HYDROLOGIC DATA FOR 1994-96 FOR THE HURON PROJECT OF THE HIGH PLAINS GROUND-WATER DEMONSTRATION PROGRAM

By Janet M. Carter

U.S. GEOLOGICAL SURVEY

Open-File Report 96-555

Prepared in cooperation with
SOUTH DAKOTA STATE UNIVERSITY, the
BUREAU OF RECLAMATION, the
SOUTH DAKOTA DEPARTMENT OF ENVIRONMENT
AND NATURAL RESOURCES, and the
CITY OF HURON

Rapid City, South Dakota
1996

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CONTENTS

Abstract.....	1
Introduction	1
Description of study area.....	2
Acknowledgments	2
Precipitation data	4
Well data	4
Water-level data	14
Injection data	59
Water-quality data.....	59
Quality-assurance data.....	59
Screening water-quality data	63
Detailed water-quality data.....	65
Plume-monitoring water-quality data.....	65
References	68
Supplemental information	69

ILLUSTRATIONS

1. Map showing study area for the Huron Project.....	3
2. Map showing location of precipitation stations within the study area	5
3. Map showing location of selected South Dakota Department of Environment and Natural Resources observation wells within the study area	8
4. Maps showing location of Huron Project observation wells, test holes, and recharge well within the study area	10
5-71. Hydrographs for observation wells:	
5. 110N61W19AAAA, BD-60H, water years 1994-96	15
6. 110N62W7BBBB, BD-76I, water years 1994-96.....	15
7. 110N62W9CCCC, BD-76K, water years 1994-96	16
8. 110N62W16DCCC, BD-60F, water years 1994-96	16
9. 110N62W18BBBB, BDS-54-78, water years 1994-96.....	17
10. 110N62W19AAAA2, BD-82A, water years 1994-96	17
11. 110N62W25CCCC, BD-76L, water years 1994-96.....	18
12. 111N62W32AADD, BD-79C, water years 1994-96.....	18
13. 111N62W32ADAA, BD-60D, water years 1994-96	19
14. 111N63W2CCCC, BD-60A, water years 1994-96	19
15. 111N63W9BBBB, BD-76C, water years 1994-96.....	20
16. 111N63W12AAAA, BD-79A, water years 1994-96	20
17. 111N63W14CCCC, BD-79B, water years 1994-96.....	21
18. 111N63W24DDDD, BD-60C, water years 1994-96.....	21
19. 112N63W36BBBB, BD-76B, water years 1994-96	22
20. 110N62W2BCCC2, CO-29-90, water years 1994-96.....	23
21. 110N62W3DCCC2, CO-27-90, water years 1994-96.....	23
22. 110N62W4AADA, CO-24-90, water years 1994-96	24
23. 110N62W4BBBB, CO-04-90, water years 1994-96.....	24
24. 110N62W4CDDD, CO-15-90, water years 1994-96	25
25. 110N62W4DDDD, CO-25-90, water years 1994-96.....	25
26. 110N62W5ADDD, CO-05-90, water years 1994-96.....	26
27. 110N62W5BBBB2, CO-03-90, water years 1994-96.....	26

ILLUSTRATIONS—Continued

28.	110N62W5CCCB2, CO-31-90, water years 1994-96	27
29.	110N62W5DCCC, CO-14-90, water years 1994-96	27
30.	110N62W6BBBB, CO-23-90, water years 1994-96	28
31.	110N62W8CCCC, CO-01-90, water years 1994-96	28
32.	110N62W9BABB, CO-06-90, water years 1994-96	29
33.	110N62W9BBAC, CO-55-90, water years 1994-96	29
34.	110N62W9BBBA, CO-65-90, water years 1994-95	30
35.	110N62W9BBBA2, CO-66-90, water years 1994-96	30
36.	110N62W9BBBA3, CO-67-90, water years 1994-95	31
37.	110N62W9BBBA4, A-01-90, water years 1994-96	31
38.	110N62W9BBBA5, A-02-90, water years 1994-96	32
39.	110N62W9BBBA6, A-03-90, water years 1994-96	32
40.	110N62W9BBBA7, A-04-90, water years 1994-96	33
41.	110N62W9BBBB2, CO-08-90, water years 1994-96	33
42.	110N62W9BBBC, CO-16-90, water years 1994-96	34
43.	110N62W9BBBC2, CO-33-90, water years 1994-95	34
44.	110N62W9BBBC3, CO-34-90, water years 1994-95	35
45.	110N62W9BBBC4, CO-35-90, water years 1994-96	35
46.	110N62W9BBBC5, CO-36-90, water years 1994-96	36
47.	110N62W9BBBC6, CO-37-90, water years 1994-96	36
48.	110N62W9BBBC7, CO-38-90, water years 1994-96	37
49.	110N62W9BBBD, CO-45-90, water years 1994-96	37
50.	110N62W9BBBD3, CO-47-90, water years 1994-95	38
51.	110N62W9BBBD4, CO-48-90, water years 1994-95	38
52.	110N62W9BBBD5, CO-49-90, water years 1994-95	39
53.	110N62W9BBBD6, CO-50-90, water years 1994-96	39
54.	110N62W9BBBD7, CO-51-90, water years 1994-95	40
55.	110N62W9BBCA, CO-52-90, water years 1994-95	40
56.	110N62W9BBCA2, CO-53-90, water years 1994-96	41
57.	110N62W9BBCA3, CO-54-90, water years 1994-95	41
58.	110N62W9BBCB, CO-18-90, water years 1994-96	42
59.	110N62W9BBCB2, CO-39-90, water years 1994-95	42
60.	110N62W9BBCB3, CO-40-90, water years 1994-95	43
61.	110N62W9BBCB4, CO-41-90, water years 1994-96	43
62.	110N62W9BBCB5, CO-42-90, water years 1994-96	44
63.	110N62W9BBCB6, CO-43-90, water years 1994-96	44
64.	110N62W9BBCB7, CO-44-90, water years 1994-96	45
65.	110N62W9BBCB8, CO-17-90, water years 1994-96	45
66.	110N62W9BBCB9, CO-63-90, water years 1994-95	46
67.	110N62W9BBCB10, CO-64-90, water years 1994-95	46
68.	110N62W9BBCB11, CO-62-90, water years 1994-96	47
69.	110N62W9BBCB12, CO-57-90, water years 1994-95	47
70.	110N62W9BBCB13, CO-58-90, water years 1994-95	48
71.	110N62W9BBCB14, CO-56-90, water years 1994-96	48
72.	Hydrograph for recharge well 110N62W9BBCB15, water years 1994-96	49
73-90.	Hydrographs for observation wells:	
73.	110N62W9BBCC, CO-59-90, water years 1994-96	49
74.	110N62W9BBCC2, CO-60-90, water years 1994-95	50
75.	110N62W9BBCC3, CO-61-90, water years 1994-95	50
76.	110N62W9BBCC4, A-05-90, water years 1994-96	51
77.	110N62W9BBCC5, A-06-90, water years 1994-96	51
78.	110N62W9BBCC6, A-07-90, water years 1994-96	52
79.	110N62W9BBCC7, A-08-90, water years 1994-96	52

ILLUSTRATIONS—Continued

80. 110N62W9BBCC8, CO-09-90, water years 1994-96	53
81. 110N62W9BBDD, CO-19-90, water years 1994-96	53
82. 110N62W9BCAB, CO-32-90, water years 1994-96	54
83. 110N62W9BCBC, CO-68-90, water years 1994-96	54
84. 110N62W9BCDD, CO-10-90, water years 1994-96	55
85. 110N62W10CCCC, CO-11-90, water years 1994-95	55
86. 110N62W10DDDD, CO-12-90, water years 1994-96	56
87. 110N62W16BBAA, CO-13-90, water years 1994-96	56
88. 110N62W21AAAA, CO-21-90, water years 1994-96	57
89. 110N62W21BBBB, CO-20-90, water years 1994-96	57
90. 110N62W22AAAA, CO-22-90, water years 1994-96	58
91. Graphs showing injection rate and cumulative volume of injected recharge water for 1994 recharge period	60
92. Graphs showing injection rate and cumulative volume of injected recharge water for 1995 recharge period	61
93. Map showing location of screening water-quality sampling sites	64
94. Map showing location of detailed water-quality sampling sites	66
95. Map showing location of plume-monitoring water-quality sampling sites	67

TABLES

1. Daily precipitation data for the Huron National Weather Service station, October 1993 through September 1995	6
2. Selected site data for South Dakota Department of Environment and Natural Resources observation wells	9
3. Selected site data for Huron Project observation wells, test holes, and recharge well	12
4. Concentrations of inorganic constituents obtained from quality-assurance sample blanks	62
5. Wells used in screening water-quality program	65
6. Sites used in detailed water-quality sampling program	65
7. Sites used in plume-monitoring water-quality sampling program	68
8. Water-quality data obtained from screening samples	70
9. Physical properties and concentrations of inorganic constituents, radioactive nuclides, and total organic carbon obtained from detailed samples	76
10. Concentrations of dicamba, picloram, and chlorophenoxy-acid herbicides obtained from detailed samples	101
11. Concentrations of organochlorine insecticides, gross polychlorinated biphenols (PCB's), and gross polychlorinated naphthalenes (PCN's) obtained from detailed samples	102
12. Concentrations of volatile organic compounds obtained from detailed samples	104
13. Water-quality data obtained from plume-monitoring samples	110

CONVERSION FACTORS AND VERTICAL DATUM

Multiply	By	To obtain
foot	0.3048	meter
mile	1.609	kilometer
inch	25.4	millimeter
inch	2.54	centimeter

Temperature can be converted to degrees Fahrenheit (°F) or degrees Celsius (°C) by the following equations:

$$^{\circ}\text{F} = 9/5 (^{\circ}\text{C}) + 32$$

$$^{\circ}\text{C} = 5/9 (^{\circ}\text{F} - 32)$$

Sea level: In this report, “sea level” refers to the National Geodetic Vertical Datum of 1929--a geodetic datum derived from a general adjustment of the first-order level nets of the United States and Canada, formerly called Sea Level Datum of 1929.

Water year: Water year is the 12-month period, October 1 through September 30, and is designated by the calendar year in which it ends. Thus, the water year ending September 30, 1995, is called the “1995 water year.”

Hydrologic Data for 1994-96 for the Huron Project of the High Plains Ground-Water Demonstration Program

By Janet M. Carter

ABSTRACT

This report presents data on precipitation, water levels, and water quality that have been collected or compiled for water years 1994 through 1996 for the Huron Project of the High Plains Ground-Water Demonstration Program, under the guidance of the Bureau of Reclamation. This is the second report for the project. The first report (Carter, 1995) presented data collected through water year 1993.

The purpose of the Huron Project is to demonstrate the artificial recharge potential of glacial aquifers in eastern South Dakota. High flows from the James River during spring runoff were used as a source of supplemental recharge for the Warren aquifer, which is a buried, glacial aquifer. In 1990, 70 observation wells were installed by the South Dakota Department of Environment and Natural Resources (DENR) specifically for this study, and 15 existing DENR observation wells were incorporated into the study. In 1993, the recharge well was installed. After a trial injection of recharge water in April 1994, continuous injection began in June 1994. Many sites were monitored to obtain information before, during, and after recharging the aquifer. This report presents data that were collected during the three phases of recharge.

Precipitation data are collected at two sites within the study area. A site description and daily precipitation for water years 1994-95 are presented for one precipitation site. Water-level hydrographs are presented for the 85 observation wells and the recharge well. Hydrographs are shown for the period from October 1, 1993,

through November 29, 1995. Recharge water was injected from June 2, 1994, through July 29, 1994, and from June 14, 1995, through September 13, 1995. The cumulative volume of injected water and the injection rates into the aquifer are presented for the periods of recharge.

Water-quality data were collected from screening, detailed, and plume-monitoring sampling programs. Screening water-quality data for six observation wells are presented. These data include primarily field parameters and common ions. The four detailed sampling sites represent the quality of untreated water, treated water, and ground water from the Warren aquifer. Data presented for the detailed sampling program include field parameters, bacteria counts, and concentrations of common ions, solids, nutrients, trace elements, radiometrics, total organic carbon, herbicides, insecticides, and volatile organic compounds. Water-quality data for the plume-monitoring sampling program were collected from 25 sites during injection of recharge water into the Warren aquifer in 1994 and 1995. The data for the plume-monitoring program include primarily field parameters and common ions. Data for quality-assurance samples also are presented.

INTRODUCTION

The Huron Project of the High Plains Ground-Water Demonstration Project was initiated in 1990 as a cooperative effort between South Dakota State University (SDSU), the Bureau of Reclamation, the U.S. Geological Survey (USGS), the U.S. Environmental Protection Agency, the South Dakota Department of

Environment and Natural Resources (DENR), and the city of Huron. The purpose of the study is to demonstrate the artificial recharge potential of glacial aquifers in eastern South Dakota.

The Huron Project is designed to use high flows from the James River during spring runoff as a source of supplemental recharge for the Warren aquifer, which is a buried, glacial aquifer. During the spring runoff period, water is pumped from the James River to the city of Huron's water treatment plant. After treatment, it is piped to the Huron well field and injected into the aquifer using a recharge well (fig. 1). During periods of low flow, the city of Huron can pump water from the aquifer and return it to the water treatment plant using the same pipeline. A trial injection of recharge water was conducted in April 1994; continuous injection began in June 1994.

Numerous observation wells existed in the study area prior to the inception of the Huron Project, and 15 DENR observation wells were incorporated into the study. In 1990, 76 test holes were drilled and observation wells were installed at 70 sites to provide a more comprehensive monitoring network. The recharge well was installed in 1993. Water levels were measured biweekly, beginning in 1991 for the DENR wells and new observation wells and beginning in 1994 for the recharge well.

Recharge water was injected from June 2, 1994, through July 29, 1994, and from June 14, 1995, through September 13, 1995. The cumulative volume of injected water and the injection rates into the aquifer were frequently monitored during the recharge phase.

In 1991, screening and detailed sampling programs were initiated to collect background water-quality data. The screening samples were collected monthly and were analyzed for a limited parameter set. The detailed samples were collected quarterly and were analyzed for an extensive parameter set. In 1994, a plume-sampling program was initiated to monitor the movement of the recharge plume from the recharge well to other wells located in the Huron well field. These samples were collected several times a week when water was being injected into the Warren aquifer during the summers of 1994 and 1995.

The purpose of this report is to present precipitation, water-level, and water-quality data that have been collected or compiled for the Huron Project for water years 1994 through 1996. Specifically, this report contains: (1) precipitation records for one site; (2) hydrographs for 85 observation wells and the

recharge well; (3) graphs showing the cumulative volume of injected water and injection rates for the two periods of recharge during 1994 and 1995; and (4) screening water-quality data for six sites, detailed water-quality data for four sites, and plume-monitoring water-quality data for 25 sites.

Description of Study Area

The study area is located in the James River Basin near Huron, South Dakota, as shown in figure 1. The James River Basin is a north-south trending lowland that separates two coteaus, the Coteau du Missouri and the Coteau des Prairies. Advancement and recession of glaciers during the Wisconsin age of the Pleistocene epoch created the James River Basin (Flint, 1955).

The Huron well field is located 3 miles west of Huron. The city of Huron operates six production wells located in and near the well field (fig. 1), normally from October 1 to April 1. This schedule enables the Huron Project to inject recharge water when the city is not producing water from the well field.

In addition to the city production wells, a stock well is located within the well field (fig. 1). This site was used in the earlier detailed sampling program because it was the only well in the well field that could be sampled prior to the drilling of additional observation wells during 1990. In 1992, the collection of water samples was discontinued at this site (see Carter, 1995, for water-quality data collected at this site).

The recharge site, which is located in the Huron well field, is in a glacial drift region with interbedded till and outwash. The city production wells, stock well, and recharge well are completed in an outwash aquifer, locally known as the Warren aquifer (Schaefer and others, 1990). The Warren aquifer is of Pleistocene age and is described in Steece and Howells (1965) and Howells and Stephens (1968). The Pierre Shale and the Niobrara Formation, two bedrock units of Cretaceous age, underlie the glacial drift in the study area.

Acknowledgments

Many people have assisted with development and implementation of the Huron Project. In particular, Vernon R. Schaefer and Delvin E. DeBoer, the principal project investigators, were largely responsible for

Figure 1. Study area for the Huron Project.

the development and execution of the project. Several graduate students from the Civil Engineering Department at South Dakota State University provided valuable assistance with the collection and analyses of data. The students that collected data presented in this report included Seth Peterson and John Graupman. Herb Scheele and the operators at the Huron Water Treatment Plant provided valuable aid in the collection of water samples from the James River and the treatment plant. The South Dakota Geological Survey drilled the test holes and installed the observation wells for the project.

PRECIPITATION DATA

Precipitation data are collected at two sites in the study area (fig. 2). Precipitation data are collected at an acid-rain station located in the Huron well field as part of the National Atmospheric Deposition Program and National Trends Network. The daily precipitation data for this site have been published annually in Water Resources Data for South Dakota (U.S. Geological Survey, 1987-95). USGS personnel have been responsible for maintenance of the acid-rain station and collection of precipitation data.

The National Weather Service operates the other precipitation station, which is located at the Huron Regional Airport. Daily precipitation data for the Huron weather station, compiled from monthly summaries (U.S. Department of Commerce, 1993-95) for water years 1994 through 1995, are presented in table 1. The period of record presented corresponds to the collection of water-level and water-quality data for the Huron Project presented in this report.

WELL DATA

Prior to the inception of the Huron Project, numerous DENR observation wells existed within the study area. Fifteen of these wells were incorporated into the study. The locations of the DENR observation wells utilized for the study are shown in figure 3; selected site data for these wells are presented in table 2. The two aquifers that supply the DENR observation wells are the Warren and Pleistocene aquifers, with the exception of well BDS-54-78, where the aquifer is unknown (table 2). As previously stated, the Warren aquifer is of Pleistocene age. The Pleistocene aquifer has not been differentiated but is of the same age as the Warren aquifer.

Three methods of station identification are presented in table 2. The first method is the station identification number, which is based on the international system of latitude and longitude. The number contains 15 digits. The first six digits denote the degrees, minutes, and seconds of latitude north of the equator. The next seven digits denote the degrees, minutes, and seconds of longitude west of the prime (Greenwich) meridian. The last two digits are sequential numbers for wells within the same latitude and longitude.

The second identification method presented in table 2 is the local number, which is based on the Federal land-survey system of eastern South Dakota (shown below). The local number consists of the township number followed by "N," range number followed by "W," and section number, followed by a maximum of four uppercase letters that indicate, respectively, the 160-, 40-, 10-, and 2.5-acre tract in which the well is located. These letters are assigned in a counterclockwise direction beginning with "A" in the northeast quarter. A serial number following the last letter is used to distinguish between wells in the same 2.5-acre tract. Thus, well 111N62W32AADD is in the SE¹/₄ of the SE¹/₄ of the NE¹/₄ of section 32 in township 111 north and range 62 west.

Figure 2. Location of precipitation stations within the study area.

Table 1. Daily precipitation data for the Huron National Weather Service station, October 1993 through September 1995

[T, trace; ---, no data]

PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1993 THROUGH SEPTEMBER 1994

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	.00	.00	T	.01	T	.00	T	.13	.21	.00	.29
2	.00	.00	.00	.10	T	.00	.00	.07	T	.00	.00	.68
3	.00	.00	.00	.04	.00	.00	.00	T	.00	.10	.00	.76
4	.00	.05	.00	T	.00	.00	.09	.00	.90	T	.00	T
5	.00	T	.12	.05	.00	T	.00	.01	.99	.00	T	.00
6	.00	.00	.00	T	T	T	.00	.10	.07	1.16	.00	.00
7	.00	T	.00	.00	.04	.00	.00	.00	.01	.24	.02	.00
8	.57	T	.00	.01	.24	T	.08	.00	.03	.05	.00	.00
9	.00	.00	.00	T	.00	.07	.00	.00	.00	.00	.93	.00
10	.00	.00	T	T	.00	.00	.00	.00	.08	.00	.16	.00
11	.00	.00	.00	.00	.05	.00	.00	T	.00	T	.01	.00
12	.00	1.29	.00	T	T	.00	.00	.00	.10	.00	T	T
13	.00	.02	T	.07	.00	.00	.00	.91	.00	.47	.01	.05
14	.00	.00	T	.00	.00	.00	.45	.34	T	.00	.00	T
15	.06	.00	.00	.00	.00	.00	.00	.00	.64	.10	.00	.05
16	T	.00	.06	.04	.00	.00	.00	.00	.28	.00	.00	.00
17	.00	.00	.11	T	.00	T	.00	T	.94	.00	.00	.00
18	.00	.00	T	T	T	.00	T	.00	T	.50	.01	.00
19	.00	.00	T	.05	T	T	.00	.00	.40	.10	.00	.00
20	T	.00	T	.00	.00	.11	.09	.00	T	.00	.00	T
21	.00	.00	.21	.00	T	.00	.00	.12	.00	.00	.00	.09
22	.00	.01	T	.00	.19	.00	.00	.00	.53	.00	T	.00
23	.00	.05	.00	.00	.07	.03	.00	.00	.00	.00	T	.00
24	.00	.23	.11	T	.09	.00	T	T	.00	.00	T	.00
25	.00	.06	T	T	.01	T	.56	.12	.02	T	.00	.00
26	.00	.06	.02	.05	.00	T	1.11	.00	.00	T	.00	.00
27	.00	.01	T	.43	T	.06	T	.00	T	.00	.00	.00
28	.00	.00	.00	.09	T	T	.37	.00	.00	.00	.00	.00
29	T	.00	.02	T	---	T	T	.00	.00	.00	.13	.00
30	.00	.00	.04	T	---	.00	.00	.00	.00	.02	T	.00
31	.00	---	.03	T	---	.00	---	.00	---	.00	.00	---
Total	.63	1.78	.72	.93	.70	.27	2.75	1.67	5.12	2.95	1.27	1.92

Table 1. Daily precipitation data for the Huron National Weather Service station, October 1993 through September 1995—Continued

PRECIPITATION, IN INCHES, WATER YEAR OCTOBER 1994 THROUGH SEPTEMBER 1995

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.02	T	.00	T	.02	.00	.00	.11	.00	.00	.00	.00
2	.70	.00	.00	.01	T	.00	.00	T	.00	.00	.00	.00
3	.03	.00	.00	.00	T	.00	.00	.02	.00	.94	.11	T
4	T	.00	.02	.00	T	.25	T	.00	.03	.09	1.74	.00
5	.00	.00	T	.00	.03	.06	.00	.00	.00	.15	.18	.69
6	.36	.00	.02	T	.04	.08	.00	.32	.00	.00	T	.02
7	.05	.00	.04	.00	.01	T	.26	.01	.88	T	.00	.00
8	.00	.00	.04	T	.00	.00	.23	.94	.10	T	.00	.00
9	.00	.00	.00	.00	.00	.00	.54	1.18	.55	.00	.00	.00
10	.00	.00	.00	T	T	.00	.46	T	.17	.00	.00	.00
11	.00	.00	T	.00	T	.00	.39	.00	.00	.00	T	.09
12	.00	.02	.00	.18	.00	.00	.11	.49	.00	T	.00	T
13	.00	T	T	.00	T	.00	.00	.44	.00	.00	.32	.00
14	.00	.00	.44	T	.07	.00	.00	.00	.00	.00	.00	.00
15	.23	.00	T	T	.03	.00	.36	.00	.08	.03	.00	.30
16	.22	.00	.00	.01	T	.00	.00	.05	.00	.00	.00	.00
17	.41	T	.00	.26	.00	.15	.16	.00	.00	.00	.00	.00
18	.00	.04	.00	.00	.00	.03	1.82	.00	.00	.00	T	.21
19	.00	.00	.00	T	T	.00	.00	.00	.00	.36	.00	.00
20	.00	.15	.00	T	.00	T	.01	.00	.00	.00	.00	.00
21	.00	.00	.00	T	.00	.00	T	T	T	T	.00	.08
22	T	.00	.00	T	.00	.17	.00	.31	.32	.14	.00	.00
23	.00	.00	.00	.01	T	.00	.31	.00	T	.04	.00	.00
24	.00	.00	.00	T	.00	.00	.00	.00	.00	.00	T	.00
25	.00	.00	.00	.01	.00	1.06	T	T	.00	.17	.30	.00
26	.00	.05	.00	.00	T	1.13	T	.49	.00	.00	.00	.00
27	.00	.33	.00	.00	.03	.29	.00	2.00	.07	.16	.00	.00
28	T	.01	.00	T	T	.03	.32	.04	.00	.00	T	.00
29	.00	.01	.01	T	---	T	.11	.00	.00	.00	.54	.43
30	.00	.00	T	.00	---	T	.23	.00	.00	.33	.00	1.07
31	.00	---	T	T	---	.00	---	.00	---	.46	.00	---
Total	2.02	.61	.57	.48	.23	3.25	5.31	6.40	2.20	2.87	3.19	2.89

Base from U.S. Geological Survey 1:100,000,
Huron planimetric map, 1985
City limit from Office of the City Engineer
map, Huron, 1990

0 2 4 MILES
0 2 4 KILOMETERS

EXPLANATION

HURON WELL FIELD

76K

OBSERVATION WELL--Number and letter or
number (54-78) correspond to the last
number of the other identifier number in table 2

Figure 3. Location of selected South Dakota Department of Environment and Natural Resources observation wells within the study area.

Table 2. Selected site data for South Dakota Department of Environment and Natural Resources observation wells

[Other identifier: BD or BDS, Beadle County. All values in feet below or above (-) land surface. --, no data]

Station identification number	USGS local number	Other identifier	Aquifer	Depth drilled (feet)	Top of casing (feet)	Bottom of casing (feet)	Top of screen (feet)	Bottom of screen (feet)
441935098114101	110N61W19AAAA	BD-60H	Warren	--	--	--	--	--
442119098200701	110N62W 7BBBB	BD-76I	Pleistocene	90.0	-1.30	58.70	58.70	63.70
442033098174001	110N62W 9CCCC	BD-76K	Warren	110	-1.50	88.50	88.50	93.50
441941098170301	110N62W16DCCC	BD-60F	Warren	92.0	-0.50	80.00	--	--
442027098200701	110N62W18BBBB	BDS-54-78	--	40.0	-2.50	37.00	17.00	37.00
441935098185702	110N62W19AAAA2	BD-82A	Warren	--	--	--	--	--
441757098135901	110N62W25CCCC	BD-76L	Pleistocene	90.0	-0.20	68.80	68.80	73.80
442254098174501	111N62W32AADD	BD-79C	Warren	--	--	--	--	--
442250098174401	111N62W32ADAA	BD-60D	Pleistocene	130	-2.00	63.00	--	--
442638098223301	111N63W 2CCCC	BD-60A	Pleistocene	100	-0.98	58.00	--	--
442632098250001	111N63W 9BBBB	BD-76C	Pleistocene	120	-2.39	98.20	98.20	103.20
442633098201101	111N63W12AAAA	BD-79A	Warren	--	--	--	--	--
442451098151501	111N63W14CCCC	BD-79B	Warren	--	--	--	--	--
442402098201101	111N63W24DDDD	BD-60C	Pleistocene	125	-2.00	64.00	--	--
442816098212001	112N63W36BBBB	BD-76B	Pleistocene	90.0	-2.09	57.80	57.80	62.80

The third identification method is the "other identifier," which was assigned by DENR (table 2). This name denotes the county in which the well is located followed by the year and sequence in which it was drilled.

In 1990, the South Dakota Geological Survey (SDGS) drilled 76 test holes within the study area. Observation wells subsequently were installed at 70 of these sites. The recharge well was completed in 1993. The locations of the observation wells, test holes, and recharge well are shown in figure 4, and selected site data for the wells and test holes are presented in table 3.

The wells and test holes in table 3 are identified by the 15-digit station identification number based on their latitudes and longitudes, the USGS local number based on the Federal land-survey system, and the other identifier, all assigned by the same methods previously described. The other identifier (table 3) was designated by SDGS and denotes the drilling technique (CO: combination rig; A: auger rig) followed by the sequence and year in which it was drilled.

The observation wells and test holes were drilled with either a combination rotary or an auger rig. All well-drilling and completion materials were provided by SDGS. The eight wells that were constructed with

an auger were drilled into the surficial till deposits and do not penetrate the Warren aquifer. The other 68 wells were constructed using hydraulic rotary techniques. Of these wells, 8 were completed in the till, 54 were completed in the Warren aquifer, and 6 were not completed because of drilling problems.

All completed wells have 2-inch PVC casing and screen. The wells were gravel packed with washed Platte River sand from Grand Island, Nebraska, and were sealed with bentonite to approximately 20 feet below land surface and with neat cement from the top of the bentonite to the land surface. The wells were developed using compressed air, after which 5-foot-tall metal protectors were installed over the top of each well.

Cuttings from the wells and test holes were collected at 5-foot intervals. The cuttings and information provided by the driller were used to prepare geologic logs of each of the wells and test holes, except for those completed in the till. Gamma logging was performed on most of the wells by USGS. The gamma logs are available for examination at the USGS office in Huron, South Dakota. The geologic logs of the observation wells and test holes are presented in Carter (1995).

Base from U.S. Geological Survey 1:100,000,
Huron planimetric map, 1985
City limit from Office of the City Engineer
map, Huron, 1990

0 2 4 MILES
0 2 4 KILOMETERS

EXPLANATION

- HURON WELL FIELD
- ²⁴ HURON PROJECT OBSERVATION WELL--Number corresponds to the middle number of the other identifier number in table 3
- ^{A1} HURON PROJECT OBSERVATION WELL--Letter denotes auger wells and number corresponds to the middle number of the other identifier number of the auger wells in table 3
- ² HURON PROJECT TEST HOLE--Number corresponds to the middle number of the other identifier number in table 3
- RECHARGE WELL

Figure 4. Location of Huron Project observation wells, test holes, and recharge well within the study area.

Figure 4. Location of Huron Project observation wells, test holes, and recharge well within the study area.--Continued

Table 3. Selected site data for Huron Project observation wells, test holes, and recharge well

[Other identifier: CO, combination rig; A, auger rig. All values given in feet below or above (-) land surface. --, no data]

Station identification number	USGS local number	Other identifier	Aquifer	Depth drilled (feet)	Top of casing (feet)	Bottom of casing (feet)	Top of screen (feet)	Bottom of screen (feet)
442149098151601	110N62W 2BCCC	CO-28-90	Test hole	21	--	--	--	--
442149098151602	110N62W 2BCCC2	CO-29-90	Warren	87	-2.55	86	77	82
442123098155301	110N62W 3DCCC	CO-26-90	Test hole	117	--	--	--	--
442123098155302	110N62W 3DCCC2	CO-27-90	Warren	77	-2.66	76.5	67.5	72.5
442204098163101	110N62W 4AADA	CO-24-90	Warren	77	-2.46	72	62	67
442213098174301	110N62W 4BBBB	CO-04-90	Warren	107	-2.71	107	70	75
442123098171501	110N62W 4CDDD	CO-15-90	Warren	97	-2.69	87	87	92
442123098163101	110N62W 4DDDD	CO-25-90	Warren	47	-2.55	46	36	41
442150098174401	110N62W 5ADDD	CO-05-90	Warren	90	-2.40	81	81	86
442213098185601	110N62W 5BBBB	CO-02-90	Test hole	85	--	--	--	--
442213098185602	110N62W 5BBBB2	CO-03-90	Warren	100	-2.63	100	92	97
442128098185401	110N62W 5CCCB	CO-30-90	Test hole	47	--	--	--	--
442128098185402	110N62W 5CCCB2	CO-31-90	Warren	107	-2.63	107	95	100
442124098181601	110N62W 5DCCC	CO-14-90	Warren	86.5	-2.96	76.5	76.5	81.5
442213098200701	110N62W 6BBBB	CO-23-90	Warren	87	-2.41	86.5	76.5	81.5
442002098185301	110N62W 8CCCC	CO-01-90	Warren	105	-2.32	105	96	101
442122098172002	110N62W 9BABB	CO-06-90	Warren	77	-2.71	70	70	75
442118098173101	110N62W 9BBAC	CO-55-90	Warren	73	-2.39	70.5	70.5	73
442119098173601	110N62W 9BBBA	CO-65-90	Warren	87	-2.62	82.5	82.5	85
442119098173602	110N62W 9BBBA2	CO-66-90	Warren	67	-2.35	64.5	64.5	67.0
442119098173603	110N62W 9BBBA3	CO-67-90	Warren	47	-2.34	44.5	44.5	47
442119098173604	110N62W 9BBBA4	A-01-90	Till	20.55	-2.78	18.05	18.05	20.55
442119098173605	110N62W 9BBBA5	A-02-90	Till	12.5	-2.63	10	10	12.5
442119098173606	110N62W 9BBBA6	A-03-90	Till	38	-2.32	35.5	35.5	38
442119098173607	110N62W 9BBBA7	A-04-90	Till	28	-2.49	25.5	25.5	28
442123098174201	110N62W 9BBBB	CO-07-90	Test hole	127	--	--	--	--
442123098174002	110N62W 9BBBB2	CO-08-90	Warren	87	-2.86	79	79	84
442118098174001	110N62W 9BBBC	CO-16-90	Warren	87	-3.11	87	77	82
442118098174002	110N62W 9BBBC2	CO-33-90	Warren	67	-2.60	64.5	64.5	67
442118098174003	110N62W 9BBBC3	CO-34-90	Warren	47	-2.91	44.5	44.5	47
442118098174004	110N62W 9BBBC4	CO-35-90	Till	37	-2.90	34	34	36.5
442118098174005	110N62W 9BBBC5	CO-36-90	Till	12	-3.15	9.5	9.5	12.0
442118098174006	110N62W 9BBBC6	CO-37-90	Till	20.25	-3.26	17.75	17.75	20.25
442118098174007	110N62W 9BBBC7	CO-38-90	Till	26.5	-2.99	24	24	26.5
442117098173601	110N62W 9BBBD	CO-45-90	Warren	82	-2.39	77	77	82
442117098173602	110N62W 9BBBD2	CO-46-90	Test hole	39	--	--	--	--
442117098173603	110N62W 9BBBD3	CO-47-90	Warren	73	-2.31	70	70.5	73
442117098173604	110N62W 9BBBD4	CO-48-90	Warren	52	-2.21	49.5	49.5	52
442117098173501	110N62W 9BBBD5	CO-49-90	Warren	82	-3.53	79.5	79.5	82
442117098173502	110N62W 9BBBD6	CO-50-90	Warren	67	-3.06	64.5	64.5	67

Table 3. Selected site data for Huron Project observation wells, test holes, and recharge well—Continued

Station identification number	USGS local number	Other identifier	Aquifer	Depth drilled (feet)	Top of casing (feet)	Bottom of casing (feet)	Top of screen (feet)	Bottom of screen (feet)
442117098173503	110N62W 9BBBD7	CO-51-90	Warren	47	-2.98	44.5	44.5	47
442115098173501	110N62W 9BBCA	CO-52-90	Warren	72	-2.90	60	60	62.5
442115098173502	110N62W 9BBCA2	CO-53-90	Warren	74	-2.34	71	71.5	74
442115098173503	110N62W 9BBCA3	CO-54-90	Warren	47	-2.55	44.5	44.5	47
442111098173801	110N62W 9BBCB	CO-18-90	Warren	81	-2.71	51	46	51
442117098174002	110N62W 9BBCB2	CO-39-90	Warren	56.5	-3.32	54	54	56.5
442117098174003	110N62W 9BBCB3	CO-40-90	Warren	67	-2.69	63.25	63.25	65.75
442117098174004	110N62W 9BBCB4	CO-41-90	Till	47	-2.67	44.5	44.5	47
442117098174005	110N62W 9BBCB5	CO-42-90	Till	27	-2.59	24.5	24.5	27
442117098174006	110N62W 9BBCB6	CO-43-90	Till	12	-3.32	9.5	9.5	12
442117098174007	110N62W 9BBCB7	CO-44-90	Till	22	-2.91	19.5	19.5	22
442117098174001	110N62W 9BBCB8	CO-17-90	Warren	84	-2.81	70	70	75
442115098174202	110N62W 9BBCB9	CO-63-90	Warren	67	-2.81	64.5	64.5	67
442115098174203	110N62W 9BBCB10	CO-64-90	Warren	47	-2.44	44.5	44.5	47
442115098174201	110N62W 9BBCB11	CO-62-90	Warren	87	-3.11	82	82	87
442115098173902	110N62W 9BBCB12	CO-57-90	Warren	60	-2.60	57.5	57.5	60
442115098173903	110N62W 9BBCB13	CO-58-90	Warren	47	-2.58	40.35	40.35	42.85
442115098173901	110N62W 9BBCB14	CO-56-90	Warren	81	-2.59	75.5	75.5	78
442117098174008	110N62W 9BBCB15	Recharge well	Warren	80	-1.56	60	60	80
442113098174201	110N62W 9BBCC	CO-59-90	Warren	81	-2.85	78	78.5	81
442113098174202	110N62W 9BBCC2	CO-60-90	Warren	67	-2.79	64.5	64.5	67
442113098174203	110N62W 9BBCC3	CO-61-90	Warren	47	-2.60	44.5	44.5	47
442113098174204	110N62W 9BBCC4	A-05-90	Till	23	-2.27	20	20.5	23
442113098174205	110N62W 9BBCC5	A-06-90	Till	13	-3.26	8.5	8.5	11
442113098174206	110N62W 9BBCC6	A-07-90	Till	43	-2.28	37.5	37.5	40
442113098174207	110N62W 9BBCC7	A-08-90	Till	33	-2.38	30.5	30.5	33
442110098174201	110N62W 9BBCC8	CO-09-90	Warren	73	-2.47	65	65	70
442110098172501	110N62W 9BBDD	CO-19-90	Warren	77	-2.57	72	72	77
442108098173101	110N62W 9BCAB	CO-32-90	Warren	87	-2.80	87	79	84
442105098174001	110N62W 9BCBC	CO-68-90	Warren	94	-2.83	94	85	90
442057098172501	110N62W 9BCDD	CO-10-90	Warren	77	-2.70	59	59	64
442002098162801	110N62W10CCCC	CO-11-90	Warren	71	-2.83	71	62	67
442031098151801	110N62W10DDDD	CO-12-90	Warren	77	-2.68	67	67	72
442032098172501	110N62W16BBAA	CO-13-90	Warren	81	-2.96	68	68	73
441937098163001	110N62W21AAAA	CO-21-90	Warren	77	-2.43	71.5	71.5	76.5
441937098174001	110N62W21BBBB	CO-20-90	Warren	92.5	-2.54	92.5	82.5	87.5
441937098151701	110N62W22AAAA	CO-22-90	Warren	57	-3.06	56	46	51

WATER-LEVEL DATA

Water-level data are presented for 15 DENR observation wells, 70 Huron Project observation wells, and the recharge well within the study area. The locations of the wells are shown in figure 3 (DENR wells) and figure 4 (Huron Project wells). USGS personnel have been responsible for the maintenance of both the DENR and Huron Project observation wells and for the collection and compilation of the water-level records.

The following section of this report presents a site description and hydrograph for each observation well. Hydrographs for DENR observation wells are presented in figures 5-19. Hydrographs for Huron Project observation wells and the recharge well are presented in figures 20-90. The period of record shown for both the DENR and Huron Project observation wells is from October 1, 1993, through November 29, 1995. Hydrographs for the period from the earliest available record through September 30, 1993, are presented in Carter (1995). The existing DENR wells and Huron Project wells were measured bimonthly beginning in 1990, and monthly beginning in 1994. A negative water level indicates a water level above land surface. The data used to generate the hydrographs are available in the USGS's "Ground Water Site Inventory" (GWSI) data base.

Water levels within wells can be affected by several factors. Pumping of nearby wells can cause short-term and long-term declines in water levels. The observation wells completed in the Warren aquifer that are located in or near the well field are affected by the annual pumping of the city production wells from October 1 to April 1. These wells also were affected by the four 3-day aquifer tests conducted at the recharge well during the spring and fall of 1994 and 1995 and by the injection of recharge water during the summers of 1994 and 1995. The water-level decline for these wells during the production period and aquifer tests can be seen on their corresponding hydrographs. The water-level increase for these wells during the injection period also can be seen on their corresponding hydrographs. Other wells in the study area can be affected by pumping if they are located near irrigation wells. Short-term changes in water levels in artesian aquifers also can be caused by fluctuations in barometric pressure. Long-term increases and decreases in water levels generally correspond to changes in the recharge and discharge rates of the aquifer. Generally, increases in water levels correspond to periods of wet climatic conditions when aquifer recharge exceeds discharge. Long-term declines in water levels generally reflect periods of drought or increases in ground-water consumption when aquifer discharge exceeds recharge.

LOCAL WELL NUMBER: 110N61W19AAAA

SITE ID: 441935098114101

OTHER IDENTIFIER: BD-60H

ALTITUDE OF LAND SURFACE: 1,239 feet

MEASURING POINT: 2.00 feet above land surface

AQUIFER: Warren

PERIOD OF RECORD: May 24, 1982, to November 29, 1995

EXTREMES FOR PERIOD SHOWN: Highest, 2.88 feet, April 27, 1995; lowest, 13.68 feet, November 29, 1994.

EXTREMES FOR PERIOD OF RECORD: Highest, 2.88 feet, April 27, 1995; lowest, 13.68 feet, November 29, 1994.

Figure 5. Hydrograph for observation well 110N61W19AAAA, BD-60H, water years 1994-96.

LOCAL WELL NUMBER: 110N62W7BBBB

SITE ID: 442119098200701

OTHER IDENTIFIER: BD-76I

ALTITUDE OF LAND SURFACE: 1,326 feet

MEASURING POINT: 1.30 feet above land surface

AQUIFER: Pleistocene Series

PERIOD OF RECORD: December 1, 1976, to November 29, 1995

EXTREMES FOR PERIOD SHOWN: Highest, 35.37 feet, November 29, 1995; lowest, 50.10 feet, October 29, 1993.

EXTREMES FOR PERIOD OF RECORD: Highest, 35.37 feet, November 29, 1995; lowest, 51.83 feet, April 1, 1991.

Figure 6. Hydrograph for observation well 110N62W7BBBB, BD-76I, water years 1994-96.

LOCAL WELL NUMBER: 110N62W9CCCC

SITE ID: 442033098174001

OTHER IDENTIFIER: BD-76K

ALTITUDE OF LAND SURFACE: 1,300 feet

MEASURING POINT: 1.50 feet above land surface

AQUIFER: Warren

PERIOD OF RECORD: October 8, 1976, to November 29, 1995

EXTREMES FOR PERIOD SHOWN: Highest, 20.71 feet, August 29, 1995; lowest, 53.42 feet, March 11, 1994.

EXTREMES FOR PERIOD OF RECORD: Highest, 20.71 feet, August 29, 1995; lowest, 59.52 feet, April 2, 1990.

Figure 7. Hydrograph for observation well 110N62W9CCCC, BD-76K, water years 1994-96.

LOCAL WELL NUMBER: 110N62W16DCCC

SITE ID: 441941098170301

OTHER IDENTIFIER: BD-60F

ALTITUDE OF LAND SURFACE: 1,311.9 feet

MEASURING POINT: 1.50 feet above land surface

AQUIFER: Warren

PERIOD OF RECORD: June 23, 1960, to November 29, 1995

EXTREMES FOR PERIOD SHOWN: Highest, 26.42 feet, September 29, 1995; lowest, 41.41 feet, March 28, 1994.

EXTREMES FOR PERIOD OF RECORD: Highest, 18.60 feet, March 4, 1963; lowest, 52.53 feet, March 21, 1990.

Figure 8. Hydrograph for observation well 110N62W16DCCC, BD-60F, water years 1994-96.

LOCAL WELL NUMBER: 110N62W18BBBB
SITE ID: 442027098200701
OTHER IDENTIFIER: BDS-54-78
ALTITUDE OF LAND SURFACE: 1,305 feet
MEASURING POINT: 2.50 feet above land surface
AQUIFER: Unknown
PERIOD OF RECORD: March 21, 1990, to November 29, 1995
EXTREMES FOR PERIOD SHOWN: Highest, 0.14 feet, March 11, 1994; lowest, 3.91 feet, August 29, 1995.
EXTREMES FOR PERIOD OF RECORD: Highest, -0.22 feet, June 6, 1991; lowest, 6.57 feet, February 20, 1991.

Figure 9. Hydrograph for observation well 110N62W18BBBB, BDS-54-78, water years 1994-96.

LOCAL WELL NUMBER: 110N62W19AAAA2
SITE ID: 441935098185702
OTHER IDENTIFIER: BD-82A
ALTITUDE OF LAND SURFACE: 1,305 feet
MEASURING POINT: 2.20 feet above land surface
AQUIFER: Warren
PERIOD OF RECORD: October 8, 1976, to November 29, 1995
EXTREMES FOR PERIOD SHOWN: Highest, 16.47 feet, September 29, 1995; lowest, 32.24 feet, March 11, 1994.
EXTREMES FOR PERIOD OF RECORD: Highest, 16.47, September 29, 1995; lowest, 53.3, August 15, 1980.

Figure 10. Hydrograph for observation well 110N62W19AAAA2, BD-82A, water years 1994-96.

LOCAL WELL NUMBER: 110N62W25CCCC

SITE ID: 441757098135901

OTHER IDENTIFIER: BD-76L

ALTITUDE OF LAND SURFACE: 1,305 feet

MEASURING POINT: 0.20 foot above land surface

AQUIFER: Pleistocene Series

PERIOD OF RECORD: December 1, 1976, to November 29, 1995

EXTREMES FOR PERIOD SHOWN: Highest, 23.74 feet, November 29, 1995; lowest, 39.75 feet, August 25, 1994.

EXTREMES FOR PERIOD OF RECORD: Highest, 23.74 feet, November 29, 1995; lowest, 46.3 feet, July 28, 1981.

Figure 11. Hydrograph for observation well 110N62W25CCCC, BD-76L, water years 1994-96.

LOCAL WELL NUMBER: 111N62W32AADD

SITE ID: 452254097174501

OTHER IDENTIFIER: BD-79C

ALTITUDE OF LAND SURFACE: 1,309 feet

MEASURING POINT: 2.90 feet above land surface

AQUIFER: Warren

PERIOD OF RECORD: June 26, 1979, to November 29, 1995

EXTREMES FOR PERIOD SHOWN: Highest, 14.53 feet, September 11, 1995; lowest, 26.10 feet, March 11, 1994.

EXTREMES FOR PERIOD OF RECORD: Highest, 14.53 feet, September 11, 1995; lowest, 48.00 feet, August 18, 1988, September 22, 1989.

Figure 12. Hydrograph for observation well 111N62W32AADD, BD-79C, water years 1994-96.

LOCAL WELL NUMBER: 111N62W32ADAA

SITE ID: 442250098174401

OTHER IDENTIFIER: BD-60D

ALTITUDE OF LAND SURFACE: 1,304.51 feet

MEASURING POINT: 2.00 feet above land surface

AQUIFER: Pleistocene Series

PERIOD OF RECORD: June 21, 1960, to November 29, 1995

EXTREMES FOR PERIOD SHOWN: Highest, 0.58 feet, May 11, 1995; lowest, 8.21 feet, February 24, 1995.

EXTREMES FOR PERIOD OF RECORD: Highest, 0.58 feet, May 11, 1995; lowest, 42.40 feet, August 23, 1976.

Figure 13. Hydrograph for observation well 111N62W32ADAA, BD-60D, water years 1994-96.

LOCAL WELL NUMBER: 111N63W2CCCC

SITE ID: 442638098223301

OTHER IDENTIFIER: BD-60A

ALTITUDE OF LAND SURFACE: 1,327.86 feet

MEASURING POINT: 0.98 foot above land surface

AQUIFER: Pleistocene Series

PERIOD OF RECORD: June 16, 1960, to November 29, 1995

EXTREMES FOR PERIOD SHOWN: Highest, 19.99 feet, November 29, 1995; lowest, 29.29 feet, September 11, 1995.

EXTREMES FOR PERIOD OF RECORD: Highest, 12.20 feet, October 29, 1962; lowest, 43.50 feet, July 22, 1981.

Figure 14. Hydrograph for observation well 111N63W2CCCC, BD-60A, water years 1994-96.

LOCAL WELL NUMBER: 111N63W9BBBB

SITE ID: 442632098250001

OTHER IDENTIFIER: BD-76C

ALTITUDE OF LAND SURFACE: 1,342 feet

MEASURING POINT: 2.39 feet above land surface

AQUIFER: Pleistocene Series

PERIOD OF RECORD: December 1, 1976, to November 29, 1995

EXTREMES FOR PERIOD SHOWN: Highest, 27.07 feet, November 29, 1995; lowest, 39.73 feet, August 25, 1994.

EXTREMES FOR PERIOD OF RECORD: Highest, 27.07 feet, November 29, 1995; lowest, 53.70 feet, August 17, 1989.

Figure 15. Hydrograph for observation well 111N63W9BBBB, BD-76C, water years 1994-96.

LOCAL WELL NUMBER: 111N63W12AAAA

SITE ID: 442633098201101

OTHER IDENTIFIER: BD-79A

ALTITUDE OF LAND SURFACE: 1,316 feet

MEASURING POINT: 3.15 feet above land surface

AQUIFER: Warren

PERIOD OF RECORD: June 4, 1979, to November 29, 1995

EXTREMES FOR PERIOD SHOWN: Highest, 13.24 feet, November 29, 1995; lowest, 19.04 feet, October 6, 1993.

EXTREMES FOR PERIOD OF RECORD: Highest, 13.24 feet, November 29, 1995; lowest, 41.40 feet, August 24, 1981.

Figure 16. Hydrograph for observation well 111N63W12AAAA, BD-79A, water years 1994-96.

LOCAL WELL NUMBER: 111N63W14CCCC
 SITE ID: 442451098151501
 OTHER IDENTIFIER: BD-79B
 ALTITUDE OF LAND SURFACE: 1,322 feet
 MEASURING POINT: 2.66 feet above land surface
 AQUIFER: Warren

PERIOD OF RECORD: June 5, 1979, to November 29, 1995

EXTREMES FOR PERIOD SHOWN: Highest, 16.52 feet, November 29, 1995; lowest, 24.12 feet, August 25, 1994.

EXTREMES FOR PERIOD OF RECORD: Highest, 16.52 feet, November 29, 1995; lowest, 46.40 feet, August 17, 1989.

Figure 17. Hydrograph for observation well 111N63W14CCCC, BD-79B, water years 1994-96.

LOCAL WELL NUMBER: 111N63W24DDDD
 SITE ID: 442402098201101
 OTHER IDENTIFIER: BD-60C
 ALTITUDE OF LAND SURFACE: 1,312.24 feet
 MEASURING POINT: 2.00 feet above land surface
 AQUIFER: Pleistocene Series

PERIOD OF RECORD: June 20, 1960, to November 29, 1995

EXTREMES FOR PERIOD SHOWN: Highest, 17.18 feet, November 29, 1995; lowest, 25.11 feet, March 28, 1994.

EXTREMES FOR PERIOD OF RECORD: Highest, 14.60 feet, March 4, 1963; lowest, 47.70 feet, July 27, 1981.

Figure 18. Hydrograph for observation well 111N63W24DDDD, BD-60C, water years 1994-96.

LOCAL WELL NUMBER: 112N63W36BBBB

SITE ID: 442816098212001

OTHER IDENTIFIER: BD-76B

ALTITUDE OF LAND SURFACE: 1,308 feet

MEASURING POINT: 2.09 feet above land surface

AQUIFER: Pleistocene Series

PERIOD OF RECORD: October 22, 1976, to November 29, 1995

EXTREMES FOR PERIOD SHOWN: Highest, 7.46 feet, November 29, 1995; lowest, 11.66 feet, October 6, 1993.

EXTREMES FOR PERIOD OF RECORD: Highest, 7.46 feet, November 29, 1995; lowest, 22.40 feet, September 15, 1981.

Figure 19. Hydrograph for observation well 112N63W36BBBB, BD-76B, water years 1994-96.

LOCAL WELL NUMBER: 110N62W2BCCC2
SITE IDENTIFIER: 442149098151602
OTHER IDENTIFIER: CO-29-90
ALTITUDE OF LAND SURFACE: 1,284.20 feet
MEASURING POINT: 2.55 feet above land surface
AQUIFER: Warren
PERIOD OF RECORD: November 6, 1990, to November 29, 1995
EXTREMES FOR PERIOD SHOWN: Highest, 3.87 feet, June 21, 1995; lowest, 7.55 feet, February 27, 1995, March 9, 1995.
EXTREMES FOR PERIOD OF RECORD: Highest, 3.87 feet, June 21, 1995; lowest, 11.81 feet, April 15, 1991.

Figure 20. Hydrograph for observation well 110N62W2BCCC2, CO-29-90, water years 1994-96.

LOCAL WELL NUMBER: 110N62W3DCCC2
SITE IDENTIFIER: 442123098155302
OTHER IDENTIFIER: CO-27-90
ALTITUDE OF LAND SURFACE: 1,287.70 feet
MEASURING POINT: 2.66 feet above land surface
AQUIFER: Warren
PERIOD OF RECORD: November 6, 1990, to November 29, 1995
EXTREMES FOR PERIOD SHOWN: Highest, 3.16 feet, November 29, 1995; lowest, 5.76 feet, February 27, 1995.
EXTREMES FOR PERIOD OF RECORD: Highest, 3.16 feet, November 29, 1995; lowest, 13.08 feet, July 9, 1991.

Figure 21. Hydrograph for observation well 110N62W3DCCC2, CO-27-90, water years 1994-96.

LOCAL WELL NUMBER: 110N62W4AADA

SITE IDENTIFIER: 442204098163101

OTHER IDENTIFIER: CO-24-90

ALTITUDE OF LAND SURFACE: 1,289.94 feet

MEASURING POINT: 2.46 feet above land surface

AQUIFER: Warren

PERIOD OF RECORD: November 6, 1990, to November 29, 1995

EXTREMES FOR PERIOD SHOWN: Highest, 2.47 feet, November 29, 1995; lowest, 6.21 feet, October 6, 1993.

EXTREMES FOR PERIOD OF RECORD: Highest, 2.47 feet, November 29, 1995; lowest, 13.18 feet, November 6, 1990.

Figure 22. Hydrograph for observation well 110N62W4AADA, CO-24-90, water years 1994-96.

LOCAL WELL NUMBER: 110N62W4BBBB

SITE IDENTIFIER: 442213098174301

OTHER IDENTIFIER: CO-04-90

ALTITUDE OF LAND SURFACE: 1,301.84 feet

MEASURING POINT: 2.71 feet above land surface

AQUIFER: Warren

PERIOD OF RECORD: August 6, 1990, to November 29, 1995

EXTREMES FOR PERIOD SHOWN: Highest, 10.05 feet, September 11, 1995; lowest, 24.06 feet, March 11, 1994.

EXTREMES FOR PERIOD OF RECORD: Highest, 10.05 feet, September 11, 1995; lowest, 35.64 feet, August 15, 1990.

Figure 23. Hydrograph for observation well 110N62W4BBBB, CO-04-90, water years 1994-96.

LOCAL WELL NUMBER: 110N62W4CDDD
 SITE IDENTIFIER: 442123098171501
 OTHER IDENTIFIER: CO-15-90
 ALTITUDE OF LAND SURFACE: 1,298.64 feet
 MEASURING POINT: 2.69 feet above land surface
 AQUIFER: Warren

PERIOD OF RECORD: August 15, 1990, to November 29, 1995

EXTREMES FOR PERIOD SHOWN: Highest, 8.17 feet, September 11, 1995; lowest, 26.11 feet, March 7, 1994.

EXTREMES FOR PERIOD OF RECORD: Highest, 8.17 feet, September 11, 1995; lowest, 36.35 feet, November 21, 1990.

Figure 24. Hydrograph for observation well 110N62W4CDDD, CO-15-90, water years 1994-96.

LOCAL WELL NUMBER: 110N62W4DDDD
 SITE IDENTIFIER: 442123098163101
 OTHER IDENTIFIER: CO-25-90
 ALTITUDE OF LAND SURFACE: 1,293.20 feet
 MEASURING POINT: 2.55 feet above land surface
 AQUIFER: Warren

PERIOD OF RECORD: November 6, 1990, to November 29, 1995

EXTREMES FOR PERIOD SHOWN: Highest, 0.01 feet, May 12, 1995; lowest, 6.59 feet, January 20, 1995.

EXTREMES FOR PERIOD OF RECORD: Highest, 0.01 feet, May 12, 1995; lowest, 16.29 feet, April 15, 1991.

Figure 25. Hydrograph for observation well 110N62W4DDDD, CO-25-90, water years 1994-96.

LOCAL WELL NUMBER: 110N62W5ADDD

SITE IDENTIFIER: 442150098174401

OTHER IDENTIFIER: CO-05-90

ALTITUDE OF LAND SURFACE: 1,299.75 feet

MEASURING POINT: 2.40 feet above land surface

AQUIFER: Warren

PERIOD OF RECORD: August 6, 1990, to November 29, 1995

EXTREMES FOR PERIOD SHOWN: Highest, 8.39 feet, September 11, 1995; lowest, 23.65 feet, March 7, 1994.

EXTREMES FOR PERIOD OF RECORD: Highest, 8.39 feet, September 11, 1995; lowest, 34.51 feet, September 27, 1990.

Figure 26. Hydrograph for observation well 110N62W5ADDD, CO-05-90, water years 1994-96.

LOCAL WELL NUMBER: 110N62W5BBBB2

SITE IDENTIFIER: 442213098185602

OTHER IDENTIFIER: CO-03-90

ALTITUDE OF LAND SURFACE: 1,308.40 feet

MEASURING POINT: 2.63 feet above land surface

AQUIFER: Warren

PERIOD OF RECORD: August 6, 1990, to November 29, 1995

EXTREMES FOR PERIOD SHOWN: Highest, 16.16 feet, September 11, 1995; lowest, 28.36 feet, March 11, 1994.

EXTREMES FOR PERIOD OF RECORD: Highest, 16.16 feet, September 11, 1995; lowest, 40.59 feet, September 27, 1990.

Figure 27. Hydrograph for observation well 110N62W5BBBB2, CO-03-90, water years 1994-96.

LOCAL WELL NUMBER: 110N62W5CCCB2
SITE IDENTIFIER: 442128098185402
OTHER IDENTIFIER: CO-31-90
ALTITUDE OF LAND SURFACE: 1,310.81 feet
MEASURING POINT: 2.63 feet above land surface
AQUIFER: Warren

PERIOD OF RECORD: November 5, 1990, to November 29, 1995

EXTREMES FOR PERIOD SHOWN: Highest, 20.07 feet, September 11, 1995; lowest, 36.10 feet, March 28, 1994.

EXTREMES FOR PERIOD OF RECORD: Highest, 20.07 feet, September 11, 1995; lowest, 45.40 feet, December 26, 1990.

Figure 28. Hydrograph for observation well 110N62W5CCCB2, CO-31-90, water years 1994-96.

LOCAL WELL NUMBER: 110N62W5DCCC
SITE IDENTIFIER: 442124098181601
OTHER IDENTIFIER: CO-14-90
ALTITUDE OF LAND SURFACE: 1,313.83 feet
MEASURING POINT: 2.96 feet above land surface
AQUIFER: Warren

PERIOD OF RECORD: August 15, 1990, to November 29, 1995

EXTREMES FOR PERIOD SHOWN: Highest, 23.12 feet, September 11, 1995; lowest, 39.62 feet, March 7, 1994.

EXTREMES FOR PERIOD OF RECORD: Highest, 23.12 feet, September 11, 1995; lowest, 50.06 feet, November 5, 1990.

Figure 29. Hydrograph for observation well 110N62W5DCCC, CO-14-90, water years 1994-96.

LOCAL WELL NUMBER: 110N62W6BBBB

SITE IDENTIFIER: 442213098200701

OTHER IDENTIFIER: CO-23-90

ALTITUDE OF LAND SURFACE: 1,305.96 feet

MEASURING POINT: 2.41 feet above land surface

AQUIFER: Warren

PERIOD OF RECORD: November 5, 1990, to November 29, 1995

EXTREMES FOR PERIOD SHOWN: Highest, 12.90 feet, September 11, 1995; lowest, 23.03 feet, March 11, 1994.

EXTREMES FOR PERIOD OF RECORD: Highest, 12.90 feet, September 11, 1995; lowest, 34.43 feet, November 5, 1990.

Figure 30. Hydrograph for observation well 110N62W6BBBB, CO-23-90, water years 1994-96.

LOCAL WELL NUMBER: 110N62W8CCCC

SITE IDENTIFIER: 442002098185301

OTHER IDENTIFIER: CO-01-90

ALTITUDE OF LAND SURFACE: 1,321.89 feet

MEASURING POINT: 2.32 feet above land surface

AQUIFER: Warren

PERIOD OF RECORD: August 6, 1990, to November 29, 1995

EXTREMES FOR PERIOD SHOWN: Highest, 32.31 feet, September 11, 1995; lowest, 49.81 feet, March 11, 1994.

EXTREMES FOR PERIOD OF RECORD: Highest, 32.31 feet, September 11, 1995, lowest, 60.90 feet, November 21, 1990.

Figure 31. Hydrograph for observation well 110N62W8CCCC, CO-01-90, water years 1994-96.

LOCAL WELL NUMBER: 110N62W9BABB
 SITE IDENTIFIER: 442122098172002
 OTHER IDENTIFIER: CO-06-90
 ALTITUDE OF LAND SURFACE: 1,297.53 feet
 MEASURING POINT: 2.71 feet above land surface
 AQUIFER: Warren
 PERIOD OF RECORD: August 6, 1990, to November 29, 1995
 EXTREMES FOR PERIOD SHOWN: Highest, 6.86 feet, September 11, 1995; lowest, 26.03 feet, March 3, 1994.
 EXTREMES FOR PERIOD OF RECORD: Highest, 6.86 feet, September 11, 1995; lowest, 35.67 feet, November 21, 1990.

Figure 32. Hydrograph for observation well 110N62W9BABB, CO-06-90, water years 1994-96.

LOCAL WELL NUMBER: 110N62W9BBAC
 SITE IDENTIFIER: 442118098173101
 OTHER IDENTIFIER: CO-55-90
 ALTITUDE OF LAND SURFACE: 1,296.45 feet
 MEASURING POINT: 2.39 feet above land surface
 AQUIFER: Warren
 PERIOD OF RECORD: November 6, 1990, to November 29, 1995
 EXTREMES FOR PERIOD SHOWN: Highest, 5.63 feet, September 11, 1995; lowest, 25.34 feet, March 7, 1994.
 EXTREMES FOR PERIOD OF RECORD: Highest, 5.63 feet, September 11, 1995; lowest, 35.69 feet, November 21, 1990.

Figure 33. Hydrograph for observation well 110N62W9BBAC, CO-55-90, water years 1994-96.

LOCAL WELL NUMBER: 110N62W9BBBA

SITE IDENTIFIER: 442119098173601

OTHER IDENTIFIER: CO-65-90

ALTITUDE OF LAND SURFACE: 1,297.19 feet

MEASURING POINT: 2.62 feet above land surface

AQUIFER: Warren

PERIOD OF RECORD: November 6, 1990, to October 25, 1994

EXTREMES FOR PERIOD SHOWN: Highest, 9.33 feet, July 20, 1994; lowest, 27.13 feet, March 11, 1994.

EXTREMES FOR PERIOD OF RECORD: Highest, 9.33 feet, July 20, 1994; lowest, 36.69 feet, November 21, 1990.

Figure 34. Hydrograph for observation well 110N62W9BBBA, CO-65-90, water years 1994-95.

LOCAL WELL NUMBER: 110N62W9BBBA2

SITE IDENTIFIER: 442119098173602

OTHER IDENTIFIER: CO-66-90

ALTITUDE OF LAND SURFACE: 1,297.19 feet

MEASURING POINT: 2.35 feet above land surface

AQUIFER: Warren

PERIOD OF RECORD: November 6, 1990, to November 29, 1995

EXTREMES FOR PERIOD SHOWN: Highest, 6.13 feet, September 11, 1995; lowest, 25.61 feet, March 7, 1994.

EXTREMES FOR PERIOD OF RECORD: Highest, 6.13 feet, September 11, 1995; lowest, 35.88 feet, November 6, 1990.

Figure 35. Hydrograph for observation well 110N62W9BBBA2, CO-66-90, water years 1994-96.

LOCAL WELL NUMBER: 110N62W9BBBA3
SITE IDENTIFIER: 442119098173603
OTHER IDENTIFIER: CO-67-90
ALTITUDE OF LAND SURFACE: 1,297.19 feet
MEASURING POINT: 2.34 feet above land surface
AQUIFER: Warren
PERIOD OF RECORD: November 6, 1990, to October 25, 1994
EXTREMES FOR PERIOD SHOWN: Highest, 9.41 feet, July 20, 1994; lowest, 27.15 feet, March 11, 1994.
EXTREMES FOR PERIOD OF RECORD: Highest, 9.41 feet, July 20, 1994; lowest, 35.87 feet, November 6, 1990.

Figure 36. Hydrograph for observation well 110N62W9BBBA3, CO-67-90, water years 1994-95.

LOCAL WELL NUMBER: 110N62W9BBBA4
SITE IDENTIFIER: 442119098173604
OTHER IDENTIFIER: A-01-90
ALTITUDE OF LAND SURFACE: 1,297.19 feet
MEASURING POINT: 2.78 feet above land surface
AQUIFER: Till
PERIOD OF RECORD: November 2, 1990, to November 29, 1995
EXTREMES FOR PERIOD SHOWN: Highest, 2.29 feet, June 21, 1995; lowest, 8.85 feet, March 23, 1995.
EXTREMES FOR PERIOD OF RECORD: Highest, 2.29 feet, June 21, 1995; lowest, 18.67 feet, November 6, 1990.

Figure 37. Hydrograph for observation well 110N62W9BBBA4, A-01-90, water years 1994-96.

LOCAL WELL NUMBER: 110N62W9BBBA5

SITE IDENTIFIER: 442119098173605

OTHER IDENTIFIER: A-02-90

ALTITUDE OF LAND SURFACE: 1,297.19 feet

MEASURING POINT: 2.63 feet above land surface

AQUIFER: Till

PERIOD OF RECORD: November 6, 1990, to November 29, 1995

EXTREMES FOR PERIOD SHOWN: Highest, -0.75 feet, June 21, 1995; lowest, 7.51 feet, February 27, 1995.

EXTREMES FOR PERIOD OF RECORD: Highest, -0.75 feet, June 21, 1995; lowest, 12.22 feet, February 21, 1991.

Figure 38. Hydrograph for observation well 110N62W9BBBA5, A-02-90, water years 1994-96.

LOCAL WELL NUMBER: 110N62W9BBBA6

SITE IDENTIFIER: 442119098173606

OTHER IDENTIFIER: A-03-90

ALTITUDE OF LAND SURFACE: 1,297.19 feet

MEASURING POINT: 2.32 feet above land surface

AQUIFER: Till

PERIOD OF RECORD: November 6, 1990, to November 29, 1995

EXTREMES FOR PERIOD SHOWN: Highest, 3.91 feet, August 30, 1995; lowest, 11.72 feet, March 7, 1994.

EXTREMES FOR PERIOD OF RECORD: Highest, 3.91 feet, August 30, 1995; lowest, 19.48 feet, April 19, 1991.

Figure 39. Hydrograph for observation well 110N62W9BBBA6, A-03-90, water years 1994-96.

LOCAL WELL NUMBER: 110N62W9BBBA7

SITE IDENTIFIER: 442119098173607

OTHER IDENTIFIER: A-04-90

ALTITUDE OF LAND SURFACE: 1,297.19 feet

MEASURING POINT: 2.49 feet above land surface

AQUIFER: Till

PERIOD OF RECORD: November 6, 1990, to November 29, 1995

EXTREMES FOR PERIOD SHOWN: Highest, 3.66 feet, August 9, 1995; lowest, 10.24 feet, March 7, 1994.

EXTREMES FOR PERIOD OF RECORD: Highest, 3.66 feet, August 9, 1995; lowest, 17.87 feet, April 19, 1991.

Figure 40. Hydrograph for observation well 110N62W9BBBA7, A-04-90, water years 1994-96.

LOCAL WELL NUMBER: 110N62W9BBBB2

SITE IDENTIFIER: 442123098174002

OTHER IDENTIFIER: CO-08-90

ALTITUDE OF LAND SURFACE: 1,295.68 feet

MEASURING POINT: 2.86 feet above land surface

AQUIFER: Warren

PERIOD OF RECORD: August 6, 1990, to November 29, 1995

EXTREMES FOR PERIOD SHOWN: Highest, 4.71 feet, September 11, 1995; lowest, 24.74 feet, March 11, 1994.

EXTREMES FOR PERIOD OF RECORD: Highest, 4.71 feet, September 11, 1995; lowest, 33.52 feet, November 21, 1990.

Figure 41. Hydrograph for observation well 110N62W9BBBB2, CO-08-90, water years 1994-96.

LOCAL WELL NUMBER: 110N62W9BBBC

SITE IDENTIFIER: 442118098174001

OTHER IDENTIFIER: CO-16-90

ALTITUDE OF LAND SURFACE: 1,297.66 feet

MEASURING POINT: 3.11 feet above land surface

AQUIFER: Warren

PERIOD OF RECORD: August 15, 1990, to November 29, 1995

EXTREMES FOR PERIOD SHOWN: Highest, 6.42 feet, September 11, 1995; lowest, 26.24 feet, March 7, 1994.

EXTREMES FOR PERIOD OF RECORD: Highest, 6.42 feet, September 11, 1995; lowest, 36.80 feet, November 6, 1990.

Figure 42. Hydrograph for observation well 110N62W9BBBC, CO-16-90, water years 1994-96.

LOCAL WELL NUMBER: 110N62W9BBBC2

SITE IDENTIFIER: 442118098174002

OTHER IDENTIFIER: CO-33-90

ALTITUDE OF LAND SURFACE: 1,297.65 feet

MEASURING POINT: 2.60 feet above land surface

AQUIFER: Warren

PERIOD OF RECORD: November 6, 1990, to October 25, 1994

EXTREMES FOR PERIOD SHOWN: Highest, 9.48 feet, July 20, 1994; lowest, 27.79 feet, March 11, 1994.

EXTREMES FOR PERIOD OF RECORD: Highest, 9.48 feet, July 20, 1994; lowest, 36.63 feet, November 6, 1990.

Figure 43. Hydrograph for observation well 110N62W9BBBC2, CO-33-90, water years 1994-95.

LOCAL WELL NUMBER: 110N62W9BBBC3

SITE IDENTIFIER: 442118098174003

OTHER IDENTIFIER: CO-34-90

ALTITUDE OF LAND SURFACE: 1,297.66 feet

MEASURING POINT: 2.91 feet above land surface

AQUIFER: Warren

PERIOD OF RECORD: November 6, 1990, to October 25, 1994

EXTREMES FOR PERIOD SHOWN: Highest, 9.35 feet, July 20, 1994; lowest, 27.81 feet, March 11, 1994.

EXTREMES FOR PERIOD OF RECORD: Highest, 9.35 feet, July 20, 1994; lowest, 37.07 feet, November 6, 1990.

Figure 44. Hydrograph for observation well 110N62W9BBBC3, CO-34-90, water years 1994-95.

LOCAL WELL NUMBER: 110N62W9BBBC4

SITE IDENTIFIER: 442118098174004

OTHER IDENTIFIER: CO-35-90

ALTITUDE OF LAND SURFACE: 1,297.66 feet

MEASURING POINT: 2.90 feet above land surface

AQUIFER: Till

PERIOD OF RECORD: November 6, 1990, to November 29, 1995

EXTREMES FOR PERIOD SHOWN: Highest, 5.72 feet, September 11, 1995; lowest, 17.51 feet, March 7, 1994.

EXTREMES FOR PERIOD OF RECORD: Highest, 5.72 feet, September 11, 1995; lowest, 25.87 feet, April 19, 1991.

Figure 45. Hydrograph for observation well 110N62W9BBBC4, CO-35-90, water years 1994-96.

LOCAL WELL NUMBER: 110N62W9BBBC5

SITE IDENTIFIER: 442118098174005

OTHER IDENTIFIER: CO-36-90

ALTITUDE OF LAND SURFACE: 1,297.66 feet

MEASURING POINT: 3.15 feet above land surface

AQUIFER: Till

PERIOD OF RECORD: November 6, 1990, to November 29, 1995

EXTREMES FOR PERIOD SHOWN: Highest, 0.87 feet, June 9, 1995; lowest, 6.49 feet, March 7, 1994, February 25, 1995.

EXTREMES FOR PERIOD OF RECORD: Highest, 0.87 feet, June 9, 1995; lowest, 11.41 feet, May 1, 1991.

Figure 46. Hydrograph for observation well 110N62W9BBBC5, CO-36-90, water years 1994-96.

LOCAL WELL NUMBER: 110N62W9BBBC6

SITE IDENTIFIER: 442118098174006

OTHER IDENTIFIER: CO-37-90

ALTITUDE OF LAND SURFACE: 1,297.66 feet

MEASURING POINT: 3.26 feet above land surface

AQUIFER: Till

PERIOD OF RECORD: November 6, 1990, to November 29, 1995

EXTREMES FOR PERIOD SHOWN: Highest, 0.89 feet, June 9, 1995; lowest, 6.63 feet, February 27, 1995.

EXTREMES FOR PERIOD OF RECORD: Highest, 0.89 feet, June 9, 1995; lowest, 19.77 feet, May 1, 1991.

Figure 47. Hydrograph for observation well 110N62W9BBBC6, CO-37-90, water years 1994-96.

LOCAL WELL NUMBER: 110N62W9BBBC7
 SITE IDENTIFIER: 442118098174007
 OTHER IDENTIFIER: CO-38-90
 ALTITUDE OF LAND SURFACE: 1,297.66 feet
 MEASURING POINT: 2.99 feet above land surface
 AQUIFER: Till

PERIOD OF RECORD: November 6, 1990, to November 29, 1995

EXTREMES FOR PERIOD SHOWN: Highest, 4.43 feet, August 9, 1995; lowest, 12.41 feet, March 7, 1994.

EXTREMES FOR PERIOD OF RECORD: Highest, 4.43 feet, August 9, 1995; lowest, 21.43 feet, April 19, 1991.

Figure 48. Hydrograph for observation well 110N62W9BBBC7, CO-38-90, water years 1994-96.

LOCAL WELL NUMBER: 110N62W9BBBD
 SITE IDENTIFIER: 442117098173601
 OTHER IDENTIFIER: CO-45-90
 ALTITUDE OF LAND SURFACE: 1,297.66 feet
 MEASURING POINT: 2.39 feet above land surface
 AQUIFER: Warren

PERIOD OF RECORD: November 6, 1990, to November 29, 1995

EXTREMES FOR PERIOD SHOWN: Highest, 6.47 feet, September 11, 1995; lowest, 27.24 feet, March 3, 1994.

EXTREMES FOR PERIOD OF RECORD: Highest, 6.47 feet, September 11, 1995; lowest, 36.17 feet, November 6, 1990.

Figure 49. Hydrograph for observation well 110N62W9BBBD, CO-45-90, water years 1994-96.

LOCAL WELL NUMBER: 110N62W9BBBD3

SITE IDENTIFIER: 442117098173603

OTHER IDENTIFIER: CO-47-90

ALTITUDE OF LAND SURFACE: 1,297.66 feet

MEASURING POINT: 2.31 feet above land surface

AQUIFER: Warren

PERIOD OF RECORD: November 6, 1990, to October 25, 1994

EXTREMES FOR PERIOD SHOWN: Highest, 9.61 feet, July 20, 1994; lowest, 27.96 feet, March 11, 1994.

EXTREMES FOR PERIOD OF RECORD: Highest, 9.61 feet, July 20, 1994; lowest, 36.16 feet, February 1, 1991.

Figure 50. Hydrograph for observation well 110N62W9BBBD3, CO-47-90, water years 1994-95.

LOCAL WELL NUMBER: 110N62W9BBBD4

SITE IDENTIFIER: 442117098173604

OTHER IDENTIFIER: CO-48-90

ALTITUDE OF LAND SURFACE: 1,297.66 feet

MEASURING POINT: 2.21 feet above land surface

AQUIFER: Warren

PERIOD OF RECORD: November 6, 1990, to October 25, 1994

EXTREMES FOR PERIOD SHOWN: Highest, 9.52 feet, July 20, 1994; lowest, 27.99 feet, March 11, 1994.

EXTREMES FOR PERIOD OF RECORD: Highest, 9.52 feet, July 20, 1994; lowest, 36.19 feet, November 6, 1990.

Figure 51. Hydrograph for observation well 110N62W9BBBD4, CO-48-90, water years 1994-95.

LOCAL WELL NUMBER: 110N62W9BBBD5
SITE IDENTIFIER: 442117098173501
OTHER IDENTIFIER: CO-49-90
ALTITUDE OF LAND SURFACE: 1,297.08 feet
MEASURING POINT: 3.53 feet above land surface
AQUIFER: Warren
PERIOD OF RECORD: November 6, 1990, to October 25, 1994
EXTREMES FOR PERIOD SHOWN: Highest, 9.31 feet, July 20, 1994; lowest, 27.40 feet, March 11, 1994.
EXTREMES FOR PERIOD OF RECORD: Highest, 9.31 feet, July 20, 1994; lowest, 36.29 feet, November 21, 1990.

Figure 52. Hydrograph for observation well 110N62W9BBBD5, CO-49-90, water years 1994-95.

LOCAL WELL NUMBER: 110N62W9BBBD6
SITE IDENTIFIER: 442117098173502
OTHER IDENTIFIER: CO-50-90
ALTITUDE OF LAND SURFACE: 1,297.08 feet
MEASURING POINT: 3.06 feet above land surface
AQUIFER: Warren
PERIOD OF RECORD: November 6, 1990, to November 29, 1995
EXTREMES FOR PERIOD SHOWN: Highest, 6.09 feet, September 11, 1995; lowest, 25.87 feet, March 7, 1994.
EXTREMES FOR PERIOD OF RECORD: Highest, 6.09 feet, September 11, 1995, lowest, 36.22 feet, November 6, 1990.

Figure 53. Hydrograph for observation well 110N62W9BBBD6, CO-50-90, water years 1994-96.

LOCAL WELL NUMBER: 110N62W9BBBD7

SITE IDENTIFIER: 442117098173503

OTHER IDENTIFIER: CO-51-90

ALTITUDE OF LAND SURFACE: 1,297.08 feet

MEASURING POINT: 2.98 feet above land surface

AQUIFER: Warren

PERIOD OF RECORD: November 6, 1990, to October 25, 1994

EXTREMES FOR PERIOD SHOWN: Highest, 9.38 feet, July 20, 1994; lowest, 27.40 feet, March 11, 1994.

EXTREMES FOR PERIOD OF RECORD: Highest, 9.38 feet, July 20, 1994; lowest, 36.31 feet, November 21, 1990.

Figure 54. Hydrograph for observation well 110N62W9BBBD7, CO-51-90, water years 1994-95.

LOCAL WELL NUMBER: 110N62W9BBBCA

SITE IDENTIFIER: 442115098173501

OTHER IDENTIFIER: CO-52-90

ALTITUDE OF LAND SURFACE: 1,295.37 feet

MEASURING POINT: 2.90 feet above land surface

AQUIFER: Warren

PERIOD OF RECORD: November 6, 1990, to October 25, 1994

EXTREMES FOR PERIOD SHOWN: Highest, 7.96 feet, July 28, 1994; lowest, 26.46 feet, March 11, 1994.

EXTREMES FOR PERIOD OF RECORD: Highest, 7.96 feet, July 28, 1994; lowest, 35.15 feet, November 21, 1990.

Figure 55. Hydrograph for observation well 110N62W9BBBCA, CO-52-90, water years 1994-95.

LOCAL WELL NUMBER: 110N62W9BBCA2
SITE IDENTIFIER: 442115098173502
OTHER IDENTIFIER: CO-53-90
ALTITUDE OF LAND SURFACE: 1,295.37 feet
MEASURING POINT: 2.34 feet above land surface
AQUIFER: Warren
PERIOD OF RECORD: November 6, 1990, to November 29, 1995
EXTREMES FOR PERIOD SHOWN: Highest, 4.55 feet, September 11, 1995; lowest, 26.46 feet, March 11, 1994.
EXTREMES FOR PERIOD OF RECORD: Highest, 4.55 feet, September 11, 1995; lowest 35.19 feet, November 21, 1990.

Figure 56. Hydrograph for observation well 110N62W9BBCA2, CO-53-90, water years 1994-96.

LOCAL WELL NUMBER: 110N62W9BBCA3
SITE IDENTIFIER: 442115098173503
OTHER IDENTIFIER: CO-54-90
ALTITUDE OF LAND SURFACE: 1,295.37 feet
MEASURING POINT: 2.55 feet above land surface
AQUIFER: Warren
PERIOD OF RECORD: November 6, 1990, to October 25, 1994
EXTREMES FOR PERIOD SHOWN: Highest, 8.06 feet, July 29, 1994; lowest, 26.48 feet, March 11, 1994.
EXTREMES FOR PERIOD OF RECORD: Highest, 8.06 feet, July 29, 1994; lowest, 35.25 feet, November 21, 1990.

Figure 57. Hydrograph for observation well 110N62W9BBCA3, CO-54-90, water years 1994-95.

LOCAL WELL NUMBER: 110N62W9BBCB

SITE IDENTIFIER: 442111098173801

OTHER IDENTIFIER: CO-18-90

ALTITUDE OF LAND SURFACE: 1,295.87 feet

MEASURING POINT: 2.71 feet above land surface

AQUIFER: Warren

PERIOD OF RECORD: August 15, 1990, to November 29, 1995

EXTREMES FOR PERIOD SHOWN: Highest, 5.26 feet, September 11, 1995; lowest, 26.68 feet, February 24, 1994.

EXTREMES FOR PERIOD OF RECORD: Highest, 5.26 feet, September 11, 1995; lowest, 36.50 feet, November 21, 1990.

Figure 58. Hydrograph for observation well 110N62W9BBCB, CO-18-90, water years 1994-96.

LOCAL WELL NUMBER: 110N62W9BBCB2

SITE IDENTIFIER: 442117098174002

OTHER IDENTIFIER: CO-39-90

ALTITUDE OF LAND SURFACE: 1,297.65 feet

MEASURING POINT: 3.32 feet above land surface

AQUIFER: Warren

PERIOD OF RECORD: November 6, 1990, to October 25, 1994

EXTREMES FOR PERIOD SHOWN: Highest, 10.30 feet, July 6, 1994; lowest, 28.45 feet, March 11, 1994.

EXTREMES FOR PERIOD OF RECORD: Highest, 10.30 feet, July 6, 1994; lowest, 37.27 feet, November 6, 1990.

Figure 59. Hydrograph for observation well 110N62W9BBCB2, CO-39-90, water years 1994-95.

LOCAL WELL NUMBER: 110N62W9BBCB3

SITE IDENTIFIER: 442117098174003

OTHER IDENTIFIER: CO-40-90

ALTITUDE OF LAND SURFACE: 1,297.65 feet

MEASURING POINT: 2.69 feet above land surface

AQUIFER: Warren

PERIOD OF RECORD: November 6, 1990, to October 25, 1994

EXTREMES FOR PERIOD SHOWN: Highest, 9.17 feet, July 20, 1994; lowest, 28.36 feet, March 11, 1994.

EXTREMES FOR PERIOD OF RECORD: Highest, 9.17 feet, July 20, 1994; lowest, 37.05 feet, November 6, 1990.

Figure 60. Hydrograph for observation well 110N62W9BBCB3, CO-40-90, water years 1994-95.

LOCAL WELL NUMBER: 110N62W9BBCB4

SITE IDENTIFIER: 442117098174004

OTHER IDENTIFIER: CO-41-90

ALTITUDE OF LAND SURFACE: 1,297.65 feet

MEASURING POINT: 2.67 feet above land surface

AQUIFER: Till

PERIOD OF RECORD: November 6, 1990, to November 29, 1995

EXTREMES FOR PERIOD SHOWN: Highest, 3.33 feet, August 9, 1995; lowest, 25.79 feet, February 24, 1994.

EXTREMES FOR PERIOD OF RECORD: Highest, 3.33 feet, August 9, 1995; lowest, 35.64 feet, February 1, 1991.

Figure 61. Hydrograph for observation well 110N62W9BBCB4, CO-41-90, water years 1994-96.

LOCAL WELL NUMBER: 110N62W9BBCB5

SITE IDENTIFIER: 442117098174005

OTHER IDENTIFIER: CO-42-90

ALTITUDE OF LAND SURFACE: 1,297.65 feet

MEASURING POINT: 2.59 feet above land surface

AQUIFER: Till

PERIOD OF RECORD: November 6, 1990, to November 29, 1995

EXTREMES FOR PERIOD SHOWN: Highest, 3.22 feet, August 9, 1995; lowest, 10.15 feet, March 7, 1994.

EXTREMES FOR PERIOD OF RECORD: Highest, 3.22 feet, August 9, 1995; lowest, 16.23 feet, April 15, 1991.

Figure 62. Hydrograph for observation well 110N62W9BBCB5, CO-42-90, water years 1994-96.

LOCAL WELL NUMBER: 110N62W9BBCB6

SITE IDENTIFIER: 442117098174006

OTHER IDENTIFIER: CO-43-90

ALTITUDE OF LAND SURFACE: 1297.65 feet

MEASURING POINT: 3.32 feet above land surface

AQUIFER: Till

PERIOD OF RECORD: November 6, 1990, to November 27, 1995

EXTREMES FOR PERIOD SHOWN: Highest, 0.82 feet, June 9, 1995; lowest, 6.22 feet, February 27, 1995.

EXTREMES FOR PERIOD OF RECORD: Highest, 0.60 feet, June 6, 1991; lowest, 9.70 feet, April 1, 1991.

Figure 63. Hydrograph for observation well 110N62W9BBCB6, CO-43-90, water years 1994-96.

LOCAL WELL NUMBER: 110N62W9BBCB7
SITE IDENTIFIER: 442117098174007
OTHER IDENTIFIER: CO-44-90
ALTITUDE OF LAND SURFACE: 1,297.65 feet
MEASURING POINT: 2.91 feet above land surface
AQUIFER: Till
PERIOD OF RECORD: November 6, 1990, to November 29, 1995
EXTREMES FOR PERIOD SHOWN: Highest, 0.81 feet; June 9, 1995; lowest, 6.22 feet, February 27, 1995.
EXTREMES FOR PERIOD OF RECORD: Highest, 0.55 feet, June 6, 1991; lowest, 9.70 feet, April 1, 1991.

Figure 64. Hydrograph for observation well 110N62W9BBCB7, CO-44-90, water years 1994-96.

LOCAL WELL NUMBER: 110N62W9BBCB8
SITE IDENTIFIER: 442117098174001
OTHER IDENTIFIER: CO-17-90
ALTITUDE OF LAND SURFACE: 1,297.65 feet
MEASURING POINT: 2.81 feet above land surface
AQUIFER: Warren
PERIOD OF RECORD: August 15, 1990, to November 29, 1995
EXTREMES FOR PERIOD SHOWN: Highest 6.09 feet, September 13, 1995; lowest, 28.64 feet, March 16, 1994.
EXTREMES FOR PERIOD OF RECORD: Highest, 6.09 feet, September 13, 1995; lowest 36.70 feet, November 21, 1990.

Figure 65. Hydrograph for observation well 110N62W9BBCB8, CO-17-90, water years 1994-96.

LOCAL WELL NUMBER: 110N62W9BBCB9

SITE IDENTIFIER: 442115098174202

OTHER IDENTIFIER: CO-63-90

ALTITUDE OF LAND SURFACE: 1,298.24 feet

MEASURING POINT: 2.81 feet above land surface

AQUIFER: Warren

PERIOD OF RECORD: November 5, 1990, to October 25, 1994

EXTREMES FOR PERIOD SHOWN: Highest, 10.17 feet, July 20, 1994; lowest, 27.69 feet, March 3, 1994.

EXTREMES FOR PERIOD OF RECORD: Highest, 10.17 feet, July 20, 1994; lowest, 36.79 feet, November 21, 1990.

Figure 66. Hydrograph for observation well 110N62W9BBCB9, CO-63-90, water years 1994-95.

LOCAL WELL NUMBER: 110N62W9BBCB10

SITE IDENTIFIER: 442115098174203

OTHER IDENTIFIER: CO-64-90

ALTITUDE OF LAND SURFACE: 1,298.24 feet

MEASURING POINT: 2.44 feet above land surface

AQUIFER: Warren

PERIOD OF RECORD: November 5, 1990, to October 25, 1994

EXTREMES FOR PERIOD SHOWN: Highest, 10.12 feet, July 20, 1994; lowest, 28.31 feet, March 11, 1994.

EXTREMES FOR PERIOD OF RECORD: Highest, 10.12 feet, July 20, 1994; lowest, 38.80 feet, November 21, 1990.

Figure 67. Hydrograph for observation well 110N62W9BBCB10, CO-64-90, water years 1994-95.

LOCAL WELL NUMBER: 110N62W9BBCB11
 SITE IDENTIFIER: 442115098174201
 OTHER IDENTIFIER: CO-62-90
 ALTITUDE OF LAND SURFACE: 1,297.30 feet
 MEASURING POINT: 3.11 feet above land surface
 AQUIFER: Warren

PERIOD OF RECORD: November 5, 1990, to November 29, 1995

EXTREMES FOR PERIOD SHOWN: Highest, 7.04 feet, September 11, 1995; lowest, 28.32 feet, March 11, 1994.

EXTREMES FOR PERIOD OF RECORD: Highest, 7.04 feet, September 11, 1995; lowest, 37.25 feet, November 21, 1990.

Figure 68. Hydrograph for observation well 110N62W9BBCB11, CO-62-90, water years 1994-96.

LOCAL WELL NUMBER: 110N62W9BBCB12
 SITE IDENTIFIER: 442115098173902
 OTHER IDENTIFIER: CO-57-90
 ALTITUDE OF LAND SURFACE: 1,295.82 feet
 MEASURING POINT: 2.60 feet above land surface
 AQUIFER: Warren

PERIOD OF RECORD: November 5, 1990, to October 25, 1994

EXTREMES FOR PERIOD SHOWN: Highest, -0.11 feet, May 3, 1994; lowest, 7.31 feet, August 26, 1994.

EXTREMES FOR PERIOD OF RECORD: Highest, -0.11 feet, May 3, 1994; lowest, 37.38 feet, November 21, 1990.

Figure 69. Hydrograph for observation well 110N62W9BBCB12, CO-57-90, water years 1994-95.

LOCAL WELL NUMBER: 110N62W9BBCB13

SITE IDENTIFIER: 442115098173903

OTHER IDENTIFIER: CO-58-90

ALTITUDE OF LAND SURFACE: 1,295.82 feet

MEASURING POINT: 2.58 feet above land surface

AQUIFER: Warren

PERIOD OF RECORD: November 5, 1990, to October 25, 1994

EXTREMES FOR PERIOD SHOWN: Highest, 8.22 feet, July 28, 1994; lowest, 27.10 feet, March 11, 1994.

EXTREMES FOR PERIOD OF RECORD: Highest, 8.22 feet, July 28, 1994; lowest, 35.55 feet, November 21, 1990.

Figure 70. Hydrograph for observation well 110N62W9BBCB13, CO-58-90, water years 1994-95.

LOCAL WELL NUMBER: 110N62W9BBCB14

SITE IDENTIFIER: 442115098173901

OTHER IDENTIFIER: CO-56-90

ALTITUDE OF LAND SURFACE: 1,295.82 feet

MEASURING POINT: 2.59 feet above land surface

AQUIFER: Warren

PERIOD OF RECORD: November 5, 1990, to November 29, 1995

EXTREMES FOR PERIOD SHOWN: Highest, 4.85 feet, September 11, 1995; lowest, 26.87 feet, March 7, 1994.

EXTREMES FOR PERIOD OF RECORD: Highest, 4.85 feet, September 11, 1995; lowest, 35.49 feet, November 21, 1990.

Figure 71. Hydrograph for observation well 110N62W9BBCB14, CO-56-90, water years 1994-96.

LOCAL WELL NUMBER: 110N62W9BBCB15
SITE IDENTIFIER: 442117098174008
OTHER IDENTIFIER: Recharge well
ALTITUDE OF LAND SURFACE: 1298.40
MEASURING POINT: 1.56 feet above land surface
AQUIFER: Warren

PERIOD OF RECORD: January 21, 1994, to November 29, 1995

EXTREMES FOR PERIOD SHOWN: Highest, 0.61 feet, August 2, 1995; lowest, 41.38 feet, September 29, 1995.

Figure 72. Hydrograph for recharge well 110N62W9BBCB15, water years 1994-96.

LOCAL WELL NUMBER: 110N62W9BBCC
SITE IDENTIFIER: 442113098174201
OTHER IDENTIFIER: CO-59-90
ALTITUDE OF LAND SURFACE: 1,297.30 feet
MEASURING POINT: 2.85 feet above land surface
AQUIFER: Warren

PERIOD OF RECORD: November 5, 1990, to November 29, 1995

EXTREMES FOR PERIOD SHOWN: Highest, 6.06 feet, September 12, 1995; lowest, 28.04 feet, March 11, 1994.

EXTREMES FOR PERIOD OF RECORD: Highest, 6.06 feet, September 12, 1995; lowest, 36.51 feet, November 5, 1990, November 21, 1990.

Figure 73. Hydrograph for observation well 110N62W9BBCC, CO-59-90, water years 1994-96.

LOCAL WELL NUMBER: 110N62W9BBCC2

SITE IDENTIFIER: 442113098174202

OTHER IDENTIFIER: CO-60-90

ALTITUDE OF LAND SURFACE: 1,297.30 feet

MEASURING POINT: 2.79 feet above land surface

AQUIFER: Warren

PERIOD OF RECORD: November 5, 1990, to October 25, 1994

EXTREMES FOR PERIOD SHOWN: Highest, 9.06 feet, July 20, 1994; lowest, 27.34 feet, March 3, 1994.

EXTREMES FOR PERIOD OF RECORD: Highest, 9.06 feet, July 20, 1994, lowest, 36.49 feet, November 21, 1990.

Figure 74. Hydrograph for observation well 110N62W9BBCC2, CO-60-90, water years 1994-95.

LOCAL WELL NUMBER: 110N62W9BBCC3

SITE IDENTIFIER: 442113098174203

OTHER IDENTIFIER: CO-61-90

ALTITUDE OF LAND SURFACE: 1,297.30 feet

MEASURING POINT: 2.60 feet above land surface

AQUIFER: Warren

PERIOD OF RECORD: November 5, 1990, to October 25, 1994

EXTREMES FOR PERIOD SHOWN: Highest, 9.00 feet, July 20, 1994; lowest, 28.08 feet, March 11, 1994.

EXTREMES FOR PERIOD OF RECORD: Highest, 9.00 feet, July 20, 1994; lowest, 38.38 feet, November 21, 1990.

Figure 75. Hydrograph for observation well 110N62W9BBCC3, CO-61-90, water years 1994-95.

LOCAL WELL NUMBER: 110N62W9BBCC4
SITE IDENTIFIER: 442113098174204
OTHER IDENTIFIER: A-05-90
ALTITUDE OF LAND SURFACE: 1,297.30 feet
MEASURING POINT: 2.27 feet above land surface
AQUIFER: Till

PERIOD OF RECORD: November 5, 1990, to November 29, 1995

EXTREMES FOR PERIOD SHOWN: Highest, 1.55 feet, June 9, 1995; lowest, 7.06 feet, February 24, 1994.

EXTREMES FOR PERIOD OF RECORD: Highest, 1.55 feet, June 9, 1995; lowest, 11.50 feet, April 1, 1991.

Figure 76. Hydrograph for observation well 110N62W9BBCC4, A-05-90, water years 1994-96.

LOCAL WELL NUMBER: 110N62W9BBCC5
SITE IDENTIFIER: 442113098174205
OTHER IDENTIFIER: A-06-90
ALTITUDE OF LAND SURFACE: 1,297.30 feet
MEASURING POINT: 3.26 feet above land surface
AQUIFER: Till

PERIOD OF RECORD: November 5, 1990, to November 29, 1995

EXTREMES FOR PERIOD SHOWN: Highest, 0.13 feet, June 9, 1995; lowest, 5.88 feet, February 10, 1994.

EXTREMES FOR PERIOD OF RECORD: Highest, 0.12 feet, June 6, 1991; lowest, 6.98 feet, January 18, 1991.

Figure 77. Hydrograph for observation well 110N62W9BBCC5, A-06-90, water years 1994-96.

LOCAL WELL NUMBER: 110N62W9BBCC6

SITE IDENTIFIER: 442113098174206

OTHER IDENTIFIER: A-07-90

ALTITUDE OF LAND SURFACE: 1,297.30 feet

MEASURING POINT: 2.28 feet above land surface

AQUIFER: Till

PERIOD OF RECORD: November 5, 1990, to November 29, 1995

EXTREMES FOR PERIOD SHOWN: Highest, 6.04 feet, September 12, 1995; lowest, 24.81 feet, March 7, 1994.

EXTREMES FOR PERIOD OF RECORD: Highest, 6.04 feet, September 12, 1995; lowest 34.57 feet, December 7, 1990.

Figure 78. Hydrograph for observation well 110N62W9BBCC6, A-07-90, water years 1994-96.

LOCAL WELL NUMBER: 110N62W9BBCC7

SITE IDENTIFIER: 442113098174207

OTHER IDENTIFIER: A-08-90

ALTITUDE OF LAND SURFACE: 1,297.30 feet

MEASURING POINT: 2.38 feet above land surface

AQUIFER: Till

PERIOD OF RECORD: November 5, 1990, to November 29, 1995

EXTREMES FOR PERIOD SHOWN: Highest, 2.73 feet, August 9, 1995; lowest, 9.64 feet, March 7, 1994.

EXTREMES FOR PERIOD OF RECORD: Highest, 2.73 feet, August 9, 1995; lowest, 14.48 feet, April 1, 1991, April 19, 1991.

Figure 79. Hydrograph for observation well 110N62W9BBCC7, A-08-90, water years 1994-96.

LOCAL WELL NUMBER: 110N62W9BBCC8
SITE IDENTIFIER: 442110098174201
OTHER IDENTIFIER: CO-09-90
ALTITUDE OF LAND SURFACE: 1,297.30 feet
MEASURING POINT: 2.47 feet above land surface
AQUIFER: Warren
PERIOD OF RECORD: August 6, 1990, to November 29, 1995
EXTREMES FOR PERIOD SHOWN: Highest, 6.81 feet, September 11, 1995; lowest, 29.30 feet, February 24, 1994.
EXTREMES FOR PERIOD OF RECORD: Highest, 6.81 feet, September 11, 1995; lowest, 38.59 feet, November 5, 1990.

Figure 80. Hydrograph for observation well 110N62W9BBCC8, CO-09-90, water years 1994-96.

LOCAL WELL NUMBER: 110N62W9BBDD
SITE IDENTIFIER: 442110098172501
OTHER IDENTIFIER: CO-19-90
ALTITUDE OF LAND SURFACE: 1,296.52 feet
MEASURING POINT: 2.57 feet above land surface
AQUIFER: Warren
PERIOD OF RECORD: November 6, 1990, to November 29, 1995
EXTREMES FOR PERIOD SHOWN: Highest, 6.16 feet, September 11, 1995; lowest, 26.15 feet, March 7, 1994.
EXTREMES FOR PERIOD OF RECORD: Highest, 6.16 feet, September 11, 1995; lowest, 37.68 feet, November 21, 1990.

Figure 81. Hydrograph for observation well 110N62W9BBDD, CO-19-90, water years 1994-96.

LOCAL WELL NUMBER: 110N62W9BCAB

SITE IDENTIFIER: 442108098173101

OTHER IDENTIFIER: CO-32-90

ALTITUDE OF LAND SURFACE: 1,305.75 feet

MEASURING POINT: 2.80 feet above land surface

AQUIFER: Warren

PERIOD OF RECORD: November 5, 1990, to November 29, 1995

EXTREMES FOR PERIOD SHOWN: Highest, 15.48 feet, September 11, 1995; lowest, 38.44 feet, March 3, 1994.

EXTREMES FOR PERIOD OF RECORD: Highest, 15.48 feet, September 11, 1995; lowest, 51.07 feet, November 21, 1990.

Figure 82. Hydrograph for observation well 110N62W9BCAB, CO-32-90, water years 1994-96.

LOCAL WELL NUMBER: 110N62W9BCBC

SITE IDENTIFIER: 442105098174001

OTHER IDENTIFIER: CO-68-90

ALTITUDE OF LAND SURFACE: 1,302.80 feet

MEASURING POINT: 2.83 feet above land surface

AQUIFER: Warren

PERIOD OF RECORD: November 5, 1990, to November 29, 1995

EXTREMES FOR PERIOD SHOWN: Highest, 12.32 feet, August 30, 1995; lowest, 41.52 feet, March 11, 1994.

EXTREMES FOR PERIOD OF RECORD: Highest, 12.32 feet, August 30, 1995; lowest, 48.95 feet, November 5, 1990.

Figure 83. Hydrograph for observation well 110N62W9BCBC, CO-68-90, water years 1994-96.

LOCAL WELL NUMBER: 110N62W9BCDD

SITE IDENTIFIER: 442057098172501

OTHER IDENTIFIER: CO-10-90

ALTITUDE OF LAND SURFACE: 1,301.09 feet

MEASURING POINT: 2.70 feet above land surface

AQUIFER: Warren

PERIOD OF RECORD: August 6, 1990, to November 29, 1995

EXTREMES FOR PERIOD SHOWN: Highest, 11.34 feet, September 11, 1995; lowest, 33.39 feet, April 27, 1995.

EXTREMES FOR PERIOD OF RECORD: Highest, 11.34 feet, September 11, 1995; lowest, 42.26 feet, November 21, 1990.

Figure 84. Hydrograph for observation well 110N62W9BCDD, CO-10-90, water years 1994-96.

LOCAL WELL NUMBER: 110N62W10CCCC

SITE IDENTIFIER: 442002098162801

OTHER IDENTIFIER: CO-11-90

ALTITUDE OF LAND SURFACE: 1,294.32 feet

MEASURING POINT: 2.83 feet above land surface

AQUIFER: Warren

PERIOD OF RECORD: August 15, 1990, to September 29, 1995

EXTREMES FOR PERIOD SHOWN: Highest 6.31 feet, September 11, 1995; lowest, 19.63 feet, March 9, 1995.

EXTREMES FOR PERIOD OF RECORD: Highest, 6.31 feet, September 11, 1995, lowest, 33.25 feet, December 26, 1990.

Figure 85. Hydrograph for observation well 110N62W10CCCC, CO-11-90, water years 1994-95.

LOCAL WELL NUMBER: 110N62W10DDDD

SITE IDENTIFIER: 442031098151801

OTHER IDENTIFIER: CO-12-90

ALTITUDE OF LAND SURFACE: 1,288.17 feet

MEASURING POINT: 2.68 feet above land surface

AQUIFER: Warren

PERIOD OF RECORD: August 15, 1990, to November 29, 1995

EXTREMES FOR PERIOD SHOWN: Highest, 4.93 feet, November 29, 1995; lowest, 7.05 feet, February 24, 1995.

EXTREMES FOR PERIOD OF RECORD: Highest, 4.93 feet, November 29, 1995; lowest, 13.86 feet, July 9, 1991.

Figure 86. Hydrograph for observation well 110N62W10DDDD, CO-12-90, water years 1994-96.

LOCAL WELL NUMBER: 110N62W16BBAA

SITE IDENTIFIER: 442032098172501

OTHER IDENTIFIER: CO-13-90

ALTITUDE OF LAND SURFACE: 1,303.73 feet

MEASURING POINT: 2.96 feet above land surface

AQUIFER: Warren

PERIOD OF RECORD: August 15, 1990, to November 29, 1995

EXTREMES FOR PERIOD SHOWN: Highest, 14.11 feet, September 11, 1995; lowest, 36.52 feet, March 11, 1994.

EXTREMES FOR PERIOD OF RECORD: Highest, 14.11 feet, September 11, 1995; lowest, 47.35 feet, February 20, 1991.

Figure 87. Hydrograph for observation well 110N62W16BBAA, CO-13-90, water years 1994-96.

LOCAL WELL NUMBER: 110N62W21AAAA
SITE IDENTIFIER: 441937098163001
OTHER IDENTIFIER: CO-21-90
ALTITUDE OF LAND SURFACE: 1,311.93 feet
MEASURING POINT: 2.43 feet above land surface
AQUIFER: Warren
PERIOD OF RECORD: November 5, 1990, to November 29, 1995
EXTREMES FOR PERIOD SHOWN: Highest, 26.33 feet, September 27, 1995; lowest, 41.15 feet, October 6, 1993.
EXTREMES FOR PERIOD OF RECORD: Highest, 26.33 feet, September 27, 1995; lowest, 49.40 feet, May 1, 1991.

Figure 88. Hydrograph for observation well 110N62W21AAAA, CO-21-90, water years 1994-96.

LOCAL WELL NUMBER: 110N62W21BBBB
SITE IDENTIFIER: 441937098174001
OTHER IDENTIFIER: CO-20-90
ALTITUDE OF LAND SURFACE: 1,307.19 feet
MEASURING POINT: 2.54 feet above land surface
AQUIFER: Warren
PERIOD OF RECORD: November 5, 1990, to November 29, 1995
EXTREMES FOR PERIOD SHOWN: Highest, 19.48 feet, September 29, 1995; lowest, 32.52 feet, March 11, 1994.
EXTREMES FOR PERIOD OF RECORD: Highest, 19.48 feet, September 29, 1995; lowest, 52.69 feet, July 9, 1991.

Figure 89. Hydrograph for observation well 110N62W21BBBB, CO-20-90, water years 1994-96.

LOCAL WELL NUMBER: 110N62W22AAAA

SITE IDENTIFIER: 441937098151701

OTHER IDENTIFIER: CO-22-90

ALTITUDE OF LAND SURFACE: 1,304.85 feet

MEASURING POINT: 3.06 feet above land surface

AQUIFER: Warren

PERIOD OF RECORD: November 5, 1990, to November 29, 1995

EXTREMES FOR PERIOD SHOWN: Highest, 20.32 feet, November 29, 1995; lowest, 27.22 feet, October 6, 1993.

EXTREMES FOR PERIOD OF RECORD: Highest, 20.32 feet, November 29, 1995; lowest, 28.59 feet, June 12, 1992.

Figure 90. Hydrograph for observation well 110N62W22AAAA, CO-22-90, water years 1994-96.

INJECTION DATA

Recharge water was injected into the Warren aquifer from June 2, 1994, through July 29, 1994, and from June 14, 1995, through September 13, 1995. The injection rates and the cumulative volume of injected water into the aquifer were frequently monitored during the recharge phase. Plots of the injection rates and the cumulative volume of water are shown in figure 91 for the 1994 recharge period and in figure 92 for the 1995 recharge period. During the 1994 recharge period, the total volume of injected water was 9,223,800 gallons, at an average flow rate of 137 gallons per minute. During the 1995 recharge period, the total volume of injected water was 9,184,000 gallons, at an average flow rate of 77 gallons per minute.

The injection of water was halted on several occasions during both the 1994 and 1995 recharge periods. Recharge ceased from June 3-7, 1994, in order to repair a break in the pipeline between Huron's water treatment plant and the recharge well. Recharge also was halted in 1994 from June 30 to July 5 due to repairs at the water treatment plant. During the 1995 recharge period, injection was ceased from July 26-28 in order to regenerate the recharge well.

WATER-QUALITY DATA

Samples were collected and analyzed to provide information on the water quality of the Warren aquifer before, during, and after the injection of the treated James River water. Water-quality data from the James River and treated water from the Huron Water Treatment plant also were collected. This section presents data collected from the quality-assurance, screening, detailed, and plume-monitoring water-quality sampling programs.

Quality-assurance samples were collected to evaluate the collection and field processing methods of water-quality samples and to evaluate the precision and accuracy of the reported analytical results for inorganic constituents in samples that were submitted to laboratories. Quality-control data were provided by the USGS National Water Quality Laboratory (NWQL) for organic compounds; however, these data are not presented in this report.

The screening sampling program was designed to establish baseline water-quality data for a relatively large area using a limited parameter list. These data will be useful for assessing general water-quality

changes that may have occurred in the aquifer due to artificial recharge. The detailed sampling program was designed to provide more detailed water-quality data and thus, includes a more extensive parameter list. The plume-monitoring sampling program was designed to monitor the progression of the recharge plume as it moved from the recharge well to nearby observation wells by using water-quality parameters. The concentrations of several parameters varied greatly between the recharge water and aquifer water and were used as tracers of the recharge plume. For example, iron concentrations generally were 300 times greater in the aquifer water than in the recharge water. Therefore, the advancement of the recharge plume to an observation well could be identified when the iron concentration of the observation well decreased due to the mixing of aquifer and recharge waters.

Three agencies assisted in the collection and analyses of the water-quality samples for both the screening and the detailed sampling programs. Samples and field parameters were collected by either USGS or SDSU field personnel. Laboratory analyses were performed by the USGS NWQL, South Dakota Department of Health Laboratory, or SDSU Northern Great Plains Water Resources Research Center (NGPWRRRC) Laboratory. All data for the plume-monitoring sampling program were collected by SDSU field personnel and analyzed by the NGPWRRRC Laboratory.

All ground-water samples were collected by using a submersible pump after a minimum of three well volumes had been purged from the well and specific-conductance values had stabilized. Samples from the James River also were collected by using a submersible pump after specific-conductance values had stabilized. The treatment plant effluent was collected from a faucet at the plant after specific-conductance values had stabilized.

Measurements of specific conductance, pH, temperature, dissolved oxygen, and oxidation-reduction potential were made onsite. Sample processing, including filtration and acidification, was performed onsite.

Quality-Assurance Data

Quality-assurance samples were collected to evaluate the collection and field-processing methods of water-quality samples and to evaluate the precision and accuracy of the reported analytical results. These quality-assurance samples included blanks, duplicates, and blind duplicates.

Figure 91. Injection rate and cumulative volume of injected recharge water for 1994 recharge period.

1995

Figure 92. Injection rate and cumulative volume of injected recharge water for 1995 recharge period.

Blank samples, including laboratory equipment blanks and field equipment blanks were collected and analyzed to identify the presence and magnitude of contamination that potentially could bias analytical results. Laboratory equipment blanks are samples of ultra-pure deionized water that are processed in a laboratory or other controlled environment through the sampling equipment used in this study; laboratory blanks are used to identify sample contamination introduced from the sampling equipment. Field equipment blanks are samples of ultra-pure deionized water that are processed through the sampling equipment at the

field collection site; field blanks are used to identify sample contamination introduced from the sampling equipment and contamination introduced during collection and processing of samples in the field. Three laboratory blanks and one field blank were collected during the period presented in this report. The analytical results of the blank samples are presented in table 4. Generally, the laboratory and field equipment blanks indicated that external contamination did not substantially contribute to concentrations of constituents presented in this report.

Table 4. Concentrations of inorganic constituents obtained from quality-assurance sample blanks

[All analyses on unfiltered samples unless otherwise specified. All samples collected by U.S. Geological Survey and analyzed by National Water Quality Laboratory. mg/L, milligrams per liter; mL, milliliter; µg/L, micrograms per liter; deg, degrees; <, less than; --, no data]

Station name	Date	Calcium, filtered (mg/L as Ca) (00915)	Magne- sium, filtered (mg/L as Mg) (00925)	Sodium (mg/L as Na) (00930)	Potas- sium, filtered (mg/L as K) (00935)	Sulfate, filtered (mg/L as SO ₄) (00945)	Chloride, filtered (mg/L as Cl) (00940)	Fluoride, filtered (mg/L as F) (00950)	Silica, filtered (mg/L as SiO ₂) (00955)
Laboratory blank	02-10-94	0.03	0.00	0.03	--	--	--	--	<0.02
Laboratory blank	12-05-94	0.01	0.00	<0.03	--	--	--	--	0.03
Laboratory blank	09-15-95	0.06	0.03	0.09	--	--	--	--	0.02
Field blank	04-24-95	0.45	0.08	<0.20	<0.10	0.20	<0.10	<0.10	0.16

Station name	Date	Solids, residue at 180 deg C, filtered (mg/L) (70300)	Residue at 105 deg C, filtered (mg/L) (00515)	Nitrogen, ammonia, filtered (mg/L as N) (00608)	Nitrogen, nitrite, filtered (mg/L as N) (00613)	Nitrogen, NO ₂ + NO ₃ , filtered (mg/L as N) (00631)	Phos- phorus ortho, filtered (mg/L as P) (00671)	Aluminum, filtered (µg/L as Al) (01106)
Laboratory blank	02-10-94	--	--	<0.002	0.001	<0.005	<0.001	3
Laboratory blank	12-05-94	--	--	--	--	--	--	1
Laboratory blank	09-15-95	--	--	<0.002	0.001	<0.005	<0.001	2
Field blank	04-24-95	3	3	--	--	--	--	--

Station name	Date	Antimony, filtered (µg/L as Sb) (01095)	Arsenic, filtered (µg/L as As) (01000)	Barium, filtered (µg/L as Ba) (01005)	Beryllium, filtered (µg/L as Be) (01010)	Boron, filtered (µg/L as B) (01020)	Cadmium, filtered (µg/L as Cd) (01025)	Chromium, filtered (µg/L as Cr) (01030)	Cobalt, filtered (µg/L as Co) (01035)
Laboratory blank	02-10-94	<0.2	--	0.3	<0.2	<20	<0.3	0	<0.2
Laboratory blank	12-05-94	<0.2	--	<0.2	<0.2	<2	<0.2	<0	<0.2
Laboratory blank	09-15-95	<0.2	--	<0.2	<0.2	3	<0.3	0	<0.2
Field blank	04-24-95	--	<1	<2	<0.5	<10	<1.0	<5	<3

Table 4. Concentrations of inorganic constituents obtained from quality-assurance sample blanks—Continued

Station name	Date	Copper, filtered (µg/L as Cu) (01040)	Iron, filtered (µg/L as Fe) (01046)	Lead, filtered (µg/L as Pb) (01049)	Lithium, filtered (µg/L as Li) (01130)	Manga- nese, filtered (µg/L as Mn) (01056)	Mercury, filtered (µg/L as Hg) (71890)	Molyb- denum, filtered (µg/L as Mo) (01060)
Laboratory blank	02-10-94	0.4	5	<0.3	--	<0.1	--	<0.2
Laboratory blank	12-05-94	<0.2	<3	<0.3	--	<0.1	--	<0.2
Laboratory blank	09-15-95	<0.2	<3	<0.3	--	0.1	--	<0.2
Field blank	04-24-95	<10	12	<10	<4	<1	<0.1	<10

Station name	Date	Nickel, filtered (µg/L as Ni) (01065)	Silver, filtered (µg/L as Ag) (01075)	Strontium, filtered (µg/L as Sr) (01080)	Thallium, filtered (µg/L as Tl) (01057)	Uranium, natural, filtered (µg/L as U) (22703)	Vanadium, filtered (µg/L as V) (01085)	Zinc, filtered (µg/L as Zn) (01090)
Laboratory blank	02-10-94	<1	<0.2	<0.1	<0.1	<0.20	--	1
Laboratory blank	12-05-94	<1	<0.2	<0.1	<0.1	<0.20	--	<1
Laboratory blank	09-15-95	<1	<0.2	0.2	<0.1	<0.20	--	1
Field blank	04-24-95	<10	2.0	4	--	--	<6	3

Duplicate samples are two samples collected as close in time as possible and are considered to be essentially identical in composition. A total of 26 sets of duplicate samples were collected to assess the precision of the analytical results. Four sets of duplicate samples were collected and from each pair of samples, one sample was sent to the USGS NWQL and one sample was sent to the SDSU NGPWRRRC Laboratory for analyses. The purpose of these duplicate samples was to assess the variability in analytical results between the USGS NWQL and the SDSU NGPWRRRC Laboratory. One set of duplicate samples was collected, and both samples were submitted to the USGS NWQL. The purpose of this set of duplicate samples was to assess the precision of analytical results within the USGS NWQL. Data from the duplicate samples are presented in a following section.

Twenty-one sets of duplicate samples were collected, and both samples from each pair were submitted to the SDSU NGPWRRRC Laboratory. For these 21 duplicate sets, one sample from each pair was disguised such that the laboratory was unable to associate the two samples of each duplicate pair. These duplicate samples are referred to as blind duplicates, and the purpose of these was to assess the precision of analytical results within the SDSU NGPWRRRC Laboratory. Data

from the blind duplicates are presented in a following section.

Generally, the duplicate samples collected during this study indicated that there is reasonable agreement between the analyses of the USGS NWQL and the SDSU NGPWRRRC Laboratory. They also indicated that there is reasonable consistency within both the USGS NWQL and the SDSU NGPWRRRC Laboratory.

Screening Water-Quality Data

Water-quality data for the screening sampling program were collected at six sites (fig. 93) during the period presented in this report. Information regarding station identification and location are presented in table 5. All wells used in the screening program are completed in the Warren aquifer. The water-quality data collected from the screening sampling program samples are presented in table 8 in the Supplemental Information section at the end of the report. Water-quality data collected through water year 1993 are presented for 32 screening sites in Carter (1995). Quality-assurance data collected from duplicate blind samples also are presented in table 8.

Figure 93. Location of screening water-quality sampling sites.

Table 5. Wells used in screening water-quality program

[Other identifier: CO, combination rig]

Station identification number	USGS local number	Other identifier
442122098172002	110N62W 9BABB	CO-06-90
442124098181601	110N62W 5DCCC	CO-14-90
442002098185301	110N62W 8CCCC	CO-01-90
442110098172501	110N62W 9BBDD	CO-19-90
442032098172501	110N62W16BBAA	CO-13-90
441937098163001	110N62W21AAAA	CO-21-90

Detailed Water-Quality Data

Water-quality data for the detailed sampling program were collected at four sites within the study area (fig. 94). These samples represent the quality of untreated water (James River), treated water (water treatment plant), and ground water from the Warren aquifer (two wells). Information regarding site identification and location is presented in table 6.

Water-quality data obtained from the detailed sampling program are presented in four tables (tables 9, 10, 11, and 12) in the Supplemental Information section. The physical properties, field parameters, bacteria counts, and concentrations of common ions, solids, nutrients, trace elements, radiometrics, and total organic carbon are presented in table 9. Quality-assurance data collected from duplicate and duplicate blind samples also are presented in table 9. In table 9, 2 sigma refers to the 2 sigma precision estimate (2SPE), which is a measure of the error of the reported concentration. Generally, there is about 95 percent certainty that the true concentration for a sample is within the range of the reported value plus or minus the 2SPE, with the lower part of that range bounded by zero.

Concentrations of herbicides are presented in table 10, and concentrations of organochlorine insecticides, gross polychlorinated biphenols (PCB's), and

gross polychlorinated naphthalenes (PCN's) are presented in table 11. Concentrations of volatile organic compounds are presented in table 12. Water-quality data collected through water year 1993 are presented for eight detailed sites in Carter (1995).

Plume-Monitoring Water-Quality Data

Water-quality data for the plume-monitoring sampling program were collected at 25 sites within the Huron well field (fig. 95). All samples for this sampling program were collected by SDSU field personnel and analyzed by the SDSU NGPWRRRC Laboratory. Information regarding station identification and location are presented in table 7. These sites were sampled during the period of injection of recharge water into the Warren aquifer during the summers of 1994 and 1995. All wells used in the plume-monitoring sampling program are completed in the Warren aquifer. The water-quality data collected from this sampling program are presented in table 13 in the Supplemental Information section. The difference between the recharge well and recharge well injectate should be noted. The water-quality data from the recharge well represents the aquifer water, and the data from the recharge well injectate represents treated water from Huron's water treatment plant before it is injected into the aquifer.

Table 6. Sites used in detailed water-quality sampling program

Station identification number	USGS local number	Station name or other identifier	Sample representation
442150098120601	110N61W 6ACCD	James River at Morningside	Untreated water
442150098120602	110N61W 6ACCD2	Huron Water Treatment Plant effluent	Treated water
442150098174401	110N62W 5ADDD	CO-05-90	Warren aquifer
442111098173801	110N62W 9BBCD	CO-18-90	Warren aquifer

Base from U.S. Geological Survey 1:100,000,
Huron planimetric map, 1985
City limit from Office of the City Engineer
map, Huron, 1990

0 2 4 MILES
0 2 4 KILOMETERS

EXPLANATION

HURON WELL FIELD

⁵ WATER-QUALITY SAMPLING SITE--Number
corresponds to the middle number of the
other identifier number in table 6

Figure 94. Location of detailed water-quality sampling sites.

Figure 95. Location of plume-monitoring water-quality sampling sites in the Huron well field.

Table 7. Sites used in plume-monitoring water-quality sampling program

Station identification number	USGS local number	Other identifier
442119098173601	110N62W 9BBBA	CO-65-90
442119098173602	110N62W 9BBBA2	CO-66-90
442119098173603	110N62W 9BBBA3	CO-67-90
442118098174001	110N62W 9BBBC	CO-16-90
442118098174002	110N62W 9BBBC2	CO-33-90
442118098174003	110N62W 9BBBC3	CO-34-90
442117098173603	110N62W 9BBBD3	CO-47-90
442117098173604	110N62W 9BBBD4	CO-48-90
442117098173501	110N62W 9BBBD5	CO-49-90
442117098173502	110N62W 9BBBD6	CO-50-90
442117098173503	110N62W 9BBBD7	CO-51-90
442115098173501	110N62W 9BBCA	CO-52-90
442115098173502	110N62W 9BBCA2	CO-53-90
442115098173503	110N62W 9BBCA3	CO-54-90
442117098174002	110N62W 9BBCB2	CO-39-90
442117098174003	110N62W 9BBCB3	CO-40-90
442117098174001	110N62W 9BBCB8	CO-17-90
442115098174202	110N62W 9BBCB9	CO-63-90
442115098174203	110N62W 9BBCB10	CO-64-90
442115098173903	110N62W 9BBCB13	CO-58-90
442115098173901	110N62W 9BBCB14	CO-56-90
442117098174008	110N62W 9BBCB15	Recharge well
442117098174009	110N62W 9BBCB16	Recharge well injectate
442113098174202	110N62W 9BBCC2	CO-60-90
442113098174203	110N62W 9BBCC3	CO-61-90

REFERENCES

- Carter, J.M., 1995, Hydrologic data through 1993 for the Huron Project of the High Plains Ground-Water Demonstration Program: U.S. Geological Survey Open-File Report 95-313, 151 p.
- Flint, R.F., 1955, Pleistocene geology of eastern South Dakota: U.S. Geological Survey Professional Paper 262, 173 p.
- Howells, L.W., and Stephens, J.C., 1968, Geology and water resources of Beadle County, South Dakota: Part II, Water resources: South Dakota Geological Survey Bulletin 18, 65 p.
- Schaefer, V.R., DeBoer, D.E., and Emmons, P.J., 1990, Huron Groundwater Recharge Demonstration Project of the High Plains Groundwater Demonstration Program, Plan of Development: South Dakota State University, Brookings, South Dakota.
- Steece, F.V., and Howells, L.W., 1965, Geology and ground-water supplies in Sanborn County, South Dakota: South Dakota Geological Survey Bulletin 17, 182 p.
- U.S. Department of Commerce, 1993-95, Local climatological data for Huron, South Dakota, monthly summary: Asheville, North Carolina, October 1993 to September 1995 (published monthly).
- U.S. Geological Survey, 1987-95, Water resources data for South Dakota, Water years 1986-1994: U.S. Geological Survey Water Data Reports SD-86-1 to SD-94-1 (published annually).

SUPPLEMENTAL INFORMATION

Table 8. Water-quality data obtained from screening samples

[Agency collecting or analyzing sample: USGS, U.S. Geological Survey; SDSU, South Dakota State University. $\mu\text{S}/\text{cm}$, microsiemens per centimeter; mg/L , milligrams per liter; mV , millivolt; mL , milliliter; $\mu\text{g}/\text{L}$, micrograms per liter; pci/L , deg, degrees; IT, incremental titration; --, no data]

Station number	Date	Agency collecting sample	Agency analyzing sample	Specific conduct- ance, field ($\mu\text{S}/\text{cm}$) (00095)	pH, field (standard units) (00400)	Temper- ature, water, field (deg C) (00010)	Dissolved oxygen, field (mg/L) (00300)	Oxidation- reduction potential, field (mV) (00090)	Hardness, total (mg/L as CaCO_3) (00900)
442124098181601 (CO-14-90)	10-27-93	USGS	SDSU	1,780	7.4	10.5	0.2	--	240
	11-18-93	USGS	SDSU	1,770	7.4	10.5	0.1	--	240
	12-15-93	USGS	SDSU	1,760	7.1	10.0	0.1	--	240
	01-26-94	USGS	SDSU	1,870	7.2	9.5	0.1	--	--
	02-23-94	USGS	SDSU	1,800	7.3	9.5	0.1	--	220
	03-16-94	USGS	SDSU	1,830	7.3	10.0	0.1	--	220
	¹ 03-16-94	USGS	SDSU	--	--	--	--	--	--
	04-06-94	USGS	SDSU	1,830	7.5	10.5	0.1	--	220
	05-10-94	USGS	SDSU	1,840	7.5	11.0	0.1	--	240
	06-29-94	USGS	SDSU	1,830	7.3	11.0	0.1	--	220
	07-27-94	USGS	SDSU	1,840	7.4	11.0	0.1	--	230
	10-04-94	USGS	SDSU	1,830	7.4	10.5	0.1	--	230
	¹ 10-04-94	USGS	SDSU	--	--	--	--	--	--
	11-29-94	USGS	SDSU	1,820	7.5	10.0	0.1	--	230
	¹ 11-29-94	USGS	SDSU	--	--	--	--	--	--
	12-20-94	USGS	SDSU	1,820	7.3	10.0	0.0	--	240
	¹ 12-20-94	USGS	SDSU	--	--	--	--	--	--
	01-26-95	USGS	SDSU	1,800	7.5	10.0	0.1	-128	240
	02-22-95	USGS	SDSU	1,790	7.5	10.0	0.1	-130	240
	¹ 02-22-95	USGS	SDSU	--	--	--	--	--	--
	03-30-95	USGS	SDSU	1,750	7.4	10.0	0.1	-147	240
	04-20-95	USGS	SDSU	1,750	7.5	10.5	0.1	-122	230
	¹ 04-20-95	USGS	SDSU	--	--	--	--	--	--
	06-01-95	USGS	SDSU	1,720	7.5	11.5	0.2	--	240
	06-28-95	USGS	SDSU	1,740	7.4	11.0	0.0	--	240
	07-26-95	USGS	SDSU	1,740	7.4	11.0	0.1	-131	240
	08-30-95	USGS	SDSU	1,740	7.5	11.5	0.0	-142	240
442002098185301 (CO-01-90)	10-27-93	USGS	SDSU	1,950	7.3	10.5	0.2	--	460
	11-17-93	USGS	SDSU	1,930	7.3	10.5	0.1	--	470
	12-15-93	USGS	SDSU	1,930	6.8	10.5	0.1	--	480
	¹ 12-15-93	USGS	SDSU	--	--	--	--	--	--
	01-26-94	USGS	SDSU	2,010	7.0	10.0	0.2	--	--
	02-23-94	USGS	SDSU	1,970	6.8	10.0	0.2	--	430
	¹ 02-23-94	USGS	SDSU	--	--	--	--	--	--
	03-16-94	USGS	SDSU	2,000	7.0	10.5	0.1	--	440
	04-06-94	USGS	SDSU	2,020	7.2	10.5	0.1	--	420
	05-10-94	USGS	SDSU	2,010	7.2	11.0	0.1	--	450
	¹ 05-10-94	USGS	SDSU	--	--	--	--	--	--
	06-29-94	USGS	SDSU	2,010	7.1	11.0	0.1	--	410
	07-27-94	USGS	SDSU	2,010	7.3	11.0	0.1	--	460
	10-04-94	USGS	SDSU	2,000	7.1	10.5	0.1	--	460
	11-29-94	USGS	SDSU	2,000	7.2	10.5	0.1	--	460

Alkalinity, field, dissolved, IT (mg/L as CaCO ₃) (39086)	Calcium, dissolved (mg/L as Ca) (00915)	Magne- sium, dissolved (mg/L as Mg) (00925)	Sodium, dissolved (mg/L as Na) (00930)	Sodium adsorp- tion ratio (00931)	Bicar- bonate, field, dissolved (mg/L as HCO ₃) (00453)	Carbonate, field, dissolved (mg/L as CO ₃) (00452)	Sulfate, dissolved (mg/L as SO ₄) (00945)	Chloride, dissolved (mg/L as Cl) (00940)	Iron, dissolved (µg/L as Fe) (01046)	Manga- nese, dissolved (µg/L as Mn) (01056)
416	65	18	320	9	507	0	470	34	2,800	330
462	65	19	320	9	563	0	460	35	2,800	340
457	65	18	330	9	557	0	490	35	2,900	340
470	--	17	--	--	573	0	--	--	--	--
444	56	19	320	9	541	0	510	33	2,800	360
452	58	19	310	9	551	0	510	34	2,800	350
--	83	20	320	--	--	--	490	34	2,800	350
448	58	18	310	9	546	0	430	34	2,800	360
450	67	18	310	9	549	0	460	35	2,900	340
490	60	17	310	9	598	0	480	36	2,900	320
454	64	17	310	9	554	0	470	35	2,800	350
500	66	17	340	10	--	0	440	35	2,600	330
--	65	18	340	--	--	--	440	34	2,600	320
442	64	17	320	9	539	0	450	34	2,800	350
--	64	18	320	9	--	--	450	34	2,700	350
460	66	17	320	9	561	0	450	35	2,700	320
--	66	17	320	--	--	--	460	35	2,700	320
450	65	18	320	9	549	0	460	35	2,700	340
444	66	18	310	9	542	0	470	34	2,800	340
--	66	18	310	--	--	--	470	34	2,700	340
444	66	18	320	9	542	0	470	33	2,900	360
466	65	17	310	9	569	0	470	34	2,900	330
--	66	17	310	--	--	--	470	35	2,900	330
440	66	18	320	9	537	0	460	34	3,000	350
440	68	18	310	9	537	0	480	34	2,900	340
438	67	18	320	9	453	0	460	34	2,900	350
428	65	19	300	8	522	0	460	35	2,200	350
414	120	40	270	5	505	0	550	38	30	1,700
462	120	41	280	6	563	0	570	40	40	1,700
464	120	40	290	6	566	0	600	39	20	1,800
--	120	40	280	--	--	--	570	39	20	1,700
472	--	39	--	--	575	0	--	--	--	--
456	110	41	270	6	556	0	650	40	20	1,800
--	100	42	280	--	--	--	650	40	20	1,800
470	110	42	280	6	573	0	610	41	20	1,800
484	100	40	280	6	590	0	540	41	20	1,800
452	120	39	280	6	552	0	580	42	20	1,700
--	120	39	280	--	--	--	560	42	20	1,700
452	100	39	280	6	552	0	580	42	40	1,600
500	120	38	270	6	610	0	560	41	30	1,700
456	120	38	290	6	--	0	560	41	30	1,700
454	120	39	280	6	554	0	560	40	50	1,800

Table 8. Water-quality data obtained from screening samples—Continued

Station number	Date	Agency collecting sample	Agency analyzing sample	Specific conduct- ance, field ($\mu\text{s}/\text{cm}$) (00095)	pH, field (standard units) (00400)	Temper- ature, water, field (deg C) (00010)	Dissolved oxygen, field (mg/L) (00300)	Oxidation- reduction potential, field (mV) (00090)	Hardness, total (mg/L as CaCO_3) (00900)
442002098185301 (CO-01-90)—Cont.	12-20-94	USGS	SDSU	2,000	7.0	10.0	0.0	--	450
	01-25-95	USGS	SDSU	1,980	7.2	9.5	0.1	-36	460
	¹ 01-25-95	USGS	SDSU	--	--	--	--	--	--
	02-22-95	USGS	SDSU	1,960	7.2	10.5	0.1	-8	460
	03-29-95	USGS	SDSU	1,900	7.1	10.0	0.1	-26	450
	¹ 03-29-95	USGS	SDSU	--	--	--	--	--	--
	04-20-95	USGS	SDSU	1,900	7.2	10.5	0.1	3	440
	06-01-95	USGS	SDSU	1,860	7.2	11.0	0.2	--	440
	06-28-95	USGS	SDSU	1,880	7.2	11.0	0.1	--	470
	¹ 06-28-95	USGS	SDSU	--	--	--	--	--	--
	07-26-95	USGS	SDSU	1,880	7.1	11.0	0.1	113	450
	08-30-95	USGS	SDSU	1,880	7.3	12.0	0.0	-21	470
	09-27-95	USGS	SDSU	1,820	7.1	11.5	0.1	28	460
442122098172002 (CO-06-90)	10-27-93	USGS	SDSU	1,520	7.5	11.0	0.1	--	180
	11-18-93	USGS	SDSU	1,520	7.3	11.0	0.2	--	190
	¹ 11-18-93	USGS	SDSU	--	--	--	--	--	--
	12-15-93	USGS	SDSU	1,500	7.1	10.5	0.1	--	190
	01-26-94	USGS	SDSU	1,600	7.2	9.5	0.1	--	--
	03-16-94	USGS	SDSU	1,570	7.3	11.0	0.1	--	170
	05-10-94	USGS	SDSU	1,560	7.5	12.0	0.1	--	180
	06-29-94	USGS	SDSU	1,560	7.4	12.0	0.1	--	170
	10-04-94	USGS	SDSU	1,560	7.4	10.5	0.1	--	170
	11-29-94	USGS	SDSU	1,560	7.4	10.0	0.1	--	180
	12-20-94	USGS	SDSU	1,560	7.3	10.0	0.0	--	180
	01-26-95	USGS	SDSU	1,540	7.5	10.0	0.1	-135	180
	02-22-95	USGS	SDSU	1,530	7.5	10.5	0.1	-131	180
	03-30-95	USGS	SDSU	1,510	7.4	10.0	0.1	-125	170
	04-20-95	USGS	SDSU	1,500	7.4	10.5	0.1	-133	170
	06-01-95	USGS	SDSU	1,480	7.5	12.0	0.2	--	180
	06-28-95	USGS	SDSU	1,490	7.4	12.5	0.1	--	180
	07-26-95	USGS	SDSU	1,490	7.3	13.0	0.1	-121	170
	08-30-95	USGS	SDSU	1,510	7.5	13.0	0.0	-139	180
	09-27-95	USGS	SDSU	1,460	7.5	12.0	0.1	-136	180
442110098172501 (CO-19-90)	10-27-93	USGS	SDSU	1,580	7.5	10.5	0.1	--	150
	11-18-93	USGS	SDSU	1,570	7.5	10.5	0.1	--	150
	12-15-93	USGS	SDSU	1,570	7.1	10.0	0.1	--	150
	04-06-94	USGS	SDSU	1,630	7.5	10.5	0.1	--	140
	¹ 04-06-94	USGS	SDSU	--	--	--	--	--	--
	05-10-94	USGS	SDSU	1,630	7.5	11.0	0.1	--	150
	06-29-94	USGS	SDSU	1,610	7.5	11.5	0.1	--	130
	07-27-94	USGS	SDSU	1,620	7.4	11.0	0.1	--	140

Alkalinity, field, dissolved, IT (mg/L as CaCO ₃) (39086)	Calcium, dissolved as Ca (00915)	Magne- sium, dissolved as Mg (00925)	Sodium, dissolved as Na (00930)	Sodium adsorp- tion ratio (00931)	Bicar- bonate, field, dissolved (mg/L as HCO ₃) (00453)	Carbonate, field, dissolved (mg/L as CO ₃) (00452)	Sulfate, dissolved (mg/L as SO ₄) (00945)	Chloride, dissolved (mg/L as Cl) (00940)	Iron, dissolved (µg/L as Fe) (01046)	Manga- nese, dissolved (µg/L as Mn) (01056)
478	120	38	270	6	583	0	590	41	30	1,600
452	120	38	290	6	552	0	560	41	20	1,700
--	120	38	290	--	--	--	590	42	30	1,700
468	120	40	270	5	571	0	570	40	20	1,700
468	120	39	270	6	571	0	550	40	30	1,800
--	120	39	270	--	--	--	560	40	30	1,700
446	110	37	270	6	544	0	590	41	20	1,700
446	110	38	270	6	544	0	570	42	20	1,700
438	120	39	270	6	534	0	560	40	20	1,700
--	120	40	280	--	--	--	570	40	20	1,700
438	110	39	280	6	534	0	560	40	20	1,700
440	120	41	270	6	537	0	560	40	680	1,800
460	120	41	290	6	561	0	560	41	20	1,700
440	49	13	270	9	536	0	310	34	1,900	500
504	51	15	290	9	614	0	280	35	2,000	510
--	51	14	290	--	--	--	280	35	2,000	520
558	52	14	290	9	680	0	310	35	2,000	510
478	--	13	--	--	583	0	--	--	--	--
496	45	14	280	9	605	0	300	35	2,000	510
498	51	12	280	9	608	0	290	36	2,000	490
514	46	13	290	10	627	0	290	35	2,000	470
482	50	12	270	9	588	0	270	35	1,800	480
480	49	13	290	9	586	0	270	35	2,000	510
526	50	12	270	9	642	0	280	36	1,800	470
488	50	13	290	10	595	0	270	36	1,900	490
470	50	13	280	9	574	0	290	35	1,900	480
492	49	13	280	9	600	0	290	36	2,000	500
486	50	12	280	9	593	0	290	35	1,900	460
464	51	12	290	9	566	0	290	34	1,900	470
486	51	13	280	9	593	0	270	34	2,000	460
462	50	12	280	9	564	0	290	35	2,000	480
462	49	13	270	9	564	0	270	36	600	490
476	49	13	300	10	581	0	290	36	1,900	500
474	40	12	310	11	578	0	310	35	1,500	320
508	41	13	320	11	619	0	270	37	1,600	340
536	40	11	320	12	653	0	330	37	1,500	340
534	36	12	320	12	651	0	280	36	1,500	350
--	36	12	310	--	--	--	270	36	1,500	340
516	41	11	300	11	630	0	290	37	1,600	320
546	36	10	310	12	666	0	300	36	1,500	310
510	39	11	310	11	622	0	290	36	1,500	330

Table 8. Water-quality data obtained from screening samples—Continued

Station number	Date	Agency collecting sample	Agency analyzing sample	Specific conduct- ance, field ($\mu\text{S}/\text{cm}$) (00095)	pH, field (standard units) (00400)	Temper- ature, water, field (deg C) (00010)	Dissolved oxygen, field (mg/L) (00300)	Oxidation- reduction potential, field (mV) (00090)	Hardness, total (mg/L as CaCO_3) (00900)
442110098172501 (CO-19-90)—Cont.	¹ 07-27-94	USGS	SDSU	--	--	--	--	--	--
	10-04-94	USGS	SDSU	1,620	7.5	10.5	0.1	--	140
	01-26-95	USGS	SDSU	1,600	7.5	10.5	0.1	-134	140
	02-23-95	USGS	SDSU	1,590	7.5	10.0	0.1	-121	140
	03-30-95	USGS	SDSU	1,570	7.4	10.0	0.1	-100	140
	07-26-95	USGS	SDSU	1,550	7.4	11.5	0.1	-113	140
	08-30-95	USGS	SDSU	1,560	7.5	--	103	-123	140
	09-28-95	USGS	SDSU	1,530	7.5	10.5	0.0	-118	140
442032098172501 (CO-13-90)	10-27-93	USGS	SDSU	1,900	7.6	10.5	0.2	--	160
	11-17-93	USGS	SDSU	1,900	7.6	10.5	0.1	--	170
	12-15-93	USGS	SDSU	1,900	7.1	10.5	0.1	--	160
	06-29-94	USGS	SDSU	1,910	7.5	11.0	0.1	--	140
	¹ 06-29-94	USGS	SDSU	--	--	--	--	--	--
	10-04-94	USGS	SDSU	1,950	7.5	10.0	0.1	--	150
	11-29-94	USGS	SDSU	1,910	7.7	10.0	0.1	--	140
	12-20-94	USGS	SDSU	1,930	7.4	10.0	0.0	--	150
	01-25-95	USGS	SDSU	1,890	7.6	10.0	0.1	-132	150
	09-27-95	USGS	SDSU	2,760	7.4	11.0	0.1	-133	380
	¹ 09-27-95	USGS	SDSU	--	--	--	--	--	--
441937098163001 (CO-21-90)	10-27-93	USGS	SDSU	2,050	7.3	10.0	0.2	--	410
	¹ 10-27-93	USGS	SDSU	--	--	--	--	--	--
	11-17-93	USGS	SDSU	2,020	7.3	10.0	0.2	--	400
	12-15-93	USGS	SDSU	2,020	6.9	10.0	0.1	--	390
	01-26-94	USGS	SDSU	2,120	7.1	10.0	0.2	--	--
	03-16-94	USGS	SDSU	2,290	7.1	10.5	0.2	--	500
	04-06-94	USGS	SDSU	2,240	7.3	10.0	0.1	--	450
	05-10-94	USGS	SDSU	2,260	7.2	10.5	0.2	--	480
	06-29-94	USGS	SDSU	2,150	7.1	11.0	0.1	--	390
	07-27-94	USGS	SDSU	2,120	7.4	11.0	0.1	--	400
	10-04-94	USGS	SDSU	2,050	7.3	10.5	0.1	--	370
	11-29-94	USGS	SDSU	2,050	7.4	10.0	0.1	--	360
	12-20-94	USGS	SDSU	2,080	7.1	10.0	0.1	--	360
	01-25-95	USGS	SDSU	2,070	7.3	10.0	0.1	--	380
	02-22-95	USGS	SDSU	2,050	7.3	10.0	0.1	--	390
	03-29-95	USGS	SDSU	2,000	7.2	10.0	0.1	--	400
	04-20-95	USGS	SDSU	2,090	7.2	10.0	0.1	--	470
	06-01-95	USGS	SDSU	2,080	7.3	11.0	0.2	--	530
	06-28-95	USGS	SDSU	2,130	7.2	11.5	0.1	--	570
	07-26-95	USGS	SDSU	1,970	7.1	11.0	0.1	--	390
	08-30-95	USGS	SDSU	1,850	7.4	11.5	0.0	--	400
	09-27-95	USGS	SDSU	1,920	7.2	10.5	0.1	--	380

¹Indicates duplicate blind sample for quality-assurance purposes.

Alkalinity, field, dissolved, IT (mg/L as CaCO ₃) (39086)	Calcium, dissolved (mg/L as Ca) (00915)	Magne- sium, dissolved (mg/L as Mg) (00925)	Sodium, dissolved (mg/L as Na) (00930)	Sodium adsorp- tion ratio (00931)	Bicar- bonate, field, dissolved (mg/L as HCO ₃) (00453)	Carbonate, field, dissolved (mg/L as CO ₃) (00452)	Sulfate, dissolved (mg/L as SO ₄) (00945)	Chloride, dissolved (mg/L as Cl) (00940)	Iron, dissolved (µg/L as Fe) (01046)	Manga- nese, dissolved (µg/L as Mn) (01056)
--	48	10	300	--	--	--	280	36	1,500	330
508	40	9.8	340	12	--	0	280	36	1,400	310
498	39	11	330	12	608	0	300	37	1,400	320
514	40	10	310	11	627	--	290	36	1,500	320
518	39	10	310	12	632	0	280	37	1,500	330
500	38	10	320	12	610	0	290	37	1,500	300
474	38	11	300	11	578	0	280	36	980	310
516	38	11	320	12	630	0	290	37	1,400	380
464	41	13	380	13	566	0	470	35	2,100	180
510	43	15	390	13	622	0	480	37	2,100	190
512	43	14	400	14	624	0	500	37	2,100	190
516	34	12	390	15	630	0	440	38	1,900	160
--	34	11	380	--	--	--	450	39	1,900	160
504	40	11	400	14	--	0	450	37	1,900	170
498	38	12	380	14	608	0	440	36	1,900	180
548	41	12	380	14	669	0	460	39	1,100	410
492	39	12	380	14	600	0	390	40	1,900	170
416	100	31	560	12	508	0	1,100	47	4,400	450
--	100	32	570	--	--	--	1,100	47	4,500	450
414	100	37	320	7	505	0	640	36	480	720
--	100	37	320	--	--	--	630	37	480	720
432	100	35	330	7	527	0	650	39	550	770
468	100	34	340	7	571	0	660	38	570	790
456	--	34	--	--	556	0	--	--	--	--
430	120	51	320	6	524	0	900	45	430	790
470	110	46	320	7	573	0	650	43	460	710
428	120	45	320	6	522	0	730	44	460	660
502	93	39	330	7	613	0	660	41	470	640
448	100	34	320	7	547	0	640	40	540	740
398	97	32	350	8	486	0	600	38	500	740
464	93	30	350	8	566	0	610	37	610	870
458	95	31	330	7	559	0	630	38	530	780
404	99	33	340	8	493	0	630	39	480	820
440	100	33	320	7	537	0	620	38	470	810
428	100	34	330	7	522	0	600	39	460	880
410	120	42	320	6	500	0	700	41	350	710
414	130	49	300	6	505	0	760	43	300	580
408	140	53	310	6	564	0	740	45	320	550
404	98	34	320	7	493	0	620	39	430	640
388	100	35	210	4	473	0	610	38	460	700
436	97	33	340	8	532	0	600	39	480	700

Table 9. Physical properties and concentrations of inorganic constituents, radioactive nuclides, and total organic carbon obtained from detailed samples

[Agency collecting or analyzing sample: USGS, U.S. Geological Survey; SDSU, South Dakota State University; NWQL, National Water Quality Laboratory; SDDHL, South Dakota Department of Health Laboratory. $\mu\text{S}/\text{cm}$, microsiemens per centimeter; mg/L , milligrams per liter; mm , millimeter; mV , millivolt; mL , milliliter; $\mu\text{g}/\text{L}$, micrograms per liter; pci/L , picocuries per liter; deg , degrees; FET, fixed end point titration; IT, incremental titration; NTU, nephelometric turbidity units; $\mu\text{m-mf}$, micrometer-membrane filter; cols, colonies; <, less than; --, no data]

Station number (other identifier)	Date	Agency collecting sample	Agency analyzing sample	Specific conduct- ance, field ($\mu\text{S}/\text{cm}$) (00095)	pH, field (standard units) (00400)	Temper- ature, air, field (deg C) (00020)	Temper- ature, water, field (deg C) (00010)	Turbidity, field (NTU) (00076)	Baro- metric pressure, field (mm of Hg) (00025)	Dissolved oxygen, field (mg/L) (00300)
442150098120601 (James River at Morningside)	03-22-94	USGS	NWQL	490	7.7	18.0	6.0	29	604	8.5
	03-22-94	USGS	SDDHL	--	--	--	--	--	--	--
	05-02-94	USGS	NWQL	897	8.1	10.0	8.0	3.0	768	10.9
	05-02-94	USGS	SDDHL	--	--	--	--	--	--	--
	05-24-94	USGS	NWQL	1,120	7.8	15.5	23.0	17	725	7.0
	05-24-94	USGS	SDDHL	--	--	--	--	--	--	--
	06-28-94	USGS	NWQL	1,040	8.1	68.0	22.5	22	722	6.4
	06-28-94	USGS	SDDHL	--	--	--	--	--	--	--
442150098120602 (Huron Water Treatment Plant effluent)	03-22-94	USGS	NWQL	702	9.3	16.0	5.0	--	604	10.6
	03-22-94	USGS	SDDHL	--	--	--	--	--	--	--
	05-02-94	USGS	NWQL	938	9.0	16.0	10.5	0.20	768	9.6
	05-02-94	USGS	SDDHL	--	--	--	--	--	--	--
	05-24-94	USGS	NWQL	916	8.6	24.5	22.5	0.90	725	7.2
	05-24-94	USGS	SDDHL	--	--	--	--	--	--	--
	06-28-94	USGS	NWQL	784	8.9	20.0	24.0	0.30	724	6.6
	06-28-94	USGS	SDDHL	--	--	--	--	--	--	--
	07-26-94	USGS	NWQL	825	9.1	12.5	24.0	--	728	6.3
	07-26-94	USGS	SDDHL	--	--	--	--	--	--	--
	10-26-94	USGS	NWQL	900	8.7	2.5	11.0	--	729	10.3
	10-26-94	USGS	SDDHL	--	--	--	--	--	--	--
	04-24-95	USGS	SDSU	781	9.0	--	9.0	--	--	10.8
	04-24-95	USGS	NWQL	771	9.0	15.5	9.0	--	753	10.8
	04-24-95	USGS	NWQL	--	--	--	--	--	--	--
	07-06-95	USGS	NWQL	817	9.0	18.0	22.0	--	728	7.4
	07-06-95	USGS	SDDHL	--	--	--	--	--	--	--
	08-21-95	USGS	NWQL	678	8.9	24.0	25.5	--	729	7.1
	08-21-95	USGS	SDDHL	--	--	--	--	--	--	--
442150098174401 (CO-05-90)	10-27-93	USGS	SDSU	1,540	7.5	--	10.5	--	--	0.2
	11-18-93	USGS	SDSU	1,540	7.4	--	10.5	--	--	0.1
	12-14-93	USGS	SDDHL	--	--	--	--	--	--	--
	12-14-93	USGS	NWQL	1,540	7.1	-4.5	10.0	2.4	726	0.1
	12-14-93	USGS	SDSU	1,540	7.1	--	10.0	--	--	0.1
	01-26-94	USGS	SDSU	1,630	7.3	--	10.0	--	--	0.1
	02-23-94	USGS	SDSU	1,580	7.2	--	9.5	--	--	0.1
	03-16-94	USGS	SDSU	1,600	7.3	--	10.5	--	--	0.1
	03-22-94	USGS	NWQL	1,560	7.5	12.0	10.5	3.2	591	0.2
	03-22-94	USGS	SDDHL	--	--	--	--	--	--	--
	04-06-94	USGS	SDSU	1,600	7.5	--	10.5	--	--	0.1
	05-09-94	USGS	SDSU	1,600	7.4	--	11.5	--	--	0.1
	05-24-94	USGS	NWQL	1,590	7.1	30.0	11.0	2.2	721	0.1
	05-24-94	USGS	SDDHL	--	--	--	--	--	--	--
	06-28-94	USGS	NWQL	1,590	7.4	21.0	11.5	--	720	0.1

Dissolved oxygen, percent saturation, field (00301)	Oxidation-reduction potential, field (mV) (00090)	Hardness, total (mg/L as CaCO ₃) (00900)	Alkalinity, field, dissolved, IT (mg/L as CaCO ₃) (39086)	Coliform, fecal, 0.7 µm-mf (cols/ 100 mL) (31625)	Strep-tococci fecal, KF agar (cols per 100 mL) (31673)	Calcium, dissolved (mg/L as Ca) (00915)	Magnesium, dissolved (mg/L as Mg) (00925)	Sodium, dissolved (mg/L as Na) (00930)	Sodium percent (00932)
87	--	130	91	K21	340	30	14	35	33
--	--	--	--	--	--	--	--	--	--
91	--	280	192	K320	130	61	31	72	34
--	--	--	--	--	--	--	--	--	--
87	--	360	257	K40	--	76	42	90	34
--	--	--	--	--	--	--	--	--	--
78	--	350	294	K32	K32	74	41	77	31
--	--	--	--	--	--	--	--	--	--
80	--	220	115	0	0	78	4.9	47	30
--	--	--	--	--	--	--	--	--	--
83	--	130	78	0	0	29	14	120	64
--	--	--	--	--	--	--	--	--	--
87	--	190	49	--	--	51	16	92	48
--	--	--	--	--	--	--	--	--	--
84	291	160	64	0	0	31	20	80	49
--	--	--	--	--	--	--	--	--	--
79	--	140	48	0	0	35	13	90	54
--	--	--	--	--	--	--	--	--	--
98	--	200	62	K0	K0	42	24	94	48
--	--	--	--	--	--	--	--	--	--
--	0	180	--	--	--	40	19	71	--
95	232	200	44	0	0	45	20	73	42
--	--	--	--	--	--	--	--	--	--
89	--	180	58	0	0	43	18	81	47
--	--	--	--	--	--	--	--	--	--
92	--	140	61	0	0	37	11	73	51
--	--	--	--	--	--	--	--	--	--
--	--	150	424	--	--	43	11	290	--
--	--	160	480	--	--	44	11	310	--
--	--	--	--	--	--	--	--	--	--
1	--	150	469	0	0	45	9.6	290	79
--	--	160	463	--	--	44	12	310	--
--	--	--	480	--	--	--	10	--	--
--	--	150	484	--	--	39	12	300	--
--	--	150	486	--	--	39	12	300	--
2	--	150	456	0	0	45	9.3	280	79
--	--	--	--	--	--	--	--	--	--
--	--	140	526	--	--	39	11	300	--
--	--	150	462	--	--	44	9.9	300	--
1	--	150	490	--	--	43	9.5	280	79
--	--	--	--	--	--	--	--	--	--
1	--	150	522	0	0	44	9.8	280	79

Table 9. Physical properties and concentrations of inorganic constituents, radioactive nuclides, and total organic carbon obtained from detailed samples—Continued

Station number (other identifier)	Date	Sodium adsorp- tion ratio (00931)	Potassium, dissolved (mg/L as K) (00935)	Bicar- bonate, field, dissolved, IT (mg/L as HCO ₃) (00453)	Carbonate, field, dissolved, IT (mg/L as CO ₃) (00452)	Sulfate, dissolved (mg/L as SO ₄) (00945)	Chloride, dissolved (mg/L as Cl) (00940)	Fluoride, dissolved (mg/L as F) (00950)	Silica, dissolved (mg/L as SiO ₂) (00955)
442150098120601 (James River at Morningside)	03-22-94	1	18	111	0	99	19	<0.10	11
	03-22-94	--	--	--	--	--	--	--	--
	05-02-94	2	14	234	0	200	43	0.10	6.0
	05-02-94	--	--	--	--	--	--	--	--
	05-24-94	2	17	314	0	250	50	0.20	7.5
	05-24-94	--	--	--	--	--	--	--	--
	06-28-94	2	18	359	0	200	36	0.30	13
	06-28-94	--	--	--	--	--	--	--	--
442150098120602 (Huron Water Treatment Plant effluent)	03-22-94	1	18	79	30	170	29	1.1	8.9
	03-22-94	--	--	--	--	--	--	--	--
	05-02-94	5	15	76	10	280	46	1.0	8.8
	05-02-94	--	--	--	--	--	--	--	--
	05-24-94	3	17	47	6	290	56	1.4	3.6
	05-24-94	--	--	--	--	--	--	--	--
	06-28-94	3	19	68	5	230	43	1.3	6.7
	06-28-94	--	--	--	--	--	--	--	--
	07-26-94	3	21	46	6	240	51	1.4	7.3
	07-26-94	--	--	--	--	--	--	--	--
	10-26-94	3	17	69	3	290	50	1.3	10
	10-26-94	--	--	--	--	--	--	--	--
	04-24-95	2	--	--	--	290	40	--	--
	04-24-95	2	16	39	7	250	39	1.1	7.3
	04-24-95	--	--	--	--	--	--	--	--
	07-06-95	3	16	52	9	250	47	1.3	6.8
	07-06-95	--	--	--	--	--	--	--	--
	08-21-95	3	13	58	8	210	29	1.4	7.7
	08-21-95	--	--	--	--	--	--	--	--
442150098174401 (CO-05-90)	10-27-93	10	--	517	0	340	37	--	--
	11-18-93	11	--	585	0	310	40	--	--
	12-14-93	--	--	--	--	--	--	--	--
	12-14-93	10	9.9	572	0	300	35	0.40	29
	12-14-93	11	--	565	0	340	38	--	--
	01-26-94	--	--	585	0	--	--	--	--
	02-23-94	11	--	590	0	340	39	--	--
	03-16-94	11	--	593	0	360	38	--	--
	03-22-94	10	10	556	0	300	36	0.40	27
	03-22-94	--	--	--	--	--	--	--	--
	04-06-94	11	--	641	0	290	38	--	--
	05-09-94	10	--	564	0	310	38	--	--
	05-24-94	10	10	597	0	300	37	0.40	28
	05-24-94	--	--	--	--	--	--	--	--
	06-28-94	10	10	637	0	300	36	0.40	29

Solids, sum of con- stituents, dissolved (mg/L) (70301)	Solids, residue at 180 deg C, dissolved (mg/L) (70300)	Solids, dissolved (tons per acre-feet) (70303)	Solids, residue at 105 deg C, total (mg/L) (00500)	Residue at 105 deg C, dissolved (mg/L) (00515)	Residue at 105 deg C, suspended (mg/L) (00530)	Nitrogen, ammonia, dissolved (mg/L as N) (00608)	Nitrogen, ammonia, dissolved (mg/L as NH ₄) (71846)	Nitrogen, ammonia+ organic, dissolved (mg/L as N) (00623)	Nitrogen, NO ₂ + NO ₃ , total (mg/L as N) (00630)	Nitrogen, NO ₂ + NO ₃ , dissolved (mg/L as N) (00631)
281	311	0.42	400	327	71	--	--	--	--	--
--	--	--	--	--	--	0.450	0.58	2.3	1.10	1.10
543	590	0.80	627	614	23	--	--	--	--	--
--	--	--	--	--	--	<0.020	--	0.95	0.100	0.100
688	744	1.01	806	748	57	--	--	--	--	--
--	--	--	--	--	--	<0.020	--	1.0	--	<0.100
637	674	0.92	796	788	56	--	--	--	--	--
--	--	--	--	--	--	<0.020	--	1.1	0.100	0.100
426	451	0.61	466	473	3	--	--	--	--	--
--	--	--	--	--	--	1.15	1.5	2.2	1.00	1.00
562	582	0.79	599	597	2	--	--	--	--	--
--	--	--	--	--	--	0.720	0.93	1.4	0.100	0.100
557	585	0.80	608	605	<1	--	--	--	--	--
--	--	--	--	--	--	0.640	0.82	1.5	--	<0.100
470	490	0.67	476	506	4	--	--	--	--	--
--	--	--	--	--	--	0.740	0.95	2.3	0.100	0.100
488	510	0.69	--	515	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	<0.100
566	585	0.80	--	617	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	0.300	0.300
--	--	--	--	--	--	--	--	--	--	--
478	502	0.68	--	518	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	0.500	0.500
498	542	0.74	--	556	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	0.200	0.200
419	446	0.61	--	454	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	0.100	0.100
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	0.450	0.58	1.3	--	<0.100
1,000	996	1.35	1,050	1,100	2	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
984	1,030	1.40	1,050	1,050	10	--	--	--	--	--
--	--	--	--	--	--	0.900	1.2	1.2	0.100	0.100
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
1,000	1,020	1.39	1,040	1,040	4	--	--	--	--	--
--	--	--	--	--	--	0.470	0.61	1.1	0.100	0.100
1,020	1,030	1.40	--	1,060	--	--	--	--	--	--

Table 9. Physical properties and concentrations of inorganic constituents, radioactive nuclides, and total organic carbon obtained from detailed samples—Continued

Station number (other identifier)	Date	Phos- phorus, total (mg/L as P) (00665)	Phos- phorus ortho, dissolved (mg/L as P) (00671)	Arsenic, dissolved (µg/L as As) (01000)	Barium, dissolved (µg/L as Ba) (01005)	Beryllium, dissolved (µg/L as Be) (01010)	Boron, dissolved (µg/L as B) (01020)	Cadmium, dissolved (µg/L as Cd) (01025)	Chromium, dissolved (µg/L as Cr) (01030)
442150098120601 (James River at Morningside)	03-22-94	--	--	2	46	<0.5	80	<1.0	<5
	03-22-94	0.543	0.329	--	--	--	--	--	--
	05-02-94	--	--	2	61	<0.5	130	<1.0	<5
	05-02-94	0.280	0.233	--	--	--	--	--	--
	05-24-94	--	--	4	77	<0.5	160	<1.0	<5
	05-24-94	0.360	0.314	--	--	--	--	--	--
	06-28-94	--	--	5	68	<0.5	180	<1.0	<5
	06-28-94	0.266	0.263	--	--	--	--	--	--
442150098120602 (Huron Water Treatment Plant effluent)	03-22-94	--	--	<1	14	<0.5	90	<1.0	<5
	03-22-94	0.623	0.040	--	--	--	--	--	--
	05-02-94	--	--	<1	10	<0.5	150	<1.0	<5
	05-02-94	1.36	0.041	--	--	--	--	--	--
	05-24-94	--	--	<1	18	<0.5	120	<1.0	<5
	05-24-94	0.743	0.063	--	--	--	--	--	--
	06-28-94	--	--	1	11	<0.5	120	1.0	<5
	06-28-94	0.416	0.059	--	--	--	--	--	--
	07-26-94	--	--	1	15	<0.5	140	<1.0	<5
	07-26-94	--	--	--	--	--	--	--	--
	10-26-94	--	--	1	10	<0.5	130	<1.0	<5
	10-26-94	--	--	--	--	--	--	--	--
	04-24-95	--	--	--	--	--	--	--	--
	04-24-95	--	--	<1	11	<0.5	100	<1.0	<5
	04-24-95	--	--	--	--	--	--	--	--
	07-06-95	--	--	<1	14	<0.5	100	<1.0	<5
	07-06-95	--	--	--	--	--	--	--	--
	08-21-95	--	--	1	12	<0.5	60	<1.0	<5
	08-21-95	--	--	--	--	--	--	--	--
442150098174401 (CO-05-90)	10-27-93	--	--	--	--	--	--	--	--
	11-18-93	--	--	--	--	--	--	--	--
	12-14-93	0.123	0.031	--	--	--	--	--	--
	12-14-93	--	--	1	19	<0.5	340	<1.0	<5
	12-14-93	--	--	--	--	--	--	--	--
	01-26-94	--	--	--	--	--	--	--	--
	02-23-94	--	--	--	--	--	--	--	--
	03-16-94	--	--	--	--	--	--	--	--
	03-22-94	--	--	1	18	<0.5	340	<1.0	<5
	03-22-94	0.133	0.025	--	--	--	--	--	--
	04-06-94	--	--	--	--	--	--	--	--
	05-09-94	--	--	--	--	--	--	--	--
	05-24-94	--	--	1	19	<0.5	320	<1.0	<5
	05-24-94	--	0.014	--	--	--	--	--	--
	06-28-94	--	--	1	20	<0.5	340	1.0	<5

Cobalt, dissolved (µg/L as Co) (01035)	Copper, dissolved (µg/L as Cu) (01040)	Iron, dissolved (µg/L as Fe) (01046)	Lead, dissolved (µg/L as Pb) (01049)	Lithium, dissolved (µg/L as Li) (01130)	Manga- nese, dissolved (µg/L as Mn) (01056)	Mercury, dissolved (µg/L as Hg) (71890)	Molyb- denum, dissolved (µg/L as Mo) (01060)	Nickel, dissolved (µg/L as Ni) (01065)	Selenium, dissolved (µg/L as Se) (01145)	Silver, dissolved (µg/L as Ag) (01075)
4	<10	240	<10	19	340	<0.1	10	<10	<1	<1.0
--	--	--	--	--	--	--	--	--	--	--
<3	<10	22	<10	41	120	<0.1	<10	<10	<1	<1.0
--	--	--	--	--	--	--	--	--	--	--
<3	<10	6	<10	53	91	0.1	<10	<10	<1	<1.0
--	--	--	--	--	--	--	--	--	--	--
<3	<10	11	10	53	170	<0.1	<10	<10	<1	<1.0
--	--	--	--	--	--	--	--	--	--	--
<3	<10	6	<10	28	3	<0.1	<10	<10	<1	<1.0
--	--	--	--	--	--	--	--	--	--	--
<3	<10	7	<10	54	3	<0.1	<10	<10	<1	<1.0
--	--	--	--	--	--	--	--	--	--	--
<3	<10	7	<10	53	2	<0.1	<10	<10	<1	<1.0
--	--	--	--	--	--	--	--	--	--	--
<3	<10	5	10	53	2	<0.1	<10	<10	<1	3.0
--	--	--	--	--	--	--	--	--	--	--
<3	<10	55	<10	49	3	<0.1	10	<10	--	<1.0
--	--	--	--	--	--	--	--	--	--	--
<3	<10	5	<10	67	2	<0.1	<10	<10	--	<1.0
--	--	--	--	--	--	--	--	--	--	--
--	--	0	--	--	0	--	--	--	--	--
<3	<10	4	<10	43	<1	<0.1	<10	10	--	<1.0
--	--	--	--	--	--	--	--	--	--	--
<3	<10	7	<10	54	4	<0.1	<10	<10	--	<1.0
--	--	--	--	--	--	--	--	--	--	--
<3	<10	6	<10	46	1	<0.1	<10	<10	--	<1.0
--	--	--	--	--	--	--	--	--	--	--
--	--	1,200	--	--	420	--	--	--	--	--
--	--	1,200	--	--	460	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
<3	<10	1,100	<10	85	410	<0.1	<10	<10	<1	<1.0
--	--	1,200	--	--	440	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
--	--	1,200	--	--	470	--	--	--	--	--
--	--	1,200	--	--	460	--	--	--	--	--
<3	<10	1,200	<10	81	400	<0.1	20	<10	<1	<1.0
--	--	--	--	--	--	--	--	--	--	--
--	--	1,200	--	--	460	--	--	--	--	--
--	--	1,200	--	--	430	--	--	--	--	--
<3	<10	1,100	10	84	390	<0.1	<10	10	<1	3.0
--	--	--	--	--	--	--	--	--	--	--
<3	<10	1,100	<10	84	400	<0.1	<10	<10	<1	<1.0

Table 9. Physical properties and concentrations of inorganic constituents, radioactive nuclides, and total organic carbon obtained from detailed samples—Continued

Station number (other identifier)	Date	Strontium, dissolved (µg/L as Sr) (01080)	Vanadium, dissolved (µg/L as V) (01085)	Zinc, dissolved (µg/L as Zn) (01090)	Gross alpha, dissolved (µg/L as natural uranium) (80030)	Alpha, count, 2 sigma, dissolved as natural uranium (µg/L) (75986)	Alpha radio, dissolved as Th-230 (pci/L) (04126)	Alpha count, 2 sigma, dissolved as Th-230 (pci/L) (75987)	Gross alpha, dissolved (pci/L as U-natural) (01515)
442150098120601 (James River at Morningside)	03-22-94	160	<6	17	0.6	1.5	<0.6	1.1	--
	03-22-94	--	--	--	--	--	--	--	1.2
	05-02-94	310	<6	17	2.5	3.5	1.6	2.2	--
	05-02-94	--	--	--	--	--	--	--	2.7
	05-24-94	420	<6	17	1.1	3.4	0.8	2.4	--
	05-24-94	--	--	--	--	--	--	--	2.7
	06-28-94	390	<6	<3	3.1	3.4	2.3	2.5	--
	06-28-94	--	--	--	--	--	--	--	3.1
442150098120602 (Huron Water Treatment Plant effluent)	03-22-94	200	<6	6	1.0	1.8	0.7	1.4	--
	03-22-94	--	--	--	--	--	--	--	1.8
	05-02-94	150	<6	18	<0.6	2.3	<0.6	1.6	--
	05-02-94	--	--	--	--	--	--	--	1.1
	05-24-94	260	<6	17	0.8	2.3	<0.6	1.5	--
	05-24-94	--	--	--	--	--	--	--	0.8
	06-28-94	160	<6	20	1.5	2.4	1.1	1.7	--
	06-28-94	--	--	--	--	--	--	--	1.3
	07-26-94	190	<6	20	--	--	--	--	--
	07-26-94	--	--	--	--	--	--	--	--
	10-26-94	190	<6	28	--	--	--	--	--
	10-26-94	--	--	--	--	--	--	--	--
	04-24-95	--	--	--	--	--	--	--	--
	04-24-95	210	<6	24	--	--	--	--	--
	04-24-95	--	--	--	--	--	--	--	--
	07-06-95	190	<6	23	--	--	--	--	--
	07-06-95	--	--	--	--	--	--	--	--
	08-21-95	160	<6	20	--	--	--	--	--
	08-21-95	--	--	--	--	--	--	--	--
442150098174401 (CO-05-90)	10-27-93	--	--	--	--	--	--	--	--
	11-18-93	--	--	--	--	--	--	--	--
	12-14-93	--	--	--	--	--	--	--	3.1
	12-14-93	420	<6	<3	3.6	4.8	2.6	3.5	--
	12-14-93	--	--	--	--	--	--	--	--
	01-26-94	--	--	--	--	--	--	--	--
	02-23-94	--	--	--	--	--	--	--	--
	03-16-94	--	--	--	--	--	--	--	--
	03-22-94	430	<6	<3	2.6	6.2	1.9	4.4	--
	03-22-94	--	--	--	--	--	--	--	1.8
	04-06-94	--	--	--	--	--	--	--	--
	05-09-94	--	--	--	--	--	--	--	--
	05-24-94	420	<6	<3	1.5	6.1	1.0	4.4	--
	05-24-94	--	--	--	--	--	--	--	1.5
	06-28-94	420	<6	3	1.2	4.5	0.9	3.4	--

Table 9. Physical properties and concentrations of inorganic constituents, radioactive nuclides, and total organic carbon obtained from detailed samples—Continued

Station number (other identifier)	Date	Agency collecting sample	Agency analyzing sample	Specific conduct- ance, field ($\mu\text{S}/\text{cm}$) (00095)	pH, field (standard units) (00400)	Temper- ature, air, field (deg C) (00020)	Temper- ature, water, field (deg C) (00010)	Turbidity, field (NTU) (00076)	Baro- metric pressure, field (mm of Hg) (00025)	Dissolved oxygen, field (mg/L) (00300)
442150098174401 (CO-05-90)—Cont.	06-28-94	USGS	SDDHL	--	--	--	--	--	--	--
	06-29-94	USGS	SDSU	1,590	7.4	--	11.5	--	--	0.1
	07-26-94	USGS	SDSU	1,590	7.6	--	11.0	--	--	0.1
	07-26-94	USGS	NWQL	1,590	7.6	14.0	11.0	--	728	0.1
	07-26-94	USGS	SDDHL	--	--	--	--	--	--	--
	10-04-94	USGS	SDSU	1,590	7.4	--	10.5	--	--	0.1
	10-26-94	USGS	NWQL	1,590	7.3	5.0	10.5	--	727	0.1
	10-26-94	USGS	SDDHL	--	--	--	--	--	--	--
	11-29-94	USGS	SDSU	1,590	7.5	4.0	10.0	--	726	0.1
	12-20-94	USGS	SDSU	1,590	7.4	-5.0	10.5	--	733	0.0
	01-24-95	USGS	SDDHL	--	--	--	--	--	--	--
	01-24-95	USGS	NWQL	1,580	7.5	-8.0	10.0	--	729	0.1
	01-25-95	USGS	SDSU	1,580	7.5	--	10.0	--	--	0.1
	02-22-95	USGS	SDSU	1,560	7.5	6.0	10.5	--	723	0.1
	03-30-95	USGS	SDSU	1,530	7.5	-1.0	10.5	--	732	0.0
	04-20-95	USGS	SDSU	1,530	7.5	8.0	10.5	--	720	0.1
	04-24-95	USGS	SDSU	1,530	7.5	--	10.5	--	--	0.1
	04-24-95	USGS	NWQL	1,530	7.5	11.0	10.5	--	726	0.1
	¹ 04-24-95	USGS	NWQL	--	--	--	--	--	--	--
	04-24-95	USGS	SDDHL	--	--	--	--	--	--	--
	06-01-95	USGS	SDSU	1,520	7.4	21.0	11.5	--	721	0.2
	² 06-01-95	USGS	SDSU	--	--	--	--	--	--	--
	06-28-95	USGS	SDSU	1,260	7.4	20.0	12.0	--	724	0.1
	07-06-95	USGS	NWQL	1,510	7.3	21.0	11.5	--	725	0.1
	³ 07-06-95	USGS	SDSU	--	--	--	--	--	--	--
	07-06-95	USGS	SDDHL	--	--	--	--	--	--	--
	07-26-95	USGS	SDSU	1,510	7.4	21.0	11.5	--	721	0.1
	² 07-26-95	USGS	SDSU	--	--	--	--	--	--	--
	08-21-95	USGS	NWQL	1,530	7.5	29.5	11.5	--	725	0.1
	³ 08-21-95	USGS	SDSU	--	--	--	--	--	--	--
	08-21-95	USGS	SDDHL	--	--	--	--	--	--	--
	08-30-95	USGS	SDSU	1,530	7.5	27.0	11.5	--	717	0.1
	09-27-95	USGS	SDSU	1,480	7.5	26.0	11.0	--	721	0.1
442111098173801 (CO-18-90)	12-14-93	USGS	SDDHL	--	--	--	--	--	--	--
	12-14-93	USGS	NWQL	1,610	7.2	-6.0	9.0	3.7	727	0.1
	03-22-94	USGS	NWQL	1,610	7.5	16.0	10.5	4.5	599	0.1
	03-22-94	USGS	SDDHL	--	--	--	--	--	--	--
	05-24-94	USGS	NWQL	1,650	7.2	33.0	12.0	4.3	723	0.1
	05-24-94	USGS	SDDHL	--	--	--	--	--	--	--
	06-28-94	USGS	NWQL	1,640	7.4	24.0	12.0	5.2	720	0.1
	06-28-94	USGS	SDDHL	--	--	--	--	--	--	--
	07-26-94	USGS	NWQL	1,650	7.6	16.5	11.0	--	--	0.1
	07-26-94	USGS	SDDHL	--	--	--	--	--	--	--
	10-26-94	USGS	NWQL	1,640	7.4	5.0	10.0	--	727	0.1
	10-26-94	USGS	SDDHL	--	--	--	--	--	--	--
	01-24-95	USGS	SDSU	1,620	7.5	--	10.0	--	--	0.1
	01-24-95	USGS	SDDHL	--	--	--	--	--	--	--

Dissolved oxygen, percent saturation, field (00301)	Oxidation-reduction potential, field (mV) (00090)	Hardness, total (mg/L as CaCO ₃) (00900)	Alkalinity, field, dissolved, IT (mg/L as CaCO ₃) (39086)	Coliform, fecal, 0.7 µm-mf (cols/ 100 mL) (31625)	Strep-tococci fecal, KF agar (cols per 100 mL) (31673)	Calcium, dissolved (mg/L as Ca) (00915)	Magnesium, dissolved (mg/L as Mg) (00925)	Sodium, dissolved (mg/L as Na) (00930)	Sodium percent (00932)
--	--	--	--	--	--	--	--	--	--
--	--	140	496	--	--	40	11	300	--
--	-153	150	485	--	--	43	10	290	--
1	-153	150	485	0	0	44	9.5	290	80
--	--	--	--	--	--	--	--	--	--
--	--	150	438	--	--	44	9.5	290	--
1	-86	160	444	K0	K0	47	10	290	79
--	--	--	--	--	--	--	--	--	--
1	--	150	470	--	--	42	10	300	--
0	--	150	492	--	--	44	10	300	--
--	--	--	--	--	--	--	--	--	--
1	-117	150	465	0	0	43	9.6	290	80
--	-117	150	465	--	--	45	10	300	--
1	-133	150	472	--	--	43	10	300	--
0	-126	150	440	--	--	43	10	300	--
1	-124	150	462	--	--	43	9.6	290	--
--	-82	150	468	--	--	42	9.7	300	--
1	-82	160	468	0	0	48	10	300	79
--	--	160	--	--	--	47	10	300	79
--	--	--	--	--	--	--	--	--	--
2	--	150	534	--	--	43	10	300	--
--	--	150	--	--	--	44	10	300	--
1	--	150	408	--	--	44	10	300	--
1	--	160	449	0	0	46	9.8	270	78
--	--	150	--	--	--	44	10	300	--
--	--	--	--	--	--	--	--	--	--
1	-116	150	452	--	--	42	10	300	--
--	--	150	--	--	--	42	10	300	--
1	-120	150	455	0	0	44	9.5	280	79
--	--	150	--	--	--	43	11	300	--
--	--	--	--	--	--	--	--	--	--
1	-108	150	474	--	--	42	10	290	--
1	-111	150	460	--	--	42	11	310	--
--	--	--	--	--	--	--	--	--	--
1	--	170	529	0	0	48	12	300	78
1	--	170	403	0	0	48	11	280	77
--	--	--	--	--	--	--	--	--	--
1	--	160	478	--	--	46	12	280	77
--	--	--	--	--	--	--	--	--	--
1	-121	170	534	0	0	47	12	290	78
--	--	--	--	--	--	--	--	--	--
1	-134	170	498	0	0	47	12	290	78
--	--	--	--	--	--	--	--	--	--
1	-117	170	454	K0	K0	50	12	300	78
--	--	--	--	--	--	--	--	--	--
1	--	160	460	--	--	42	13	310	--
--	--	--	--	--	--	--	--	--	--

Table 9. Physical properties and concentrations of inorganic constituents, radioactive nuclides, and total organic carbon obtained from detailed samples—Continued

Station number (other identifier)	Date	Sodium adsorp- tion ratio (00931)	Potassium, dissolved (mg/L as K) (00935)	Bicar- bonate, field, dissolved, IT (mg/L as HCO ₃) (00453)	Carbonate, field, dissolved, IT (mg/L as CO ₃) (00452)	Sulfate, dissolved (mg/L as SO ₄) (00945)	Chloride, dissolved (mg/L as Cl) (00940)	Fluoride, dissolved (mg/L as F) (00950)	Silica, dissolved (mg/L as SiO ₂) (00955)
442150098174401 (CO-05-90)—Cont.	06-28-94	--	--	--	--	--	--	--	--
	06-29-94	11	--	605	0	310	37	--	--
	07-26-94	10	--	591	0	310	36	--	--
	07-26-94	10	9.8	591	0	300	35	0.40	29
	07-26-94	--	--	--	--	--	--	--	--
	10-04-94	10	--	534	0	290	36	--	--
	10-26-94	10	9.3	542	0	300	35	0.40	30
	10-26-94	--	--	--	--	--	--	--	--
	11-29-94	11	--	574	0	280	36	--	--
	12-20-94	10	--	600	0	300	37	--	--
	01-24-95	--	--	--	--	--	--	--	--
	01-24-95	10	10	567	0	300	36	0.40	28
	01-25-95	11	--	567	0	300	37	--	--
	02-22-95	11	--	576	--	290	36	--	--
	03-30-95	11	--	537	0	330	36	--	--
	04-20-95	10	--	564	0	310	36	--	--
	04-24-95	11	--	--	0	320	35	--	--
	04-24-95	10	10	571	0	300	34	0.40	31
	¹ 04-24-95	10	10	--	--	300	33	0.40	30
	04-24-95	--	--	--	--	--	--	--	--
	06-01-95	11	--	652	0	320	35	--	--
	² 06-01-95	10	--	--	--	300	35	--	--
	06-28-95	11	--	498	0	320	35	--	--
	07-06-95	9	10	548	0	300	32	0.40	30
	³ 07-06-95	10	--	--	--	300	35	--	--
	07-06-95	--	--	--	--	--	--	--	--
	07-26-95	11	--	552	0	320	35	--	--
	² 07-26-95	11	--	--	--	--	35	--	--
	08-21-95	10	10	555	0	300	33	0.50	30
	³ 08-21-95	10	--	--	--	--	35	--	--
	08-21-95	--	--	--	--	--	--	--	--
	08-30-95	10	--	578	0	310	34	--	--
	09-27-95	11	--	561	0	320	35	--	--
442111098173801 (CO-18-90)	12-14-93	--	--	--	--	--	--	--	--
	12-14-93	10	11	645	0	360	30	0.40	27
	03-22-94	9	11	492	0	330	31	0.50	25
	03-22-94	--	--	--	--	--	--	--	--
	05-24-94	10	11	583	0	330	31	0.50	26
	05-24-94	--	--	--	--	--	--	--	--
	06-28-94	10	11	652	0	340	29	0.40	27
	06-28-94	--	--	--	--	--	--	--	--
	07-26-94	10	11	608	0	330	32	0.40	27
	07-26-94	--	--	--	--	--	--	--	--
	10-26-94	10	11	554	0	330	31	0.50	28
	10-26-94	--	--	--	--	--	--	--	--
	01-24-95	11	--	--	0	320	32	--	--
	01-24-95	--	--	--	--	--	--	--	--

Solids, sum of con- stituents, dissolved (mg/L) (70301)	Solids, residue at 180 deg C, dissolved (mg/L) (70300)	Solids, dissolved (tons per acre-feet) (70303)	Solids, residue at 180 deg C, total (mg/L) (00500)	Residue at 105 deg C, dissolved (mg/L) (00515)	Residue at 105 deg C, suspended (mg/L) (00530)	Nitrogen, ammonia, dissolved (mg/L as N) (00608)	Nitrogen, ammonia, dissolved (mg/L as NH ₄) (71846)	Nitrogen, ammonia+ organic, dissolved (mg/L as N) (00623)	Nitrogen, NO ₂ + NO ₃ , total (mg/L as N) (00630)	Nitrogen, NO ₂ + NO ₃ , dissolved (mg/L as N) (00631)
--	--	--	--	--	--	0.480	0.62	0.98	0.100	0.100
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
1,010	1,040	1.41	--	1,020	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	<0.100
--	--	--	--	--	--	--	--	--	--	--
991	1,010	1.37	--	1,040	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	<0.100
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	<0.100
998	1,030	1.40	--	1,040	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
1,020	1,030	1.40	--	1,030	--	--	--	--	--	--
1,020	1,030	1.40	--	1,030	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	0.100	0.100
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
970	1,030	1.40	--	1,040	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	0.100	0.100
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
982	1,010	1.37	--	1,020	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	<0.100
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	0.450	0.58	1.2	--	<0.100
1,110	1,070	1.46	1,100	1,090	2	--	--	--	--	--
981	1,050	1.43	1,080	1,100	4	--	--	--	--	--
--	--	--	--	--	--	0.890	1.1	1.3	--	<0.100
1,030	1,070	1.46	1,080	1,080	6	--	--	--	--	--
--	--	--	--	--	--	0.440	0.57	1.0	--	<0.100
1,080	1,060	1.44	1,080	1,080	15	--	--	--	--	--
--	--	--	--	--	--	0.430	0.55	0.97	0.100	0.100
1,050	1,070	1.46	--	1,050	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	<0.100
1,040	1,040	1.41	--	1,090	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	<0.100
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	<0.100

Table 9. Physical properties and concentrations of inorganic constituents, radioactive nuclides, and total organic carbon obtained from detailed samples—Continued

Station number (other identifier)	Date	Phos- phorus, total (mg/L as P) (00665)	Phos- phorus ortho, dissolved (mg/L as P) (00671)	Arsenic, dissolved (µg/L as As) (01000)	Barium, dissolved (µg/L as Ba) (01005)	Beryllium, dissolved (µg/L as Be) (01010)	Boron, dissolved (µg/L as B) (01020)	Cadmium, dissolved (µg/L as Cd) (01025)	Chromium, dissolved (µg/L as Cr) (01030)
442150098174401 (CO-05-90)—Cont.	06-28-94	0.100	0.025	--	--	--	--	--	--
	06-29-94	--	--	--	--	--	--	--	--
	07-26-94	--	--	--	--	--	--	--	--
	07-26-94	--	--	1	18	<0.5	310	<1.0	<5
	07-26-94	--	--	--	--	--	--	--	--
	10-04-94	--	--	--	--	--	--	--	--
	10-26-94	--	--	2	20	<0.5	330	<1.0	<5
	10-26-94	--	--	--	--	--	--	--	--
	11-29-94	--	--	--	--	--	--	--	--
	12-20-94	--	--	--	--	--	--	--	--
	01-24-95	--	--	--	--	--	--	--	--
	01-24-95	--	--	1	19	<0.5	330	1.0	<5
	01-25-95	--	--	--	--	--	--	--	--
	02-22-95	--	--	--	--	--	--	--	--
	03-30-95	--	--	--	--	--	--	--	--
	04-20-95	--	--	--	--	--	--	--	--
	04-24-95	--	--	--	--	--	--	--	--
	04-24-95	--	--	1	19	<0.5	330	<1.0	<5
	¹ 04-24-95	--	--	1	19	<0.5	320	<1.0	<5
	04-24-95	--	--	--	--	--	--	--	--
	06-01-95	--	--	--	--	--	--	--	--
	² 06-01-95	--	--	--	--	--	--	--	--
	06-28-95	--	--	--	--	--	--	--	--
	07-06-95	--	--	1	19	<0.5	330	<1.0	<5
	³ 07-06-95	--	--	--	--	--	--	--	--
	07-06-95	--	--	--	--	--	--	--	--
	07-26-95	--	--	--	--	--	--	--	--
	² 07-26-95	--	--	--	--	--	--	--	--
	08-21-95	--	--	2	18	<0.5	300	2.0	<5
	³ 08-21-95	--	--	--	--	--	--	--	--
	08-21-95	--	--	--	--	--	--	--	--
	08-30-95	--	--	--	--	--	--	--	--
	09-27-95	--	--	--	--	--	--	--	--
442111098173801 (CO-18-90)	12-14-93	0.063	0.011	--	--	--	--	--	--
	12-14-93	--	--	10	20	<0.5	270	<1.0	<5
	03-22-94	--	--	8	16	<0.5	270	<1.0	<5
	03-22-94	0.067	0.009	--	--	--	--	--	--
	05-24-94	--	--	8	18	<0.5	240	2.0	<5
	05-24-94	--	0.010	--	--	--	--	--	--
	06-28-94	--	--	8	18	<0.5	250	1.0	<5
	06-28-94	0.050	0.016	--	--	--	--	--	--
	07-26-94	--	--	9	17	<0.5	250	<1.0	<5
	07-26-94	--	--	--	--	--	--	--	--
	10-26-94	--	--	10	21	<0.5	250	<1.0	<5
	10-26-94	--	--	--	--	--	--	--	--
	01-24-95	--	--	--	--	--	--	--	--
	01-24-95	--	--	--	--	--	--	--	--

Cobalt, dissolved (µg/L as Co) (01035)	Copper, dissolved (µg/L as Cu) (01040)	Iron, dissolved (µg/L as Fe) (01046)	Lead, dissolved (µg/L as Pb) (01049)	Lithium, dissolved (µg/L as Li) (01130)	Manga- nese, dissolved (µg/L as Mn) (01056)	Mercury, dissolved (µg/L as Hg) (71890)	Molyb- denum, dissolved (µg/L as Mo) (01060)	Nickel, dissolved (µg/L as Ni) (01065)	Selenium, dissolved (µg/L as Se) (01145)	Silver, dissolved (µg/L as Ag) (01075)
--	--	--	--	--	--	--	--	--	--	--
--	--	1,200	--	--	400	--	--	--	--	--
--	--	1,200	--	--	430	--	--	--	--	--
10	<10	1,100	<10	76	410	<0.1	10	<10	--	2.0
--	--	--	--	--	--	--	--	--	--	--
--	--	1,100	--	--	430	--	--	--	--	--
<3	<10	1,200	<10	92	420	<0.1	<10	<10	--	1.0
--	--	--	--	--	--	--	--	--	--	--
--	--	1,200	--	--	440	--	--	--	--	--
--	--	1,900	--	--	180	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
<3	<10	1,100	<10	85	390	<0.1	<10	<10	--	<1.0
--	--	1,100	--	--	440	--	--	--	--	--
--	--	1,200	--	--	420	--	--	--	--	--
--	--	1,200	--	--	440	--	--	--	--	--
--	--	1,200	--	--	420	--	--	--	--	--
--	--	1,200	--	--	400	--	--	--	--	--
<3	<10	1,200	<10	95	420	<0.1	20	<10	--	<1.0
7	<10	1,200	<10	96	420	<0.1	<10	10	--	2.0
--	--	--	--	--	--	--	--	--	--	--
--	--	1,100	--	--	410	--	--	--	--	--
--	--	1,100	--	--	430	--	--	--	--	--
--	--	1,100	--	--	410	--	--	--	--	--
6	<10	1,200	<10	91	400	<0.1	<10	<10	--	<1.0
--	--	1,200	--	--	420	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
--	--	1,200	--	--	410	--	--	--	--	--
--	--	1,200	--	--	420	--	--	--	--	--
9	<10	1,100	20	85	390	<0.1	20	10	--	<1.0
--	--	1,000	--	--	430	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
--	--	460	--	--	420	--	--	--	--	--
--	--	1,100	--	--	430	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
<3	<10	1,000	<10	80	410	<0.1	<10	<10	<1	<1.0
<3	<10	1,200	<10	80	370	<0.1	20	<10	<1	<1.0
--	--	--	--	--	--	--	--	--	--	--
<3	<10	1,100	<10	82	370	<0.1	30	<10	<1	<1.0
--	--	--	--	--	--	--	--	--	--	--
<3	<10	1,100	<10	84	380	<0.1	10	<10	<1	1.0
--	--	--	--	--	--	--	--	--	--	--
20	<10	1,100	<10	75	390	<0.1	30	<10	--	<1.0
--	--	--	--	--	--	--	--	--	--	--
<3	<10	1,200	20	92	410	<0.1	20	<10	--	1.0
--	--	--	--	--	--	--	--	--	--	--
--	--	1,200	--	--	400	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--

Table 9. Physical properties and concentrations of inorganic constituents, radioactive nuclides, and total organic carbon obtained from detailed samples—Continued

Station number (other identifier)	Date	Strontium, dissolved (µg/L as Sr) (01080)	Vanadium, dissolved (µg/L as V) (01085)	Zinc, dissolved (µg/L as Zn) (01090)	Gross alpha, dissolved (µg/L as natural uranium) (80030)	Alpha, count, 2 sigma, dissolved as natural uranium (µg/L) (75986)	Alpha radio, dissolved as Th-230 (pci/L) (04126)	Alpha count, 2 sigma, dissolved as Th-230 (pci/L) (75987)	Gross alpha, dissolved (pci/L as U-natural) (01515)
442150098174401 (CO-05-90)	06-28-94	--	--	--	--	--	--	--	1.5
	06-29-94	--	--	--	--	--	--	--	--
	07-26-94	--	--	--	--	--	--	--	--
	07-26-94	420	<6	<3	--	--	--	--	--
	07-26-94	--	--	--	--	--	--	--	--
	10-04-94	--	--	--	--	--	--	--	--
	10-26-94	450	<6	<3	--	--	--	--	--
	10-26-94	--	--	--	--	--	--	--	--
	11-29-94	--	--	--	--	--	--	--	--
	12-20-94	--	--	--	--	--	--	--	--
	01-24-95	--	--	--	--	--	--	--	--
	01-24-95	450	<6	<3	--	--	--	--	--
	01-25-95	--	--	--	--	--	--	--	--
	02-22-95	--	--	--	--	--	--	--	--
	03-30-95	--	--	--	--	--	--	--	--
	04-20-95	--	--	--	--	--	--	--	--
	04-24-95	--	--	--	--	--	--	--	--
	04-24-95	440	<6	<3	--	--	--	--	--
	¹ 04-24-95	440	<6	3	--	--	--	--	--
	04-24-95	--	--	--	--	--	--	--	--
	06-01-95	--	--	--	--	--	--	--	--
	² 06-01-95	--	--	--	--	--	--	--	--
	06-28-95	--	--	--	--	--	--	--	--
	07-06-95	430	<6	<3	--	--	--	--	--
	³ 07-06-95	--	--	--	--	--	--	--	--
	07-06-95	--	--	--	--	--	--	--	--
	07-26-95	--	--	--	--	--	--	--	--
	² 07-26-95	--	--	--	--	--	--	--	--
	08-21-95	430	<6	<3	--	--	--	--	--
	³ 08-21-95	--	--	--	--	--	--	--	--
	08-21-95	--	--	--	--	--	--	--	--
	08-30-95	--	--	--	--	--	--	--	--
	09-27-95	--	--	--	--	--	--	--	--
442111098173801 (CO-18-90)	12-14-93	--	--	--	--	--	--	--	5.0
	12-14-93	510	<6	<3	2.4	4.1	1.8	3.0	--
	03-22-94	510	<6	<3	3.2	6.1	2.4	4.7	--
	03-22-94	--	--	--	--	--	--	--	1.7
	05-24-94	500	<6	<3	3.1	6.3	2.2	4.5	--
	05-24-94	--	--	--	--	--	--	--	2.0
	06-28-94	500	<6	<3	5.5	6.6	3.9	4.6	--
	06-28-94	--	--	--	--	--	--	--	3.0
	07-26-94	490	<6	<3	--	--	--	--	--
	07-26-94	--	--	--	--	--	--	--	--
	10-26-94	520	<6	<3	--	--	--	--	--
	10-26-94	--	--	--	--	--	--	--	--
	01-24-95	--	--	--	--	--	--	--	--
	01-24-95	--	--	--	--	--	--	--	--

Alpha dissolved, counting error (pci/L) (01504)	Gross beta, dissolved (pci/L as Cs-137) (03515)	Beta, 2 sigma, dissolved as Cs-137 (pci/L) (75989)	Gross beta, dissolved (pci/L as Sr/Yt-90) (80050)	Beta, 2 sigma, dissolved as Sr90/Y90 (pci/L) (75988)	Gross beta, counting error (pci/L as Sr90) (03528)	Radium 226, dissolved, radon method (pci/L) (09511)	Radium 226, dissolved, counting error (pci/L) (09504)	Radium 228, dissolved (pci/L as Ra-228) (81366)	Radium 228, dissolved, counting error (pci/L) (81367)	Carbon, organic, total (mg/L as C) (00680)
--	--	--	18	--	7.7	--	--	0.90	0.30	--
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3.9	--	--	54	--	10.4	0.30	0.3	0.80	0.20	--
--	15	3.7	11	2.7	--	--	--	--	--	5.1
--	14	3.4	10	2.5	--	--	--	--	--	6.0
--	--	--	15	--	7.7	<0.10	0.1	1.2	0.40	--
--	17	3.9	13	2.9	--	--	--	--	--	5.4
--	--	--	38	--	8.9	0.10	0.1	0.80	0.20	--
--	15	3.6	11	2.7	--	--	--	--	--	8.5
--	--	--	18	--	7.7	2.1	0.4	1.9	0.60	--
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Table 9. Physical properties and concentrations of inorganic constituents, radioactive nuclides, and total organic carbon obtained from detailed samples—Continued

Station number (other identifier)	Date	Agency collecting sample	Agency analyzing sample	Specific conduct- ance, field ($\mu\text{S}/\text{cm}$) (00095)	pH, field (standard units) (00400)	Temper- ature, air, field (deg C) (00020)	Temper- ature, water, field (deg C) (00010)	Turbidity, field (NTU) (00076)	Baro- metric pressure, field (mm of Hg) (00025)	Dissolved oxygen, field (mg/L) (00300)
442111098173801	01-24-95	USGS	NWQL	1,620	7.5	-6.0	10.0	--	729	0.1
(CO-18-90)—Cont.	07-06-95	USGS	NWQL	1,550	7.5	21.0	12.5	--	725	0.1
	³ 07-06-95	USGS	SDSU	--	--	--	--	--	--	--
	07-06-95	USGS	SDDHL	--	--	--	--	--	--	--
	08-21-95	USGS	NWQL	1,580	7.5	28.5	14.0	--	725	0.1
	³ 08-21-95	USGS	SDSU	--	--	--	--	--	--	--
	08-21-95	USGS	SDDHL	--	--	--	--	--	--	--

Dissolved oxygen, percent saturation, field (00301)	Oxidation-reduction potential, field (mV) (00090)	Hardness, total (mg/L as CaCO ₃) (00900)	Alkalinity, field, dissolved, IT (mg/L as CaCO ₃) (39086)	Coliform, fecal, 0.7 µm-mf (cols/ 100 mL) (31625)	Strep-tococci fecal, KF agar (cols per 100 mL) (31673)	Calcium, dissolved (mg/L as Ca) (00915)	Magnesium, dissolved (mg/L as Mg) (00925)	Sodium, dissolved (mg/L as Na) (00930)	Sodium percent (00932)
1	-94	160	460	0	0	46	12	280	77
1	--	170	465	0	0	47	12	280	77
--	--	160	--	--	--	46	12	300	--
--	--	--	--	--	--	--	--	--	--
1	-136	160	455	0	0	46	12	290	78
--	--	160	--	--	--	44	13	300	--
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Table 9. Physical properties and concentrations of inorganic constituents, radioactive nuclides, and total organic carbon obtained from detailed samples—Continued

Station number (other identifier)	Date	Sodium adsorp- tion ratio (00931)	Potassium, dissolved (mg/L as K) (00935)	Bicar- bonate, field, dissolved, IT (mg/L as HCO ₃) (00453)	Carbonate, field, dissolved, IT (mg/L as CO ₃) (00452)	Sulfate, dissolved (mg/L as SO ₄) (00945)	Chloride, dissolved (mg/L as Cl) (00940)	Fluoride, dissolved (mg/L as F) (00950)	Silica, dissolved (mg/L as SiO ₂) (00955)
442111098173801 (CO-18-90)—Cont.	01-24-95	10	11	561	0	320	30	0.50	26
	07-06-95	9	11	567	0	330	29	0.40	28
	³ 07-06-95	10	--	--	--	--	31	--	--
	07-06-95	--	--	--	--	--	--	--	--
	08-21-95	10	11	555	0	320	29	0.50	29
	³ 08-21-95	10	--	--	--	--	31	--	--
	08-21-95	--	--	--	--	--	--	--	--

Solids, sum of con- stituents, dissolved (mg/L) (70301)	Solids, residue at 180 deg C, dissolved (mg/L) (70300)	Solids, dissolved (tons per acre-feet) (70303)	Solids, residue at 105 deg C, total (mg/L) (00500)	Residue at 105 deg C, dissolved (mg/L) (00515)	Residue at 105 deg C, suspended (mg/L) (00530)	Nitrogen, ammonia, dissolved (mg/L as N) (00608)	Nitrogen, ammonia, dissolved (mg/L as NH ₄) (71846)	Nitrogen, ammonia+ organic, dissolved (mg/L as N) (00623)	Nitrogen, NO ₂ + NO ₃ , total (mg/L as N) (00630)	Nitrogen, NO ₂ + NO ₃ , dissolved (mg/L as N) (00631)
1,000	1,070	1.46	--	1,070	--	--	--	--	--	--
1,020	1,070	1.46	--	1,060	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	0.100	0.100
1,010	1,060	1.44	--	1,060	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
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Table 9. Physical properties and concentrations of inorganic constituents, radioactive nuclides, and total organic carbon obtained from detailed samples—Continued

Station number (other identifier)	Date	Phos- phorus, total (mg/L as P) (00665)	Phos- phorus ortho, dissolved (mg/L as P) (00671)	Arsenic, dissolved (µg/L as As) (01000)	Barium, dissolved (µg/L as Ba) (01005)	Beryllium, dissolved (µg/L as Be) (01010)	Boron, dissolved (µg/L as B) (01020)	Cadmium, dissolved (µg/L as Cd) (01025)	Chromium, dissolved (µg/L as Cr) (01030)
442111098173801	01-24-95	--	--	8	17	<0.5	270	<1.0	<5
(CO-18-90)—Cont.	07-06-95	--	--	8	17	<0.5	250	<1.0	<5
	³ 07-06-95	--	--	--	--	--	--	--	--
	07-06-95	--	--	--	--	--	--	--	--
	08-21-95	--	--	9	17	<0.5	250	<1.0	<5
	³ 08-21-95	--	--	--	--	--	--	--	--
	08-21-95	--	--	--	--	--	--	--	--

Cobalt, dissolved (µg/L as Co) (01035)	Copper, dissolved (µg/L as Cu) (01040)	Iron, dissolved (µg/L as Fe) (01046)	Lead, dissolved (µg/L as Pb) (01049)	Lithium, dissolved (µg/L as Li) (01130)	Manga- nese, dissolved (µg/L as Mn) (01056)	Mercury, dissolved (µg/L as Hg) (71890)	Molyb- denum, dissolved (µg/L as Mo) (01060)	Nickel, dissolved (µg/L as Ni) (01065)	Selenium, dissolved (µg/L as Se) (01145)	Silver, dissolved (µg/L as Ag) (01075)
<3	<10	1,100	<10	84	360	0.1	20	<10	--	<1.0
5	<10	1,200	<10	87	370	<0.1	30	<10	--	<1.0
--	--	1,100	--	--	400	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--
8	<10	1,200	<10	84	380	<0.1	30	10	--	<1.0
--	--	350	--	--	410	--	--	--	--	--
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Table 9. Physical properties and concentrations of inorganic constituents, radioactive nuclides, and total organic carbon obtained from detailed samples—Continued

Station number (other identifier)	Date	Strontium, dissolved (µg/L as Sr) (01080)	Vanadium, dissolved (µg/L as V) (01085)	Zinc, dissolved (µg/L as Zn) (01090)	Gross alpha, dissolved (µg/L as natural uranium) (80030)	Alpha, count, 2 sigma, dissolved as natural uranium (µg/L) (75986)	Alpha radio, dissolved as Th-230 (pci/L) (04126)	Alpha count, 2 sigma, dissolved as Th-230 (pci/L) (75987)	Gross alpha, dissolved (pci/L as U-natural) (01515)
442111098173801 (CO-18-90)—Cont.	01-24-95	530	<6	<3	--	--	--	--	--
	07-06-95	500	<6	<3	--	--	--	--	--
	³ 07-06-95	--	--	--	--	--	--	--	--
	07-06-95	--	--	--	--	--	--	--	--
	08-21-95	510	<6	<3	--	--	--	--	--
	³ 08-21-95	--	--	--	--	--	--	--	--
	08-21-95	--	--	--	--	--	--	--	--

¹Indicates duplicate sample pair sent to NWQL for quality-assurance purposes.

²Indicates blind sample for quality-assurance purposes.

³Indicates replicate sample pairs sent to SDSU and NWQL for quality-assurance purposes.

Alpha dissolved, counting error (pci/L) (01504)	Gross beta, dissolved (pci/L as Cs-137) (03515)	Beta, 2 sigma, dissolved as Cs-137 (pci/L) (75989)	Gross beta, dissolved (pci/L as Sr/Yt-90) (80050)	Beta, 2 sigma, dissolved as Sr90/Y90 (pci/L) (75988)	Gross beta, counting error (pci/L as Sr90) (03528)	Radium 226, dissolved, radon method (pci/L) (09511)	Radium 226, dissolved, counting error (pci/L) (09504)	Radium 228, dissolved (pci/L as Ra-228) (81366)	Radium 228, dissolved, counting error (pci/L) (81367)	Carbon, organic, total (mg/L as C) (00680)
--	--	--	--	--	--	--	--	--	--	--
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Table 10. Concentrations of dicamba, picloram, and chlorophenoxy-acid herbicides obtained from detailed samples

[All analyses on unfiltered samples. All samples collected by U.S. Geological Survey and analyzed by National Water Quality Laboratory. µg/L, micrograms per liter; <, less than]

Station number (other identifier)	Date	Dicamba (Mediben) (Ban Vel D) (µg/L) (82052)	Picloram (Tordon) (Amdon) (µg/L) (39720)	Silvex (µg/L) (39760)	2,4-D (µg/L) (39730)	2,4,5-T (µg/L) (39740)	2,4-DP (µg/L) (82183)
42150098120601 (James River at Morningside)	03-22-94	0.04	<0.01	<0.01	0.39	<0.01	<0.01
	05-02-94	0.02	0.04	<0.01	<0.01	<0.01	<0.01
	06-28-94	0.06	<0.01	<0.01	0.20	<0.01	<0.01
442150098120602 (Huron Water Treatment Plant effluent)	03-22-94	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	05-02-94	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	06-28-94	0.05	<0.01	<0.01	<0.01	<0.01	<0.01
442150098174401 (CO-05-90)	12-14-93	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	03-22-94	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	06-28-94	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
442111098173801 (CO-18-90)	12-14-93	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	03-22-94	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Table 11. Concentrations of organochlorine insecticides, gross polychlorinated biphenols (PCB's), and gross polychlorinated naphthalenes (PCN's) obtained from detailed samples

[All analyses on unfiltered samples. All samples collected by U.S. Geological Survey and analyzed by National Water Quality Laboratory. µg/L, micrograms per liter; <, less than]

Station number (other identifier)	Date	Aldrin (µg/L) (39330)	Chlordane (µg/L) (39350)	DDD (µg/L) (39360)	DDE (µg/L) (39365)	DDT (µg/L) (39370)	Dieldrin (µg/L) (39380)	Endo- sulfan (µg/L) (39388)
42150098120601 (James River at Morningside)	03-22-94	<0.010	<0.1	<0.010	<0.010	<0.010	<0.010	<0.010
	05-02-94	<0.010	<0.1	<0.010	<0.010	<0.010	<0.010	<0.010
	05-24-94	<0.010	<0.1	<0.010	<0.010	<0.010	<0.010	<0.010
	06-28-94	<0.010	<0.1	<0.010	<0.010	<0.010	<0.010	<0.010
442150098120602 (Huron Water Treatment Plant effluent)	03-22-94	<0.010	<0.1	<0.010	<0.010	<0.010	<0.010	<0.010
	05-02-94	<0.010	<0.1	<0.010	<0.010	<0.010	<0.010	<0.010
	05-24-94	<0.010	<0.1	<0.010	<0.010	<0.010	<0.010	<0.010
	06-28-94	<0.010	<0.1	<0.010	<0.010	<0.010	<0.010	<0.010
42150098174401 (CO-05-90)	12-14-93	<0.010	<0.1	<0.010	<0.010	<0.010	<0.010	<0.010
	03-22-94	<0.010	<0.1	<0.010	<0.010	<0.010	<0.010	<0.010
	05-24-94	<0.010	<0.1	<0.010	<0.010	<0.010	<0.010	<0.010
	06-28-94	<0.010	<0.1	<0.010	<0.010	<0.010	<0.010	<0.010
42111098173801 (CO-18-90)	12-14-93	<0.010	<0.1	<0.010	<0.010	<0.010	<0.010	<0.010
	03-22-94	<0.010	<0.1	<0.010	<0.010	<0.010	<0.010	<0.010
	05-24-94	<0.010	<0.1	<0.010	<0.010	<0.010	<0.010	<0.010

Endrin (µg/L) (39390)	Heptachlor (µg/L) (39410)	Heptachlor epoxide (µg/L) (39420)	Lindane (µg/L) (39340)	Methoxy- chlor (µg/L) (39480)	Mirex (µg/L) (39755)	Perthane (µg/L) (39034)	PCB (µg/L) (39516)	PCN (µg/L) (39250)	Toxaphene (µg/L) (39400)
<0.010	<0.010	<0.010	<0.010	<0.01	<0.01	<0.1	<0.1	<0.10	<1
<0.010	<0.010	<0.010	<0.010	<0.01	<0.01	<0.1	<0.1	<0.10	<1
<0.010	<0.010	<0.010	<0.010	<0.01	<0.01	<0.1	<0.1	<0.10	<1
<0.010	<0.010	<0.010	<0.010	<0.01	<0.01	<0.1	<0.1	<0.10	<1
<0.010	<0.010	<0.010	<0.010	<0.01	<0.01	<0.1	<0.1	<0.10	<1
<0.010	<0.010	<0.010	<0.010	<0.01	<0.01	<0.1	<0.1	<0.10	<1
<0.010	<0.010	<0.010	<0.010	<0.01	<0.01	<0.1	<0.1	<0.10	<1
<0.010	<0.010	<0.010	<0.010	<0.01	<0.01	<0.1	<0.1	<0.10	<1
<0.010	<0.010	<0.010	<0.010	<0.01	<0.01	<0.1	<0.1	<0.10	<1
<0.010	<0.010	<0.010	<0.010	<0.01	<0.01	<0.1	<0.1	<0.10	<1
<0.010	<0.010	<0.010	<0.010	<0.01	<0.01	<0.1	<0.1	<0.10	<1
<0.010	<0.010	<0.010	<0.010	<0.01	<0.01	<0.1	<0.1	<0.10	<1
<0.010	<0.010	<0.010	<0.010	<0.01	<0.01	<0.1	<0.1	<0.10	<1
<0.010	<0.010	<0.010	<0.010	<0.01	<0.01	<0.1	<0.1	<0.10	<1
<0.010	<0.010	<0.010	<0.010	<0.01	<0.01	<0.1	<0.1	<0.10	<1
<0.010	<0.010	<0.010	<0.010	<0.01	<0.01	<0.1	<0.1	<0.10	<1
<0.010	<0.010	<0.010	<0.010	<0.01	<0.01	<0.1	<0.1	<0.10	<1
<0.010	<0.010	<0.010	<0.010	<0.01	<0.01	<0.1	<0.1	<0.10	<1
<0.010	<0.010	<0.010	<0.010	<0.01	<0.01	<0.1	<0.1	<0.10	<1

Table 12. Concentrations of volatile organic compounds obtained from detailed samples

[All analyses on unfiltered samples. All samples collected by U.S. Geological Survey and analyzed by National Water Quality Laboratory. µg/L, micrograms per liter; <, less than]

Station number (other identifier)	Date	Acrolein (µg/L) (34210)	Acrylo- nitrile (µg/L) (34215)	Benzene (µg/L) (34030)	Bromo- benzene (µg/L) (81555)	Benzene, n-butyl- (µg/L) (77342)	Benzene, sec-butyl- (µg/L) (77350)	Benzene, tert-butyl- (µg/L) (77353)	Chloro- benzene (µg/L) (34301)	Benzene, o-chloro- (µg/L) (34536)
442150098120601 (James River at Morningside)	03-22-94	<20	<20	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
	05-02-94	<20	<20	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
	05-24-94	<20	<20	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
	06-28-94	<20	<20	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
442150098120602 (Huron Water Treatment Plant effluent)	03-22-94	<20	<20	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
	05-02-94	<20	<20	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
	05-24-94	<20	<20	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
	06-28-94	<20	<20	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
42150098174401 (CO-05-90)	12-14-93	<20	<20	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
	03-22-94	<20	<20	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
	05-24-94	<20	<20	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
	06-28-94	<20	<20	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
442111098173801 (CO-18-90)	12-14-93	<20	<20	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
	03-22-94	<20	<20	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
	05-24-94	<20	<20	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
	06-28-94	<20	<20	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0

[illegible]

Table 12. Concentrations of volatile organic compounds obtained from detailed samples—Continued

Station number (other identifier)	Date	Methyl- ene chloride (µg/L) (34423)	Chloro- form (µg/L) (32106)	1,2- Dibromo- ethane (µg/L) (77651)	Chloro- ethane (µg/L) (34311)	1,1-Di- chloro- ethane (µg/L) (34496)	1,2-Di- chloro- ethane (µg/L) (32103)	Ethane, 1,1,1,2- tetra- chloro- (µg/L) (77562)	Ethane, 1,1,2,2- tetra- chloro- (µg/L) (34516)	1,1,1-Tri- chloro- ethane (µg/L) (34506)
442150098120601 (James River at Morningside)	03-22-94	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
	05-02-94	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
	05-24-94	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
	06-28-94	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
442150098120602 (Huron Water Treatment Plant effluent)	03-22-94	<3.0	25	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
	05-02-94	<3.0	21	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
	05-24-94	<3.0	40	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
	06-28-94	<3.0	63	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
42150098174401 (CO-05-90)	12-14-93	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
	03-22-94	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
	05-24-94	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
	06-28-94	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
442111098173801 (CO-18-90)	12-14-93	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
	03-22-94	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
	05-24-94	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
	06-28-94	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0

1,1,2-Tri-chloro-ethane (µg/L) (34511)	Cis-1,2-dichloro-ethene (µg/L) (77093)	1,2-Trans-dichloro-ethene (µg/L) (34546)	2-Chloro-ethyl-vinyl-ether (µg/L) (34576)	Methyl-ether, tert-butyl- (µg/L) (78032)	1,1-Di-chloro-ethylene (µg/L) (34501)	Tetra-chloro-ethylene (µg/L) (34475)	Tri-chloro-ethylene (µg/L) (39180)	Freon-113 (µg/L) (77652)	Mesit-ylen (µg/L) (77226)	Methane, bromo-chloro- (µg/L) (77297)	Chloro-dibromo-methane (µg/L) (32105)
<3.0	<3.0	<3.0	<3.0	<5.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.00	<3.0
<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.00	<3.0
<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.00	<3.0
<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.00	<3.0
<3.0	<3.0	<3.0	<3.0	<5.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.00	<3.0
<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.00	5.8
<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.00	9.9
<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.00	7.9
<3.0	<3.0	<3.0	<3.0	<5.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.00	<3.0
<3.0	<3.0	<3.0	<3.0	<5.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.00	<3.0
<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.00	<3.0
<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.00	<3.0
<3.0	<3.0	<3.0	<3.0	<5.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.00	<3.0
<3.0	<3.0	<3.0	<3.0	<5.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.00	<3.0
<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.00	<3.0
<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.00	<3.0

Table 12. Concentrations of volatile organic compounds obtained from detailed samples—Continued

Station number (other identifier)	Date	Dibromo- methane (µg/L) (30217)	Dichloro- bromo- methane (µg/L) (32101)	Dichloro- difluoro- methane (µg/L) (34668)	Trichloro- fluoro- methane (µg/L) (34488)	Naphth- alene (µg/L) (34696)	Dibromo- chloro- propane (µg/L) (82625)	1,2-Di- chloro- propane (µg/L) (34541)	1,3-Di- chloro- propane (µg/L) (77173)	2,2-Di- chloro- propane (µg/L) (77170)
442150098120601 (James River at Morningside)	03-22-94	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
	05-02-94	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
	05-24-94	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
	06-28-94	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
442150098120602 (Huron Water Treatment Plant effluent)	03-22-94	<3.0	8.5	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
	05-02-94	<3.0	13	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
	05-24-94	<3.0	23	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
	06-28-94	<3.0	26	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
42150098174401 (CO-05-90)	12-14-93	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
	03-22-94	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
	05-24-94	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
	06-28-94	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
442111098173801 (CO-18-90)	12-14-93	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
	03-22-94	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
	05-24-94	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
	06-28-94	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0

[illegible]

Table 13. Water-quality data obtained from plume-monitoring samples

[$\mu\text{S}/\text{cm}$, microsiemens per centimeter; mg/L , milligrams per liter; mV , millivolt; mL , milliliter; $\mu\text{g}/\text{L}$, micrograms per liter; FET, fixed end point titration; IT, incremental titration; --, no data]

Station number	Date	Specific conductance, field ($\mu\text{S}/\text{cm}$) (00095)	pH, field (standard units) (00400)	Dissolved oxygen, field (mg/L) (00300)	Oxidation-reduction potential, field (mV) (00090)	Alkalinity, whole, FET, field (mg/L as CaCO_3) (00410)	Calcium, dissolved (mg/L as Ca) (00915)
442119098173601 (CO-65-90)	06-02-94	1,640	7.0	0.1	-148	476	46
	06-08-94	1,650	7.2	0.1	-139	460	43
	06-30-94	1,670	7.4	0.1	-143	490	41
442119098173602 (CO-66-90)	06-02-94	1,550	6.9	0.1	-143	460	51
	06-08-94	1,630	7.1	0.1	-136	448	53
	06-30-94	1,610	7.4	0.1	-142	464	49
	07-08-94	1,620	7.5	0.1	-136	472	50
	09-01-94	1,450	7.2	--	-137	420	56
	10-19-94	1,590	7.3	0.1	-141	434	54
	01-09-95	1,590	7.5	0.1	-138	498	55
	03-07-95	1,560	7.5	--	-123	458	53
	05-24-95	1,550	7.5	0.1	-151	432	53
	06-29-95	1,540	7.3	0.0	-215	420	52
	07-27-95	1,530	7.3	0.0	-169	423	53
	11-14-95	1,460	7.5	0.1	-116	458	55
442119098173603 (CO-67-90)	06-02-94	2,020	7.0	0.1	-124	456	55
	06-08-94	1,930	7.1	0.1	-105	450	54
	06-30-94	1,700	7.4	0.1	-110	466	48
	09-01-94	1,530	7.3	--	-88	434	49
	01-09-95	1,710	7.5	0.1	-96	500	55
	03-07-95	1,670	7.5	--	-60	466	55
442118098174001 (CO-16-90)	06-02-94	1,600	7.0	0.1	-155	476	47
	06-07-94	1,680	7.5	0.1	-147	426	45
	06-20-94	1,680	7.4	0.1	-144	410	41
	06-27-94	1,650	7.5	0.1	-147	444	41
	06-30-94	1,680	7.4	0.1	-153	482	39
	07-05-94	1,680	7.4	0.1	-148	462	39
	07-13-94	1,670	7.5	0.1	-166	482	37
	07-21-94	1,600	7.6	0.1	-167	464	35
	08-31-94	1,600	7.3	--	-132	408	42
	10-19-94	1,600	7.6	0.0	-147	450	44
	01-09-95	1,650	7.5	0.1	-141	520	46
	03-06-95	1,640	7.5	--	-131	448	44
	05-24-95	1,570	7.5	0.2	-122	459	45
	06-29-95	1,620	7.4	0.1	-135	450	44
	07-28-95	1,600	7.4	0.1	-153	455	42
	11-13-95	1,520	7.4	0.1	-389	459	45
442118098174002 (CO-33-90)	06-02-94	--	6.9	0.1	-141	452	42
	06-07-94	--	7.4	0.1	-124	412	98
	06-10-94	1,660	7.4	0.1	-122	430	--
	06-13-94	1,670	7.4	--	-128	432	--

Magnesium, dissolved (mg/L as Mg) (00925)	Sodium, dissolved (mg/L as Na) (00930)	Bicarbonate, whole, IT, field (mg/L as HCO3) (00450)	Carbonate, whole, IT, field (mg/L as CO3) (00457)	Chloride, dissolved (mg/L as Cl) (00940)	Fluoride, dissolved (mg/L as F) (00950)	Iron, dissolved (mg/L as Fe) (01046)	Manganese, dissolved (mg/L as Mn) (01056)	Carbon, organic, total (mg/L as C) (00680)
11	310	580	0	41	--	1,700	410	5.2
11	310	561	0	39	--	1,700	380	6.0
12	320	597	0	42	--	1,600	390	5.8
15	290	561	0	35	--	2,200	200	4.4
15	280	546	0	34	--	2,100	200	5.1
15	290	566	0	35	--	2,100	200	4.7
15	290	575	0	35	--	2,300	210	4.8
15	290	512	0	34	--	2,300	210	--
14	290	529	0	34	--	2,200	210	5.3
15	280	607	0	34	--	2,300	210	4.9
14	290	558	0	33	--	2,100	210	4.8
14	280	527	0	34	0.34	2,100	220	5.4
15	280	512	0	35	0.34	2,000	200	9.4
15	280	516	0	33	0.46	2,300	200	5.4
16	290	558	0	34	0.38	2,400	220	--
16	380	556	0	37	--	590	440	5.0
16	370	549	0	36	--	540	440	5.6
17	310	568	0	33	--	420	450	5.1
12	330	529	0	33	--	530	400	5.1
16	310	610	0	33	--	640	480	5.4
17	310	568	0	32	--	730	500	5.6
12	310	580	0	39	--	2,300	230	5.1
12	320	519	0	38	--	2,300	240	5.9
11	320	500	0	37	--	2,100	230	7.6
11	320	541	0	37	--	2,100	220	6.4
12	320	588	0	37	--	2,100	220	4.5
12	320	563	0	37	--	2,100	220	5.5
12	320	588	0	37	--	2,200	240	4.3
11	320	566	0	42	--	2,000	210	7.0
12	320	497	0	42	--	2,100	230	6.2
11	320	549	0	36	--	2,100	230	5.7
12	320	634	0	37	--	2,200	230	5.6
12	320	546	0	37	--	2,200	230	5.9
12	310	560	0	39	0.40	2,100	240	7.0
11	320	549	0	38	0.36	2,100	220	6.7
--	310	555	0	35	0.46	2,100	210	8.3
12	300	560	0	37	0.37	2,300	240	--
59	300	551	0	56	--	2,200	260	5.5
67	450	502	0	57	--	2,300	260	7.5
--	--	524	0	--	--	--	--	--
--	--	527	0	33	--	1,200	110	5.4

Table 13. Water-quality data obtained from plume-monitoring samples—Continued

Station number	Date	Specific conductance, field ($\mu\text{S}/\text{cm}$) (00095)	pH, field (standard units) (00400)	Dissolved oxygen, field (mg/L) (00300)	Oxidation- reduction potential, field (mV) (00090)	Alkalinity, whole, FET, field (mg/L as CaCO_3) (00410)	Calcium, dissolved (mg/L as Ca) (00915)
442118098174002 (CO-33-90)—Cont.	06-23-94	1,660	7.5	0.1	-130	432	--
	06-30-94	1,670	7.4	0.1	-143	472	37
	07-05-94	--	7.3	0.1	-127	428	99
	07-08-94	1,850	7.5	0.1	-143	464	44
	07-15-94	1,890	7.5	0.1	-147	466	46
	07-18-94	1,900	7.5	0.1	-153	478	46
	07-21-94	1,930	7.6	0.1	-152	460	46
	07-25-94	1,930	7.6	0.1	-170	452	46
	08-31-94	1,960	7.3	--	-115	400	48
	10-19-94	2,450	7.6	0.1	-126	418	81
	01-09-95	2,230	7.5	0.1	-131	500	61
	03-06-95	2,480	7.5	--	-108	448	75
	05-24-95	2,630	7.5	0.1	-92	432	91
	06-16-95	2,580	7.2	0.1	-126	412	72
	06-21-95	2,110	7.3	0.0	-158	450	58
	06-29-95	2,150	7.3	0.1	-141	454	62
	07-10-95	2,000	7.3	0.1	-171	427	57
	07-13-95	1,980	7.2	0.0	-135	432	57
	07-20-95	1,950	7.4	0.1	-108	420	54
	07-28-95	2,660	7.4	0.0	-139	439	90
	08-03-95	1,800	7.4	0.0	-149	428	46
	08-10-95	2,040	7.4	0.0	-148	416	55
	08-17-95	1,940	7.5	0.1	-130	424	53
	09-06-95	1,910	7.5	0.0	-143	350	54
	11-13-95	2,470	7.3	0.1	-387	450	87
442118098174003 (CO-34-90)	06-02-94	--	6.9	0.1	-87	472	90
	06-07-94	--	7.4	0.1	-81	414	82
	06-10-94	1,970	7.4	0.1	-81	430	--
	06-13-94	1,940	7.4	--	-86	436	--
	06-16-94	1,860	7.4	0.1	-83	430	32
	06-20-94	1,950	7.4	0.1	-87	422	36
	06-23-94	1,940	7.4	0.1	-88	444	--
	06-27-94	1,890	7.4	0.1	-91	422	36
	06-30-94	1,920	7.4	0.1	-96	468	35
	07-05-94	--	7.3	0.1	-83	468	82
	07-08-94	1,890	7.5	0.1	-117	478	34
	07-13-94	1,920	7.5	0.1	-114	470	36
	07-15-94	1,920	7.5	0.1	-116	460	35
	07-18-94	1,850	7.5	0.1	-125	480	36
	07-21-94	1,910	7.6	0.1	-125	490	38
	07-25-94	1,940	7.6	0.1	-149	486	40
	08-31-94	3,160	7.3	--	-79	442	82
	10-19-94	3,220	7.6	0.1	-101	446	85
	01-09-95	--	7.4	0.1	-98	520	92
	03-06-95	2,950	7.5	--	-99	466	73
	05-24-95	3,900	7.5	0.2	-125	444	98

Magnesium, dissolved (mg/L as Mg) (00925)	Sodium, dissolved (mg/L as Na) (00930)	Bicarbonate, whole, IT, field (mg/L as HCO3) (00450)	Carbonate, whole, IT, field (mg/L as CO3) (00457)	Chloride, dissolved (mg/L as Cl) (00940)	Fluoride, dissolved (mg/L as F) (00950)	Iron, dissolved (mg/L as Fe) (01046)	Manganese, dissolved (mg/L as Mn) (01056)	Carbon, organic, total (mg/L as C) (00680)
--	--	527	0	--	--	--	--	--
19	320	575	0	69	--	1,200	110	5.4
71	470	522	0	60	--	2,500	270	6.3
26	330	566	0	38	--	1,400	130	6.1
29	340	568	0	38	--	1,300	140	5.4
28	330	583	0	39	--	1,400	140	5.8
29	340	561	0	41	--	1,400	140	6.2
29	330	551	0	43	--	1,400	140	6.5
37	350	488	0	42	--	1,100	130	5.9
64	430	510	0	52	--	1,400	210	7.2
49	380	610	0	41	--	1,300	150	6.1
62	430	546	0	46	--	1,500	180	5.9
75	450	527	0	52	0.44	1,700	230	6.6
57	400	502	0	45	0.51	1,300	180	10
45	370	549	0	41	0.48	1,200	150	6.3
47	370	554	0	43	0.43	1,300	140	8.3
40	340	521	0	39	0.56	1,200	140	--
42	360	527	0	37	0.53	1,200	140	6.1
38	340	512	0	36	0.83	1,200	130	6.2
72	430	535	0	51	0.51	1,700	210	6.6
31	330	522	0	34	0.51	1,200	120	6.4
38	340	507	0	41	0.48	1,200	150	6.5
36	360	517	0	41	0.47	1,200	130	8.4
37	330	427	0	49	0.47	1,300	140	7.8
78	470	549	0	56	0.46	1,800	230	--
120	580	575	0	54	--	280	230	5.6
110	550	505	0	50	--	300	240	6.5
--	--	524	0	--	--	--	--	--
--	--	532	0	34	--	210	140	5.2
46	320	524	0	33	--	210	150	5.1
48	340	515	0	34	--	230	170	5.1
--	--	541	0	--	--	--	--	--
45	330	515	0	35	--	220	190	5.1
44	330	571	0	35	--	210	180	5.5
140	580	571	0	50	--	330	280	6.3
50	320	583	0	34	--	250	180	2.8
46	330	573	0	35	--	260	200	4.3
45	330	561	0	35	--	250	210	5.5
43	330	585	0	35	--	250	210	5.8
44	340	597	0	34	--	270	230	5.6
43	330	593	0	35	--	280	230	5.4
97	560	539	0	46	--	420	300	5.6
110	560	544	0	43	--	390	220	8.0
120	560	634	0	43	--	490	200	6.3
98	520	568	0	43	--	400	200	6.2
160	650	541	0	48	0.65	370	220	6.9

Table 13 113

Table 13. Water-quality data obtained from plume-monitoring samples—Continued

Station number	Date	Specific conductance, field (µs/cm) (00095)	pH, field (standard units) (00400)	Dissolved oxygen, field (mg/L) (00300)	Oxidation-reduction potential, field (mV) (00090)	Alkalinity, whole, FET, field (mg/L as CaCO ₃) (00410)	Calcium, dissolved (mg/L as Ca) (00915)
442118098174003 (CO-34-90)—Cont.	06-29-95	2,270	7.4	0.1	-114	466	46
	07-28-95	3,180	7.4	0.0	-92	442	77
	11-13-95	3,410	7.3	0.1	-217	456	110
442117098173603 (CO-47-90)	06-02-94	1,580	6.9	0.1	-136	456	52
	06-07-94	1,620	7.2	0.1	-133	418	51
	08-31-94	1,440	7.2	--	-125	410	52
	10-19-94	1,600	7.6	0.1	-141	442	52
	01-09-95	1,610	7.5	0.0	-131	508	60
	03-07-95	1,570	7.5	--	-124	468	51
	05-24-95	1,540	7.3	0.4	-126	439	52
	06-21-95	1,570	7.3	0.0	-170	479	51
	06-26-95	1,540	7.4	0.0	-257	436	51
	06-30-95	1,550	7.3	0.0	-201	454	50
	07-05-95	1,550	7.1	0.1	-129	449	51
	07-10-95	1,540	7.3	0.1	-156	422	51
	07-13-95	1,540	7.1	0.0	-139	449	51
	07-20-95	1,550	7.4	0.1	-143	433	52
	07-28-95	1,540	7.4	0.0	-154	440	51
	08-03-95	1,560	7.4	0.0	-156	441	50
	08-10-95	1,570	7.5	0.0	-129	426	52
	08-17-95	1,580	7.4	0.0	-161	447	51
	08-30-95	1,570	7.5	0.0	-128	442	51
	09-06-95	1,570	7.5	0.0	-150	406	51
	09-11-95	1,550	7.5	0.1	-124	413	50
	09-19-95	1,550	7.5	0.1	-124	413	50
	09-26-95	1,520	7.5	0.1	-141	458	49
	09-29-95	1,520	7.4	0.1	-130	448	52
	10-03-95	1,510	7.4	0.0	-129	442	52
	10-06-95	1,520	7.5	0.0	-146	468	50
	10-09-95	1,500	7.4	0.1	-260	452	50
	10-13-95	1,500	7.4	0.1	-114	448	51
	10-16-95	1,510	7.4	--	--	432	51
	10-20-95	1,460	7.4	0.1	-132	441	52
	11-06-95	1,420	7.4	--	-358	432	51
	11-14-95	1,470	7.5	0.1	-101	454	51
442117098173604 (CO-48-90)	06-02-94	1,800	6.9	0.1	-94	452	73
	06-07-94	1,760	7.1	0.1	-91	414	68
	07-05-94	1,640	7.4	0.1	-103	444	53
	07-08-94	1,510	7.5	0.1	-102	466	54
	07-13-94	1,630	7.5	0.1	-127	464	51
	07-21-94	1,660	7.4	0.1	-133	452	57
	07-25-94	1,630	7.6	0.1	-144	476	52
	08-31-94	1,620	7.3	--	-15	418	60
	10-19-94	1,640	7.5	0.0	-108	436	66
	01-09-95	1,790	7.5	0.1	-85	502	73
	03-07-95	1,640	7.5	--	-105	462	63

Magnesium, dissolved (mg/L as Mg) (00925)	Sodium, dissolved (mg/L as Na) (00930)	Bicarbonate, whole, IT, field (mg/L as HCO3) (00450)	Carbonate, whole, IT, field (mg/L as CO3) (00457)	Chloride, dissolved (mg/L as Cl) (00940)	Fluoride, dissolved (mg/L as F) (00950)	Iron, dissolved (mg/L as Fe) (01046)	Manganese, dissolved (mg/L as Mn) (01056)	Carbon, organic, total (mg/L as C) (00680)
61	400	568	0	35	0.60	180	110	7.0
110	330	539	0	40	0.54	270	240	6.8
150	660	556	0	57	0.49	330	390	--
14	290	556	0	35	--	1,700	270	4.5
14	290	510	0	34	--	1,700	260	5.0
15	300	500	0	34	--	2,100	270	4.9
13	290	539	0	34	--	2,000	260	5.3
14	290	619	0	33	--	2,000	260	5.1
14	300	571	0	34	--	--	250	5.2
14	280	535	0	34	0.36	1,700	260	5.4
14	290	584	0	35	0.37	1,600	270	7.1
14	290	532	0	35	0.36	1,800	270	6.3
14	280	554	0	35	0.36	1,900	260	6.0
14	280	547	0	34	0.35	1,900	260	5.4
14	280	515	0	32	0.46	1,900	260	6.0
14	290	547	0	32	0.47	2,000	270	5.7
14	280	528	0	32	0.46	2,100	250	--
15	290	536	0	34	0.45	2,100	240	6.1
15	290	538	0	31	0.43	2,100	270	5.8
16	280	519	0	34	0.40	1,800	260	5.6
15	300	545	0	35	0.40	2,000	250	5.2
14	290	539	0	35	0.38	2,100	260	4.6
15	290	495	0	36	0.37	2,100	250	--
15	290	504	0	35	0.37	2,100	260	5.7
15	290	504	0	35	0.37	2,100	260	5.7
15	310	558	0	34	0.43	2,100	270	5.6
14	290	546	0	33	0.39	1,900	270	5.8
14	310	539	0	34	0.41	2,100	260	5.5
14	280	571	0	34	0.40	2,100	260	5.6
15	280	551	0	34	0.40	2,100	270	5.6
14	280	546	0	35	0.38	2,100	260	5.8
15	280	527	0	35	0.37	2,200	260	5.5
14	280	538	0	35	0.38	2,100	280	5.3
14	280	527	0	33	0.38	2,200	270	6.3
15	300	554	0	33	0.38	2,200	280	--
27	290	551	0	45	--	410	470	4.6
24	290	505	0	38	--	420	440	5.3
21	290	541	0	33	--	360	260	5.3
20	290	568	0	34	--	390	430	4.9
19	280	566	0	32	--	420	460	5.5
21	290	551	0	34	--	320	600	5.4
19	290	580	0	31	--	420	490	5.0
23	290	510	0	34	--	350	530	4.9
23	290	532	0	37	--	340	560	5.5
27	290	612	0	43	--	420	560	5.3
22	290	563	0	34	--	510	420	5.0

Table 13 115

Table 13. Water-quality data obtained from plume-monitoring samples—Continued

Station number	Date	Specific conductance, field ($\mu\text{S}/\text{cm}$) (00095)	pH, field (standard units) (00400)	Dissolved oxygen, field (mg/L) (00300)	Oxidation- reduction potential, field (mV) (00090)	Alkalinity, whole, FET, field (mg/L as CaCO_3) (00410)	Calcium, dissolved (mg/L as Ca) (00915)
442117098173604 (CO-48-90)—Cont.	05-24-95	2,100	7.2	0.3	-122	418	110
	06-16-95	2,070	7.1	0.1	--	402	97
	06-30-95	1,760	7.3	0.0	-209	434	74
	07-28-95	1,790	7.3	0.0	-97	434	69
	11-14-95	1,620	7.5	0.1	-49	452	73
442117098173501 (CO-49-90)	06-03-94	1,650	6.9	0.1	-149	476	46
	06-08-94	1,540	7.4	0.1	-135	474	45
	06-30-94	1,690	7.5	0.1	-131	472	41
	09-01-94	1,670	7.4	--	-139	442	46
	10-19-94	1,650	7.5	0.0	-142	461	46
	01-10-95	1,660	7.5	0.1	-140	453	48
	03-06-95	1,570	7.4	--	-94	464	49
	05-24-95	1,600	7.3	0.4	-117	442	50
	06-29-95	1,610	7.4	0.0	-142	436	47
	11-14-95	1,660	7.4	0.1	-75	463	55
442117098173502 (CO-50-90)	06-03-94	1,570	6.9	0.1	-154	450	54
	06-08-94	1,610	7.4	0.1	-143	450	51
	06-30-94	1,580	7.4	0.1	-134	448	48
	09-01-94	1,590	7.4	--	-141	420	53
	10-19-94	1,570	7.5	0.1	-143	440	52
	01-10-95	1,580	7.5	0.1	-142	460	55
	03-06-95	1,560	7.5	--	-144	442	52
	05-24-95	1,520	7.4	0.3	-140	426	53
	06-29-95	1,530	7.4	0.0	-155	423	51
	08-30-95	1,540	7.5	0.0	-137	450	52
	11-14-95	1,460	7.5	0.1	-93	444	52
442117098173503 (CO-51-90)	06-03-94	1,610	7.0	0.1	-108	466	53
	06-08-94	1,650	7.4	0.1	-93	450	51
	06-30-94	1,650	7.4	0.1	-73	460	48
	09-01-94	1,640	7.3	--	-88	408	55
	10-19-94	1,610	7.5	0.1	-100	436	53
	01-10-95	1,620	7.5	0.1	-93	458	53
	03-06-95	1,470	7.5	--	-127	452	52
	05-24-95	1,570	7.3	0.4	55	440	54
	06-29-95	1,570	7.5	0.0	-117	436	52
	11-14-95	1,500	7.5	0.1	5	469	51
442115098173501 (CO-52-90)	01-10-95	1,590	7.5	0.1	-132	470	50
	02-10-95	1,590	7.5	0.1	-145	460	48
	03-06-95	1,570	7.5	--	-151	442	50
442115098173502 (CO-53-90)	01-10-95	1,650	7.5	0.1	-140	485	50
	02-10-95	1,650	7.5	0.0	-142	478	49
	02-24-95	950	7.9	--	-236	184	62
	03-06-95	1,630	7.5	--	-142	468	50

Magnesium, dissolved (mg/L as Mg) (00925)	Sodium, dissolved (mg/L as Na) (00930)	Bicarbonate, whole, IT, field (mg/L as HCO3) (00450)	Carbonate, whole, IT, field (mg/L as CO3) (00457)	Chloride, dissolved (mg/L as Cl) (00940)	Fluoride, dissolved (mg/L as F) (00950)	Iron, dissolved (mg/L as Fe) (01046)	Manganese, dissolved (mg/L as Mn) (01056)	Carbon, organic, total (mg/L as C) (00680)
56	290	510	0	58	0.44	430	730	6.5
46	290	490	0	54	0.42	420	720	5.6
34	300	529	0	45	0.41	320	520	6.5
34	290	529	0	41	0.47	370	550	7.8
33	290	551	0	41	0.41	520	630	--
11	310	580	0	41	--	1,400	390	5.6
10	310	578	0	41	--	1,300	420	6.4
12	320	575	0	41	--	1,300	380	6.1
13	330	539	0	41	--	1,400	410	6.0
11	320	562	0	40	--	1,300	390	6.2
12	310	552	0	41	--	1,400	370	6.0
13	320	566	0	40	--	1,200	360	6.5
12	300	539	0	40	0.38	1,200	390	6.8
11	310	532	0	40	0.35	1,200	370	6.7
15	330	565	0	41	0.36	1,600	450	--
13	280	549	0	34	--	2,300	270	4.7
14	280	549	0	33	--	2,200	260	6.7
14	290	546	0	33	--	2,300	260	--
15	290	512	0	32	--	2,300	270	4.7
14	290	536	0	32	--	2,200	270	5.0
13	280	561	0	31	--	2,200	250	4.8
14	290	539	0	33	--	2,300	270	5.1
14	280	519	0	32	0.38	2,100	270	5.2
14	280	516	0	32	0.35	2,100	260	6.3
15	270	549	0	33	0.36	2,500	270	4.8
15	280	541	0	30	0.38	2,400	280	--
16	290	568	0	34	--	230	520	4.8
15	290	549	0	32	--	230	520	5.6
17	290	561	0	33	--	200	480	5.1
17	320	497	0	33	--	220	530	5.0
16	300	532	0	32	--	220	520	5.6
16	290	558	0	32	--	290	460	5.4
16	300	551	0	32	--	310	490	5.2
16	290	536	0	33	0.42	210	510	5.8
16	290	532	0	32	0.39	220	490	5.5
17	290	572	0	32	0.45	240	520	--
13	290	573	0	33	--	1,700	270	5.8
14	300	561	0	34	--	1,700	300	--
13	290	539	0	33	--	1,700	290	5.4
13	310	591	0	38	--	1,700	310	6.1
13	310	583	0	38	--	1,800	340	--
25	88	224	0	42	--	3,500	430	--
13	310	571	0	38	--	1,800	330	6.3

Table 13. Water-quality data obtained from plume-monitoring samples—Continued

Station number	Date	Specific conductance, field ($\mu\text{S}/\text{cm}$) (00095)	pH, field (standard units) (00400)	Dissolved oxygen, field (mg/L) (00300)	Oxidation- reduction potential, field (mV) (00090)	Alkalinity, whole, FET, field (mg/L as CaCO_3) (00410)	Calcium, dissolved (mg/L as Ca) (00915)
442115098173503 (CO-54-90)	01-10-95	1,610	7.5	0.1	-79	456	60
	02-10-95	1,610	7.4	0.1	-74	450	58
	03-06-95	1,780	7.3	--	-41	458	90
442117098174002 (CO-39-90)	06-02-94	--	6.9	0.1	-85	504	64
	06-07-94	--	7.4	0.1	-102	504	97
	06-10-94	1,770	7.4	0.1	-110	402	--
	06-13-94	2,290	7.5	0.2	-116	434	--
	06-20-94	1,750	7.4	0.2	-119	408	36
	06-27-94	2,130	7.5	0.2	-119	410	44
	06-30-94	2,140	7.4	0.1	-131	480	40
	07-08-94	2,180	7.5	0.2	-110	468	46
	07-13-94	2,350	7.5	0.1	-129	486	44
	07-15-94	2,070	7.5	0.1	-125	464	38
	07-18-94	1,820	7.5	0.1	-123	437	32
	07-21-94	2,210	7.6	0.1	-100	408	38
	07-25-94	2,000	7.7	0.1	-151	396	33
	07-29-94	2,070	7.7	0.1	-90	352	37
	08-04-94	2,160	7.7	0.1	-182	334	42
	08-11-94	2,290	7.5	0.1	-163	344	46
	08-31-94	3,020	7.4	--	-105	348	90
	09-16-94	2,610	7.3	0.0	-79	432	61
	09-29-94	3,460	7.7	0.1	-102	418	87
	10-19-94	3,280	7.5	0.1	-64	394	85
	01-09-95	2,720	7.5	0.1	-103	326	71
	02-10-95	2,130	7.6	0.1	-104	274	48
	03-06-95	1,800	7.6	--	-159	248	44
	05-24-95	4,120	7.4	0.1	-111	364	140
	06-16-95	1,830	7.5	0.1	-140	244	30
	06-21-95	1,580	7.5	0.0	-191	235	26
	06-23-95	2,090	7.5	0.0	-204	244	43
	06-29-95	2,270	7.5	0.0	-147	247	45
	07-05-95	2,150	7.6	0.1	-134	236	44
	07-10-95	1,810	7.5	0.1	-167	208	33
	07-17-95	1,920	7.5	0.0	-128	208	39
	07-28-95	3,270	7.4	0.0	-139	300	93
	08-03-95	1,430	7.6	0.0	-156	178	23
	08-07-95	2,670	7.5	0.0	-143	230	61
	08-10-95	3,450	7.4	0.0	-130	276	90
	08-14-95	2,850	7.4	0.0	-71	144	70
	08-28-95	3,290	7.5	0.1	-105	245	82
	09-11-95	2,360	7.5	0.0	-140	166	56
	09-26-95	1,800	7.7	0.1	-128	213	38
	11-13-95	3,110	7.5	0.1	-351	459	110
442117098174003 (CO-40-90)	06-02-94	1,560	7.3	0.1	-145	468	48
	06-07-94	1,650	7.5	0.1	-132	408	45

Magnesium, dissolved (mg/L as Mg) (00925)	Sodium, dissolved (mg/L as Na) (00930)	Bicarbonate, whole, IT, field (mg/L as HCO3) (00450)	Carbonate, whole, IT, field (mg/L as CO3) (00457)	Chloride, dissolved (mg/L as Cl) (00940)	Fluoride, dissolved (mg/L as F) (00950)	Iron, dissolved (mg/L as Fe) (01046)	Manganese, dissolved (mg/L as Mn) (01056)	Carbon, organic, total (mg/L as C) (00680)
17	280	556	0	31	--	78	370	5.1
17	290	549	0	31	--	69	400	--
29	290	558	0	38	--	--	210	5.2
68	510	614	0	51	--	850	160	--
120	590	614	0	46	--	940	170	6.3
--	--	490	0	--	--	--	--	--
--	--	529	0	35	--	830	120	5.5
27	340	497	0	32	--	890	150	5.7
37	370	500	0	34	--	890	150	5.2
37	390	585	0	34	--	920	140	5.3
41	390	571	0	35	--	950	130	3.6
47	420	593	0	37	--	910	140	6.1
37	380	566	0	37	--	910	150	6.7
27	330	533	0	43	--	850	130	7.2
43	390	497	0	45	--	720	130	7.6
37	350	483	0	45	--	630	130	8.0
41	350	429	0	48	--	530	120	8.3
43	370	407	0	50	--	650	140	8.3
49	410	419	0	51	--	620	150	8.1
77	540	424	0	53	--	1,400	300	7.8
57	450	527	0	49	--	880	220	6.1
190	500	510	0	54	--	940	250	7.9
95	590	480	0	55	--	720	240	8.6
73	430	397	0	53	--	810	230	8.7
48	360	334	0	51	--	710	210	--
43	320	302	0	48	--	570	210	8.3
150	680	444	0	60	0.62	1,600	500	8.1
35	310	297	0	23	1.1	340	120	9.1
31	280	287	0	46	0.93	300	120	7.8
48	360	297	0	48	0.86	440	160	7.7
56	370	301	0	49	0.87	450	140	7.7
50	350	288	0	48	0.93	430	140	6.7
38	290	254	0	45	1.1	340	120	--
45	320	254	0	43	1.1	400	140	6.4
120	570	366	0	53	1.0	840	280	8.6
27	240	217	0	40	1.1	270	120	6.1
78	430	280	0	50	1.0	580	190	6.1
120	530	336	0	56	0.99	630	220	6.1
88	470	176	0	55	0.97	530	190	--
110	490	299	0	60	0.90	670	210	6.0
67	380	202	0	56	0.91	490	180	7.1
46	320	260	0	48	1.1	270	150	6.0
110	590	560	0	51	0.63	1,100	450	--
12	300	571	0	34	--	1,700	140	5.5
12	300	497	0	33	--	1,600	140	5.8

Table 13. Water-quality data obtained from plume-monitoring samples—Continued

Station number	Date	Specific conductance, field ($\mu\text{S}/\text{cm}$) (00095)	pH, field (standard units) (00400)	Dissolved oxygen, field (mg/L) (00300)	Oxidation-reduction potential, field (mV) (00090)	Alkalinity, whole, FET, field (mg/L as CaCO_3) (00410)	Calcium, dissolved (mg/L as Ca) (00915)
442117098174003 (CO-40-90)—Cont.	06-10-94	1,650	7.4	0.1	-126	426	--
	06-13-94	1,720	7.4	0.1	-136	428	--
	06-20-94	1,560	7.4	0.1	-134	390	40
	06-27-94	1,450	7.5	0.1	-139	334	36
	06-30-94	1,360	7.5	0.1	-155	344	27
	07-08-94	1,210	7.5	0.1	-152	290	19
	07-15-94	1,110	7.8	0.1	-177	250	17
	07-18-94	1,090	7.7	0.0	-179	246	16
	07-21-94	1,090	7.8	0.1	-164	228	16
	07-25-94	1,060	7.9	0.1	-212	156	16
	07-29-94	1,030	7.8	0.1	-185	196	19
	08-04-94	1,030	7.9	0.1	-213	206	17
	08-11-94	1,060	7.8	0.1	-253	218	18
	08-30-94	--	--	--	--	--	20
	09-01-94	--	--	--	--	--	22
	09-02-94	--	--	--	--	--	23
	09-16-94	1,160	7.5	0.0	-133	256	23
	10-19-94	1,120	7.9	0.1	-150	242	23
	01-09-95	1,060	7.8	0.1	-160	280	20
	02-10-95	1,020	7.8	0.1	-137	202	18
	02-24-95	1,000	7.7	--	-137	192	18
	03-06-95	980	7.8	--	-176	190	18
	05-24-95	1,040	7.8	0.1	-153	205	23
	06-16-95	1,140	7.6	0.1	-169	190	18
	06-21-95	980	7.6	0.0	-189	190	18
	06-23-95	970	7.7	0.0	-245	166	17
	06-26-95	970	7.8	0.1	-238	160	17
	06-29-95	970	7.8	0.0	-198	150	19
	07-05-95	990	7.7	0.1	-146	145	21
	07-10-95	1,000	7.7	0.1	-191	149	21
	07-13-95	1,010	7.5	0.0	-191	132	21
	07-17-95	1,000	7.6	0.0	-178	140	22
	07-20-95	1,020	7.7	0.0	-197	145	22
	07-28-95	1,030	7.8	0.0	-192	140	22
	08-03-95	980	7.7	0.0	-184	113	20
	08-07-95	980	7.9	0.0	-203	112	20
	08-10-95	980	7.8	0.0	-203	103	20
	08-14-95	960	7.8	0.0	-135	121	21
	08-17-95	950	7.8	0.0	-218	105	21
	08-28-95	900	7.9	0.0	-187	102	24
	08-31-95	880	7.7	0.0	-201	108	25
	09-06-95	870	7.8	0.0	-187	101	26
	09-11-95	860	7.8	0.0	-197	84	27
	09-19-95	860	7.8	0.0	-197	84	27
	09-26-95	1,040	7.9	0.1	-139	164	30
	09-29-95	1,080	7.8	0.0	-193	207	31
	10-03-95	1,090	7.8	0.1	-157	238	31

Magnesium, dissolved (mg/L as Mg) (00925)	Sodium, dissolved (mg/L as Na) (00930)	Bicarbonate, whole, IT, field (mg/L as HCO3) (00450)	Carbonate, whole, IT, field (mg/L as CO3) (00457)	Chloride, dissolved (mg/L as Cl) (00940)	Fluoride, dissolved (mg/L as F) (00950)	Iron, dissolved (mg/L as Fe) (01046)	Manganese, dissolved (mg/L as Mn) (01056)	Carbon, organic, total (mg/L as C) (00680)
--	--	519	0	--	--	--	--	--
--	--	522	0	32	--	2,000	150	5.1
12	300	475	0	39	--	1,600	130	6.4
10	270	407	0	42	--	1,400	110	8.5
9.5	250	419	0	48	--	1,200	100	7.1
6.7	220	354	0	49	--	990	78	8.7
6.0	200	305	0	47	--	750	82	8.4
6.1	200	300	0	46	--	710	86	8.3
6.0	200	278	0	45	--	680	91	8.1
6.6	190	190	0	45	--	620	98	8.2
5.3	180	239	0	42	--	540	98	8.2
5.4	180	251	0	42	--	530	100	7.6
6.1	190	266	0	43	--	610	110	7.8
6.6	200	--	--	45	--	590	120	7.9
7.2	210	--	--	45	--	680	130	8.1
7.0	210	--	--	45	--	720	130	7.9
6.0	210	312	0	44	--	720	130	8.2
5.9	210	295	0	45	--	700	120	6.7
6.3	190	341	0	43	--	560	110	8.4
5.6	190	246	0	42	--	510	120	--
5.2	180	234	0	41	--	480	110	--
5.1	180	232	0	40	--	460	120	7.3
6.2	190	250	0	44	0.83	410	150	8.1
5.8	190	232	0	44	0.86	450	150	10
5.5	180	232	0	44	0.86	420	140	8.6
5.3	180	202	0	45	0.84	420	130	7.8
5.2	180	195	0	45	0.84	410	130	8.0
5.4	180	183	0	45	0.80	410	110	11
5.5	170	177	0	46	0.77	390	140	6.6
5.6	170	182	0	43	0.86	440	140	7.0
5.8	180	161	0	45	0.88	430	140	7.1
5.7	180	171	0	41	0.55	450	150	8.4
6.1	180	177	0	46	0.82	540	140	6.5
8.2	190	171	0	50	0.79	460	140	9.6
6.2	170	138	0	45	0.73	440	160	7.1
6.2	170	137	0	50	0.68	440	160	5.9
6.8	200	126	0	50	0.66	420	160	--
6.2	160	148	0	49	0.62	390	170	6.0
--	160	128	0	48	0.62	430	160	7.1
7.2	140	124	0	44	0.59	440	200	5.3
7.0	140	132	0	44	0.58	--	200	--
7.6	130	123	0	42	0.58	450	210	6.0
7.8	130	102	0	42	0.59	520	220	6.6
7.8	130	102	0	42	0.59	520	220	6.6
8.0	190	200	0	49	0.78	540	230	6.3
7.4	190	252	0	48	0.74	560	220	7.2
8.0	210	290	0	45	0.79	540	220	7.9

Table 13. Water-quality data obtained from plume-monitoring samples—Continued

Station number	Date	Specific conductance, field ($\mu\text{S}/\text{cm}$) (00095)	pH, field (standard units) (00400)	Dissolved oxygen, field (mg/L) (00300)	Oxidation- reduction potential, field (mV) (00090)	Alkalinity, whole, FET, field (mg/L as CaCO_3) (00410)	Calcium, dissolved (mg/L as Ca) (00915)
442117098174003 (CO-40-90)—Cont.	10-06-95	1,130	7.7	0.1	-100	270	32
	10-09-95	1,150	7.8	0.1	--	278	33
	10-13-95	1,160	7.7	0.0	-210	270	34
	10-16-95	1,190	7.8	--	--	280	35
	10-20-95	1,170	7.6	0.1	-177	300	37
	11-03-95	1,220	7.8	--	-136	317	38
	11-06-95	1,200	7.6	--	-372	314	38
	11-13-95	1,250	7.8	0.1	-116	330	39
442117098174001 (CO-17-90)	03-06-95	1,100	7.6	--	-188	254	21
	05-24-95	1,130	7.7	0.1	-165	248	24
	06-16-95	600	7.5	0.1	-151	246	19
	06-21-95	1,110	7.4	0.0	-160	268	20
	06-23-95	1,080	7.5	0.1	-183	234	20
	06-26-95	1,050	7.6	0.1	-184	219	18
	06-29-95	1,030	7.7	0.0	-195	204	19
	07-10-95	1,040	7.6	0.0	-189	175	20
	07-17-95	1,070	7.5	0.0	-170	166	21
	07-28-95	1,120	7.6	0.0	-190	171	22
	08-07-95	1,030	7.8	0.0	-192	116	19
	08-14-95	1,000	7.7	0.1	-139	127	19
	08-28-95	940	7.8	0.1	-144	115	26
	09-06-95	900	7.8	0.1	-159	107	30
	09-11-95	890	7.7	0.0	-186	108	28
	10-03-95	1,080	7.8	0.1	-115	261	27
	11-13-95	1,300	7.8	0.1	-237	386	37
442115098174202 (CO-63-90)	06-02-94	1,650	7.0	0.1	-149	460	47
	06-08-94	1,710	7.4	0.1	-123	450	50
	06-27-94	1,620	7.5	0.1	-134	468	--
	06-30-94	1,650	7.5	0.1	-138	494	44
	07-05-94	1,630	7.4	0.1	-136	480	44
	07-08-94	1,660	7.5	0.0	-139	478	44
	07-13-94	1,650	7.5	0.1	-155	466	42
	08-31-94	1,550	7.3	--	-129	420	46
442115098174203 (CO-64-90)	06-02-94	1,740	7.0	0.1	-121	468	55
	06-08-94	1,780	7.4	0.1	-101	472	53
	06-27-94	1,680	7.5	0	-101	486	--
	06-30-94	1,670	7.5	0.1	-103	474	45
	07-05-94	1,700	7.5	0.1	-107	470	46
	10-19-94	1,700	7.3	0.1	-137	442	51
	01-09-95	1,660	7.5	0.1	-100	526	52
	03-07-95	1,640	7.5	--	-100	470	50
	05-24-95	1,710	7.5	0.1	-106	438	59
	06-29-95	1,630	7.3	0.0	-194	468	51
	08-31-95	1,590	7.5	0.0	-137	445	49

Magnesium, dissolved (mg/L as Mg) (00925)	Sodium, dissolved (mg/L as Na) (00930)	Bicarbonate, whole, IT, field (mg/L as HCO3) (00450)	Carbonate, whole, IT, field (mg/L as CO3) (00457)	Chloride, dissolved (mg/L as Cl) (00940)	Fluoride, dissolved (mg/L as F) (00950)	Iron, dissolved (mg/L as Fe) (01046)	Manganese, dissolved (mg/L as Mn) (01056)	Carbon, organic, total (mg/L as C) (00680)
8.4	200	329	0	44	0.78	660	230	8.6
8.6	210	339	0	45	0.75	720	230	8.8
8.8	210	329	0	46	0.75	800	230	8.2
9.8	220	341	0	44	0.69	840	230	8.2
10	240	366	0	42	0.68	910	250	8.3
9.8	230	386	0	40	0.65	930	250	7.3
10	230	383	0	38	0.64	960	250	7.2
10	240	402	0	38	0.64	1,100	260	--
6.0	210	310	0	42	--	810	150	8.5
14	210	302	0	45	0.70	850	170	8.8
6.1	210	300	0	44	0.69	790	180	15
5.8	210	327	0	44	0.69	780	160	13
5.6	200	285	0	44	0.69	710	160	9.1
5.3	200	267	0	42	0.69	700	150	8.9
5.0	190	249	0	43	0.71	700	130	9.3
5.2	190	213	0	42	0.86	670	140	--
5.4	190	202	0	45	0.84	720	150	6.2
6.6	210	208	0	50	0.82	800	160	6.8
5.7	180	141	0	51	0.80	680	170	7.2
5.6	170	155	0	51	0.75	540	170	6.5
7.2	140	140	0	46	0.60	620	260	6.1
8.4	140	130	0	45	0.62	730	290	6.5
7.8	140	132	0	45	0.60	750	270	6.5
6.8	210	318	0	43	0.80	700	250	8.2
9.8	260	471	0	48	0.54	1,300	330	--
13	310	561	0	34	--	1,800	220	4.8
14	300	549	0	34	--	1,600	220	5.4
--	--	571	0	--	--	--	--	--
14	310	602	0	33	--	1,400	220	5.3
14	310	585	0	33	--	1,400	220	5.4
12	320	583	0	34	--	1,600	220	5.2
13	300	568	0	35	--	1,500	230	4.8
14	310	512	0	37	--	1,500	200	5.7
16	320	571	0	38	--	550	470	5.2
16	320	575	0	37	--	550	450	5.4
--	--	593	0	--	--	--	--	--
16	320	578	0	33	--	330	460	5.1
18	310	573	0	34	--	350	450	5.5
15	320	539	0	37	--	1,600	220	6.1
15	300	641	0	33	--	510	460	5.4
15	310	573	0	33	--	530	470	5.8
18	340	534	0	39	0.44	580	480	5.6
22	320	571	0	34	0.42	400	400	5.9
16	290	543	0	33	0.44	430	480	5.7

Table 13. Water-quality data obtained from plume-monitoring samples—Continued

Station number	Date	Specific conductance, field ($\mu\text{S}/\text{cm}$) (00095)	pH, field (standard units) (00400)	Dissolved oxygen, field (mg/L) (00300)	Oxidation- reduction potential, field (mV) (00090)	Alkalinity, whole, FET, field (mg/L as CaCO_3) (00410)	Calcium, dissolved (mg/L as Ca) (00915)
442115098173903 (CO-58-90)	06-03-94	--	6.6	0.1	-75	500	220
	06-08-94	--	7.3	0.1	-65	474	160
	06-30-94	2,010	7.3	0.1	-58	468	60
	07-29-94	1,880	7.5	0.1	-153	498	60
	08-04-94	2,250	7.6	0.1	-182	482	84
	08-11-94	--	7.1	0.1	-213	486	130
	09-01-94	3,430	7.0	--	-72	468	280
	09-16-94	4,250	6.9	0.0	-45	520	280
	09-29-94	4,220	7.3	0.1	-78	490	290
	10-19-94	2,940	7.3	0.1	-89	466	160
	01-10-95	2,120	7.4	0.2	-53	532	78
	02-10-95	2,320	7.4	0.1	-116	486	100
	03-06-95	2,590	7.3	--	-93	492	130
442115098173901 (CO-56-90)	06-08-94	1,660	7.5	0.1	-132	472	30
	06-30-94	1,740	7.4	0.1	-128	478	26
	07-29-94	1,810	7.6	0.1	-178	476	32
	08-04-94	1,790	7.6	0.1	-192	474	33
	08-11-94	1,800	7.3	0.1	-244	490	33
	09-01-94	1,400	7.4	--	-141	418	34
	09-16-94	1,770	7.3	0.0	-111	524	32
	09-29-94	1,760	7.8	0.1	-133	472	31
	10-19-94	1,750	7.6	0.1	-139	464	33
	01-10-95	1,770	7.5	0.1	-140	540	34
	02-10-95	1,750	7.5	0.1	-135	474	33
	03-06-95	1,760	7.5	--	-155	476	34
442117098174008 (Recharge well)	06-03-94	830	7.3	6.6	239	52	37
	06-08-94	790	8.0	6.8	329	52	29
	09-19-95	790	7.7	--	-61	64	41
	09-20-95	760	7.4	--	-75	66	44
	09-21-95	740	7.4	--	-118	70	44
	09-22-95	740	7.4	--	-91	81	44
	09-26-95	820	7.6	0.1	-55	110	52
	09-29-95	880	7.6	--	-124	160	61
	10-02-95	1,800	7.5	--	--	186	66
	10-03-95	1,060	7.4	--	-117	214	67
	10-04-95	1,150	7.4	--	--	216	67
	10-05-95	1,190	7.5	--	--	246	68
	10-06-95	1,100	7.6	--	-135	264	70
	10-09-95	1,240	7.5	--	-340	318	70
	10-10-95	1,250	7.7	--	-381	318	68
	10-11-95	1,270	7.6	--	-217	337	68
	10-13-95	1,300	7.5	0.1	-176	315	68
	10-16-95	1,350	7.5	--	--	379	66
	10-18-95	1,350	7.5	--	--	377	67
	10-20-95	1,380	7.6	--	--	393	65

Magnesium, dissolved (mg/L as Mg) (00925)	Sodium, dissolved (mg/L as Na) (00930)	Bicarbonate, whole, IT, field (mg/L as HCO3) (00450)	Carbonate, whole, IT, field (mg/L as CO3) (00457)	Chloride, dissolved (mg/L as Cl) (00940)	Fluoride, dissolved (mg/L as F) (00950)	Iron, dissolved (mg/L as Fe) (01046)	Manganese, dissolved (mg/L as Mn) (01056)	Carbon, organic, total (mg/L as C) (00680)
93	520	610	0	120	--	660	580	4.7
--	440	578	0	88	--	720	410	5.4
40	330	571	0	43	--	190	180	4.7
32	320	607	0	40	--	200	190	5.5
46	350	588	0	52	--	270	270	5.1
68	410	593	0	69	--	400	380	5.2
150	600	571	0	130	--	1,500	610	5.3
160	610	634	0	130	--	1,500	570	5.6
160	360	597	0	130	--	1,500	550	5.6
90	430	568	0	75	--	710	360	5.7
43	340	649	0	45	--	370	190	5.2
53	370	593	0	54	--	87	270	--
70	400	600	0	65	--	--	350	5.5
9.2	350	575	0	44	--	1,300	140	--
10	360	583	0	43	--	1,300	160	5.1
9.6	350	580	0	43	--	1,500	180	5.8
9.8	350	578	0	44	--	1,500	170	5.5
11	360	597	0	43	--	1,600	170	5.6
10	370	510	0	42	--	1,600	180	5.6
9.7	350	639	0	41	--	1,500	170	5.7
8.7	360	575	0	42	--	1,500	160	6.1
9.3	360	566	0	42	--	1,500	170	6.0
10	360	658	0	42	--	1,600	160	5.9
9.8	350	578	0	43	--	1,500	160	--
10	370	580	0	40	--	1,600	160	5.9
19	90	63	0	55	--	45	21	7.8
19	83	63	0	50	--	28	16	9.0
15	89	78	0	33	1.5	22	52	8.1
14	86	80	0	33	1.5	27	140	7.3
14	84	85	0	32	1.4	24	210	6.8
14	85	99	0	32	1.5	30	250	7.0
19	96	134	0	40	1.3	62	480	7.3
23	110	195	0	43	1.2	60	630	6.6
24	130	227	0	48	1.1	51	710	7.1
24	140	261	0	48	1.1	68	710	7.4
24	140	263	0	47	1.1	64	730	6.5
26	150	300	0	46	1.0	66	690	6.3
25	160	322	0	44	1.0	69	710	6.7
22	180	388	0	41	0.94	60	680	6.5
22	200	388	0	40	1.0	62	660	6.0
21	200	411	0	39	0.99	72	640	6.4
20	200	384	0	38	0.97	68	630	6.2
20	220	462	0	38	0.88	64	580	6.2
18	230	460	0	37	0.84	68	570	6.5
18	240	479	0	37	0.79	64	560	6.9

Table 13. Water-quality data obtained from plume-monitoring samples—Continued

Station number	Date	Specific conductance, field ($\mu\text{S}/\text{cm}$) (00095)	pH, field (standard units) (00400)	Dissolved oxygen, field (mg/L) (00300)	Oxidation-reduction potential, field (mV) (00090)	Alkalinity, whole, FET, field (mg/L as CaCO_3) (00410)	Calcium, dissolved (mg/L as Ca) (00915)
442117098174008 (Recharge well)—Cont.	10-30-95	1,400	7.6	--	--	388	64
	11-01-95	1,420	7.5	--	--	368	62
	11-03-95	1,380	7.6	--	--	380	63
	11-06-95	1,350	7.5	--	-310	386	62
442117098174009 (Recharge well injectate)	06-03-94	810	7.3	6.1	326	--	42
	06-08-94	790	8.0	6.8	272	60	29
	06-13-94	760	8.4	--	292	46	--
	06-16-94	750	8.6	7.5	321	48	27
	06-20-94	770	8.6	7.0	268	56	28
	06-27-94	780	8.7	6.9	263	52	27
	07-08-94	750	8.9	6.6	249	66	--
	07-15-94	570	8.6	6.9	169	52	33
	07-21-94	860	8.6	6.4	--	52	37
	07-29-94	810	8.7	6.4	140	56	38
	08-30-94	1,040	7.3	0.5	47	146	56
	08-30-94	950	7.7	0.2	66	110	49
	08-30-94	910	7.7	0.2	70	88	47
	08-30-94	890	7.7	0.1	96	94	45
	08-31-94	920	7.7	0.2	47	90	46
	08-31-94	900	7.5	0.3	73	84	46
	08-31-94	920	7.4	--	79	86	47
	09-01-94	930	7.5	--	43	78	47
	09-01-94	920	7.5	--	88	64	48
	09-01-94	920	7.4	--	86	82	49
	09-02-94	900	7.5	--	56	78	50
	06-16-95	900	7.7	6.3	296	38	46
	06-21-95	850	7.8	6.9	--	22	42
	06-30-95	850	8.3	6.7	109	52	43
	07-05-95	840	8.5	7.6	196	49	42
	07-13-95	790	8.2	6.1	278	46	44
	07-20-95	780	8.5	6.0	297	33	42
	07-28-95	760	8.4	5.6	290	57	40
	08-03-95	730	8.6	6.9	314	62	35
	08-10-95	710	8.7	6.5	293	48	36
	08-17-95	700	8.7	6.1	298	51	37
	08-31-95	680	8.7	5.6	194	56	38
	09-06-95	710	8.6	5.7	293	43	38
	09-11-95	710	8.7	5.8	306	41	37
442113098174202 (CO-60-90)	06-02-94	1,620	6.9	0.1	-157	476	50
	06-07-94	1,700	7.5	0.1	-145	482	48
	06-10-94	1,700	7.4	0.1	-137	422	--
	06-13-94	1,680	7.5	--	-141	436	--
	06-20-94	1,690	7.4	0.1	-144	410	46
	06-27-94	1,630	7.4	0.1	-151	404	44
	06-30-94	1,450	7.4	0.1	-159	400	32

Magnesium, dissolved (mg/L as Mg) (00925)	Sodium, dissolved (mg/L as Na) (00930)	Bicarbonate, whole, IT, field (mg/L as HCO3) (00450)	Carbonate, whole, IT, field (mg/L as CO3) (00457)	Chloride, dissolved (mg/L as Cl) (00940)	Fluoride, dissolved (mg/L as F) (00950)	Iron, dissolved (mg/L as Fe) (01046)	Manganese, dissolved (mg/L as Mn) (01056)	Carbon, organic, total (mg/L as C) (00680)
17	230	473	0	36	0.85	180	590	6.5
16	240	449	0	36	0.82	78	550	5.8
17	250	463	0	36	0.81	62	530	7.0
16	250	471	0	36	0.76	55	530	6.3
20	94	--	--	57	--	15	25	7.0
20	85	73	0	51	--	3	16	8.7
--	--	56	--	47	--	--	7	7.7
21	82	59	--	48	--	12	6	7.7
21	83	68	--	45	--	8	5	7.4
22	80	63	--	45	--	4	0	8.0
13	87	80	--	44	--	5	6	--
13	49	63	--	30	--	--	4	--
18	94	63	--	56	--	26	12	6.8
10	93	68	--	52	--	2	1	6.4
22	110	178	0	56	--	130	87	10
19	110	134	0	53	--	85	81	7.9
18	100	107	0	53	--	75	84	7.3
18	100	115	0	53	--	95	93	7.3
19	100	110	0	55	--	60	160	5.9
18	100	102	0	55	--	56	180	6.5
18	110	105	0	56	--	50	200	6.8
17	100	95	0	57	--	50	280	5.8
18	100	78	0	57	--	53	310	6.0
18	100	100	0	57	--	56	330	5.3
19	99	95	0	54	--	57	410	5.4
21	79	46	0	48	1.2	6	64	7.6
22	87	27	0	50	1.3	6	34	7.7
22	95	63	--	52	1.4	0	13	8.4
21	88	60	--	50	1.3	2	3	8.2
15	87	56	0	44	1.5	0	4	7.3
15	87	40	--	40	1.4	0	0	8.4
15	88	70	--	42	1.4	0	6	11
15	84	76	--	35	1.4	0	2	8.2
14	76	59	--	35	1.5	0	7	9.8
12	85	62	--	36	1.5	0	7	7.2
12	76	68	--	31	1.4	0	3	7.8
14	78	52	--	32	1.4	8	2	8.5
15	79	50	--	31	1.4	0	2	8.0
--	--	580	0	36	--	2,300	150	4.8
12	320	588	0	35	--	2,200	140	6.5
--	--	515	0	--	--	--	--	--
--	--	532	0	34	--	2,500	150	4.9
13	320	500	0	34	--	2,200	150	5.1
12	300	493	0	43	--	2,100	140	6.9
11	270	488	0	47	--	1,700	110	4.8

Table 13. Water-quality data obtained from plume-monitoring samples—Continued

Station number	Date	Specific conductance, field ($\mu\text{s}/\text{cm}$) (00095)	pH, field (standard units) (00400)	Dissolved oxygen, field (mg/L) (00300)	Oxidation- reduction potential, field (mV) (00090)	Alkalinity, whole, FET, field (mg/L as CaCO_3) (00410)	Calcium, dissolved (mg/L as Ca) (00915)
442113098174202 (CO-60-90)—Cont.	07-08-94	1,280	7.6	0.1	-160	324	28
	07-15-94	1,140	7.7	0.1	-171	250	19
	07-18-94	1,140	7.7	0.1	-175	248	19
	07-21-94	1,130	7.8	0.1	-169	240	18
	07-25-94	1,100	7.8	0.1	-199	228	18
	07-29-94	1,090	7.7	0.1	-203	230	19
	08-04-94	1,100	7.7	0.1	-210	234	20
	08-11-94	1,120	7.6	0.1	-264	246	21
	08-30-94	--	--	--	--	--	22
	09-01-94	--	--	--	--	--	24
	09-02-94	--	--	--	--	--	24
	09-16-94	1,180	7.5	0.0	-136	250	24
	10-19-94	1,160	7.8	0.1	-156	274	24
	01-09-95	1,150	7.7	0.1	-157	278	24
	02-10-95	1,270	7.6	0.1	-151	310	29
	02-24-95	1,290	7.5	--	-154	294	30
	03-06-95	1,330	7.5	--	-168	314	33
	05-24-95	1,510	7.6	0.1	-154	398	47
	06-16-95	1,580	7.2	0.1	-152	390	48
	06-21-95	1,570	7.5	0.1	--	471	47
	06-23-95	1,520	7.4	0.1	-229	426	48
	06-26-95	1,570	7.5	0.0	-243	432	49
	06-29-95	1,550	7.4	0.0	-236	418	48
	07-05-95	1,480	7.2	0.1	-158	380	43
	07-10-95	1,370	7.3	0.1	-148	343	37
	07-13-95	1,320	7.5	0.1	-151	328	33
	07-17-95	1,340	7.5	0.0	-139	300	34
	07-20-95	1,350	7.4	0.0	-165	304	34
	07-27-95	1,320	7.6	0.0	-173	292	32
	08-03-95	1,230	7.6	0.1	-153	234	26
	08-07-95	1,160	7.6	0.1	-162	201	23
	08-10-95	1,140	7.6	0.0	-198	189	22
	08-14-95	1,110	7.7	0.0	-159	174	21
	08-17-95	1,090	7.7	0.0	-193	170	20
	08-28-95	1,050	7.8	0.0	-178	160	20
	08-31-95	1,040	7.6	0.0	-164	162	20
	09-06-95	1,030	7.7	0.0	-181	144	20
	09-11-95	1,010	7.6	0.0	-169	159	20
	09-19-95	1,010	7.6	0.0	-169	159	20
	09-26-95	1,250	7.7	0.1	-174	280	34
	09-29-95	1,350	7.6	0.0	-167	340	39
	10-03-95	1,480	7.5	0.0	-145	416	48
	10-06-95	1,520	7.5	0.1	-149	454	48
	10-09-95	1,520	7.6	0.1	-189	442	49
	10-13-95	1,530	7.4	0.0	-172	439	49
	10-16-95	1,570	7.5	--	--	448	50
	10-20-95	1,550	7.4	0.1	-125	439	52

Magnesium, dissolved (mg/L as Mg) (00925)	Sodium, dissolved (mg/L as Na) (00930)	Bicarbonate, whole, IT, field (mg/L as HCO3) (00450)	Carbonate, whole, IT, field (mg/L as CO3) (00457)	Chloride, dissolved (mg/L as Cl) (00940)	Fluoride, dissolved (mg/L as F) (00950)	Iron, dissolved (mg/L as Fe) (01046)	Manganese, dissolved (mg/L as Mn) (01056)	Carbon, organic, total (mg/L as C) (00680)
7.0	230	395	0	50	--	1,400	86	5.1
6.6	210	305	0	48	--	1,100	88	8.7
6.3	210	302	0	47	--	1,100	88	8.5
6.2	210	293	0	46	--	1,100	92	8.3
6.6	210	278	0	45	--	1,100	100	8.5
6.0	190	280	0	45	--	970	100	8.5
5.4	200	285	0	45	--	1,000	110	8.6
6.0	210	300	0	46	--	1,000	110	8.5
6.5	210	--	--	45	--	1,100	110	8.6
6.9	210	--	--	46	--	1,100	110	8.7
6.8	210	--	--	46	--	1,100	120	8.2
5.5	210	305	0	45	--	1,200	120	8.9
6.5	220	334	0	45	--	1,100	120	9.2
6.7	210	339	0	44	--	1,100	120	8.9
8.0	250	378	0	43	--	1,400	140	--
8.0	240	358	0	38	--	--	160	--
9.1	260	383	0	36	--	1,400	150	6.5
12	290	485	0	35	0.42	2,100	200	6.8
12	290	475	0	34	0.45	2,100	210	7.8
13	290	574	0	34	0.43	2,100	210	6.8
13	300	519	0	33	0.42	2,100	210	12
13	300	527	0	33	0.43	2,200	210	--
12	300	510	0	34	0.43	2,000	190	9.3
11	270	463	0	37	0.44	1,900	170	6.3
9.6	250	418	0	37	0.57	1,500	160	6.8
9.2	250	400	0	38	0.59	1,400	150	6.8
8.8	250	366	0	39	0.51	1,400	150	--
9.2	250	371	0	41	0.56	1,600	140	6.9
8.8	250	356	0	46	0.56	1,500	140	6.2
7.9	230	285	0	46	0.60	1,200	120	6.0
7.2	220	245	0	52	0.60	1,100	120	12
9.0	220	230	0	52	0.62	1,000	120	13
6.4	210	212	0	52	0.63	920	120	7.7
6.1	200	207	0	50	0.64	950	110	10
5.8	180	195	0	47	0.63	870	110	6.9
5.8	180	198	0	47	0.63	870	120	--
5.8	180	176	0	45	0.63	840	120	7.1
5.8	180	194	0	44	0.63	850	120	7.9
5.8	180	194	0	44	0.63	850	120	7.9
9.2	250	341	0	49	0.58	1,400	190	9.2
10	270	415	0	42	0.49	1,500	220	7.3
13	300	507	0	35	0.47	2,000	260	5.8
13	290	554	0	34	0.45	2,000	260	6.1
13	290	539	0	36	0.44	2,100	270	--
13	300	535	0	36	0.42	2,200	270	5.5
14	300	546	0	36	0.41	2,300	260	6.0
14	300	535	0	36	0.42	2,200	270	6.4

Table 13 129

Table 13. Water-quality data obtained from plume-monitoring samples—Continued

Station number	Date	Specific conductance, field ($\mu\text{s}/\text{cm}$) (00095)	pH, field (standard units) (00400)	Dissolved oxygen, field (mg/L) (00300)	Oxidation- reduction potential, field (mV) (00090)	Alkalinity, whole, FET, field (mg/L as CaCO_3) (00410)	Calcium, dissolved (mg/L as Ca) (00915)
442113098174202 (CO-60-90)—Cont.	11-03-95	1,560	7.6	--	-129	453	51
	11-06-95	1,520	7.4	--	-387	437	51
	11-13-95	1,550	7.4	0.1	-367	458	52
442113098174203 (CO-61-90)	06-02-94	2,170	6.9	0.1	-118	494	83
	06-07-94	1,920	7.5	0.2	-105	430	63
	06-10-94	1,750	7.4	0.1	-96	430	--
	06-13-94	1,730	7.5	--	-106	440	--
	06-20-94	1,720	7.4	0.1	-109	430	48
	06-27-94	1,720	7.4	0.1	-120	446	48
	06-30-94	1,710	7.4	0.1	-125	480	47
	07-08-94	1,720	7.5	0.1	-130	488	50
	07-13-94	1,710	7.5	0.1	-141	462	45
	07-15-94	1,700	7.6	0.1	-136	464	45
	07-18-94	1,670	7.5	0.1	-145	470	46
	07-21-94	1,710	7.6	0.1	-130	502	46
	07-25-94	1,710	7.6	0.1	-165	472	46
	07-29-94	1,700	7.6	0.1	-176	484	50
	08-04-94	1,750	7.6	0.1	-181	474	54
	08-11-94	1,920	7.4	0.1	-208	482	63
	08-31-94	2,010	7.4	--	-102	438	74
	09-16-94	1,880	7.3	0.0	-93	470	65
	09-29-94	2,060	7.5	0.1	-117	448	75
	10-19-94	1,990	7.6	0.1	-114	454	74
	01-09-95	1,680	7.5	0.1	-122	528	55
	02-10-95	1,700	7.5	0.1	-110	472	51
	03-06-95	1,560	7.4	--	-142	470	54
	05-24-95	2,100	7.5	0.1	-119	446	91
	06-16-95	1,780	7.2	0.1	-116	456	59
	06-21-95	1,670	7.5	0.1	-79	474	51
	06-23-95	1,650	7.4	0.1	-231	480	50
	06-29-95	1,600	7.4	0.0	-227	443	49
	07-05-95	1,530	7.2	0.1	-148	423	45
	07-10-95	1,490	7.3	0.1	-79	394	43
	07-17-95	1,390	7.5	0.1	-95	--	36
	07-27-95	1,290	7.6	0.0	-132	292	30
	08-03-95	1,230	7.7	0.0	-138	276	27
	08-07-95	1,200	7.6	0.0	-144	274	25
	08-10-95	1,210	7.6	0.0	-154	254	25
	08-14-95	1,190	7.6	0.0	-94	239	25
	08-28-95	1,180	7.7	0.0	-125	234	24
	09-06-95	1,180	7.6	0.0	-149	219	25
	09-11-95	1,170	7.6	0.0	-145	242	25
	09-26-95	1,230	7.6	0.1	-127	293	--
	10-03-95	1,480	7.4	0.0	-126	398	44
	11-13-95	1,570	7.4	0.1	-388	465	52

Magnesium, dissolved (mg/L as Mg) (00925)	Sodium, dissolved (mg/L as Na) (00930)	Bicarbonate, whole, IT, field (mg/L as HCO3) (00450)	Carbonate, whole, IT, field (mg/L as CO3) (00457)	Chloride, dissoived (mg/L as Cl) (00940)	Fluoride, dissolved (mg/L as F) (00950)	Iron, dissolved (mg/L as Fe) (01046)	Manganese, dissolved (mg/L as Mn) (01056)	Carbon, organic, total (mg/L as C) (00680)
14	310	552	0	36	0.41	2,300	260	5.6
14	300	533	0	36	0.41	2,400	260	5.6
14	310	558	0	36	0.40	2,400	270	--
31	370	602	0	43	--	870	440	4.9
22	340	524	0	36	--	710	380	5.4
--	--	524	0	--	--	--	--	--
--	--	536	0	32	--	630	330	5.0
17	320	524	0	32	--	600	370	5.2
17	310	544	0	43	--	580	380	5.7
17	270	585	0	47	--	620	370	5.0
17	310	595	0	33	--	650	370	5.0
16	310	563	0	33	--	680	400	5.5
16	310	566	0	33	--	630	400	5.5
16	320	573	0	33	--	640	400	5.9
16	320	612	0	32	--	630	400	5.3
16	310	575	0	33	--	670	420	5.4
15	300	590	0	32	--	670	430	5.5
16	310	578	0	33	--	740	440	5.4
22	340	588	0	36	--	800	510	5.4
26	360	534	0	38	--	860	510	4.8
20	340	573	0	35	--	740	450	5.1
27	360	546	0	38	--	820	480	5.1
25	360	554	0	38	--	730	470	5.7
15	310	644	0	32	--	610	390	5.6
16	310	575	0	33	--	640	440	--
17	320	573	0	32	--	680	430	5.7
30	370	544	0	41	0.38	910	680	5.4
21	320	556	0	34	0.44	610	470	11
17	320	578	0	33	0.44	530	440	6.4
16	310	585	0	33	0.42	570	410	10
15	300	540	0	43	0.42	570	400	9.2
14	280	516	0	40	0.44	530	370	--
13	270	480	0	38	0.55	450	360	--
11	260	--	0	40	0.58	390	320	8.0
10	250	356	0	44	0.62	350	270	7.9
9.2	230	336	0	44	0.60	370	240	--
8.7	220	334	0	47	0.59	370	260	--
6.4	160	310	0	48	0.58	330	240	9.3
8.6	220	291	0	49	0.58	300	230	8.9
8.6	210	285	0	45	0.56	380	240	8.3
8.8	210	267	0	45	0.54	380	250	8.2
8.7	220	295	0	45	--	380	250	8.3
10	250	357	0	46	0.55	--	--	8.3
15	290	485	0	38	0.50	580	410	7.2
16	300	567	0	32	0.45	650	480	--

Table 13 131