795	768
10	---	---	---	---	---	---	---	---	674	631	772	758
11	---	---	---	---	---	---	---	---	719	661	760	759
12	---	---	---	---	---	---	---	---	737	702	759	746
13	---	---	---	---	---	---	---	---	702	689	746	726
14	---	---	---	---	---	---	---	---	689	672	784	719
15	---	---	---	---	---	---	---	---	672	657	805	765
16	---	---	---	---	---	---	---	---	743	657	819	805
17	---	---	---	---	---	---	---	---	747	719	817	808
18	---	---	---	---	---	---	---	---	719	702	826	817
19	---	---	---	---	---	---	---	---	702	688	845	825
20	---	---	---	---	---	---	---	---	755	688	872	845
21	---	---	---	---	---	---	---	---	755	734	889	872
22	---	---	---	---	---	---	---	---	734	725	878	863
23	---	---	---	---	---	---	---	---	725	711	888	848
24	---	---	---	---	---	---	---	---	711	684	923	864
25	---	---	---	---	---	---	---	---	684	670	967	921
26	---	---	---	---	---	---	---	---	750	648	972	946
27	---	---	---	---	---	---	---	---	670	643	972	960
28	---	---	---	---	---	---	748	699	643	632	969	959
29	---	---	---	---	---	---	748	694	709	626	959	954
30	---	---	---	---	---	---	747	703	733	674	968	956
31	---	---	---	---	---	---	753	739	753	720	---	---
MONTH	---	---	---	---	---	---	753	694	760	626	972	689
YEAR	972	626										

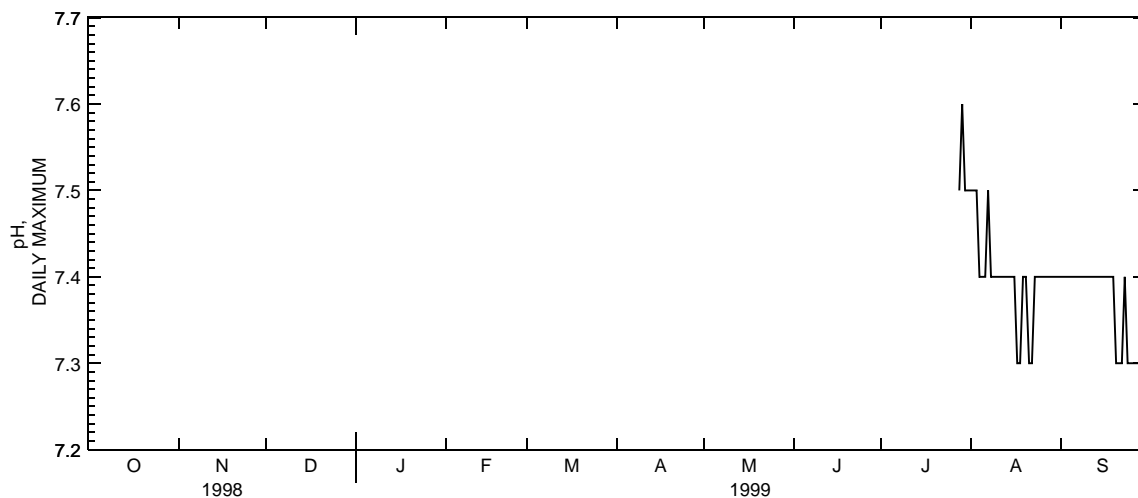


PROJECT DATA **Water Data for Bolton Well Field**

391905084372903. LOCAL NUMBER, BU-1158-8C—Continued

PH, WATER, WHOLE, FIELD, STANDARD UNITS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	---	---	7.5	7.4	7.4	7.4
2	---	---	---	---	---	---	---	---	7.5	7.4	7.4	7.4
3	---	---	---	---	---	---	---	---	7.5	7.4	7.4	7.4
4	---	---	---	---	---	---	---	---	7.4	7.4	7.4	7.4
5	---	---	---	---	---	---	---	---	7.4	7.4	7.4	7.4
6	---	---	---	---	---	---	---	---	7.4	7.4	7.4	7.4
7	---	---	---	---	---	---	---	---	7.5	7.4	7.4	7.3
8	---	---	---	---	---	---	---	---	7.4	7.3	7.4	7.3
9	---	---	---	---	---	---	---	---	7.4	7.4	7.4	7.4
10	---	---	---	---	---	---	---	---	7.4	7.4	7.4	7.4
11	---	---	---	---	---	---	---	---	7.4	7.4	7.4	7.4
12	---	---	---	---	---	---	---	---	7.4	7.3	7.4	7.4
13	---	---	---	---	---	---	---	---	7.4	7.3	7.4	7.4
14	---	---	---	---	---	---	---	---	7.4	7.4	7.4	7.4
15	---	---	---	---	---	---	---	---	7.4	7.4	7.4	7.4
16	---	---	---	---	---	---	---	---	7.4	7.3	7.4	7.4
17	---	---	---	---	---	---	---	---	7.3	7.3	7.4	7.4
18	---	---	---	---	---	---	---	---	7.3	7.3	7.4	7.4
19	---	---	---	---	---	---	---	---	7.4	7.3	7.4	7.3
20	---	---	---	---	---	---	---	---	7.4	7.3	7.3	7.3
21	---	---	---	---	---	---	---	---	7.3	7.3	7.3	7.3
22	---	---	---	---	---	---	---	---	7.3	7.3	7.3	7.3
23	---	---	---	---	---	---	---	---	7.4	7.3	7.4	7.3
24	---	---	---	---	---	---	---	---	7.4	7.4	7.3	7.3
25	---	---	---	---	---	---	---	---	7.4	7.4	7.3	7.3
26	---	---	---	---	---	---	---	---	7.4	7.4	7.3	7.3
27	---	---	---	---	---	---	---	---	7.4	7.4	7.3	7.3
28	---	---	---	---	---	---	7.5	7.5	7.4	7.4	7.3	7.3
29	---	---	---	---	---	---	7.6	7.5	7.4	7.4	7.3	7.3
30	---	---	---	---	---	---	7.5	7.4	7.4	7.4	7.3	7.3
31	---	---	---	---	---	---	7.5	7.5	7.4	7.4	---	---
MONTH	---	---	---	---	---	---	7.6	7.4	7.5	7.3	7.4	7.3
YEAR	7.6	7.3										

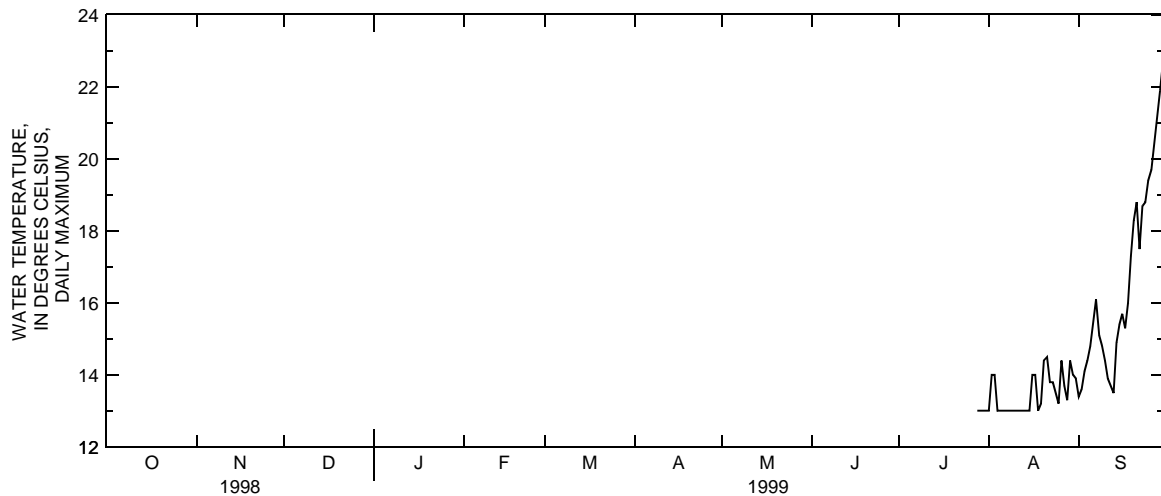


PROJECT DATA
Water Data for Bolton Well Field

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391905084372903. LOCAL NUMBER, BU-1158-8C—Continued

TEMPERATURE, WATER, DEGREES CELSIUS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999												
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	---	---	13.0	13.0	13.4	13.1
2	---	---	---	---	---	---	---	---	14.0	13.0	13.6	12.9
3	---	---	---	---	---	---	---	---	14.0	13.0	14.1	13.6
4	---	---	---	---	---	---	---	---	13.0	13.0	14.4	13.7
5	---	---	---	---	---	---	---	---	13.0	13.0	14.8	13.5
6	---	---	---	---	---	---	---	---	13.0	13.0	15.5	14.8
7	---	---	---	---	---	---	---	---	13.0	12.0	16.1	15.0
8	---	---	---	---	---	---	---	---	13.0	12.0	15.1	14.8
9	---	---	---	---	---	---	---	---	13.0	12.0	14.8	14.3
10	---	---	---	---	---	---	---	---	13.0	12.0	14.4	13.9
11	---	---	---	---	---	---	---	---	13.0	13.0	13.9	13.7
12	---	---	---	---	---	---	---	---	13.0	13.0	13.7	13.5
13	---	---	---	---	---	---	---	---	13.0	13.0	13.5	13.2
14	---	---	---	---	---	---	---	---	13.0	13.0	14.9	13.0
15	---	---	---	---	---	---	---	---	13.0	13.0	15.4	14.5
16	---	---	---	---	---	---	---	---	14.0	13.0	15.7	14.9
17	---	---	---	---	---	---	---	---	14.0	13.0	15.3	14.7
18	---	---	---	---	---	---	---	---	13.0	13.0	16.0	15.3
19	---	---	---	---	---	---	---	---	13.2	13.0	17.3	16.0
20	---	---	---	---	---	---	---	---	14.4	13.1	18.3	17.3
21	---	---	---	---	---	---	---	---	14.5	13.8	18.8	17.5
22	---	---	---	---	---	---	---	---	13.8	13.6	17.5	17.0
23	---	---	---	---	---	---	---	---	13.8	13.5	18.7	16.6
24	---	---	---	---	---	---	---	---	13.5	13.2	18.8	18.4
25	---	---	---	---	---	---	---	---	13.2	13.0	19.4	18.8
26	---	---	---	---	---	---	---	---	14.4	13.0	19.7	18.1
27	---	---	---	---	---	---	---	---	13.7	13.3	20.4	18.6
28	---	---	---	---	---	---	13.0	12.0	13.3	13.1	21.1	19.2
29	---	---	---	---	---	---	13.0	12.0	14.4	12.9	21.9	21.1
30	---	---	---	---	---	---	13.0	12.0	14.0	13.2	22.7	21.9
31	---	---	---	---	---	---	13.0	13.0	13.9	13.3	---	---
MONTH	---	---	---	---	---	---	13.0	12.0	14.5	12.0	22.7	12.9
YEAR	22.7	12.0										

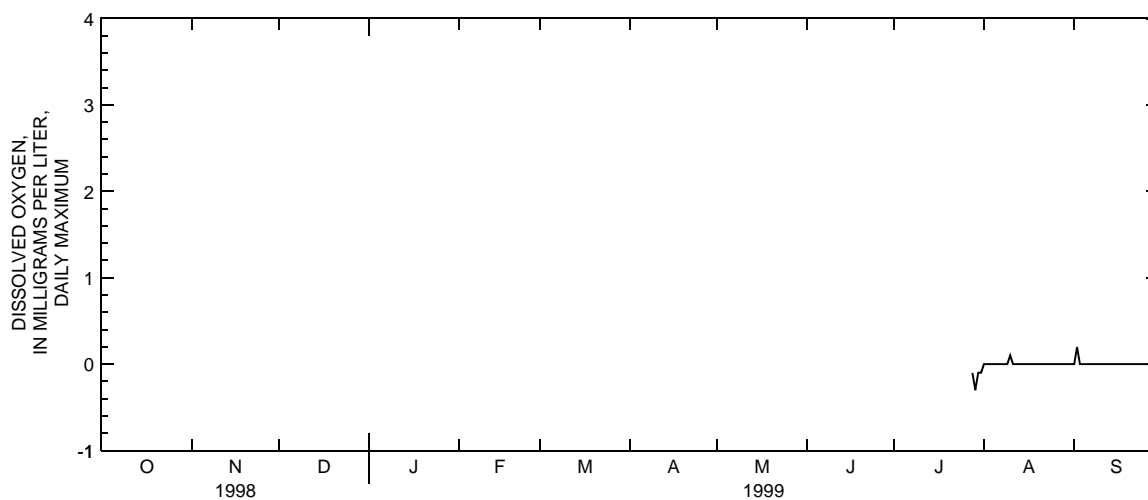


PROJECT DATA **Water Data for Bolton Well Field**

391905084372903. LOCAL NUMBER, BU-1158-8C—Continued

OXYGEN, DISSOLVED, MILLIGRAMS PER LITER, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	---	---	.0	-.1	.0	.0
2	---	---	---	---	---	---	---	---	.0	.0	.2	.0
3	---	---	---	---	---	---	---	---	.0	.0	.0	.0
4	---	---	---	---	---	---	---	---	.0	.0	.0	.0
5	---	---	---	---	---	---	---	---	.0	.0	.0	.0
6	---	---	---	---	---	---	---	---	.0	.0	.0	.0
7	---	---	---	---	---	---	---	---	.0	.0	.0	.0
8	---	---	---	---	---	---	---	---	.0	.0	.0	.0
9	---	---	---	---	---	---	---	---	.0	.0	.0	.0
10	---	---	---	---	---	---	---	---	.1	.0	.0	.0
11	---	---	---	---	---	---	---	---	.0	.0	.0	.0
12	---	---	---	---	---	---	---	---	.0	.0	.0	.0
13	---	---	---	---	---	---	---	---	.0	.0	.0	.0
14	---	---	---	---	---	---	---	---	.0	.0	.0	.0
15	---	---	---	---	---	---	---	---	.0	.0	.0	.0
16	---	---	---	---	---	---	---	---	.0	.0	.0	.0
17	---	---	---	---	---	---	---	---	.0	.0	.0	.0
18	---	---	---	---	---	---	---	---	.0	.0	.0	.0
19	---	---	---	---	---	---	---	---	.0	.0	.0	.0
20	---	---	---	---	---	---	---	---	.0	.0	.0	.0
21	---	---	---	---	---	---	---	---	.0	.0	.0	.0
22	---	---	---	---	---	---	---	---	.0	.0	.0	.0
23	---	---	---	---	---	---	---	---	.0	.0	.0	.0
24	---	---	---	---	---	---	---	---	.0	.0	.0	.0
25	---	---	---	---	---	---	---	---	.0	.0	.0	.0
26	---	---	---	---	---	---	---	---	.0	.0	.0	.0
27	---	---	---	---	---	---	---	---	.0	.0	.0	.0
28	---	---	---	---	---	---	-.1	-.4	.0	.0	.0	.0
29	---	---	---	---	---	---	-.3	-.4	.0	.0	.0	.0
30	---	---	---	---	---	---	-.1	-.3	.0	.0	.0	.0
31	---	---	---	---	---	---	-.1	-.1	.0	.0	---	---
MONTH	---	---	---	---	---	---	-.1	-.4	.1	-.1	.2	.0
YEAR	.2	-.4										



PROJECT DATA
Water Data for Bolton Well Field

469

391905084372904. LOCAL NUMBER, BU-1159-8D

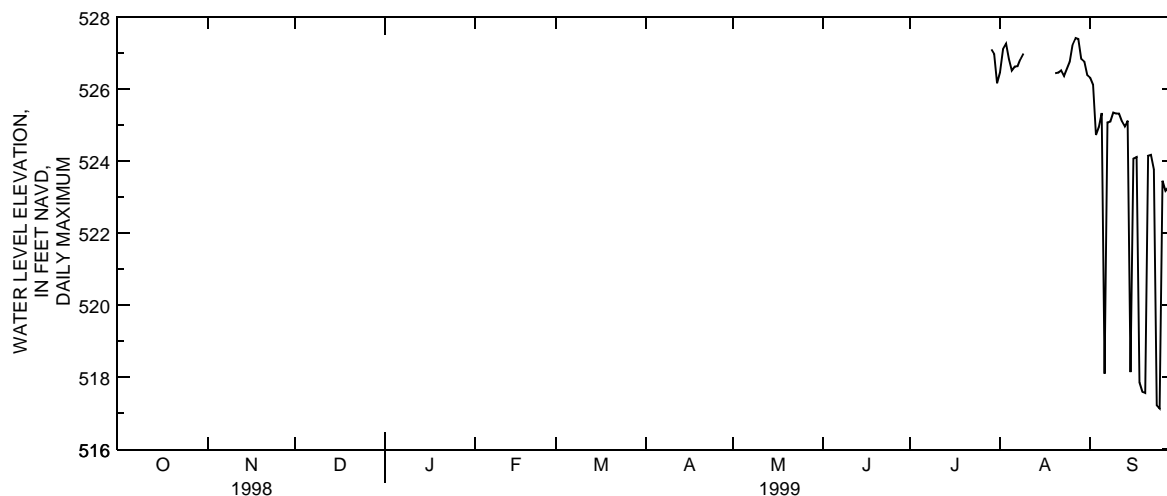
LOCATION.--Latitude 39°19'05", longitude 84°37'29", Butler County, Hydrologic Unit 05080002.
AQUIFER.--Glacial outwash, sand and gravel; 1120TSH.
WELL CHARACTERISTICS.--Observation well drilled by rotasonic techniques, diameter 4.0 in., depth 185 ft. from land surface to bottom of screen.
INSTRUMENTATION.-- SI Model 6920 data sonde with turbidity probe 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 (NAVD88). 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 29, 1999. Negative 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: Current year
SPECIFIC CONDUCTANCE: Current year
pH: Current year
WATER TEMPERATURE: Current Year
DISSOLVED OXYGEN: Current Year
EXTREMES FOR PERIOD OF RECORD.--
WATER LEVEL ELEVATION: Maximum daily low, 516.18 ft. above NAVD88, September 29, 1999; Maximum daily high, 527.42 ft. above NAVD88, August 27, 1999.
SPECIFIC CONDUCTANCE: Maximum, 636 microsiemens per centimeter, September 3, 1999; Minimum, 601 microsiemens per centimeter, July 31, 1999.
pH: Maximum, 7.5, July 29 to August 9, 1999; Minimum, 7.3, August 26, 29-31, and September 2 and 3, 1999.
WATER TEMPERATURE: Maximum, 12.4°C, all days during period of record; Minimum, 12.4°C, all days during period of record.
DISSOLVED OXYGEN: Maximum, 1.8 milligrams per liter, August 21, 1999; Minimum -0.1 milligrams per liter, July 29, and September 26-30, 1999.
EXTREMES FOR CURRENT YEAR.--
WATER LEVEL ELEVATION: Maximum daily low, 516.18 ft. above NAVD88, September 29, 1999; Maximum daily high, 527.42 ft. above NAVD88, August 27, 1999.
SPECIFIC CONDUCTANCE: Maximum, 636 microsiemens per centimeter, September 3, 1999; Minimum, 601 microsiemens per centimeter, July 31, 1999.
pH: Maximum, 7.5, July 29 to August 9, 1999; Minimum, 7.3, August 26, 29-31, and September 2 and 3, 1999.
WATER TEMPERATURE: Maximum, 12.4°C, all days during period of record; Minimum, 12.4°C, all days during period of record.
DISSOLVED OXYGEN: Maximum, 1.8 milligrams per liter, August 21, 1999; Minimum -0.1 milligrams per liter, July 29, and September 26-30, 1999.

PROJECT DATA
Water Data for Bolton Well Field

391905084372904. LOCAL NUMBER, BU-1159-8D—Continued

WATER LEVEL ELEVATION, FEET NAVD, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	---	---	526.46	519.33	526.32	526.11
2	---	---	---	---	---	---	---	---	527.14	519.45	526.12	519.11
3	---	---	---	---	---	---	---	---	527.28	520.62	524.73	518.11
4	---	---	---	---	---	---	---	---	526.84	519.99	524.95	518.12
5	---	---	---	---	---	---	---	---	526.53	526.20	525.34	517.58
6	---	---	---	---	---	---	---	---	526.63	526.06	518.10	517.53
7	---	---	---	---	---	---	---	---	526.64	519.52	525.07	517.35
8	---	---	---	---	---	---	---	---	526.84	526.17	525.10	524.68
9	---	---	---	---	---	---	---	---	526.99	526.61	525.35	524.73
10	---	---	---	---	---	---	---	---	---	---	525.33	524.80
11	---	---	---	---	---	---	---	---	---	---	525.32	524.91
12	---	---	---	---	---	---	---	---	---	---	525.11	524.58
13	---	---	---	---	---	---	---	---	---	---	524.97	524.54
14	---	---	---	---	---	---	---	---	---	---	525.13	518.14
15	---	---	---	---	---	---	---	---	---	---	518.14	517.79
16	---	---	---	---	---	---	---	---	---	---	524.08	517.69
17	---	---	---	---	---	---	---	---	---	---	524.12	517.35
18	---	---	---	---	---	---	---	---	---	---	517.86	517.36
19	---	---	---	---	---	---	---	---	---	---	517.60	516.95
20	---	---	---	---	---	---	---	---	526.45	519.39	517.57	516.92
21	---	---	---	---	---	---	---	---	526.46	519.44	524.15	517.34
22	---	---	---	---	---	---	---	---	526.53	526.35	524.18	523.76
23	---	---	---	---	---	---	---	---	526.37	526.14	523.78	517.22
24	---	---	---	---	---	---	---	---	526.56	526.12	517.22	516.90
25	---	---	---	---	---	---	---	---	526.77	526.45	517.13	516.32
26	---	---	---	---	---	---	---	---	527.25	519.67	523.46	516.58
27	---	---	---	---	---	---	---	---	527.42	527.25	523.18	516.58
28	---	---	---	---	---	---	---	---	527.39	526.84	523.28	516.42
29	---	---	---	---	---	---	527.11	519.83	526.84	520.17	516.78	516.18
30	---	---	---	---	---	---	526.98	519.99	526.77	519.16	516.84	516.61
31	---	---	---	---	---	---	526.17	519.51	526.39	519.16	---	---
MONTH	---	---	---	---	---	---	527.11	519.51	527.42	519.16	526.32	516.18
YEAR	527.42	516.18										



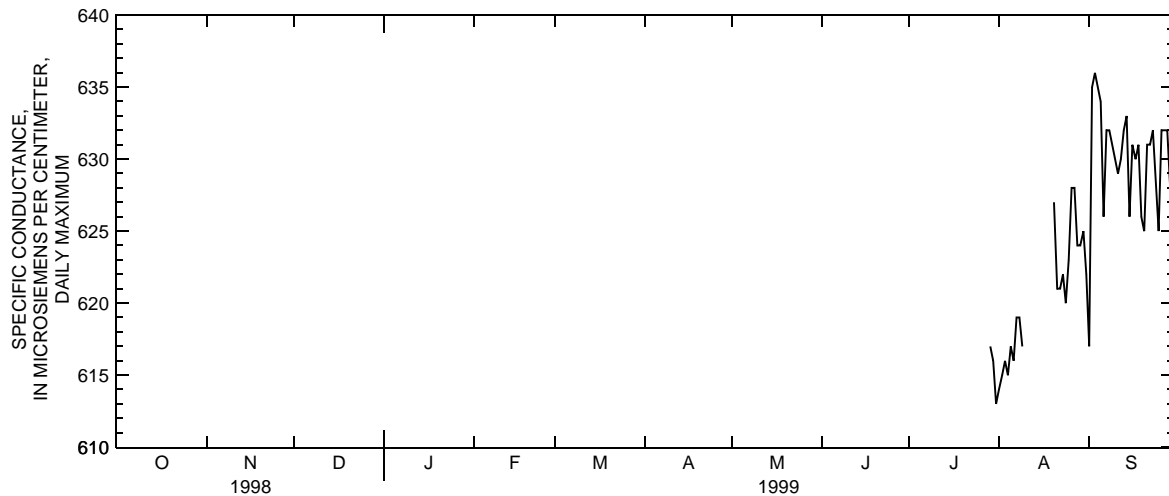
PROJECT DATA
Water Data for Bolton Well Field

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391905084372904. LOCAL NUMBER, BU-1159-8D—Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	---	---	614	603	617	612
2	---	---	---	---	---	---	---	---	615	603	635	617
3	---	---	---	---	---	---	---	---	616	606	636	624
4	---	---	---	---	---	---	---	---	615	607	635	624
5	---	---	---	---	---	---	---	---	617	615	634	625
6	---	---	---	---	---	---	---	---	616	615	626	623
7	---	---	---	---	---	---	---	---	619	609	632	623
8	---	---	---	---	---	---	---	---	619	614	632	629
9	---	---	---	---	---	---	---	---	617	613	631	629
10	---	---	---	---	---	---	---	---	---	---	630	629
11	---	---	---	---	---	---	---	---	---	---	629	628
12	---	---	---	---	---	---	---	---	---	---	630	628
13	---	---	---	---	---	---	---	---	---	---	632	630
14	---	---	---	---	---	---	---	---	---	---	633	623
15	---	---	---	---	---	---	---	---	---	---	626	623
16	---	---	---	---	---	---	---	---	---	---	631	622
17	---	---	---	---	---	---	---	---	---	---	630	621
18	---	---	---	---	---	---	---	---	---	---	631	623
19	---	---	---	---	---	---	---	---	---	---	626	621
20	---	---	---	---	---	---	---	---	627	612	625	622
21	---	---	---	---	---	---	---	---	621	614	631	622
22	---	---	---	---	---	---	---	---	621	618	631	628
23	---	---	---	---	---	---	---	---	622	615	632	620
24	---	---	---	---	---	---	---	---	620	615	628	622
25	---	---	---	---	---	---	---	---	623	618	625	620
26	---	---	---	---	---	---	---	---	628	613	632	622
27	---	---	---	---	---	---	---	---	628	622	632	622
28	---	---	---	---	---	---	---	---	624	622	632	621
29	---	---	---	---	---	---	617	606	624	616	628	612
30	---	---	---	---	---	---	616	602	625	614	626	625
31	---	---	---	---	---	---	613	601	622	608	---	---
MONTH	---	---	---	---	---	---	617	601	628	603	636	612
YEAR	636	601										

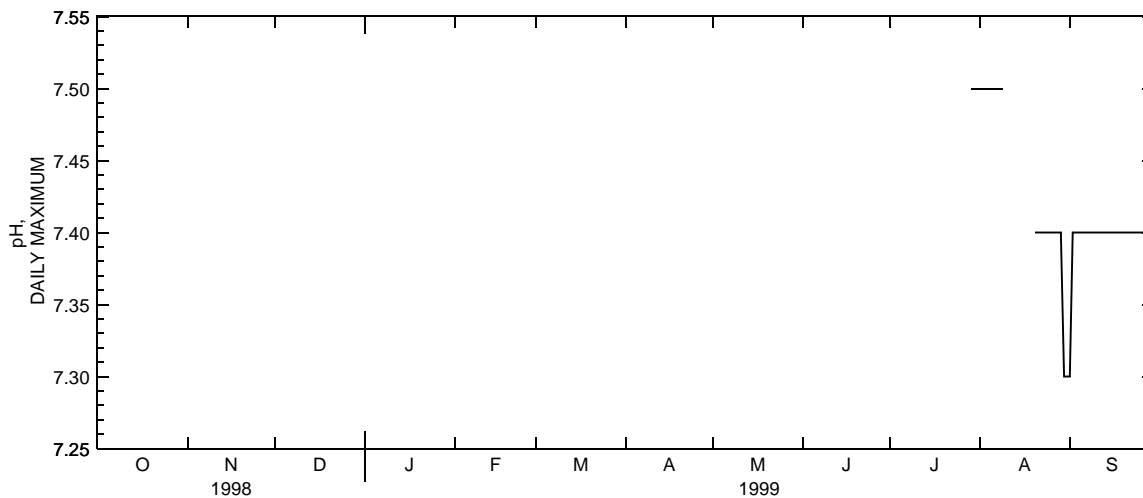


PROJECT DATA **Water Data for Bolton Well Field**

391905084372904. LOCAL NUMBER, BU-1159-8D—Continued

PH, WATER, WHOLE, FIELD, STANDARD UNITS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	---	---	7.5	7.5	7.3	7.3
2	---	---	---	---	---	---	---	---	7.5	7.5	7.4	7.3
3	---	---	---	---	---	---	---	---	7.5	7.5	7.4	7.4
4	---	---	---	---	---	---	---	---	7.5	7.5	7.4	7.4
5	---	---	---	---	---	---	---	---	7.5	7.5	7.4	7.4
6	---	---	---	---	---	---	---	---	7.5	7.5	7.4	7.4
7	---	---	---	---	---	---	---	---	7.5	7.5	7.4	7.4
8	---	---	---	---	---	---	---	---	7.5	7.5	7.4	7.4
9	---	---	---	---	---	---	---	---	7.5	7.5	7.4	7.4
10	---	---	---	---	---	---	---	---	---	---	7.4	7.4
11	---	---	---	---	---	---	---	---	---	---	7.4	7.4
12	---	---	---	---	---	---	---	---	---	---	7.4	7.4
13	---	---	---	---	---	---	---	---	---	---	7.4	7.4
14	---	---	---	---	---	---	---	---	---	---	7.4	7.4
15	---	---	---	---	---	---	---	---	---	---	7.4	7.4
16	---	---	---	---	---	---	---	---	---	---	7.4	7.4
17	---	---	---	---	---	---	---	---	---	---	7.4	7.4
18	---	---	---	---	---	---	---	---	---	---	7.4	7.4
19	---	---	---	---	---	---	---	---	---	---	7.4	7.4
20	---	---	---	---	---	---	---	---	7.4	7.4	7.4	7.4
21	---	---	---	---	---	---	---	---	7.4	7.4	7.4	7.4
22	---	---	---	---	---	---	---	---	7.4	7.4	7.4	7.4
23	---	---	---	---	---	---	---	---	7.4	7.4	7.4	7.4
24	---	---	---	---	---	---	---	---	7.4	7.4	7.4	7.4
25	---	---	---	---	---	---	---	---	7.4	7.4	7.4	7.4
26	---	---	---	---	---	---	---	---	7.4	7.3	7.4	7.4
27	---	---	---	---	---	---	---	---	7.4	7.4	7.4	7.4
28	---	---	---	---	---	---	---	---	7.4	7.4	7.4	7.4
29	---	---	---	---	---	---	7.5	7.5	7.4	7.3	7.4	7.4
30	---	---	---	---	---	---	7.5	7.5	7.3	7.3	7.4	7.4
31	---	---	---	---	---	---	7.5	7.5	7.3	7.3	---	---
MONTH	---	---	---	---	---	---	7.5	7.5	7.5	7.3	7.4	7.3
YEAR	7.5	7.3										



PROJECT DATA

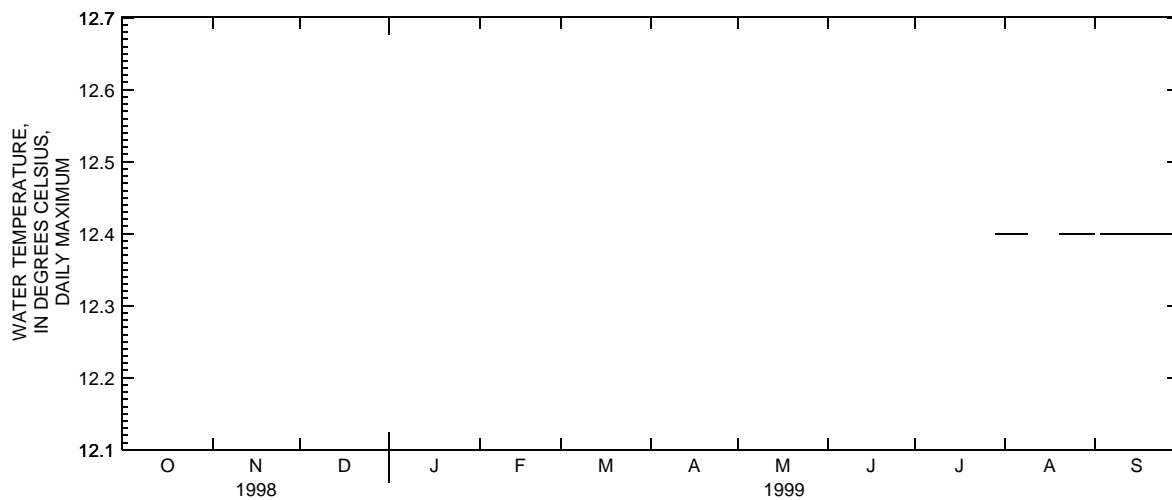
Water Data for Bolton Well Field

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391905084372904. LOCAL NUMBER, BU-1159-8D—Continued

TEMPERATURE, WATER, DEGREES CELSIUS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	---	---	12.4	12.4	12.4	12.4
2	---	---	---	---	---	---	---	---	12.4	12.4	---	---
3	---	---	---	---	---	---	---	---	12.4	12.4	12.4	12.4
4	---	---	---	---	---	---	---	---	12.4	12.4	12.4	12.4
5	---	---	---	---	---	---	---	---	12.4	12.4	12.4	12.4
6	---	---	---	---	---	---	---	---	12.4	12.4	12.4	12.4
7	---	---	---	---	---	---	---	---	12.4	12.4	12.4	12.4
8	---	---	---	---	---	---	---	---	12.4	12.4	12.4	12.4
9	---	---	---	---	---	---	---	---	12.4	12.4	12.4	12.4
10	---	---	---	---	---	---	---	---	---	---	12.4	12.4
11	---	---	---	---	---	---	---	---	---	---	12.4	12.4
12	---	---	---	---	---	---	---	---	---	---	12.4	12.4
13	---	---	---	---	---	---	---	---	---	---	12.4	12.4
14	---	---	---	---	---	---	---	---	---	---	12.4	12.4
15	---	---	---	---	---	---	---	---	---	---	12.4	12.4
16	---	---	---	---	---	---	---	---	---	---	12.4	12.4
17	---	---	---	---	---	---	---	---	---	---	12.4	12.4
18	---	---	---	---	---	---	---	---	---	---	12.4	12.4
19	---	---	---	---	---	---	---	---	---	---	12.4	12.4
20	---	---	---	---	---	---	---	---	12.4	12.4	12.4	12.4
21	---	---	---	---	---	---	---	---	12.4	12.4	12.4	12.4
22	---	---	---	---	---	---	---	---	12.4	12.4	12.4	12.4
23	---	---	---	---	---	---	---	---	12.4	12.4	12.4	12.4
24	---	---	---	---	---	---	---	---	12.4	12.4	12.4	12.4
25	---	---	---	---	---	---	---	---	12.4	12.4	12.4	12.4
26	---	---	---	---	---	---	---	---	12.4	12.4	12.4	12.4
27	---	---	---	---	---	---	---	---	12.4	12.4	12.4	12.4
28	---	---	---	---	---	---	---	---	12.4	12.4	12.4	12.4
29	---	---	---	---	---	---	12.4	12.4	12.4	12.4	12.4	12.4
30	---	---	---	---	---	---	12.4	12.4	12.4	12.4	12.4	12.4
31	---	---	---	---	---	---	12.4	12.4	12.4	12.4	---	---
MONTH	---	---	---	---	---	---	12.4	12.4	12.4	12.4	12.4	12.4
YEAR	12.4	12.4										

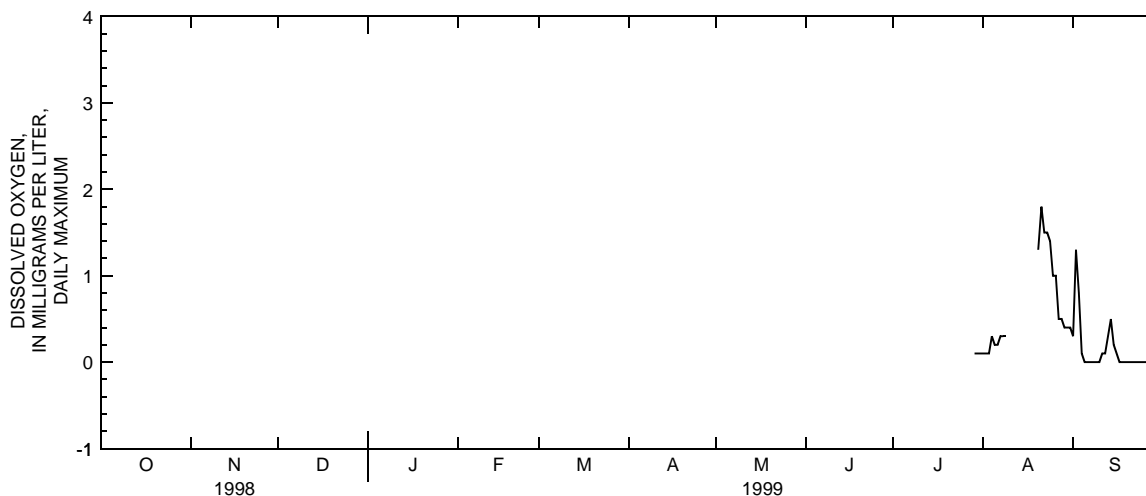


PROJECT DATA **Water Data for Bolton Well Field**

391905084372904. LOCAL NUMBER, BU-1159-8D—Continued

OXYGEN, DISSOLVED, MILLIGRAMS PER LITER, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	---	---	.1	.1	.3	.2
2	---	---	---	---	---	---	---	---	.1	.1	1.3	.2
3	---	---	---	---	---	---	---	---	.1	.1	.8	.0
4	---	---	---	---	---	---	---	---	.3	.1	.1	.0
5	---	---	---	---	---	---	---	---	.2	.1	.0	.0
6	---	---	---	---	---	---	---	---	.2	.1	.0	.0
7	---	---	---	---	---	---	---	---	.3	.1	.0	.0
8	---	---	---	---	---	---	---	---	.3	.1	.0	.0
9	---	---	---	---	---	---	---	---	.3	.3	.0	.0
10	---	---	---	---	---	---	---	---	---	---	.0	.0
11	---	---	---	---	---	---	---	---	---	---	.1	.0
12	---	---	---	---	---	---	---	---	---	---	.1	.1
13	---	---	---	---	---	---	---	---	---	---	.3	.1
14	---	---	---	---	---	---	---	---	---	---	.5	.1
15	---	---	---	---	---	---	---	---	---	---	.2	.1
16	---	---	---	---	---	---	---	---	---	---	.1	.0
17	---	---	---	---	---	---	---	---	---	---	.0	.0
18	---	---	---	---	---	---	---	---	---	---	.0	.0
19	---	---	---	---	---	---	---	---	---	---	.0	.0
20	---	---	---	---	---	---	---	---	1.3	1.1	.0	.0
21	---	---	---	---	---	---	---	---	1.8	1.3	.0	.0
22	---	---	---	---	---	---	---	---	1.5	1.3	.0	.0
23	---	---	---	---	---	---	---	---	1.5	1.4	.0	.0
24	---	---	---	---	---	---	---	---	1.4	1.0	.0	.0
25	---	---	---	---	---	---	---	---	1.0	.7	.0	.0
26	---	---	---	---	---	---	---	---	1.0	.5	.0	-.1
27	---	---	---	---	---	---	---	---	.5	.5	.0	-.1
28	---	---	---	---	---	---	---	---	.5	.4	.0	-.1
29	---	---	---	---	---	---	.1	-.1	.4	.4	.0	-.1
30	---	---	---	---	---	---	.1	.1	.4	.3	.0	-.1
31	---	---	---	---	---	---	.1	.1	.4	.2	---	---
MONTH	---	---	---	---	---	---	.1	-.1	1.8	.1	1.3	-.1
YEAR	1.8	---	---	---	---	---	---	---	---	---	---	---



PROJECT DATA
Water Data for Bolton Well Field

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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 and chlorophyll probes set for 60-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 (NAVD88).

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 August 4, 1999. Negative chlorophyll 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: Current year

SPECIFIC CONDUCTANCE: Current year

pH: Current year

WATER TEMPERATURE: Current Year

TURBIDITY: Current Year

DISSOLVED OXYGEN: Current Year

CHLOROPHYLL A: Current Year

EXTREMES FOR PERIOD OF RECORD.--

WATER LEVEL ELEVATION: Minimum daily stage, 531.92 ft. above NAVD88, September 17, 1999; Maximum daily stage, 532.73 ft. above NAVD88, August 26, 1999.

SPECIFIC CONDUCTANCE: Maximum, 1,220 microsiemens per centimeter, September 26, 1999; Minimum, 571 microsiemens per centimeter, August 24 and 25, 1999.

pH: Maximum, 9.0, August 21, 1999; Minimum, 7.9, August 26 and 27, and September 3 and 4, 1999.

WATER TEMPERATURE: Maximum, 30.4°C, August 4, 1999; Minimum, 19.1°C, September 22, 1999.

TURBIDITY: Maximum, 360, NTU, August 24, 1999; Minimum, 16 NTU, September 6 and 7, 1999.

DISSOLVED OXYGEN: Maximum, 17.4 milligrams per liter, September 1, 1999; Minimum 2.8 milligrams per liter, September 6 and 7, 1999.

CHLOROPHYLL A: Maximum, 182 milligrams per liter, September 2, 1999; Minimum, 27.3 milligrams per liter, August 26, 1999.

EXTREMES FOR CURRENT YEAR.--

WATER LEVEL ELEVATION: Minimum daily stage, 531.92 ft. above NAVD88, September 17, 1999; Maximum daily stage, 532.73 ft. above NAVD88, August 26, 1999.

SPECIFIC CONDUCTANCE: Maximum, 1,220 microsiemens per centimeter, September 26, 1999; Minimum, 571 microsiemens per centimeter, August 24 and 25, 1999.

pH: Maximum, 9.0, August 21, 1999; Minimum, 7.9, August 26 and 27, and September 3 and 4, 1999.

WATER TEMPERATURE: Maximum, 30.4°C, August 4, 1999; Minimum, 19.1°C, September 22, 1999.

TURBIDITY: Maximum, 360 NTU, August 24, 1999; Minimum, 16 NTU, September 6 and 7, 1999.

DISSOLVED OXYGEN: Maximum, 17.4 milligrams per liter, September 1, 1999; Minimum 2.8 milligrams per liter, September 6 and 7, 1999.

CHLOROPHYLL A: Maximum, 182 milligrams per liter, September 2, 1999; Minimum, 27.3 milligrams per liter, August 26, 1999.

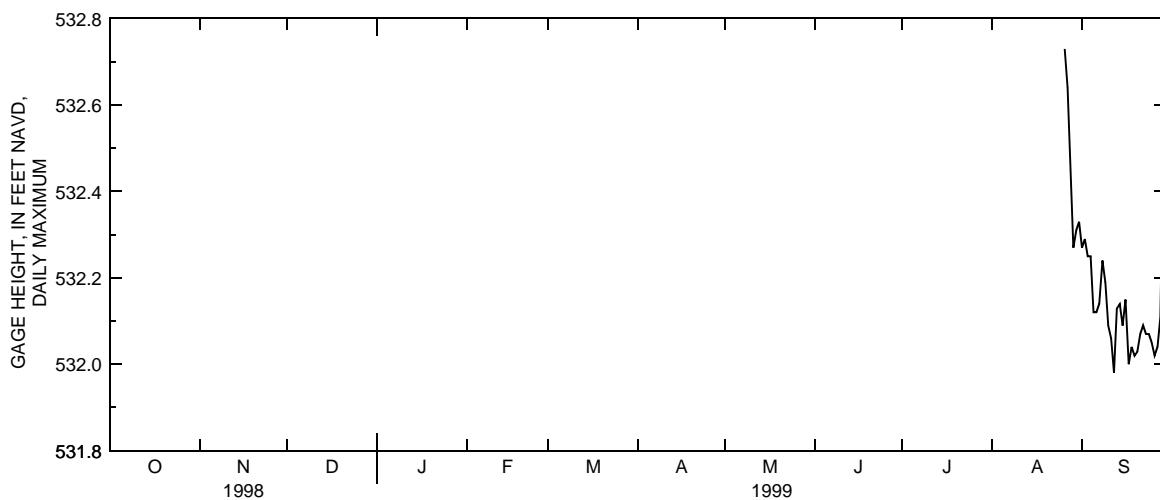
PROJECT DATA

Water Data for Bolton Well Field

03274060 GREAT MIAMI RIVER NEAR FAIRFIELD, OHIO—Continued

GAGE HEIGHT, FEET NAVD, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	---	---	---	---	532.27	532.16
2	---	---	---	---	---	---	---	---	---	---	532.29	532.21
3	---	---	---	---	---	---	---	---	---	---	532.25	532.18
4	---	---	---	---	---	---	---	---	---	---	532.25	532.12
5	---	---	---	---	---	---	---	---	---	---	532.12	531.95
6	---	---	---	---	---	---	---	---	---	---	532.12	532.05
7	---	---	---	---	---	---	---	---	---	---	532.14	532.08
8	---	---	---	---	---	---	---	---	---	---	532.24	532.14
9	---	---	---	---	---	---	---	---	---	---	532.19	532.06
10	---	---	---	---	---	---	---	---	---	---	532.09	532.01
11	---	---	---	---	---	---	---	---	---	---	532.06	531.97
12	---	---	---	---	---	---	---	---	---	---	531.98	531.96
13	---	---	---	---	---	---	---	---	---	---	532.13	531.93
14	---	---	---	---	---	---	---	---	---	---	532.14	532.07
15	---	---	---	---	---	---	---	---	---	---	532.09	532.04
16	---	---	---	---	---	---	---	---	---	---	532.15	532.00
17	---	---	---	---	---	---	---	---	---	---	532.00	531.92
18	---	---	---	---	---	---	---	---	---	---	532.04	531.99
19	---	---	---	---	---	---	---	---	---	---	532.02	532.00
20	---	---	---	---	---	---	---	---	---	---	532.03	532.00
21	---	---	---	---	---	---	---	---	---	---	532.07	532.03
22	---	---	---	---	---	---	---	---	---	---	532.09	532.04
23	---	---	---	---	---	---	---	---	---	---	532.07	532.03
24	---	---	---	---	---	---	---	---	---	---	532.07	532.03
25	---	---	---	---	---	---	---	---	---	---	532.05	532.02
26	---	---	---	---	---	---	---	---	532.73	532.62	532.02	531.99
27	---	---	---	---	---	---	---	---	532.64	532.47	532.04	531.97
28	---	---	---	---	---	---	---	---	532.47	532.08	532.11	532.04
29	---	---	---	---	---	---	---	---	532.27	532.08	532.51	532.06
30	---	---	---	---	---	---	---	---	532.31	532.23	532.44	532.14
31	---	---	---	---	---	---	---	---	532.33	532.15	---	---
MONTH	---	---	---	---	---	---	---	---	532.73	532.08	532.51	531.92
YEAR	532.73	531.92										



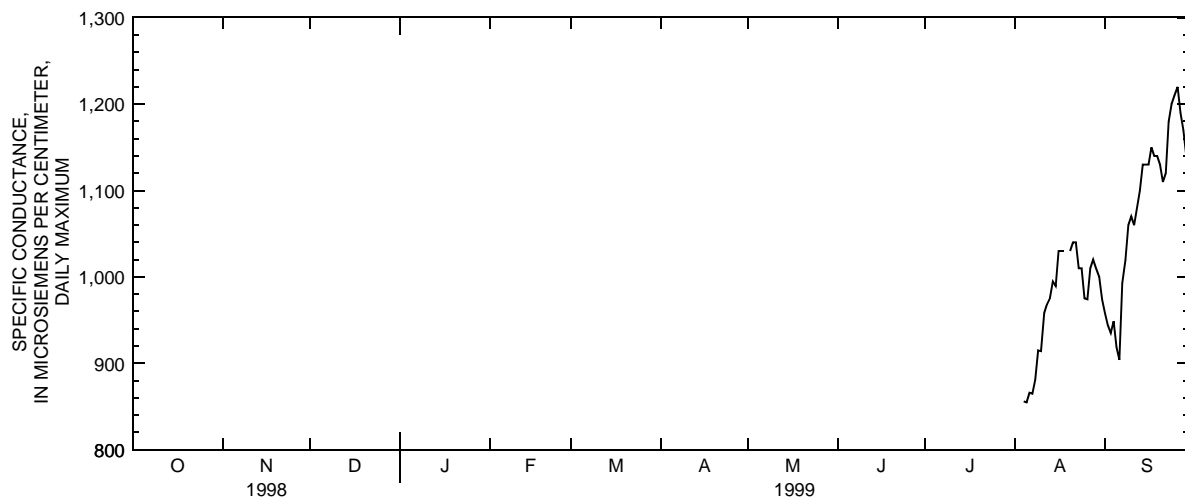
PROJECT DATA
Water Data for Bolton Well Field

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03274060 GREAT MIAMI RIVER NEAR FAIRFIELD, OHIO—Continued

SPECIFIC CONDUCTANCE, MICROSIEMENS/CM AT 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	---	---	---	---	958	909
2	---	---	---	---	---	---	---	---	---	---	944	898
3	---	---	---	---	---	---	---	---	---	---	935	896
4	---	---	---	---	---	---	---	---	856	829	949	730
5	---	---	---	---	---	---	---	---	855	829	919	734
6	---	---	---	---	---	---	---	---	866	841	904	754
7	---	---	---	---	---	---	---	---	865	849	993	894
8	---	---	---	---	---	---	---	---	881	849	1020	980
9	---	---	---	---	---	---	---	---	915	881	1060	1020
10	---	---	---	---	---	---	---	---	914	896	1070	1060
11	---	---	---	---	---	---	---	---	958	906	1060	1060
12	---	---	---	---	---	---	---	---	969	931	1080	1050
13	---	---	---	---	---	---	---	---	976	942	1100	1060
14	---	---	---	---	---	---	---	---	995	970	1130	1080
15	---	---	---	---	---	---	---	---	989	660	1130	1100
16	---	---	---	---	---	---	---	---	1030	691	1130	1100
17	---	---	---	---	---	---	---	---	1030	803	1150	1130
18	---	---	---	---	---	---	---	---	1030	880	1140	1110
19	---	---	---	---	---	---	---	---	---	---	1140	1090
20	---	---	---	---	---	---	---	---	1030	987	1130	1090
21	---	---	---	---	---	---	---	---	1040	1000	1110	1090
22	---	---	---	---	---	---	---	---	1040	982	1120	1100
23	---	---	---	---	---	---	---	---	1010	837	1180	1110
24	---	---	---	---	---	---	---	---	1010	571	1200	1180
25	---	---	---	---	---	---	---	---	975	571	1210	1190
26	---	---	---	---	---	---	---	---	974	927	1220	1160
27	---	---	---	---	---	---	---	---	1010	974	1190	1130
28	---	---	---	---	---	---	---	---	1020	992	1170	1130
29	---	---	---	---	---	---	---	---	1010	985	1140	1070
30	---	---	---	---	---	---	---	---	1000	967	1130	1050
31	---	---	---	---	---	---	---	---	974	929	---	---
MONTH	---	---	---	---	---	---	---	---	1040	571	1220	730
YEAR	1220	571										

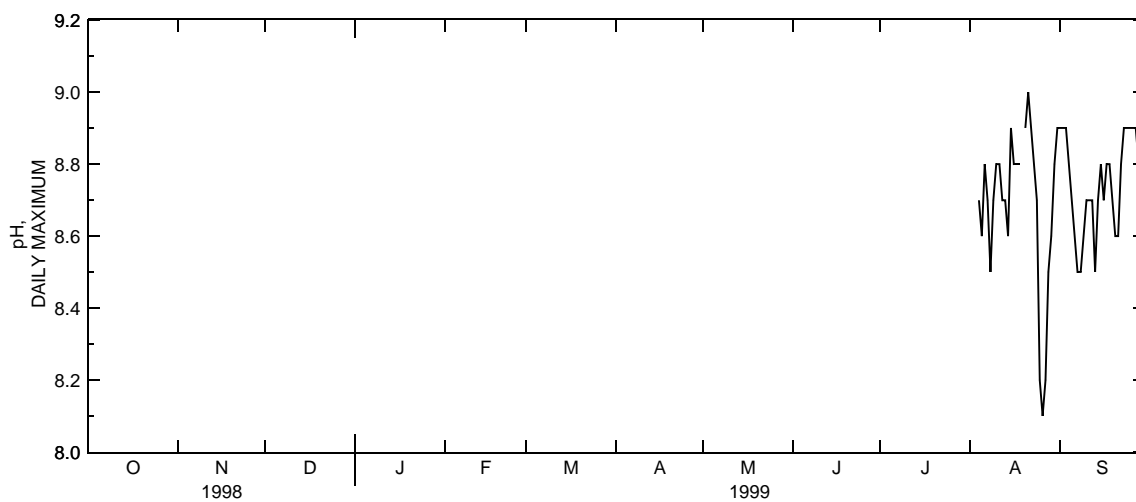


PROJECT DATA **Water Data for Bolton Well Field**

03274060 GREAT MIAMI RIVER NEAR FAIRFIELD, OHIO—Continued

PH, WATER, WHOLE, FIELD, STANDARD UNITS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	---	---	---	---	8.9	8.2
2	---	---	---	---	---	---	---	---	---	---	8.9	8.1
3	---	---	---	---	---	---	---	---	---	---	8.9	7.9
4	---	---	---	---	---	---	---	---	8.7	8.3	8.8	7.9
5	---	---	---	---	---	---	---	---	8.6	8.2	8.7	8.0
6	---	---	---	---	---	---	---	---	8.8	8.3	8.6	7.9
7	---	---	---	---	---	---	---	---	8.7	8.2	8.5	8.0
8	---	---	---	---	---	---	---	---	8.5	8.2	8.5	8.0
9	---	---	---	---	---	---	---	---	8.7	8.2	8.6	8.0
10	---	---	---	---	---	---	---	---	8.8	8.4	8.7	8.3
11	---	---	---	---	---	---	---	---	8.8	8.4	8.7	8.3
12	---	---	---	---	---	---	---	---	8.7	8.2	8.7	8.2
13	---	---	---	---	---	---	---	---	8.7	8.2	8.5	8.1
14	---	---	---	---	---	---	---	---	8.6	8.3	8.7	8.2
15	---	---	---	---	---	---	---	---	8.9	8.2	8.8	8.4
16	---	---	---	---	---	---	---	---	8.8	8.4	8.7	8.4
17	---	---	---	---	---	---	---	---	8.8	8.2	8.8	8.6
18	---	---	---	---	---	---	---	---	8.8	8.2	8.8	8.5
19	---	---	---	---	---	---	---	---	---	---	8.7	8.3
20	---	---	---	---	---	---	---	---	8.9	8.1	8.6	8.1
21	---	---	---	---	---	---	---	---	9.0	8.3	8.6	8.0
22	---	---	---	---	---	---	---	---	8.9	8.4	8.8	8.3
23	---	---	---	---	---	---	---	---	8.8	8.2	8.9	8.6
24	---	---	---	---	---	---	---	---	8.7	8.1	8.9	8.6
25	---	---	---	---	---	---	---	---	8.2	8.1	8.9	8.6
26	---	---	---	---	---	---	---	---	8.1	7.9	8.9	8.7
27	---	---	---	---	---	---	---	---	8.2	7.9	8.9	8.6
28	---	---	---	---	---	---	---	---	8.5	8.0	8.8	8.5
29	---	---	---	---	---	---	---	---	8.6	8.2	8.7	8.1
30	---	---	---	---	---	---	---	---	8.8	8.2	8.8	8.3
31	---	---	---	---	---	---	---	---	8.9	8.4	---	---
MONTH	---	---	---	---	---	---	---	---	9.0	7.9	8.9	7.9
YEAR	9.0	7.9										



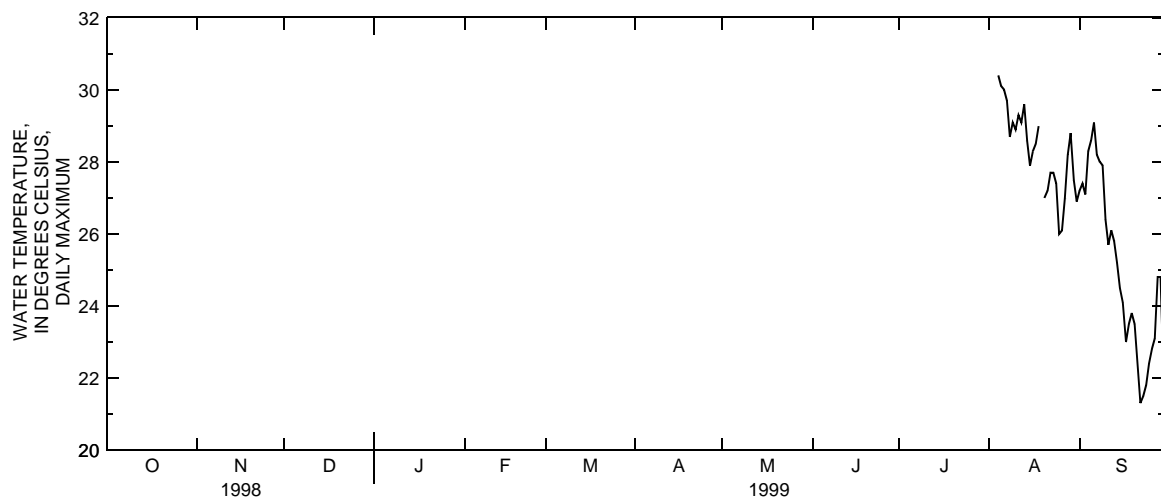
PROJECT DATA
Water Data for Bolton Well Field

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03274060 GREAT MIAMI RIVER NEAR FAIRFIELD, OHIO—Continued

TEMPERATURE, WATER, DEGREES CELSIUS, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

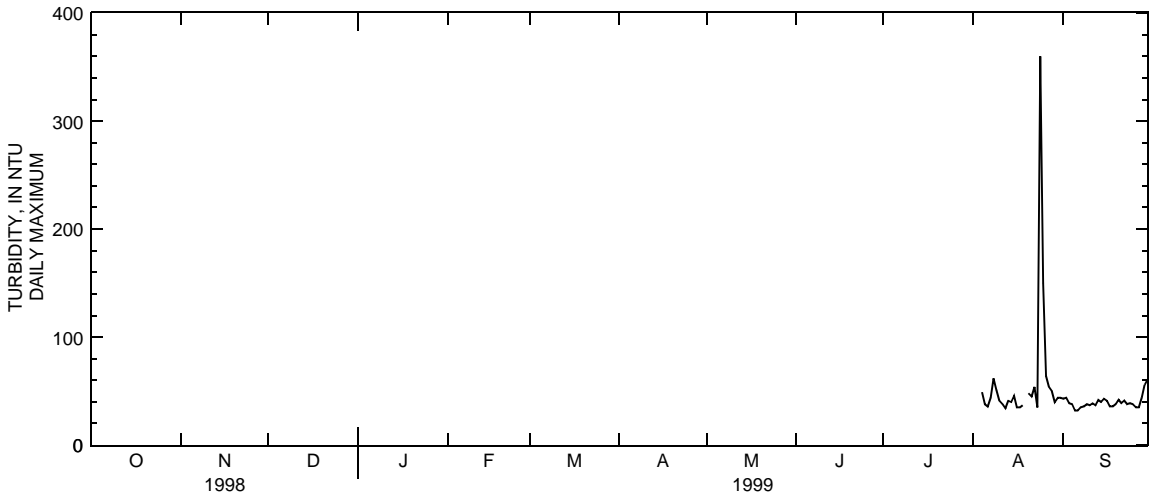
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	---	---	---	---	27.2	23.9
2	---	---	---	---	---	---	---	---	---	---	27.4	24.3
3	---	---	---	---	---	---	---	---	---	---	27.1	25.1
4	---	---	---	---	---	---	---	---	30.4	27.9	28.3	25.2
5	---	---	---	---	---	---	---	---	30.1	27.8	28.6	25.9
6	---	---	---	---	---	---	---	---	30.0	27.0	29.1	27.2
7	---	---	---	---	---	---	---	---	29.7	27.2	28.2	26.2
8	---	---	---	---	---	---	---	---	28.7	27.6	28.0	25.5
9	---	---	---	---	---	---	---	---	29.1	26.2	27.9	26.0
10	---	---	---	---	---	---	---	---	28.9	26.3	26.4	24.1
11	---	---	---	---	---	---	---	---	29.3	26.7	25.7	23.3
12	---	---	---	---	---	---	---	---	29.1	27.4	26.1	24.4
13	---	---	---	---	---	---	---	---	29.6	27.0	25.8	24.7
14	---	---	---	---	---	---	---	---	28.6	26.4	25.2	23.1
15	---	---	---	---	---	---	---	---	27.9	24.8	24.5	22.2
16	---	---	---	---	---	---	---	---	28.3	25.2	24.1	22.0
17	---	---	---	---	---	---	---	---	28.5	26.1	23.0	20.5
18	---	---	---	---	---	---	---	---	29.0	26.4	23.5	21.3
19	---	---	---	---	---	---	---	---	---	---	23.8	21.5
20	---	---	---	---	---	---	---	---	27.0	25.0	23.5	22.4
21	---	---	---	---	---	---	---	---	27.2	23.9	22.4	20.6
22	---	---	---	---	---	---	---	---	27.7	24.6	21.3	19.1
23	---	---	---	---	---	---	---	---	27.7	25.5	21.5	19.6
24	---	---	---	---	---	---	---	---	27.4	25.3	21.8	19.7
25	---	---	---	---	---	---	---	---	26.0	24.8	22.4	20.3
26	---	---	---	---	---	---	---	---	26.1	24.0	22.8	20.8
27	---	---	---	---	---	---	---	---	27.0	24.7	23.1	21.3
28	---	---	---	---	---	---	---	---	28.2	25.3	24.8	22.6
29	---	---	---	---	---	---	---	---	28.8	26.6	24.8	21.9
30	---	---	---	---	---	---	---	---	27.5	24.5	22.1	20.3
31	---	---	---	---	---	---	---	---	26.9	23.5	---	---
MONTH	---	---	---	---	---	---	---	---	30.4	23.5	29.1	19.1
YEAR	30.4	19.1										



PROJECT DATA
Water Data for Bolton Well Field

03274060 GREAT MIAMI RIVER NEAR FAIRFIELD, OHIO—Continued

TURBIDITY, NTU, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999												
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	---	---	---	---	43	31
2	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	39	29
4	---	---	---	---	---	---	---	---	49	35	38	26
5	---	---	---	---	---	---	---	---	38	28	32	20
6	---	---	---	---	---	---	---	---	36	26	32	16
7	---	---	---	---	---	---	---	---	44	26	35	16
8	---	---	---	---	---	---	---	---	62	26	36	20
9	---	---	---	---	---	---	---	---	51	27	38	20
10	---	---	---	---	---	---	---	---	41	28	37	23
11	---	---	---	---	---	---	---	---	38	27	39	24
12	---	---	---	---	---	---	---	---	34	24	37	25
13	---	---	---	---	---	---	---	---	41	23	42	23
14	---	---	---	---	---	---	---	---	40	24	40	28
15	---	---	---	---	---	---	---	---	46	31	43	28
16	---	---	---	---	---	---	---	---	35	26	41	28
17	---	---	---	---	---	---	---	---	35	25	36	27
18	---	---	---	---	---	---	---	---	37	26	36	24
19	---	---	---	---	---	---	---	---	---	---	38	26
20	---	---	---	---	---	---	---	---	48	30	42	22
21	---	---	---	---	---	---	---	---	45	32	39	23
22	---	---	---	---	---	---	---	---	54	28	41	30
23	---	---	---	---	---	---	---	---	35	24	38	27
24	---	---	---	---	---	---	---	---	360	24	39	30
25	---	---	---	---	---	---	---	---	150	55	38	30
26	---	---	---	---	---	---	---	---	64	41	35	27
27	---	---	---	---	---	---	---	---	54	35	35	25
28	---	---	---	---	---	---	---	---	50	36	44	26
29	---	---	---	---	---	---	---	---	40	32	56	24
30	---	---	---	---	---	---	---	---	44	33	61	34
31	---	---	---	---	---	---	---	---	44	33	---	---
MONTH	---	---	---	---	---	---	---	---	360	23	61	16
YEAR	360	16										



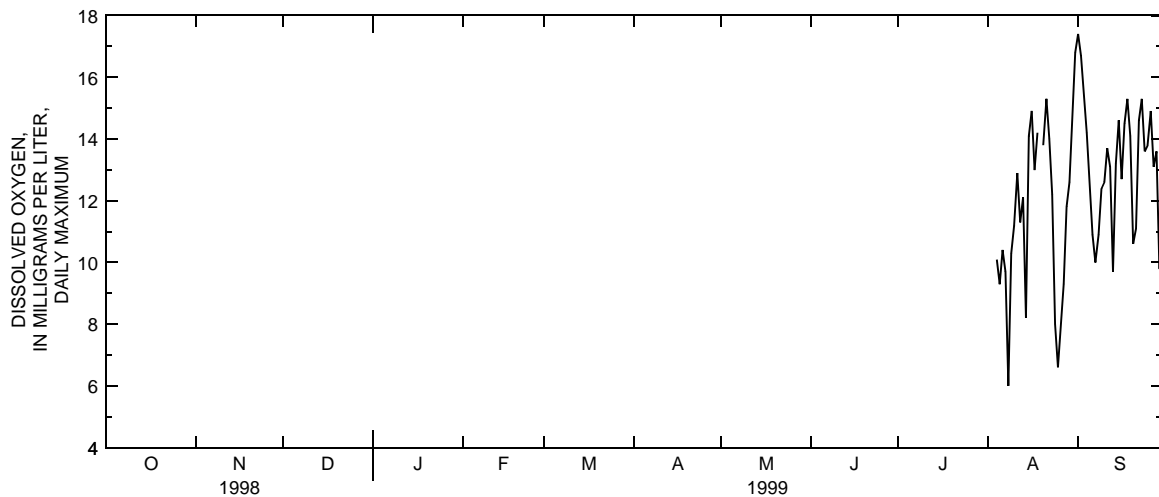
PROJECT DATA
Water Data for Bolton Well Field

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03274060 GREAT MIAMI RIVER NEAR FAIRFIELD, OHIO—Continued

OXYGEN, DISSOLVED, MILLIGRAMS PER LITER, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	---	---	---	---	17.4	5.5
2	---	---	---	---	---	---	---	---	---	---	16.7	4.9
3	---	---	---	---	---	---	---	---	---	---	15.4	4.3
4	---	---	---	---	---	---	---	---	10.1	3.7	14.2	3.7
5	---	---	---	---	---	---	---	---	9.3	3.0	12.6	3.5
6	---	---	---	---	---	---	---	---	10.4	3.2	10.9	2.8
7	---	---	---	---	---	---	---	---	9.7	3.2	10.0	2.8
8	---	---	---	---	---	---	---	---	6.0	3.2	10.9	3.3
9	---	---	---	---	---	---	---	---	10.3	3.3	12.4	3.3
10	---	---	---	---	---	---	---	---	11.2	3.5	12.6	4.4
11	---	---	---	---	---	---	---	---	12.9	3.4	13.7	4.9
12	---	---	---	---	---	---	---	---	11.3	3.7	13.1	5.2
13	---	---	---	---	---	---	---	---	12.1	3.7	9.7	4.4
14	---	---	---	---	---	---	---	---	8.2	3.7	13.2	4.9
15	---	---	---	---	---	---	---	---	14.1	4.2	14.6	5.6
16	---	---	---	---	---	---	---	---	14.9	4.7	12.7	5.7
17	---	---	---	---	---	---	---	---	13.0	4.4	14.5	6.5
18	---	---	---	---	---	---	---	---	14.2	3.7	15.3	6.8
19	---	---	---	---	---	---	---	---	---	---	14.1	5.6
20	---	---	---	---	---	---	---	---	13.8	3.9	10.6	4.7
21	---	---	---	---	---	---	---	---	15.3	4.5	11.1	4.8
22	---	---	---	---	---	---	---	---	14.0	4.0	14.6	6.2
23	---	---	---	---	---	---	---	---	12.2	3.7	15.3	6.5
24	---	---	---	---	---	---	---	---	8.0	3.4	13.6	6.4
25	---	---	---	---	---	---	---	---	6.6	3.9	13.8	5.8
26	---	---	---	---	---	---	---	---	7.9	4.9	14.9	5.9
27	---	---	---	---	---	---	---	---	9.3	4.9	13.1	5.5
28	---	---	---	---	---	---	---	---	11.8	4.8	13.6	5.4
29	---	---	---	---	---	---	---	---	12.6	4.7	9.8	4.3
30	---	---	---	---	---	---	---	---	14.6	4.7	11.7	4.7
31	---	---	---	---	---	---	---	---	16.8	5.3	---	---
MONTH	---	---	---	---	---	---	---	---	16.8	3.0	17.4	2.8
YEAR	17.4	2.8										

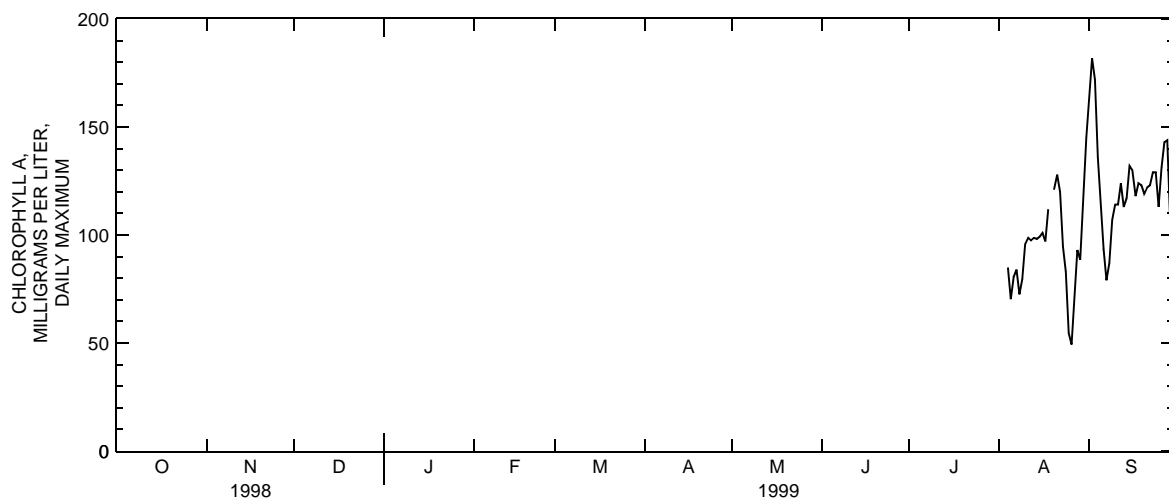


PROJECT DATA **Water Data for Bolton Well Field**

03274060 GREAT MIAMI RIVER NEAR FAIRFIELD, OHIO—Continued

CHLOROPHYLL A, A FLUOROMETRIC METHOD UNCORRECTED, AREA WEIGHTED AVERAGE (UG/L),
WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	---	---	---	---	162	81.8
2	---	---	---	---	---	---	---	---	---	---	182	---
3	---	---	---	---	---	---	---	---	---	---	172	121
4	---	---	---	---	---	---	---	---	85.0	57.0	136	92.7
5	---	---	---	---	---	---	---	---	70.3	48.5	112	74.0
6	---	---	---	---	---	---	---	---	80.5	49.9	93.6	55.4
7	---	---	---	---	---	---	---	---	83.9	54.5	79.0	40.5
8	---	---	---	---	---	---	---	---	72.5	53.2	87.1	43.5
9	---	---	---	---	---	---	---	---	79.6	45.3	107	43.2
10	---	---	---	---	---	---	---	---	96.0	54.1	114	62.0
11	---	---	---	---	---	---	---	---	98.8	61.7	114	70.5
12	---	---	---	---	---	---	---	---	97.5	55.8	124	66.4
13	---	---	---	---	---	---	---	---	98.7	51.1	113	67.0
14	---	---	---	---	---	---	---	---	98.2	58.5	117	66.7
15	---	---	---	---	---	---	---	---	99.2	64.8	132	77.1
16	---	---	---	---	---	---	---	---	101	62.7	130	79.2
17	---	---	---	---	---	---	---	---	97.0	59.6	118	89.7
18	---	---	---	---	---	---	---	---	112	67.7	124	92.1
19	---	---	---	---	---	---	---	---	---	---	123	74.5
20	---	---	---	---	---	---	---	---	121	71.3	119	64.7
21	---	---	---	---	---	---	---	---	128	90.6	122	68.0
22	---	---	---	---	---	---	---	---	120	87.2	123	82.3
23	---	---	---	---	---	---	---	---	94.8	69.3	129	87.5
24	---	---	---	---	---	---	---	---	82.9	52.3	129	82.7
25	---	---	---	---	---	---	---	---	54.7	37.6	113	76.1
26	---	---	---	---	---	---	---	---	49.2	27.3	131	70.9
27	---	---	---	---	---	---	---	---	70.0	33.6	143	78.0
28	---	---	---	---	---	---	---	---	93.0	44.2	144	88.8
29	---	---	---	---	---	---	---	---	88.6	55.7	106	70.3
30	---	---	---	---	---	---	---	---	116	60.5	111	65.5
31	---	---	---	---	---	---	---	---	145	72.5	---	---
MONTH	---	---	---	---	---	---	---	---	145	27.3	182	40.5
YEAR	182	27.3										



PROJECT DATA
Water Data for Bolton Well Field

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MANUAL GROUND-WATER LEVEL MEASUREMENTS

LOCAL WELL NUMBER	LATITUDE	LONGITUDE	DEPTH OF WELL (FEET)	ALTITUDE OF LAND SURFACE (FEET)	ALTITUDE OF WATER LEVEL (FEET)	MEASUREMENT TIME	WATER LEVEL DATE
BU-1151-1A	39°19'04"	84°36'21"	29	546.87	529.56	0800	08/04/99
					531.64	1005	08/11/99
					528.61	1022	08/19/99
					529.00	1258	08/25/99
					531.90	0800	09/02/99
					528.27	1133	09/09/99
					529.47	0905	09/22/99
					530.87	1450	09/29/99
					531.37	0855	09/30/99
BU-1152-1B	39°19'04"	84°36'21"	45	547.58	532.79	1100	07/21/99
					528.96	0845	08/04/99
					528.05	1039	08/19/99
					528.42	1304	08/25/99
					531.92	0815	09/02/99
					527.71	1136	09/09/99
					528.83	0935	09/22/99
					530.89	1446	09/29/99
BU-1153-1C	39°19'04"	84°36'21"	57	547.60	532.78	1343	07/21/99
					527.61	0949	08/04/99
					526.73	1042	08/19/99
					527.07	1312	08/25/99
					531.92	0825	09/02/99
					526.43	1144	09/09/99
					527.42	1004	09/22/99
					530.86	1439	09/29/99
BU-1154-1D	39°19'04"	84°36'21"	88	547.70	533.03	1300	07/27/99
					529.88	0955	08/04/99
					525.30	1053	08/19/99
					525.66	1315	08/25/99
					532.00	0832	09/02/99
					525.07	1151	09/09/99
					526.01	1014	09/22/99
					525.61	1315	09/22/99
					530.91	1431	09/29/99
					531.45	0937	09/30/99
BU-1156-8A	39°19'05	84°37'29"	41	541.18	526.32	1430	07/27/99
					527.31	1517	08/10/99
					526.06	0845	08/11/99
					526.93	1439	08/25/99
					526.06	1401	09/01/99
					525.75	1346	09/09/99
					524.34	1356	09/22/99
					522.97	1549	09/29/99
					523.18	1052	09/30/99
BU-1157-8B	39°19'05"	84°37'29"	61	543.74	525.70	1000	07/28/99
					527.22	1439	08/10/99
					526.78	1444	08/25/99
					526.00	1510	09/01/99
					525.67	1338	09/09/99
					524.19	1348	09/22/99
					522.37	1544	09/29/99
BU-1158-8C	39°19'05"	84°37'29"	96	545.46	526.65	1600	07/27/99
					527.17	1434	08/10/99
					526.61	1450	08/25/99
					525.80	1104	09/02/99
					525.62	1331	09/09/99
					524.15	1344	09/22/99
					518.94	1539	09/29/99
					520.15	1129	09/30/99
BU-1159-8D	39°19'05"	84°37'29"	190	545.75	526.69	1530	07/28/99
					527.17	1315	08/10/99
					526.67	1434	08/25/99
					525.56	1016	09/02/99
					525.68	1322	09/09/99
					524.09	1339	09/22/99
					516.71	1534	09/29/99
					516.90	1133	09/30/99

PROJECT DATA

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 table were collected as part of the Youngstown, Ohio, CSO project. The goal of this project is to develop an improved understanding of the effects of combined sewer overflows on the attainment of primary-contact water-quality standards for recreational waters and aquatic life. In order to attain this goal, the microbiological and chemical quality of the Mahoning River and its tributaries will be compared during periods of runoff and during periods of baseflow. Baseflow data was collected from 14 sites in 1999; 8 sites along Mill Creek and tributaries, 5 sites along Mahoning River and tributaries, and the Youngstown WWTP outfall.

Additional surface-water gaging data for selected sites can be found in the continuous-record station section of the Ohio data report.



CALENDAR YEAR 1999

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	Axe 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 WWTP Outfall at Youngstown, Ohio	--

WATER-QUALITY RECORDS

03098000 MAHONING RIVER AT YOUNGSTOWN, OHIO

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value; K, value is estimated from a non-ideal colony count.]

[illegible]

PROJECT DATA
Effects of Combined-Sewer Overflows on Recreational Waters and
Aquatic Life of the Mahoning River and Tributaries in Youngstown, Ohio
WATER-QUALITY RECORDS—CONTINUED

03098000 MAHONING RIVER AT YOUNGSTOWN, OHIO—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value; K, value is estimated from a non-ideal colony count.]

DATE	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	BOD OXYGEN DEMAND, BIOCHEM CARBON. 5 DAY (MG/L) (80082)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L) (00530)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	E. COLI WATER WHOLE TOTAL UREASE (COL/ 100 ML) (31633)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	SEDI- MENT, SUS- PENDE (MG/L) (80154)
MAY											
06...	0.05	0.11	0.09	0.15	--	--	285	K17	92	133	--
12...	--	--	--	--	--	--	--	20	--	--	--
18...	--	--	--	--	--	--	--	35	--	--	--
24...	--	--	--	--	--	--	--	4000	--	--	--
27...	--	--	--	--	--	--	--	120	--	--	--
JUL											
08...	.06	.14	.12	.12	<2.0	6	284	230	24	110	8
14...	--	--	--	--	--	--	--	67	--	--	--
20...	--	--	--	--	--	--	--	67	--	--	--
26...	--	--	--	--	--	--	--	80	--	--	--
29...	--	--	--	--	--	--	--	K6100	--	--	--
SEP											
09...	.05	.16	.14	.19	<2.0	10	276	250	19	119	9
15...	--	--	--	--	--	--	--	K57	--	--	--
21...	--	--	--	--	--	--	--	33	--	--	--
27...	--	--	--	--	--	--	--	31	--	--	--
30...	--	--	--	--	--	--	--	8100	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	TIME	GAGE HEIGHT (FEET) (00065)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	OXYGEN, DIS- SOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)
MAY										
04...	1030	--	21	735	78	7.5	7.5	905	16.5	15.5
11...	0900	13.90	--	760	73	7.4	7.4	756	15.0	14.5
13...	1005	13.50	--	725	71	7.0	8.5	770	14.5	16.0
19...	0940	1.60	--	740	62	6.0	8.3	790	17.0	17.0
25...	0940	2.58	--	730	76	8.0	8.4	440	9.0	13.5
JUL										
06...	1430	1.32	7.3	733	66	5.8	7.2	835	26.5	26.5
12...	1030	1.34	--	742	69	6.5	8.9	1380	20.0	18.5
15...	1015	1.27	--	743	66	5.9	7.7	1870	26.0	20.5
21...	0915	1.30	--	739	59	5.2	7.9	1950	22.0	22.0
27...	0910	1.25	--	735	56	4.8	8.2	1760	24.5	23.0
SEP										
07...	1330	--	--	735	73	6.4	7.6	963	22.0	21.5
13...	0858	1.30	--	737	59	5.7	8.9	1660	18.0	18.5
16...	0850	1.31	--	734	70	7.0	8.3	1650	15.0	16.0
22...	0905	1.34	--	737	68	7.5	8.2	1260	7.0	11.0
28...	0830	1.32	--	741	72	6.9	8.6	1460	18.5	17.5

[illegible]

PROJECT DATA
Effects of Combined-Sewer Overflows on Recreational Waters and
Aquatic Life of the Mahoning River and Tributaries in Youngstown, Ohio
WATER-QUALITY RECORDS—CONTINUED

03098406 MILL CREEK AT SHIELDS ROAD AT BOARDMAN, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value; K, value is estimated from a non-ideal colony count.]

DATE	SULFATE DIS- SOLVED (MG/L AS SO ₄) (00945)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, NO ₂ +NO ₃ DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	BOD OXYGEN DEMAND, BIOCHEM CARBON. 5 DAY (MG/L) (80082)
MAY										
04...	130	0.15	0.6	0.8	3.1	0.02	0.41	0.38	0.56	--
11...	--	--	--	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--
JUL										
06...	160	.07	.8	1.0	6.8	.05	.94	.88	1.08	<2.0
12...	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--	--	--
SEP										
07...	140	.02	.6	.6	6.7	.02	1.16	1.06	1.20	<2.0
13...	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--
DATE	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L) (00530)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	CLOS- TRIDIUM PERFRI- GENS, MF-MCP, (COL/ 100 ML) (90915)	CLOSTR. PERF- RIGENS, ETHANOL TREATED (COL/ 100 ML) (99765)	COLI- PHAGE, E. COLI C HOST, 1-AGAR, (PFU/ 100 ML) (90905)	COLI- PHAGE, E. COLI F-AMP, 1-AGAR, (PFU/ 100 ML) (90904)	E. COLI WHOLE TOTAL UREASE (COL/ 100 ML) (31633)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	SEDI- MENT, SUS- PENDE (MG/L) (80154)
MAY										
04...	--	568	150	--	--	<1	K170	34	722	--
11...	--	--	--	--	--	--	250	--	--	--
13...	--	--	--	--	--	--	720	--	--	--
19...	--	--	--	--	--	--	2400	--	--	--
25...	--	--	--	--	--	--	K9900	--	--	--
JUL										
06...	25	535	270	K154	<1	<1	200	12	717	28
12...	--	--	--	--	--	--	280	--	--	--
15...	--	--	--	--	--	--	460	--	--	--
21...	--	--	--	--	--	--	660	--	--	--
27...	--	--	--	--	--	--	590	--	--	--
SEP										
07...	16	569	100	73	1	1	1400	E8	370	21
13...	--	--	--	--	--	--	460	--	--	--
16...	--	--	--	--	--	--	320	--	--	--
22...	--	--	--	--	--	--	720	--	--	--
28...	--	--	--	--	--	--	480	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	TIME	GAGE HEIGHT (FEET) (00065)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	OXYGEN, DIS- SOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)
MAY										
05...	0815	0.61	10	735	87	8.2	7.7	907	13.0	16.5
10...	1350	.73	19	745	108	9.8	8.5	799	18.5	19.0
17...	0830	.71	17	743	90	8.5	9.0	1690	18.0	18.0
20...	0850	.85	29	745	87	8.4	8.8	800	14.5	17.0
26...	1015	1.45	130	735	96	10.0	9.0	520	14.0	13.5
JUL										
07...	0930	.55	7.2	740	77	6.4	7.3	766	--	23.5
13...	1045	.36	--	744	81	7.4	8.7	1460	22.5	19.5
19...	0925	.45	--	742	80	6.6	7.9	2770	23.5	25.0
22...	0945	.59	9.2	740	71	5.9	8.1	1470	25.0	24.5
28...	1020	.56	7.7	736	66	5.6	8.1	1490	23.0	24.0
SEP										
08...	1000	.86	30	736	83	7.4	7.7	850	20.5	21.0
14...	0940	.51	5.5	737	88	8.2	8.2	1470	17.0	18.5
20...	1015	.25	--	726	78	8.0	7.9	1510	17.0	14.5
23...	0850	.25	--	737	84	9.6	8.1	1200	8.5	9.5
29...	0900	.25	--	738	58	5.6	8.3	1540	21.0	17.5

[illegible]

PROJECT DATA
Effects of Combined-Sewer Overflows on Recreational Waters and
Aquatic Life of the Mahoning River and Tributaries in Youngstown, Ohio
WATER-QUALITY RECORDS—CONTINUED

03098500 MILL CREEK AT YOUNGSTOWN, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value; K, value is estimated from a non-ideal colony count.]

DATE	SULFATE DIS- SOLVED (MG/L AS SO ₄) (00945)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, NO ₂ +NO ₃ DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	BOD OXYGEN DEMAND, BIOCHEM CARBON. 5 DAY (MG/L) (80082)
MAY										
05...	120	0.12	0.6	0.9	2.5	0.06	0.11	0.09	0.24	--
10...	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--	--
JUL										
07...	140	.04	.6	.9	3.8	.02	.28	.24	.40	<2.0
13...	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--
SEP										
08...	130	.10	.6	1.3	6.8	.06	.52	.44	.83	<2.0
14...	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--	--
DATE	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L) (00530)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	CLOS- TRIDIUM PERFRI- GENS, MF-MCP, (COL/ 100 ML) (90915)	CLOSTR. PERF- RIGENS, ETHANOL TREATED (COL/ 100 ML) (99765)	COLI- PHAGE, E. COLI C HOST, 1-AGAR, (PFU/ 100 ML) (90905)	COLI- PHAGE, E. COLI F-AMP, 1-AGAR, (PFU/ 100 ML) (90904)	E. COLI WHOLE TOTAL UREASE (COL/ 100 ML) (31633)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	SEDI- MENT, SUS- PENDE (MG/L) (80154)
MAY										
05...	--	544	160	--	--	<1	83	21	307	--
10...	--	--	--	--	--	--	49	--	--	--
17...	--	--	--	--	--	--	59	--	--	--
20...	--	--	--	--	--	--	K650	--	--	--
26...	--	--	--	--	--	--	5700	--	--	--
JUL										
07...	28	473	200	220	<1	<1	190	<10	89	26
13...	--	--	--	--	--	--	K68	--	--	--
19...	--	--	--	--	--	--	70	--	--	--
22...	--	--	--	--	--	--	11000	--	--	--
28...	--	--	--	--	--	--	3300	--	--	--
SEP										
08...	76	506	270	330	<1	<1	2000	E7	106	76
14...	--	--	--	--	--	--	K180	--	--	--
20...	--	--	--	--	--	--	250	--	--	--
23...	--	--	--	--	--	--	110	--	--	--
29...	--	--	--	--	--	--	220	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	TIME	GAGE HEIGHT (FEET) (00065)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	OXYGEN, DIS- SOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)
MAY										
05...	1200	--	21.6	735	102	9.1	8.9	754	20.0	19.0
10...	1230	--	--	745	95	8.6	8.7	761	20.5	19.0
17...	0910	--	--	744	91	8.6	8.7	930	18.5	18.5
20...	0940	--	--	748	94	8.9	8.6	750	16.5	19.0
26...	1110	--	--	737	94	9.7	8.9	380	14.0	14.0
JUL										
07...	1500	3.12	7.3	--	84	6.4	8.9	666	21.0	29.0
13...	1130	--	--	746	73	6.2	8.7	1280	23.0	24.0
19...	1015	--	--	744	66	5.6	8.1	1420	25.0	27.0
22...	0845	--	--	741	79	6.4	8.0	1490	25.0	26.0
28...	0930	--	--	739	60	4.8	8.5	1300	26.0	27.0
SEP										
08...	1300	17.05	--	736	104	8.6	8.3	642	22.0	24.0
14...	0830	--	--	725	73	6.8	9.3	1300	17.0	19.5
20...	0910	--	--	737	79	7.4	8.8	1480	16.5	18.5
23...	0805	--	--	739	52	5.4	9.0	1180	8.0	13.5
29...	0800	--	--	740	60	5.5	9.4	1420	19.5	19.5

[illegible]

PROJECT DATA
Effects of Combined-Sewer Overflows on Recreational Waters and
Aquatic Life of the Mahoning River and Tributaries in Youngstown, Ohio
WATER-QUALITY RECORDS—CONTINUED

03090513 MILL CREEK AT PRICE ROAD AT YOUNGSTOWN, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value; K, value is estimated from a non-ideal colony count.]

DATE	SULFATE DIS- SOLVED (MG/L AS SO ₄) (00945)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, NO ₂ +NO ₃ DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	BOD OXYGEN DEMAND, BIOCHEM CARBON. 5 DAY (MG/L) (80082)
MAY										
05...	110	0.04	0.5	1.3	0.67	0.04	0.02	0.02	0.14	--
10...	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--	--
JUL										
07...	100	.06	.6	1.4	1.3	.09	.07	.04	.12	3.2
13...	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--
SEP										
08...	100	.05	.5	1.1	1.2	.04	.05	.02	.15	2.1
14...	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--	--
DATE	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L) (00530)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	CLOS- TRIDIUM PERFRI- GENS, MF-MCP, (COL/ 100 ML) (90915)	CLOSTR. PERF- RIGENS, ETHANOL TREATED (COL/ 100 ML) (99765)	COLI- PHAGE, E. COLI C HOST, 1-AGAR, (PFU/ 100 ML) (90905)	COLI- PHAGE, E. COLI F-AMP, 1-AGAR, (PFU/ 100 ML) (90904)	E. COLI WATER TOTAL UREASE (COL/ 100 ML) (31633)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	SEDI- MENT, SUS- PENDE (MG/L) (80154)
MAY										
05...	--	458	87	--	--	<1	K23	17	77	--
10...	--	--	--	--	--	--	K3	--	--	--
17...	--	--	--	--	--	--	28	--	--	--
20...	--	--	--	--	--	--	K100	--	--	--
26...	--	--	--	--	--	--	2300	--	--	--
JUL										
07...	12	390	73	K38.0	<1	<1	K30	<10	41	--
13...	--	--	--	--	--	--	K K85	--	--	--
19...	--	--	--	--	--	--	360	--	--	--
22...	--	--	--	--	--	--	5100	--	--	--
28...	--	--	--	--	--	--	110	--	--	--
SEP										
08...	14	369	K33	K47.0	<1	<1	K62	11	298	11
14...	--	--	--	--	--	--	K50	--	--	--
20...	--	--	--	--	--	--	K33	--	--	--
23...	--	--	--	--	--	--	63	--	--	--
29...	--	--	--	--	--	--	K68	--	--	--

WATER-QUALITY RECORDS—CONTINUED

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

[illegible]

MAY												
06...	1015	441	733	--	--	7.6	425	18.0	21.0	140	39	10
12...	1030	412	758	77	7.3	8.0	470	19.5	20.0	--	--	--
18...	0920	377	741	77	6.7	8.9	590	24.5	22.0	--	--	--
24...	0900	2800	728	73	6.6	9.2	580	14.5	20.0	--	--	--
27...	0918	530	742	80	7.8	8.9	460	19.5	20.0	--	--	--
JUL												
08...	1330	420	--	97	7.2	7.8	504	--	29.0	140	38	10
14...	1050	451	746	82	6.7	8.4	1000	28.5	26.0	--	--	--
20...	0835	520	744	70	5.4	8.0	970	25.0	29.0	--	--	--
26...	0830	545	738	65	5.0	7.4	1510	25.0	29.0	--	--	--
29...	0830	6260	735	52	4.3	8.2	820	23.0	24.5	--	--	--
SEP												
09...	1030	418	738	83	6.4	7.6	515	22.0	26.5	150	40	11
15...	0815	341	745	74	6.1	8.7	1040	10.5	25.0	--	--	--
21...	0840	294	741	76	6.7	8.9	850	11.5	21.5	--	--	--
27...	0845	301	745	81	7.2	9.2	1110	17.5	21.0	--	--	--
30...	0810	903	739	79	6.9	7.8	820	11.0	22.0	--	--	--

[illegible]

PROJECT DATA
Effects of Combined-Sewer Overflows on Recreational Waters and
Aquatic Life of the Mahoning River and Tributaries in Youngstown, Ohio
WATER-QUALITY RECORDS—CONTINUED

03098600 MAHONING RIVER BELOW WEST AVENUE AT YOUNGSTOWN, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value; K, value is estimated from a non-ideal colony count.]

DATE	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	BOD OXYGEN DEMAND, BIOCHEM CARBON. 5 DAY (MG/L) (80082)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L) (00530)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	E. COLI WATER TOTAL UREASE (COL/ 100 ML) (31633)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	SEDI- MENT, SUS- PENDE (MG/L) (80154)
MAY											
06...	0.05	0.10	0.08	0.15	--	--	300	73	80	144	--
12...	--	--	--	--	--	--	--	110	--	--	--
18...	--	--	--	--	--	--	--	80	--	--	--
24...	--	--	--	--	--	--	--	38000	--	--	--
27...	--	--	--	--	--	--	--	570	--	--	--
JUL											
08...	.07	.14	.12	.12	<2.0	5	293	K48	14	108	7
14...	--	--	--	--	--	--	--	180	--	--	--
20...	--	--	--	--	--	--	--	110	--	--	--
26...	--	--	--	--	--	--	--	200	--	--	--
29...	--	--	--	--	--	--	--	15000	--	--	--
SEP											
09...	.06	.16	.13	.19	<2.0	8	288	1400	20	116	10
15...	--	--	--	--	--	--	--	100	--	--	--
21...	--	--	--	--	--	--	--	87	--	--	--
27...	--	--	--	--	--	--	--	70	--	--	--
30...	--	--	--	--	--	--	--	K5900	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

[illegible]

MAY												
06...	1300	3.85	4.2	733	150	12.8	8.6	620	25.0	21.0	210	63
10...	1430	3.86	3.8	745	168	14.4	9.1	571	23.5	22.0	--	--
17...	0945	3.78	2.6	745	106	11.1	9.1	670	18.5	15.5	--	--
20...	1000	3.81	3.2	745	115	11.8	8.7	590	17.0	14.0	--	--
26...	0930	4.01	7.9	737	92	9.7	9.1	540	14.0	12.5	--	--
JUL												
08...	1730	3.66	1.2	742	97	8.7	8.2	757	28.5	26.0	250	70
13...	0900	3.64	1.4	745	69	6.9	7.8	1990	19.5	16.0	--	--
19...	1040	3.62	1.3	744	139	11.9	8.3	1610	26.5	23.0	--	--
22...	0810	4.16	15	742	66	5.8	7.4	1190	25.0	22.5	--	--
28...	0900	3.65	1.4	738	77	6.7	7.9	2320	26.0	20.5	--	--
SEP												
09...	0900	3.81	5.6	738	59	5.4	7.5	342	19.5	19.0	110	36
14...	0800	3.62	1.2	742	67	6.6	9.8	1140	17.0	16.0	--	--
20...	0815	3.63	1.3	738	71	7.3	8.8	3230	15.0	14.0	--	--
23...	0745	3.68	1.7	737	76	8.8	9.2	1300	6.5	9.5	--	--
29...	0730	3.67	1.6	739	59	5.7	9.6	1780	20.0	17.0	--	--

[illegible]

PROJECT DATA
Effects of Combined-Sewer Overflows on Recreational Waters and
Aquatic Life of the Mahoning River and Tributaries in Youngstown, Ohio
WATER-QUALITY RECORDS—CONTINUED

03098700 CRAB CREEK AT YOUNGSTOWN, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value; K, value is estimated from a non-ideal colony count.]

DATE	NITRO- GEN, NO ₂ +NO ₃ DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	BOD OXYGEN DEMAND, BIOCHEM. CARBON. 5 DAY (MG/L) (80082)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L) (00530)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	E. COLI WATER WHOLE TOTAL UREASE (COL/ 100 ML) (31633)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	SEDI- MENT, SUS- PENDE (MG/L) (80154)
MAY												
06...	0.09	<0.01	0.01	0.02	0.02	--	--	363	52	110	35	--
10...	--	--	--	--	--	--	--	--	K48	--	--	--
17...	--	--	--	--	--	--	--	--	240	--	--	--
20...	--	--	--	--	--	--	--	--	K140	--	--	--
26...	--	--	--	--	--	--	--	--	1100	--	--	--
JUL												
08...	<.05	<.01	.04	.02	.06	<2.0	<5	445	460	27	33	10
13...	--	--	--	--	--	--	--	--	390	--	--	--
19...	--	--	--	--	--	--	--	--	K290	--	--	--
22...	--	--	--	--	--	--	--	--	140000	--	--	--
28...	--	--	--	--	--	--	--	--	2100	--	--	--
SEP												
09...	.79	.07	.10	.06	.20	9.0	10	190	K68000	57	83	14
14...	--	--	--	--	--	--	--	--	3300	--	--	--
20...	--	--	--	--	--	--	--	--	140	--	--	--
23...	--	--	--	--	--	--	--	--	70	--	--	--
29...	--	--	--	--	--	--	--	--	K48	--	--	--

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value; K, value is estimated from a non-ideal colony count.]

[illegible]

PROJECT DATA
Effects of Combined-Sewer Overflows on Recreational Waters and
Aquatic Life of the Mahoning River and Tributaries in Youngstown, Ohio
WATER-QUALITY RECORDS—CONTINUED

03099500 MAHONING RIVER AT LOWELLVILLE, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value; K, value is estimated from a non-ideal colony count.]

DATE	NITRO- GEN, NO ₂ +NO ₃ DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	BOD OXYGEN DEMAND, BIOCHEM. CARBON. 5 DAY (MG/L) (80082)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L) (00530)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	E. COLI WATER WHOLE TOTAL UREASE (COL/ 100 ML) (31633)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	SEDI- MENT, SUS- PENDE (MG/L) (80154)
MAY												
05...	2.2	0.09	0.21	0.16	0.26	--	--	346	210	60	122	--
12...	--	--	--	--	--	--	--	--	280	--	--	--
18...	--	--	--	--	--	--	--	--	650	--	--	--
24...	--	--	--	--	--	--	--	--	17000	--	--	--
27...	--	--	--	--	--	--	--	--	680	--	--	--
JUL												
08...	2.0	.08	.21	.19	.30	<2.0	8	323	670	12	91	10
14...	--	--	--	--	--	--	--	--	360	--	--	--
20...	--	--	--	--	--	--	--	--	2200	--	--	--
26...	--	--	--	--	--	--	--	--	2100	--	--	--
29...	--	--	--	--	--	--	--	--	28000	--	--	--
SEP												
09...	2.0	.06	.23	.17	.28	<2.0	18	312	2200	27	137	17
15...	--	--	--	--	--	--	--	--	290	--	--	--
21...	--	--	--	--	--	--	--	--	210	--	--	--
27...	--	--	--	--	--	--	--	--	230	--	--	--
30...	--	--	--	--	--	--	--	--	23000	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	TIME	GAGE HEIGHT (FEET) (00065)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	OXYGEN, DIS- SOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)
MAY										
04...	0830	5.53	--	735	64	6.1	6.7	880	16.5	15.5
11...	0845	5.23	--	760	38	3.8	7.3	773	15.0	15.0
13...	0845	5.14	--	724	53	5.3	8.6	870	19.5	17.0
19...	0830	5.43	--	738	55	5.3	8.8	940	17.5	17.5
25...	0820	6.98	--	728	68	7.1	9.1	550	8.5	13.0
JUL										
06...	1045	1.32	7.3	733	52	4.2	6.8	832	32.0	26.5
12...	0930	3.93	--	743	60	5.6	8.9	1590	20.5	19.0
15...	0940	3.67	--	741	67	5.9	8.0	1800	24.5	21.5
21...	0825	3.38	--	740	48	4.2	8.1	1800	22.0	22.0
27...	0840	3.27	--	735	43	3.7	8.2	2160	22.5	23.0
SEP										
07...	1030	3.29	--	735	70	6.3	6.9	858	22.0	21.0
13...	0810	3.22	--	737	64	6.0	9.5	1820	20.5	17.5
16...	0810	3.28	--	735	68	6.8	8.8	1600	15.0	15.0
22...	0830	3.28	--	737	68	7.8	9.2	1050	6.5	10.0
28...	0745	3.21	--	740	64	6.4	8.9	1430	18.0	16.0

[illegible]

PROJECT DATA
Effects of Combined-Sewer Overflows on Recreational Waters and
Aquatic Life of the Mahoning River and Tributaries in Youngstown, Ohio
WATER-QUALITY RECORDS—CONTINUED

405916080412400 MILL CREEK AT WESTERN RESERVE ROAD NEAR BOARDMAN, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value; K, value is estimated from a non-ideal colony count.]

DATE	SULFATE DIS- SOLVED (MG/L AS SO ₄) (00945)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, NO ₂ +NO ₃ DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	BOD OXYGEN DEMAND, BIOCHEM CARBON. 5 DAY (MG/L) (80082)
MAY										
04...	170	0.20	0.5	0.8	0.49	0.04	0.02	0.02	0.16	--
11...	--	--	--	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--
JUL										
06...	200	.14	.6	.9	1.6	.07	.05	.03	.22	<2.0
12...	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--	--	--
SEP										
07...	160	.08	.5	.7	.69	.01	.05	.04	.15	<2.0
13...	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--
DATE	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L) (00530)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	CLOS- TRIDIUM PERFRI- GENS, MF-MCP, (COL/ 100 ML) (90915)	CLOSTR. PERF- RIGENS, ETHANOL TREATED (COL/ 100 ML) (99765)	COLI- PHAGE, E. COLI C HOST, 1-AGAR, (PFU/ 100 ML) (90905)	COLI- PHAGE, E. COLI F-AMP, 1-AGAR, (PFU/ 100 ML) (90904)	E. COLI WHOLE UREASE (COL/ 100 ML) (31633)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	SEDI- MENT, SUS- PENDE (MG/L) (80154)
MAY										
04...	--	559	180	--	--	<1	130	44	1720	--
11...	--	--	--	--	--	--	180	--	--	--
13...	--	--	--	--	--	--	780	--	--	--
19...	--	--	--	--	--	--	2500	--	--	--
25...	--	--	--	--	--	--	K15000	--	--	--
JUL										
06...	63	578	450	310	1	<1	780	10	2720	67
12...	--	--	--	--	--	--	480	--	--	--
15...	--	--	--	--	--	--	620	--	--	--
21...	--	--	--	--	--	--	580	--	--	--
27...	--	--	--	--	--	--	370	--	--	--
SEP										
07...	40	543	90	77	<1	<1	2100	20	642	42
13...	--	--	--	--	--	--	370	--	--	--
16...	--	--	--	--	--	--	340	--	--	--
22...	--	--	--	--	--	--	560	--	--	--
28...	--	--	--	--	--	--	600	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

		DIS- CHARGE, INST. CUBIC FEET PER SECOND (00065)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	OXYGEN, DIS- SOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	TEMPER- ATURE AIR (DEG C) (00020)	TEMPER- ATURE WATER (DEG C) (00010)
DATE	TIME	GAGE HEIGHT (FEET) (00065)							
MAY									
04...	1400	--	2.8	733	115	10.2	8.0	612	28.0
11...	0900	9.45	--	760	86	8.6	7.6	624	17.0
13...	0900	8.55	--	734	75	7.5	8.7	650	14.5
19...	0900	9.40	--	738	83	8.4	8.4	780	16.0
25...	0900	1.10	--	724	96	10.1	8.7	380	8.5
JUL									
06...	1220	.43	.34	--	104	8.1	7.7	661	30.0
12...	0950	.40	--	743	95	8.9	9.1	1250	20.0
15...	1135	.38	--	743	88	7.7	7.7	1610	26.5
21...	0855	.38	--	740	73	6.5	8.1	1600	22.5
27...	0900	.38	--	735	60	5.2	8.1	1710	22.5
SEP									
07...	1130	.47	--	735	100	8.8	7.5	796	23.5
13...	0840	.44	--	--	84	8.1	9.3	1430	18.5
16...	0830	.40	--	734	84	8.5	8.5	1490	15.0
22...	0845	.40	--	737	87	10.0	8.6	1090	6.0
28...	0810	.40	--	740	79	7.9	8.8	1430	18.0

[illegible]

PROJECT DATA
Effects of Combined-Sewer Overflows on Recreational Waters and
Aquatic Life of the Mahoning River and Tributaries in Youngstown, Ohio
WATER-QUALITY RECORDS—CONTINUED

410048080422700 INDIAN RUN NEAR CANFIELD, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value; K, value is estimated from a non-ideal colony count.]

DATE	SULFATE DIS- SOLVED (MG/L AS SO ₄) (00945)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, NO ₂ +NO ₃ DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	BOD OXYGEN DEMAND, BIOCHEM CARBON. 5 DAY (MG/L) (80082)
MAY										
04...	90	0.03	0.4	0.5	0.07	<0.01	0.01	0.02	0.02	--
11...	--	--	--	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--
JUL										
06...	80	<.02	.3	.5	.28	<.01	.02	<.01	.04	<2.0
12...	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--	--	--
SEP										
07...	74	<.02	.4	.4	.11	<.01	.02	<.01	.03	<2.0
13...	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--
DATE	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L) (00530)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	CLOS- TRIDIUM PERFRI- GENS, MF-MCP, (COL/ 100 ML) (90915)	CLOSTR. PERF- RIGENS, ETHANOL TREATED (COL/ 100 ML) (99765)	COLI- PHAGE, E. COLI C HOST, 1-AGAR, (PFU/ 100 ML) (90905)	COLI- PHAGE, E. COLI F-AMP, 1-AGAR, (PFU/ 100 ML) (90904)	E. COLI WHOLE TOTAL UREASE (COL/ 100 ML) (31633)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	SEDI- MENT, SUS- PENDE (MG/L) (80154)
MAY										
04...	--	406	K16	--	--	<1	K37	150	50	--
11...	--	--	--	--	--	--	81	--	--	--
13...	--	--	--	--	--	--	280	--	--	--
19...	--	--	--	--	--	--	260	--	--	--
25...	--	--	--	--	--	--	5600	--	--	--
JUL										
06...	<5	412	K20	K16	<1	<1	630	21	88	8
12...	--	--	--	--	--	--	250	--	--	--
15...	--	--	--	--	--	--	470	--	--	--
21...	--	--	--	--	--	--	160	--	--	--
27...	--	--	--	--	--	--	67	--	--	--
SEP										
07...	<5	450	<1	K10	<1	<1	K180	11	47	3
13...	--	--	--	--	--	--	80	--	--	--
16...	--	--	--	--	--	--	K47	--	--	--
22...	--	--	--	--	--	--	K38	--	--	--
28...	--	--	--	--	--	--	K32	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	TIME	GAGE	DIS-	BARO-	OXYGEN,	OXYGEN,	PH	SPE-	TEMPER-	TEMPER-
		HEIGHT	CHARGE,	METRIC	DIS-		WATER			
		(FEET)	CUBIC	PRES-	SOLVED		WHOLE	CON-		
		(00065)	FEET	SURE	(PER-	DIS-	(STAND-	DUCT-	AIR	WATER
			PER	OF	SATUR-	SOLVED	ARD	ANCE	(DEG C)	(DEG C)
			SECOND	HG	ATION)	(MG/L)	(UNITS)	(US/CM)	(00020)	(00010)
			(00061)	(00025)	(00301)	(00300)	(00400)	(00095)		
MAY										
04...	1215	-11.12	0.55	735	142	13.6	8.0	918	18.0	16.0
11...	1035	11.24	--	760	108	11.3	7.7	705	16.5	14.0
13...	1035	11.00	--	734	73	7.5	8.4	710	13.5	14.5
19...	1000	10.95	--	738	68	7.0	8.6	490	16.5	15.0
25...	0955	4.09	--	730	86	9.1	8.6	390	9.0	12.5
JUL										
06...	1315	3.88	.18	733	88	6.9	7.6	626	28.0	25.5
12...	1045	3.88	--	742	84	7.8	8.5	890	20.5	18.5
15...	1005	--	--	743	82	7.4	7.9	1270	27.5	20.5
21...	0920	3.85	--	740	59	5.3	8.0	1200	22.0	21.0
27...	0930	3.85	--	737	86	7.4	8.4	1110	25.0	23.0
SEP										
07...	1230	--	--	735	77	6.9	7.5	640	--	20.0
13...	0845	4.10	--	737	80	7.7	9.1	1000	18.0	17.0
16...	0910	4.10	--	735	76	7.8	8.7	900	15.5	14.5
22...	0920	--	--	737	78	8.9	7.8	910	7.0	9.0
28...	0845	4.15	--	742	59	5.9	8.5	950	18.5	16.0

[illegible]

PROJECT DATA
Effects of Combined-Sewer Overflows on Recreational Waters and
Aquatic Life of the Mahoning River and Tributaries in Youngstown, Ohio
WATER-QUALITY RECORDS—CONTINUED

410247080405200 CRANBERRY RUN AT BOARDMAN, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value; K, value is estimated from a non-ideal colony count.]

DATE	SULFATE DIS- SOLVED (MG/L AS SO ₄) (00945)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, NO ₂ +NO ₃ DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	BOD OXYGEN DEMAND, BIOCHEM CARBON. 5 DAY (MG/L) (80082)
MAY										
04...	79	0.04	0.4	0.4	0.17	<0.01	0.02	0.02	0.03	--
11...	--	--	--	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--
JUL										
06...	49	.02	.4	.5	.17	<.01	.07	.05	.07	<2.0
12...	--	--	--	--	--	--	--	--	--	--
15...	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--	--	--
SEP										
07...	53	<.02	.4	.5	.23	<.01	<.01	<.01	.05	<2.0
13...	--	--	--	--	--	--	--	--	--	--
16...	--	--	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--
DATE	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L) (00530)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	CLOS- TRIDIUM PERFRI- GENS, MF-MCP, (COL/ 100 ML) (90915)	CLOSTR. PERF- RIGENS, ETHANOL TREATED (COL/ 100 ML) (99765)	COLI- PHAGE, E. COLI C HOST, 1-AGAR, (PFU/ 100 ML) (90905)	COLI- PHAGE, E. COLI F-AMP, 1-AGAR, (PFU/ 100 ML) (90904)	E. COLI WHOLE TOTAL UREASE (COL/ 100 ML) (31633)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	SEDI- MENT, SUS- PENDE (MG/L) (80154)
MAY										
04...	--	575	K44	--	--	<1	K40	67	49	--
11...	--	--	--	--	--	--	120	--	--	--
13...	--	--	--	--	--	--	2200	--	--	--
19...	--	--	--	--	--	--	10000	--	--	--
25...	--	--	--	--	--	--	2700	--	--	--
JUL										
06...	<5	387	87	K77	<1	<1	440	18	69	5
12...	--	--	--	--	--	--	600	--	--	--
15...	--	--	--	--	--	--	300	--	--	--
21...	--	--	--	--	--	--	970	--	--	--
27...	--	--	--	--	--	--	410	--	--	--
SEP										
07...	5	359	K57	K40	<1	<1	930	15	25	2
13...	--	--	--	--	--	--	460	--	--	--
16...	--	--	--	--	--	--	730	--	--	--
22...	--	--	--	--	--	--	230	--	--	--
28...	--	--	--	--	--	--	240	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	TIME	GAGE	DIS-CHARGE,	BARO-	OXYGEN,		PH	SPE-	TEMPER-	TEMPER-
		HEIGHT	CUBIC	METRIC	DIS-		WATER	CIFIC		
		(FEET)	FEET	SURE	(PER-	OXYGEN,	FIELD	CON-		
			PER	(MM	CENT	DIS-	(STAND-	DUCT-	AIR	ATURE
			OF	HG)	SATUR-	SOLVED	ARD	ANCE	(DEG C)	WATER
		(00065)	SECOND	(00025)	(00301)	(00300)	(MG/L)	(US/CM)	(00020)	(DEG C)
JUL										
07...	1040	22.95	0.03	740	61	5.6	7.1	565	--	20.0
13...	0940	--	--	742	60	5.9	8.2	1070	20.0	16.5
19...	0955	--	--	740	51	4.6	8.3	1200	25.0	20.0
22...	0910	--	--	737	90	7.6	8.6	700	25.0	24.0
28...	0945	--	--	734	49	4.8	8.3	950	25.5	21.0
SEP										
08...	0800	22.66	--	736	78	7.3	7.5	282	16.5	18.5
14...	0900	--	--	738	84	8.2	9.1	570	17.5	16.5
20...	0945	--	--	733	58	6.0	8.9	860	17.0	13.5
23...	0835	--	--	734	60	6.8	8.9	780	10.0	10.5
29...	0835	--	--	734	50	4.9	8.7	980	21.0	16.5

[illegible][illegible]

PROJECT DATA
Effects of Combined-Sewer Overflows on Recreational Waters and
Aquatic Life of the Mahoning River and Tributaries in Youngstown, Ohio
WATER-QUALITY RECORDS—CONTINUED

410440080415900 AXE FACTORY RUN AT YOUNGSTOWN, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value; K, value is estimated from a non-ideal colony count.]

DATE	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDEDED (MG/L) (00530)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	CLOS- TRIDIUM PERFRI- GENS, MF-MCP, (COL/ 100 ML) (90915)	CLOSTR. PERF- RIGENS, ETHANOL TREATED (COL/ 100 ML) (99765)	COLI- PHAGE, E. COLI C HOST, 1-AGAR, (PFU/ 100 ML) (90905)	COLI- PHAGE, E. COLI F-AMP, 1-AGAR, (PFU/ 100 ML) (90904)	E. COLI WATER WHOLE TOTAL UREASE (COL/ 100 ML) (31633)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	SEDI- MENT, SUS- PENDEDED (MG/L) (80154)
JUL										
07...	24	338	440	K210	<1	<1	370	<10	52	34
13...	--	--	--	--	--	--	130	--	--	--
19...	--	--	--	--	--	--	K57	--	--	--
22...	--	--	--	--	--	--	7400	--	--	--
28...	--	--	--	--	--	--	120	--	--	--
SEP										
08...	5	166	77	77	<1	1	2600	28	18	4
14...	--	--	--	--	--	--	3600	--	--	--
20...	--	--	--	--	--	--	240	--	--	--
23...	--	--	--	--	--	--	130	--	--	--
29...	--	--	--	--	--	--	170	--	--	--

PROJECT DATA

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Effects of Combined-Sewer Overflows on Recreational Waters and Aquatic Life of the Mahoning River and Tributaries in Youngstown, Ohio

WATER-QUALITY RECORDS—CONTINUED

410447080371900 MAHONING RIVER AT CENTER STREET AT YOUNGSTOWN, OHIO

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value; K, value is estimated from a non-ideal colony count.]

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	OXYGEN, DIS-SOLVED (MG/L) (00300)	PH WATER FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE AIR (DEG C) (00020)	TEMPER-ATURE WATER (DEG C) (00010)	HARD-NESS TOTAL (MG/L AS CAC03) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)
JUL												
08...	1115	450	740	68	5.0	7.4	550	--	29.0	140	40	11
14...	1140	--	746	77	6.3	7.8	1070	29.0	26.0	--	--	--
20...	0900	--	745	67	5.2	8.2	1000	24.5	28.5	--	--	--
26...	0845	--	738	61	4.7	7.8	1150	25.5	29.0	--	--	--
29...	0850	--	736	60	4.8	8.1	860	23.5	26.5	--	--	--
SEP												
15...	0845	--	745	73	6.2	8.5	1000	11.0	24.0	--	--	--
16...	1400	--	738	95	7.7	7.1	551	18.5	24.5	150	41	12
21...	0905	--	741	73	6.6	8.6	880	12.5	20.0	--	--	--
27...	0925	--	745	82	7.4	8.7	1150	18.0	20.5	--	--	--
30...	0845	--	739	79	6.8	8.3	870	11.5	22.5	--	--	--
DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT DIS TOT IT FIELD (MG/L AS CAC03) (39086)	BICAR-BONATE WATER DIS IT FIELD (MG/L AS HCO3) (00453)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	NITRO-GEN, AMMONIA + DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)
JUL												
08...	3.4	40	82	100	62	0.4	4.7	65	0.16	0.7	1.0	2.0
14...	--	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--	--	--	--
SEP												
15...	--	--	--	--	--	--	--	--	--	--	--	--
16...	5.7	42	73	89	64	.5	4.4	76	.09	.6	.7	2.2
21...	--	--	--	--	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--	--	--
DATE	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	PHOS-PHORUS DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	BOD OXYGEN DEMAND, BIOCHEM CARBON. 5 DAY (MG/L) (80082)	RESIDUE TOTAL AT 105 DEG. C, SUS-PENDED (MG/L) (00530)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	E. COLI WATER WHOLE UREASE (COL / 100 ML) (31633)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	
JUL												
08...	0.08	0.21	0.18	0.17	<2.0	7	315	260	26	125	5	
14...	--	--	--	--	--	--	--	93	--	--	--	--
20...	--	--	--	--	--	--	--	540	--	--	--	--
26...	--	--	--	--	--	--	--	270	--	--	--	--
29...	--	--	--	--	--	--	--	55000	--	--	--	--
SEP												
15...	--	--	--	--	--	--	--	1400	--	--	--	--
16...	.06	.22	.20	.25	<2.0	7	325	1600	24	117	--	--
21...	--	--	--	--	--	--	--	180	--	--	--	--
27...	--	--	--	--	--	--	--	100	--	--	--	--
30...	--	--	--	--	--	--	--	9500	--	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value; K, value is estimated from a non-ideal colony count.]

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	BARO-METRIC PRES-SURE (MM OF HG)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN, DIS-SOLVED (MG/L)	PH WATER WHOLE FIELD (STAND-ARD UNITS)	SPE-CIFIC CON-DUCT-ANCE (US/CM)	TEMPER-ATURE AIR (DEG C)	TEMPER-ATURE WATER (DEG C)	
		(00065)	(00061)	(00025)	(00301)	(00300)	(00400)	(00095)	(00020)	(00010)
MAY										
05...	1015	--	0.55	735	100	10.0	7.9	940	18.0	14.0
10...	1300	--	--	745	113	10.7	8.7	758	17.0	16.5
17...	0845	13.80	--	744	72	7.3	9.4	810	18.0	14.0
20...	0915	11.75	--	747	75	8.1	8.9	620	15.5	12.5
26...	1045	1.81	--	737	84	9.0	8.7	540	14.5	12.0
JUL										
07...	1340	1.68	.25	740	95	7.8	7.6	682	22.0	24.0
13...	1110	1.67	--	745	92	8.3	8.6	1210	23.0	20.5
19...	0945	1.64	--	742	129	10.7	8.5	1610	24.0	25.0
22...	0920	2.00	--	741	81	7.1	8.6	670	25.0	22.5
28...	1005	2.00	--	738	45	3.9	8.1	1250	25.0	24.0
SEP										
08...	0900	1.73	--	756	85	7.8	7.6	619	18.0	19.5
14...	0845	1.73	--	725	73	7.1	9.2	1160	17.0	17.5
20...	0930	1.64	--	737	120	11.6	9.0	1380	16.5	16.5
23...	0815	1.63	--	738	106	11.4	8.8	1270	10.5	13.5
29...	0810	1.68	--	739	118	11.1	8.7	1450	21.0	18.5

[illegible]

PROJECT DATA

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**Effects of Combined-Sewer Overflows on Recreational Waters and
Aquatic Life of the Mahoning River and Tributaries in Youngstown, Ohio**

WATER-QUALITY RECORDS—CONTINUED

410514080404700 BEARS DEN RUN AT YOUNGSTOWN, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value; K, value is estimated from a non-ideal colony count.]

DATE	SULFATE DIS- SOLVED (MG/L AS SO ₄) (00945)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, NO ₂ +NO ₃ DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	BOD OXYGEN DEMAND, BIOCHEM CARBON. 5 DAY (MG/L) (80082)
MAY										
05...	76	0.04	0.2	0.2	0.24	<0.01	0.01	0.02	0.02	--
10...	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--	--
JUL										
07...	62	<.02	.3	.4	.36	<.01	.04	.02	.06	<2.0
13...	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--	--	--
28...	--	--	--	--	--	--	--	--	--	--
SEP										
08...	41	<.02	.4	.6	.53	<.01	.04	.03	.08	<2.0
14...	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--	--
DATE	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L) (00530)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	CLOS- TRIDIUM PERFRI- GENS, MF-MCP, (COL/ 100 ML) (90915)	CLOSTR. PERF- RIGENS, ETHANOL TREATED (COL/ 100 ML) (99765)	COLI- PHAGE, E. COLI C HOST, 1-AGAR, (PFU / 100 ML) (90905)	COLI- PHAGE, E. COLI F-AMP, 1-AGAR, (PFU / 100 ML) (90904)	E. COLI WHOLE UREASE (COL / 100 ML) (31633)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	SEDI- MENT, SUS- PENDE (MG/L) (80154)
MAY										
05...	--	544	K30	--	--	<1	K16	26	59	--
10...	--	--	--	--	--	--	K20	--	--	--
17...	--	--	--	--	--	--	270	--	--	--
20...	--	--	--	--	--	--	K480	--	--	--
26...	--	--	--	--	--	--	1000	--	--	--
JUL										
07...	8	402	93	K62	<1	<1	1000	<10	51	8
13...	--	--	--	--	--	--	310	--	--	--
19...	--	--	--	--	--	--	110	--	--	--
22...	--	--	--	--	--	--	17000	--	--	--
28...	--	--	--	--	--	--	270	--	--	--
SEP										
08...	<5	311	120	100	<1	<1	3600	34	32	5
14...	--	--	--	--	--	--	K19000	--	--	--
20...	--	--	--	--	--	--	K50	--	--	--
23...	--	--	--	--	--	--	K52	--	--	--
29...	--	--	--	--	--	--	K35	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

[illegible][illegible]

PROJECT DATA

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**Effects of Combined-Sewer Overflows on Recreational Waters and
Aquatic Life of the Mahoning River and Tributaries in Youngstown, Ohio**

WATER-QUALITY RECORDS—CONTINUED

410526080383000 YOUNGSTOWN WWTP OUTFALL AT YOUNGSTOWN, OHIO—Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999—Continued

[--, no data; <, concentration or value reported is less than that indicated; E, estimated value; K, value is estimated from a non-ideal colony count.]

DATE	NITRO- GEN, AM- MONIA + DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, AM- MONIA + ORGANIC DIS- SOLVED (MG/L AS N) (00623)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	BOD OXYGEN DEMAND, BIOCHEM CARBON. 5 DAY (MG/L) (80082)	RESIDUE TOTAL AT 105 DEG. C, SUS- PENDE (MG/L) (00530)
MAY										
10...	0.15	1.1	1.3	8.8	0.01	0.79	0.59	1.05	--	--
11...	--	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--	--
18...	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--	--	--
JUL										
07...	.12	1.4	1.8	10.0	.03	1.53	1.23	1.75	<2.0	6
13...	--	--	--	--	--	--	--	--	--	--
14...	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--	--	--
SEP										
08...	.04	.9	1.1	9.0	<.01	.76	.40	.89	<2.0	<5
15...	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--
27...	--	--	--	--	--	--	--	--	--	--
30...	--	--	--	--	--	--	--	--	--	--

DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	CLOS- TRIDIUM PERFRI- GENS, MF-MCP, (COL/ 100 ML) (90915)	CLOSTR. PERF- RIGENS, ETHANOL TREATED (COL/ 100 ML) (99765)	COLI- PHAGE, E. COLI C HOST, 1-AGAR, (PFU / 100 ML) (90905)	COLI- PHAGE, E. COLI F-AMP, 1-AGAR, (PFU / 100 ML) (90904)	E. COLI WATER WHOLE TOTAL (COL / 100 ML) (31633)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	SEDI- MENT, SUS- PENDE (MG/L) (80154)
MAY									
10...	573	K1400	--	31	17	K18	34	62	--
11...	--	--	--	--	--	230	--	--	--
12...	--	--	--	--	--	110	--	--	--
13...	--	--	--	--	--	280	--	--	--
17...	--	--	--	--	--	K19	--	--	--
18...	--	--	--	--	--	330	--	--	--
19...	--	--	--	--	--	770	--	--	--
20...	--	--	--	--	--	1700	--	--	--
24...	--	--	--	--	--	16000	--	--	--
25...	--	--	--	--	--	800	--	--	--
26...	--	--	--	--	--	K78	--	--	--
27...	--	--	--	--	--	280	--	--	--
JUL									
07...	508	K3900	K3400	2100	1900	660	45	91	5
13...	--	--	--	--	--	K21	--	--	--
14...	--	--	--	--	--	67	--	--	--
21...	--	--	--	--	--	710	--	--	--
27...	--	--	--	--	--	1900	--	--	--
SEP									
08...	457	1700	1430	<1	<1	K210	40	3	4
15...	--	--	--	--	--	390	--	--	--
21...	--	--	--	--	--	54	--	--	--
27...	--	--	--	--	--	26	--	--	--
30...	--	--	--	--	--	K420	--	--	--

PROJECT DATA
Effects of Combined-Sewer Overflows on Recreational Waters and
Aquatic Life of the Mahoning River and Tributaries in Youngstown, Ohio
FISH COMMUNITY RESULTS FROM SELECTED SITES IN THE MILL CREEK BASIN

Fish community surveys were conducted at SEVEN stream sites in Mill Creek and one of its tributaries, Indian Run, in 1999. Fish were collected by electrofishing with pulsed-DC current in a mapped reach at each stream site. All of the reaches were 150 meters in length. Each site was sampled two times. One electrofishing pass was conducted for each sampling visit. Fish were identified, weighed, and checked for external anomalies such as parasites, lesions, and skeletal deformities. Most individuals were returned to the stream after processing. More details regarding collection methods can be found in Meador and others (1993) and Ohio Environmental Protection Agency (1989). Individual fish data (including weight and anomalies) are available from the USGS, Columbus, Ohio office.

Family names are in uppercase, scientific names are in italics, and common names are in parentheses. Common names follow American Fisheries Society (Robins and others, 1991). Undetermined and hybridized fish are located at the end of the table. Batch weights of individual fish species, reported in grams, were rounded according to the size of the scales that were used.

CALENDAR YEAR 1999

STATION NUMBER	STATION NAME	DATE		DRAINAGE AREA (MI ²)
		1st visit	2nd visit	
405830080411900	Mill Creek upstream of Western Reserve Road	7/6/99	9/16/99	28.4
410053080422400	Indian Run	7/7/99	9/7/99	11.5
410241080410000	Mill Creek upstream of Cranberry Run	7/7/99	8/23/99	53.7
410254080405900	Mill Creek downstream of Cranberry Run	7/7/99	8/23/99	57.7
03098500	Mill Creek at Youngstown, Ohio	7/8/99	8/24/99	66.3
410511080404600	Mill Creek upstream of Bear's Den Run	7/8/99	8/25/99	70.9
410515080403200	Mill Creek downstream of Bear's Den Run	7/8/99	8/24/99	74.8

FISH SPECIES, NUMBERS, WEIGHTS, AND ANOMALIES COLLECTED

CATOSTOMIDAE

STATION NUMBER	<i>Catostomus commersoni</i> (white sucker)					
	Number of Fish		Batch Weight (grams)		Fish with Anomalies	
	1st visit	2nd visit	1st visit	2nd visit	1st visit	2nd visit
	visit	visit	visit	visit	visit	visit
405830080411900	45	6	1980	784	2	0
410053080422400	30	30	1406	963	1	6
410241080410000	6	2	938	163	1	0
410254080405900	6	3	1088	452	0	2
03098500	1	0	2.0	0	0	0
410511080404600	5	6	64.5	52.9	0	0
410515080403200	0	1	0	4.5	0	1

CENTRARCHIDAE

STATION NUMBER	<i>Lepomis cyanellus</i> (green sunfish)						<i>Lepomis gibbosus</i> (pumpkinseed)					
	Number of Fish		Batch Weight (grams)		Fish with Anomalies		Number of Fish		Batch Weight (grams)		Fish with Anomalies	
	1st visit	2nd visit	1st visit	2nd visit	1st visit	2nd visit	1st visit	2nd visit	1st visit	2nd visit	1st visit	2nd visit
	visit	visit	visit	visit	visit	visit	visit	visit	visit	visit	visit	visit
405830080411900	83	25	405.6	172	0	0	0	8	0	122	0	0
410053080422400	12	8	310	141	0	0	10	16	78.5	135	0	0
410241080410000	11	19	154	212	0	0	2	2	48	22	0	0
410254080405900	26	6	269	43	0	1	0	0	0	0	0	0
03098500	19	16	536	450	0	0	0	21	0	576	0	0
410511080404600	11	16	192	343	0	0	0	5	0	98	0	0
410515080403200	14	11	358	370	1	0	0	4	0	140	0	0

**Effects of Combined-Sewer Overflows on Recreational Waters and
Aquatic Life of the Mahoning River and Tributaries in Youngstown, Ohio**
FISH COMMUNITY RESULTS FROM SELECTED SITES IN THE MILL CREEK BASIN—CONTINUED

FISH SPECIES, NUMBERS, WEIGHTS, AND ANOMALIES COLLECTED—Continued

CENTRARCHIDAE—Continued

STATION NUMBER	<i>Lepomis humilis</i> (orangespotted sunfish)						<i>Lepomis macrochirus</i> (bluegill)					
	Number of Fish		Batch Weight (grams)		Fish with Anomalies		Number of Fish		Batch Weight (grams)		Fish with Anomalies	
	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd
	visit	visit	visit	visit	visit	visit	visit	visit	visit	visit	visit	visit
405830080411900	0	0	0	0	0	0	10	22	50.7	270	1	0
410053080422400	0	0	0	0	0	0	21	19	253	243	0	0
410241080410000	0	0	0	0	0	0	3	8	58	151	0	0
410254080405900	1	0	40	0	0	0	11	15	470	438	1	1
03098500	0	0	0	0	0	0	0	7	0	104	0	0
410511080404600	0	0	0	0	0	0	1	0	10	0	0	0
410515080403200	0	0	0	0	0	0	0	3	0	114	0	0

CENTRARCHIDAE—Continued

STATION NUMBER	<i>Micropterus salmoides</i> (largemouth bass)						<i>Pomoxis annularis</i> (white crappie)					
	Number of Fish		Batch Weight (grams)		Fish with Anomalies		Number of Fish		Batch Weight (grams)		Fish with Anomalies	
	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd
	visit	visit	visit	visit	visit	visit	visit	visit	visit	visit	visit	visit
405830080411900	0	2	0	160	0	0	0	0	0	0	0	0
410053080422400	3	7	226	356	0	0	0	0	0	0	0	0
410241080410000	6	4	670	518	1	0	1	0	110	0	0	0
410254080405900	5	12	412	1422	0	0	0	0	0	0	0	0
03098500	3	7	676	130	0	0	2	0	106	0	0	0
410511080404600	1	33	50	385	0	0	0	0	0	0	0	0
410515080403200	8	22	492	549	0	0	0	0	0	0	0	0

CENTRARCHIDAE—Continued

STATION NUMBER	<i>Pomoxis nigromaculatus</i> (black crappie)						<i>Campostoma anomalum</i> (central stoneroller)					
	Number of Fish		Batch Weight (grams)		Fish with Anomalies		Number of Fish		Batch Weight (grams)		Fish with Anomalies	
	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd
	visit	visit	visit	visit	visit	visit	visit	visit	visit	visit	visit	visit
405830080411900	0	0	0	0	0	0	0	0	0	0	0	0
410053080422400	4	1	242	72	0	0	6	0	16.6	0	0	0
410241080410000	0	1	0	42	0	0	0	0	0	0	0	0
410254080405900	1	1	100	66	0	0	8	22	58.0	84.7	0	0
03098500	1	1	46	46	0	0	2	1	72	4.1	0	0
410511080404600	0	0	0	0	0	0	43	48	488	511	0	0
410515080403200	0	0	0	0	0	0	89	7	1064	85.1	0	0

CYPRINIDAE—Continued

STATION NUMBER	<i>Cyprinus carpio</i> (common carp)						<i>Notemigonus crysoleucas</i> (golden shiner)					
	Number of Fish		Batch Weight (grams)		Fish with Anomalies		Number of Fish		Batch Weight (grams)		Fish with Anomalies	
	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd
	visit	visit	visit	visit	visit	visit	visit	visit	visit	visit	visit	visit
405830080411900	5	15	4200	10900	0	0	0	23	0	82.2	0	0
410053080422400	22	9	29500	8300	0	0	0	0	0	0	0	0
410241080410000	152	29	60100	20000	0	0	0	0	0	0	0	0
410254080405900	136	70	55300	43400	0	0	0	0	0	0	0	0
03098500	28	24	20100	16700	0	0	0	0	0	0	0	0
410511080404600	17	24	15400	23600	0	0	0	0	0	0	0	0
410515080403200	13	43	8900	50500	0	1	0	0	0	0	0	0

CYPRINIDAE—Continued

STATION NUMBER	<i>Pimephales notatus</i> (bluntnose minnow)						<i>Semotilus atromaculatus</i> (creek chub)					
	Number of Fish		Batch Weight (grams)		Fish with Anomalies		Number of Fish		Batch Weight (grams)		Fish with Anomalies	
	1st visit	2nd visit	1st visit	2nd visit	1st visit	2nd visit	1st visit	2nd visit	1st visit	2nd visit	1st visit	2nd visit
405830080411900	6	0	23.3	0	1	0	30	1	422	50	3	0
410053080422400	42	8	92.3	13.4	0	0	12	25	123.9	404	0	1
410241080410000	20	24	38.1	22.2	0	0	0	0	0	0	0	0
410254080405900	37	49	79.6	85.1	0	0	3	0	9.7	0	1	0
03098500	37	56	79.2	150	0	0	0	0	0	0	0	0
410511080404600	36	108	132.4	265.5	0	0	3	4	32.7	34.2	1	0
410515080403200	151	145	383	141	0	0	0	0	0	0	0	0

ICTALURIDAE

STATION NUMBER	ESOCIDAE						ICHTHYURIDAE					
	<i>Esox americanus vermiculatus</i> (grass pickerel)						<i>Ameiurus melas</i> (black bullhead)					
	Number of Fish		Batch Weight (grams)		Fish with Anomalies		Number of Fish		Batch Weight (grams)		Fish with Anomalies	
	1st visit	2nd visit	1st visit	2nd visit	1st visit	2nd visit	1st visit	2nd visit	1st visit	2nd visit	1st visit	2nd visit
405830080411900	1	0	3.0	0	0	0	0	11	0	786	0	0
410053080422400	1	2	41.9	106	0	0	3	3	240	268	0	1
410241080410000	0	0	0	0	0	0	0	0	0	0	0	0
410254080405900	0	1	0	18	0	0	1	0	135	0	0	0
03098500	0	0	0	0	0	0	0	0	0	0	0	0
410511080404600	0	0	0	0	0	0	0	0	0	0	0	0
410515080403200	0		0	0	0	0	1	0	50	0	0	0

STATION NUMBER	Ameiurus natalis (yellow bullhead)						Ameiurus nebulosus (brown bullhead)					
	Number of Fish		Batch Weight (grams)		Fish with Anomalies		Number of Fish		Batch Weight (grams)		Fish with Anomalies	
	1st visit	2nd visit	1st visit	2nd visit	1st visit	2nd visit	1st visit	2nd visit	1st visit	2nd visit	1st visit	2nd visit
405830080411900	3	4	202	604	0	0	0	0	0	0	0	0
410053080422400	1	1	104	34	0	1	0	0	0	0	0	0
410241080410000	8	5	682	364	1	1	0	0	0	0	0	0
410254080405900	8	8	788	534	2	1	1	0	160	0	0	0
03098500	7	26	734	1774	0	4	0	0	0	0	0	0
410511080404600	9	14	447.3	534	0	0	0	0	0	0	0	0
410515080403200	15	17	1096	1382	2	0	0	0	0	0	0	0

[illegible]

**Effects of Combined-Sewer Overflows on Recreational Waters and
Aquatic Life of the Mahoning River and Tributaries in Youngstown, Ohio**
COMMUNITY RESULTS FROM SELECTED SITES IN THE MILL CREEK BASIN—CONTINUED

FISH SPECIES, NUMBERS, WEIGHTS, AND ANOMALIES COLLECTED—Continued

PERCIDAE—Continued

STATION NUMBER	<i>Etheostoma nigrum</i> (johnny darter)						<i>Perca flavescens</i> (yellow perch)					
	Number of Fish		Batch Weight (grams)		Fish with Anomalies		Number of Fish		Batch Weight (grams)		Fish with Anomalies	
	1st visit	2nd visit	1st visit	2nd visit	1st visit	2nd visit	1st visit	2nd visit	1st visit	2nd visit	1st visit	2nd visit
405830080411900	0	0	0	0	0	0	8	16	12.1	53.8	0	0
410053080422400	0	1	0	0.4	0	0	0	0	0	0	0	0
410241080410000	0	0	0	0	0	0	1	2	50	92	0	0
410254080405900	0	0	0	0	0	0	1	1	40	54	0	0
03098500	0	0	0	0	0	0	4	1	374	112	0	0
410511080404600	0	0	0	0	0	0	0	0	0	0	0	0
410515080403200	0	0	0	0	0	0	0	0	0	0	0	0

UMBRIDAE

UNDETERMINED FISH

STATION NUMBER	<i>Umbra limi</i> (central mudminnow)						(Undetermined sucker)					
	Number of Fish		Batch Weight (grams)		Fish with Anomalies		Number of Fish		Batch Weight (grams)		Fish with Anomalies	
	1st visit	2nd visit	1st visit	2nd visit	1st visit	2nd visit	1st visit	2nd visit	1st visit	2nd visit	1st visit	2nd visit
405830080411900	1	0	12.8	0	0	0	0	0	0	0	0	0
410053080422400	0	0	0	0	0	0	0	0	0	0	0	0
410241080410000	0	0	0	0	0	0	0	0	0	0	0	0
410254080405900	0	0	0	0	0	0	0	0	0	0	0	0
03098500	0	0	0	0	0	0	0	0	0	0	0	0
410511080404600	0	0	0	0	0	0	0	0	0	0	0	0
410515080403200	0	0	0	0	0	0	1	0	1.8	0	0	0

HYBRIDIZED FISH

STATION NUMBER	(Hybrid bullhead)						(Hybrid sunfish)					
	Number of Fish		Batch Weight (grams)		Fish with Anomalies		Number of Fish		Batch Weight (grams)		Fish with Anomalies	
	1st visit	2nd visit	1st visit	2nd visit	1st visit	2nd visit	1st visit	2nd visit	1st visit	2nd visit	1st visit	2nd visit
405830080411900	0	5	0	312	0	0	0	4	0	76	0	0
410053080422400	0	0	0	0	0	0	13	0	480.2	0	2	0
410241080410000	0	0	0	0	0	0	2	1	48	8	0	0
410254080405900	0	0	0	0	0	0	3	8	162	109	0	1
03098500	0	0	0	0	0	0	6	25	154	744	0	0
410511080404600	0	0	0	0	0	0	1	10	26	219	0	0
410515080403200	0	0	0	0	0	0	8	13	302	706	0	2

REFERENCES CITED:

- 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.
- Ohio Environmental Protection Agency, 1989, Biological Criteria for the Protection of Aquatic Life: Volume III. Standardized Biological Field Sampling and Laboratory Methods for Assessing Fish and Macroinvertebrate Communities. Ohio EPA, Division of Water Quality Planning and Assessment, Ecological Assessment Section, Columbus, Ohio, v-4-1 - v-4-18.
- Robins, C.R., Bailey, R.M., Bond, C.E., Brooker, J.R., Lachner, E.A., Lea, R.N., and Scott, W.B., 1991, Common and scientific names of fishes from the United States and Canada, Fifth Edition: American Fisheries Society Special Publication 20, Bethesda, MD, 183 p.

PROJECT DATA

Columbus Well Field, Southern Franklin County

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. The objective of the study is to present estimates of ground-water traveltimes and flow paths under transient flow to determine the zone of contribution to the City of Columbus' South Well Field.



PROJECT DATA
Columbus Well Field, Southern Franklin County

517

395039082585800. LOCAL NUMBER, FR-115 (TH-67)

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.

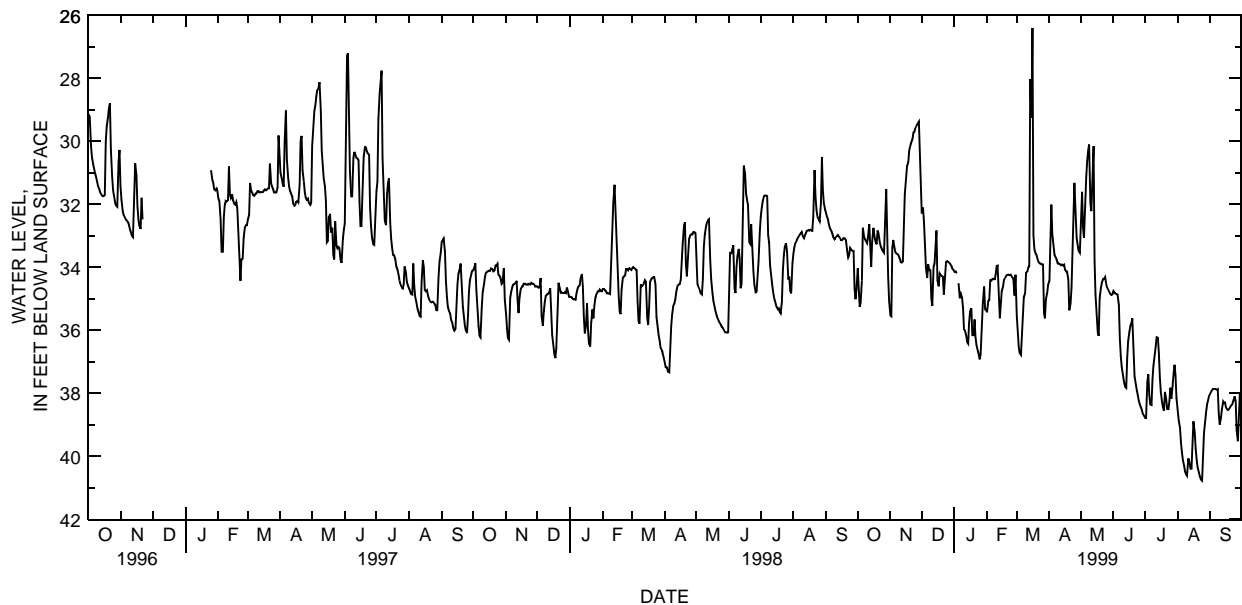
Measuring point: floor of instrument shelter, 2.10 ft above land-surface datum.

PERIOD OF RECORD.--Aug. 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 1998 TO SEPTEMBER 1999
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	34.04	35.53	32.29	34.15	35.43	35.55	34.43	32.81	34.75	38.79	38.55	37.99
2	34.72	35.56	32.11	34.13	35.06	36.09	33.07	31.61	34.82	38.79	38.85	37.92
3	35.26	33.38	32.57	34.19	35.04	36.51	32.01	32.75	34.84	37.62	39.09	37.86
4	35.13	33.13	33.24	---	34.41	36.72	32.95	33.06	34.86	37.39	39.55	37.87
5	34.42	33.38	34.00	34.50	34.42	36.78	33.30	32.38	34.87	38.05	39.86	37.86
6	32.75	33.54	34.34	34.98	34.37	36.13	33.61	31.14	35.19	38.35	40.11	37.87
7	33.05	33.58	33.90	34.85	34.38	35.46	33.68	30.62	36.26	38.37	40.30	37.88
8	33.11	33.59	34.10	34.97	34.38	34.95	33.74	30.30	36.81	37.57	40.49	37.86
9	33.18	33.64	34.10	35.28	34.23	34.83	33.88	30.11	37.16	37.12	40.58	38.62
10	33.25	33.72	35.00	35.97	33.96	34.18	33.89	31.96	37.44	36.86	40.63	38.99
11	33.05	33.84	35.22	36.00	33.95	34.14	33.90	32.22	37.63	36.52	40.07	38.78
12	32.64	33.85	33.98	36.17	34.90	34.01	33.95	30.85	37.80	36.22	40.17	38.51
13	33.39	33.82	33.89	36.38	35.62	33.96	33.92	30.16	37.83	36.24	40.39	38.26
14	33.99	32.58	33.35	36.43	35.20	28.03	33.94	33.77	36.89	36.72	40.39	38.31
15	33.19	31.69	32.84	35.75	34.76	29.26	33.92	34.88	36.34	37.48	39.50	38.30
16	32.75	31.18	34.41	35.41	34.62	26.40	34.08	35.56	36.03	37.94	38.89	38.46
17	33.00	30.79	34.60	35.30	34.39	32.98	34.14	36.07	35.86	38.28	39.23	38.52
18	33.20	30.66	34.20	36.16	34.33	33.42	34.14	36.18	35.78	38.45	39.74	38.52
19	33.27	30.28	34.26	36.16	34.26	33.58	34.38	34.98	35.62	38.55	40.09	38.47
20	32.84	30.15	34.28	35.66	34.25	33.62	35.37	34.65	36.84	37.96	40.34	38.42
21	32.94	30.05	34.30	36.22	34.23	33.78	35.15	34.48	37.46	38.19	40.50	38.37
22	33.21	29.93	34.87	36.46	34.25	33.85	34.66	34.37	37.71	38.50	40.64	38.32
23	33.34	29.72	34.22	36.65	34.23	33.88	33.38	34.36	37.89	38.50	40.75	38.20
24	33.42	29.70	33.82	36.76	34.28	33.89	32.11	34.30	38.05	38.23	40.78	38.10
25	33.49	29.58	33.80	36.92	34.33	33.91	31.32	34.50	38.22	37.82	39.90	38.24
26	33.55	29.48	33.82	36.76	34.35	33.91	32.47	34.65	38.34	38.17	39.26	39.17
27	32.58	29.43	33.86	35.84	34.90	35.45	33.06	34.72	38.45	37.75	38.85	39.52
28	31.52	29.36	33.90	35.12	34.24	35.62	33.28	34.79	38.53	37.36	38.55	38.69
29	32.50	30.67	33.96	34.62	---	35.01	33.47	34.85	38.66	37.09	38.33	38.01
30	34.30	31.63	34.06	35.34	---	34.81	33.55	34.88	38.71	37.43	38.21	38.00
31	35.06	---	34.08	35.34	---	34.55	---	34.86	---	38.15	38.07	---
MEAN	33.42	31.91	33.92	---	34.53	34.04	33.62	33.45	36.85	37.76	39.70	38.33
MAX	35.26	35.56	35.22	---	35.62	36.78	35.37	36.18	38.71	38.79	40.78	39.52



PROJECT DATA

Columbus Well Field, Southern Franklin County

395058083002400. LOCAL NUMBER, FR-119 (M-5)

LOCATION.--Latitude 39°51'11", longitude 83°00'26", Hydrologic Unit 05060001.

Owner.--Franklin County.

AQUIFER.--Sand and gravel of Quaternary age.

WELL CHARACTERISTICS.--Drilled observation well, diameter 2 in., depth 85 ft.

INSTRUMENTATION.--Data logger--60-minute record.

DATUM.--Elevation of land-surface datum is 700 ft above sea level.

Measuring point: top of plywood, 2.48 ft above land-surface datum.

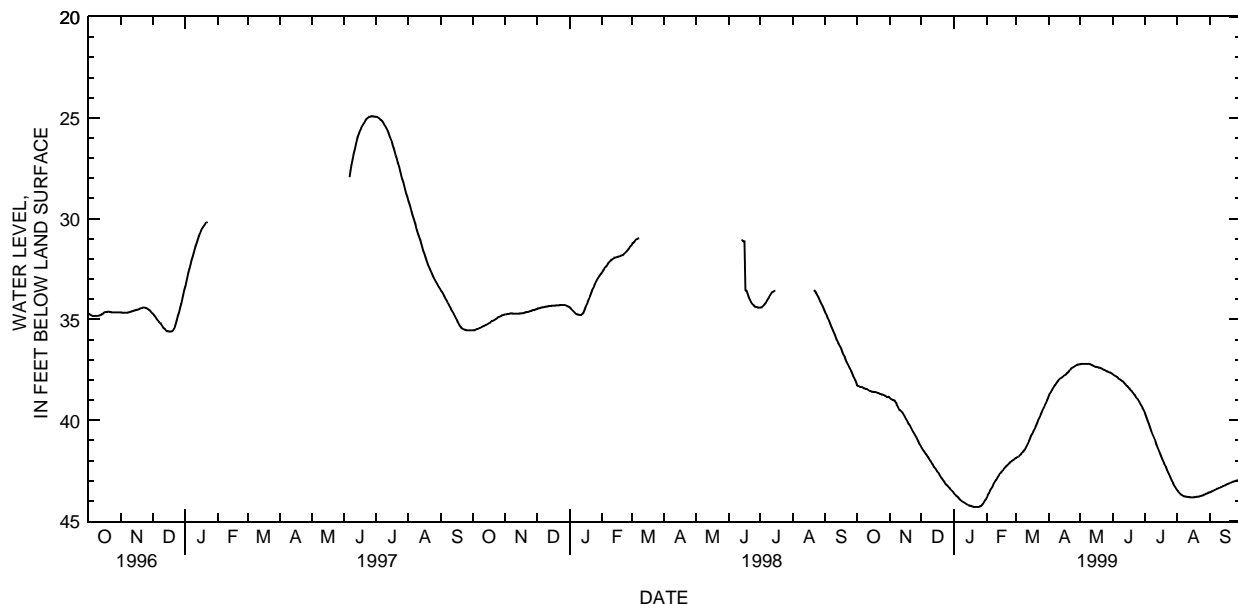
PERIOD OF RECORD.--Oct. 1979 to current year.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily low, 52.34 ft below land-surface datum, Mar. 4-7, 1992; minimum daily low, 11.10 ft below land-surface datum, June 17, 1981.

DEPTH BELOW LAND SURFACE (WATER LEVEL), FEET, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e38.28	e38.88	41.35	43.63	43.82	41.87	38.79	37.22	37.73	39.62	43.49	43.57
2	e38.30	e38.93	41.43	43.68	43.72	41.83	38.67	37.21	37.76	39.76	43.55	43.54
3	e38.31	e38.97	41.51	43.73	43.62	41.80	38.57	37.20	37.79	39.90	43.61	43.52
4	e38.34	e39.00	41.59	43.78	43.51	41.76	38.48	37.20	37.82	40.04	43.66	43.50
5	e38.35	e39.02	41.67	43.85	43.40	41.71	38.40	37.20	37.86	40.19	43.70	43.47
6	e38.37	e39.07	41.75	43.91	43.30	41.66	38.32	37.20	37.91	40.33	43.73	43.45
7	e38.41	e39.14	41.82	43.95	43.20	41.59	38.24	37.20	37.95	40.48	43.76	43.42
8	e38.42	e39.26	41.90	44.00	43.10	41.52	38.16	37.20	37.99	40.63	43.78	43.40
9	e38.45	e39.39	41.98	44.03	43.01	41.44	38.08	37.21	38.03	40.77	43.79	43.37
10	e38.45	e39.49	42.06	44.07	42.93	41.35	38.01	37.22	38.07	40.89	43.80	43.35
11	e38.48	e39.50	42.15	44.10	42.85	41.26	37.96	37.24	38.12	41.04	43.81	43.32
12	e38.50	e39.55	42.23	44.13	42.77	41.15	37.91	37.27	38.17	41.19	43.81	43.30
13	e38.54	e39.60	42.31	44.16	42.69	41.04	37.87	37.29	38.24	41.31	43.82	43.27
14	e38.56	39.71	42.38	44.19	42.62	40.92	37.84	37.32	38.29	41.44	43.82	43.25
15	e38.58	39.80	42.47	44.22	42.55	40.80	37.81	37.34	38.34	41.58	43.82	43.22
16	e38.59	39.91	42.54	44.24	42.49	40.69	37.76	37.35	38.40	41.70	43.82	43.20
17	e38.60	40.00	42.61	44.26	42.42	40.58	37.72	37.37	38.46	41.82	43.82	43.18
18	e38.60	40.09	42.70	44.27	42.36	40.47	37.67	37.38	38.52	41.95	43.81	43.16
19	e38.61	40.19	42.78	44.29	42.30	40.35	37.62	37.40	38.59	42.08	43.80	43.13
20	e38.63	40.28	42.86	44.30	42.25	40.24	37.56	37.42	38.65	42.20	43.80	43.11
21	e38.65	40.37	42.94	44.30	42.20	40.12	37.51	37.43	38.72	42.31	43.79	43.09
22	e38.66	40.47	43.02	44.30	42.15	39.99	37.45	37.46	38.80	42.44	43.77	43.07
23	e38.70	40.56	43.09	44.30	42.10	39.87	37.40	37.49	38.87	42.55	43.76	43.05
24	e38.72	40.66	43.15	44.30	42.05	39.75	37.36	37.51	38.94	42.67	43.74	43.03
25	e38.73	40.74	43.21	44.29	42.01	39.63	37.33	37.53	39.02	42.79	43.72	43.01
26	e38.75	40.84	43.27	44.27	41.97	39.51	37.30	37.57	39.10	42.90	43.70	43.00
27	e38.77	40.95	43.33	44.23	41.93	39.39	37.27	37.59	39.19	43.01	43.69	42.98
28	e38.80	41.04	43.39	44.16	41.90	39.27	37.25	37.61	39.28	43.10	43.66	42.97
29	e38.84	41.15	43.44	44.09	---	39.15	37.24	37.64	39.38	43.22	43.64	42.95
30	e38.85	41.25	43.50	44.00	---	39.03	37.22	37.66	39.49	43.31	43.61	42.94
31	e38.83	---	43.55	43.91	---	38.91	---	37.69	---	43.40	43.59	---
MEAN	38.57	39.93	42.52	44.09	42.69	40.60	37.83	37.37	38.45	41.63	43.73	43.23
MAX	38.85	41.25	43.55	44.30	43.82	41.87	38.79	37.69	39.49	43.40	43.82	43.57



e Estimated.

PROJECT DATA
Columbus Well Field, Southern Franklin County

519

395131082592400. LOCAL NUMBER, FR-123 (M-9)

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.

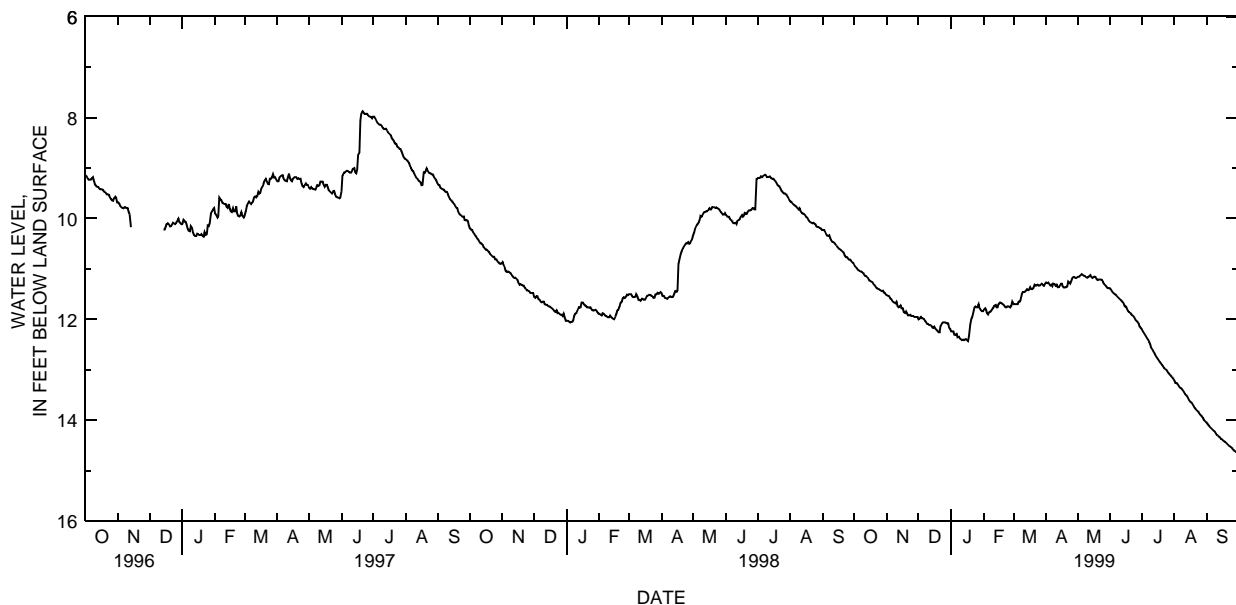
Measuring point: floor of shelter, 2.25 ft above land-surface datum.

PERIOD OF RECORD.--Apr. 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 1998 TO SEPTEMBER 1999
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10.94	11.52	12.00	12.24	11.81	11.70	11.27	11.16	11.39	12.20	13.22	14.07
2	10.96	11.53	11.98	12.24	11.78	11.70	11.28	11.15	11.43	12.24	13.26	14.09
3	10.98	11.54	11.95	12.24	11.81	11.70	11.27	11.14	11.46	12.28	13.27	14.12
4	11.01	11.58	11.98	12.30	11.88	11.70	11.29	11.12	11.48	12.31	13.29	14.14
5	11.03	11.60	11.98	12.31	11.90	11.70	11.33	11.10	11.49	12.34	13.32	14.16
6	11.04	11.64	11.99	12.29	11.85	11.65	11.31	11.12	11.51	12.37	13.35	14.18
7	11.05	11.66	12.03	12.35	11.85	11.65	11.34	11.13	11.53	12.41	13.36	14.21
8	11.06	11.67	12.06	12.34	11.82	11.61	11.29	11.14	11.55	12.45	13.39	14.22
9	11.08	11.68	12.09	12.38	11.78	11.50	11.30	11.16	11.57	12.49	13.41	14.25
10	11.10	11.65	12.09	12.39	11.77	11.46	11.33	11.17	11.60	12.56	13.44	14.28
11	11.13	11.74	12.11	12.41	11.72	11.46	11.31	11.16	11.62	12.60	13.48	14.30
12	11.14	11.76	12.11	12.40	11.71	11.45	11.36	11.14	11.65	12.64	13.50	14.32
13	11.16	11.74	12.12	12.41	11.76	11.43	11.36	11.12	11.66	12.68	13.53	14.34
14	11.18	11.72	12.16	12.40	11.76	11.40	11.33	11.16	11.70	12.72	13.57	14.37
15	11.22	11.78	12.17	12.39	11.70	11.42	11.29	11.18	11.74	12.75	13.61	14.38
16	11.24	11.78	12.14	12.41	11.67	11.41	11.29	11.16	11.75	12.78	13.63	14.40
17	11.25	11.85	12.19	12.43	11.67	11.36	11.35	11.15	11.80	12.82	13.65	14.42
18	11.26	11.87	12.21	12.32	11.68	11.40	11.37	11.16	11.84	12.85	13.68	14.43
19	11.30	11.84	12.24	12.09	11.70	11.40	11.37	11.20	11.85	12.87	13.71	14.45
20	11.32	11.88	12.26	12.00	11.72	11.38	11.36	11.22	11.88	12.90	13.75	14.47
21	11.34	11.92	12.26	11.95	11.75	11.31	11.34	11.21	11.90	12.93	13.78	14.49
22	11.38	11.92	12.12	11.87	11.76	11.33	11.25	11.21	11.92	12.96	13.80	14.51
23	11.39	11.91	12.08	11.76	11.74	11.33	11.27	11.21	11.94	12.98	13.83	14.52
24	11.40	11.93	12.06	11.74	11.74	11.31	11.29	11.22	11.97	13.00	13.85	14.54
25	11.41	11.93	12.06	11.76	11.74	11.33	11.25	11.25	12.01	13.03	13.88	14.57
26	11.43	11.93	12.06	11.76	11.76	11.33	11.18	11.29	12.03	13.06	13.90	14.59
27	11.44	11.95	12.07	11.70	11.73	11.31	11.16	11.32	12.06	13.09	13.93	14.61
28	11.43	11.95	12.08	11.78	11.65	11.29	11.16	11.34	12.08	13.11	13.95	14.63
29	11.47	11.95	12.08	11.82	---	11.31	11.18	11.37	12.14	13.13	14.00	14.64
30	11.48	11.95	12.17	11.84	---	11.33	11.18	11.38	12.17	13.15	14.02	14.66
31	11.51	---	12.19	11.84	---	11.29	---	11.38	---	13.18	14.04	---
MEAN	11.23	11.78	12.10	12.13	11.76	11.45	11.29	11.20	11.76	12.74	13.63	14.38
MAX	11.51	11.95	12.26	12.43	11.90	11.70	11.37	11.38	12.17	13.18	14.04	14.66



PROJECT DATA

Columbus Well Field, Southern Franklin County

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.

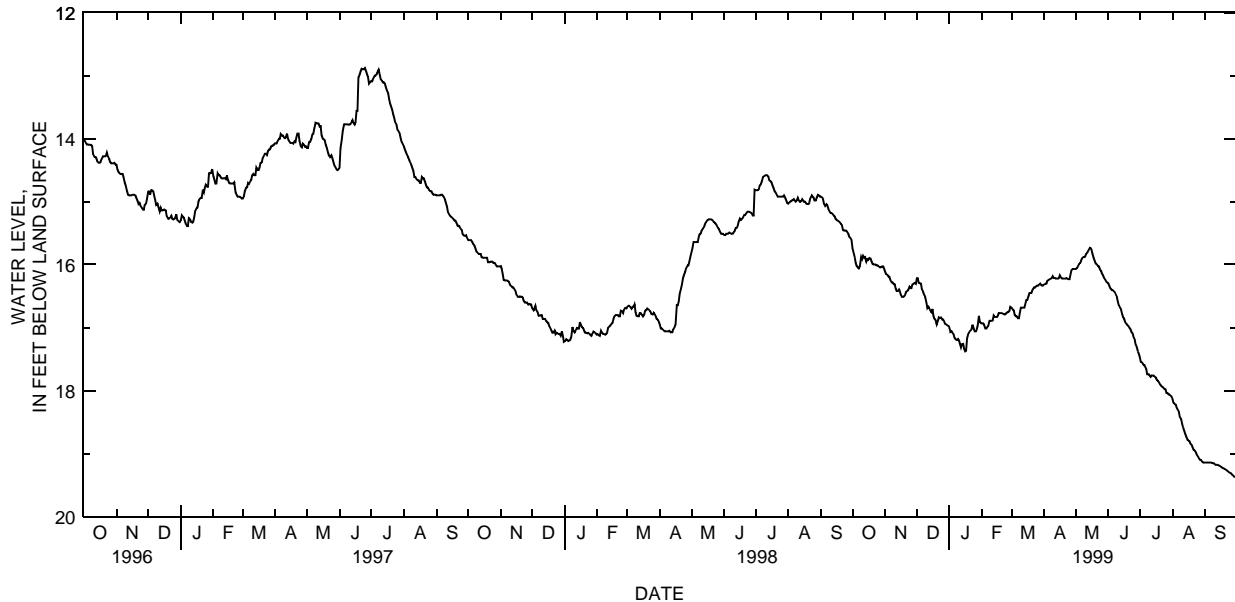
Measuring point: Top of PVC casing, 2.53 ft above land-surface datum.

PERIOD OF RECORD.--Sept. 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 1998 TO SEPTEMBER 1999 DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15.74	16.11	e16.22	e17.00	16.93	16.68	16.31	16.07	16.29	17.47	18.13	19.14
2	15.80	16.15	e16.22	e17.06	16.93	16.71	16.30	16.05	16.34	17.54	18.19	19.14
3	15.88	16.16	e16.28	e17.05	16.95	16.72	16.30	16.02	16.38	17.55	18.21	19.14
4	15.97	16.19	e16.29	e17.09	17.01	16.80	16.25	15.98	16.40	17.58	18.22	19.14
5	16.02	16.19	e16.30	e17.10	17.01	16.82	16.24	15.97	16.40	17.59	18.28	19.14
6	16.04	16.24	e16.39	e17.16	16.98	16.82	16.23	15.94	16.42	17.63	18.31	19.14
7	16.06	16.28	e16.42	e17.19	16.97	16.85	16.22	15.90	16.43	17.66	18.34	19.14
8	16.02	16.28	e16.48	e17.20	16.89	16.85	16.21	15.88	16.48	17.74	18.42	19.15
9	e15.87	16.31	e16.51	e17.18	16.89	16.76	16.18	15.88	16.51	17.74	18.45	19.15
10	e15.91	16.31	e16.60	e17.20	16.89	16.68	16.21	15.87	16.58	17.76	18.52	e19.16
11	e15.86	16.38	e16.69	e17.26	16.88	16.68	16.21	15.83	16.64	17.78	18.58	e19.17
12	e15.88	16.42	e16.67	e17.31	16.81	16.68	16.22	15.81	16.68	17.76	18.63	e19.17
13	e15.87	16.42	e16.70	e17.26	16.83	16.68	16.22	15.77	16.71	17.76	18.69	e19.18
14	e15.95	16.39	e16.74	e17.25	16.83	16.62	16.22	15.73	16.79	17.76	18.73	e19.19
15	e15.91	16.42	e16.76	e17.34	16.83	16.56	16.21	15.74	16.84	17.78	18.78	e19.20
16	e15.92	16.48	e16.70	e17.37	16.81	16.56	16.17	15.76	16.86	17.79	18.79	e19.21
17	e15.89	16.51	e16.81	e17.36	16.77	16.50	16.21	15.83	16.91	17.83	18.80	e19.22
18	e15.90	16.51	e16.86	e17.17	16.77	16.45	16.22	15.90	16.94	17.84	18.84	e19.23
19	e15.94	16.50	e16.89	e17.09	16.77	16.45	16.22	15.94	16.96	17.87	18.86	e19.23
20	e15.99	e16.47	e16.95	e17.06	16.77	16.45	16.22	15.98	16.97	17.90	18.90	e19.25
21	16.00	e16.42	e16.89	17.04	16.78	16.39	16.22	15.99	17.00	17.92	18.94	e19.26
22	16.00	e16.41	e16.84	17.02	16.79	16.36	16.21	16.02	17.03	17.93	18.95	e19.27
23	16.00	e16.40	e16.84	16.95	16.79	16.36	16.22	16.03	17.07	17.95	18.98	e19.29
24	16.01	e16.35	e16.84	17.00	16.77	16.35	16.23	16.08	17.10	17.97	19.02	e19.30
25	16.01	e16.37	e16.87	17.06	16.75	16.33	16.23	16.10	17.16	17.98	19.05	e19.31
26	16.03	e16.37	e16.87	17.06	16.75	16.33	16.16	16.15	17.19	18.03	19.08	e19.33
27	16.04	e16.31	e16.89	17.03	16.74	16.32	16.09	16.17	17.27	18.04	19.10	e19.34
28	16.04	e16.29	e16.94	16.97	16.67	16.30	16.07	16.21	17.30	18.06	19.10	e19.35
29	16.03	e16.28	e16.95	16.81	---	16.32	16.07	16.24	17.38	18.06	19.13	e19.37
30	16.03	e16.30	e16.96	16.91	---	16.33	16.07	16.27	17.42	18.08	19.14	e19.38
31	16.07	---	e16.97	16.93	---	16.33	---	16.28	---	18.10	19.14	---
MEAN	15.96	16.34	16.69	17.11	16.84	16.55	16.20	15.98	16.82	17.82	18.72	19.22
MAX	16.07	16.51	16.97	17.37	17.01	16.85	16.31	16.28	17.42	18.10	19.14	19.38



e Estimated.

PROJECT DATA
Columbus Well Field, Southern Franklin County

521

395055082592401. LOCAL NUMBER FR-272

LOCATION.--Latitude 39°50'55", longitude 82°59'24", Hydrologic Unit 05060001.

Owner.--City of Columbus.

AQUIFER.--Sand and gravel of Quaternary age.

WELL CHARACTERISTICS.--Drilled observation water well, depth 45.95; 2-in. PVC.

INSTRUMENTATION.--Data logger--60-minute record.

DATUM.--Elevation of land-surface datum is 710 ft above sea level.

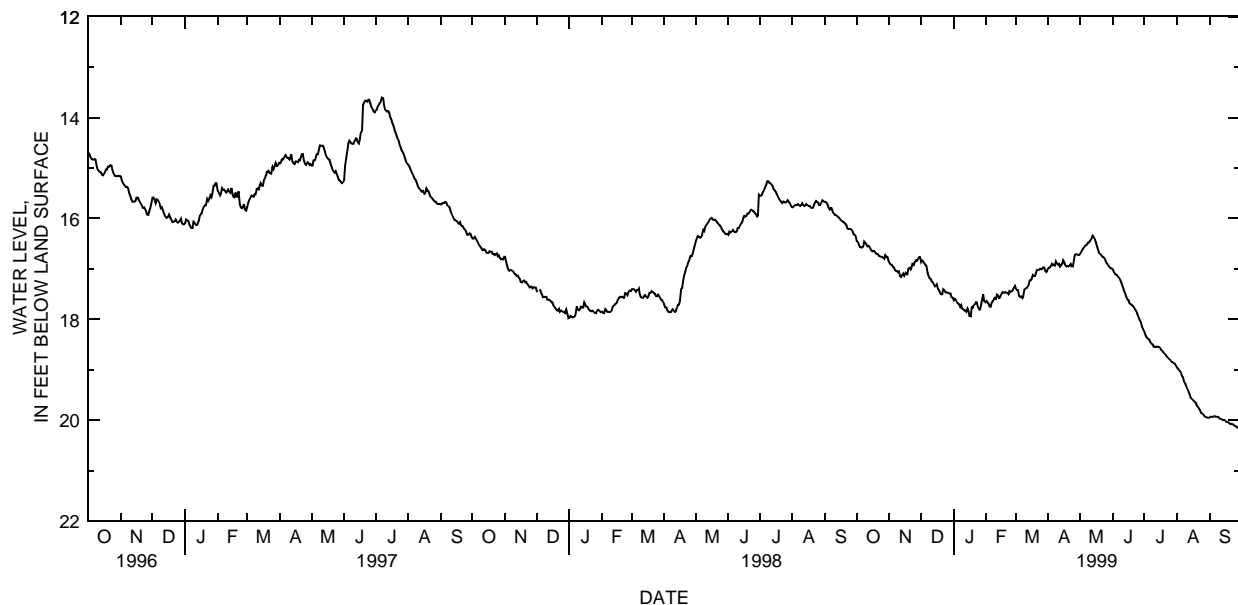
Measuring point: top of outer steel casing, 2.36 ft above land-surface datum.

PERIOD OF RECORD.--Sept. 1987 to current year.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily low, 25.45 ft below land-surface datum, Apr. 24, 1992; minimum daily low, 14.53 ft below land-surface datum, Mar. 18, 1991.

DEPTH BELOW LAND SURFACE (WATER LEVEL), FEET, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MAXIMUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16.45	16.88	16.86	17.62	17.64	17.39	16.98	16.69	17.01	18.25	18.96	19.94
2	16.47	16.91	16.83	17.59	17.66	17.42	16.98	16.66	17.06	18.31	18.99	19.93
3	16.52	16.92	16.85	17.61	17.68	17.42	16.94	16.62	17.09	18.35	19.01	19.93
4	16.57	16.95	16.89	17.67	17.74	17.53	16.90	16.59	17.11	18.37	19.03	19.93
5	16.58	16.97	16.92	17.68	17.75	17.55	16.93	16.56	17.12	18.39	19.08	19.92
6	16.58	17.02	16.95	17.70	17.66	17.54	16.91	16.54	17.15	18.42	19.13	19.92
7	16.56	17.04	17.07	17.75	17.64	17.58	16.93	16.53	17.17	18.46	19.16	19.93
8	16.46	17.04	17.13	17.71	17.60	17.54	16.85	16.48	17.21	18.48	19.24	19.93
9	16.49	17.07	17.18	17.78	17.57	17.40	16.90	16.48	17.26	18.50	19.28	19.93
10	16.52	17.05	17.20	17.80	17.59	17.39	16.92	16.45	17.33	18.54	19.34	19.95
11	16.55	17.14	17.25	17.83	17.51	17.38	16.90	16.42	17.39	18.55	19.40	19.97
12	16.54	17.16	17.26	17.83	17.52	17.35	16.95	16.39	17.45	18.54	19.44	19.98
13	16.56	17.12	17.30	17.85	17.57	17.31	16.92	16.34	17.49	18.54	19.48	19.99
14	16.61	17.09	17.34	17.79	17.56	17.23	16.90	16.38	17.57	18.54	19.55	20.00
15	16.64	17.13	17.33	17.84	17.50	17.23	16.83	16.42	17.61	18.55	19.58	20.00
16	16.65	17.08	17.30	17.93	17.46	17.21	16.87	16.47	17.62	18.57	19.60	20.02
17	16.64	17.11	17.40	17.94	17.47	17.12	16.93	16.54	17.68	18.61	19.62	20.04
18	16.66	17.11	17.42	17.76	17.47	17.14	16.95	16.62	17.70	18.63	19.64	20.04
19	16.69	17.00	17.48	17.77	17.46	17.14	16.94	16.68	17.71	18.66	19.67	20.05
20	16.70	16.98	17.50	17.72	17.47	17.08	16.95	16.71	17.73	18.68	19.72	20.06
21	16.71	17.01	17.50	17.70	17.48	17.02	16.93	16.72	17.76	18.70	19.74	20.08
22	16.74	16.97	17.40	17.66	17.50	17.02	16.90	16.76	17.80	18.73	19.78	20.08
23	16.75	16.90	17.42	17.67	17.44	17.02	16.95	16.76	17.83	18.75	19.81	20.08
24	16.76	16.92	17.45	17.75	17.45	17.00	16.95	16.79	17.88	18.77	19.85	20.10
25	16.76	16.86	17.47	17.81	17.44	17.01	16.85	16.83	17.94	18.80	19.87	20.11
26	16.78	16.83	17.47	17.81	17.43	17.00	16.73	16.88	17.98	18.82	19.89	20.12
27	16.80	16.84	17.48	17.69	17.36	16.97	16.71	16.90	18.03	18.85	19.92	20.14
28	16.73	16.80	17.49	17.59	17.33	16.98	16.71	16.93	18.06	18.85	19.93	20.15
29	16.76	16.76	17.49	17.50	---	17.04	16.72	16.97	18.16	18.87	19.94	20.16
30	16.77	16.77	17.56	17.64	---	17.06	16.72	16.99	18.20	18.88	19.95	20.17
31	16.84	---	17.57	17.66	---	17.01	---	16.99	---	18.92	19.95	---
MEAN	16.64	16.98	17.28	17.73	17.53	17.23	16.89	16.65	17.57	18.61	19.53	20.02
MAX	16.84	17.16	17.57	17.94	17.75	17.58	16.98	16.99	18.20	18.92	19.95	20.17



PROJECT DATA
Columbus Well Field, Southern Franklin County

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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.

