



National Water-Quality Assessment Program

Ground-Water Quality in the Central High Plains Aquifer, Colorado, Kansas, New Mexico, Oklahoma, and Texas, 1999

Water-Resources Investigations Report 02-4112



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

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By Mark F. Becker, Breton W. Bruce, Larry M. Pope, and William J. Andrews

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NATIONAL WATER-QUALITY ASSESSMENT PROGRAM

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FOREWORD

The U.S. Geological Survey (USGS) is committed to serve the Nation with accurate and timely scientific information that helps enhance and protect the overall quality of life, and facilitates effective management of water, biological, energy, and mineral resources. Information on the quality of the Nation's water resources is of critical interest to the USGS because it is so integrally linked to the long-term availability of water that is clean and safe for drinking and recreation and that is suitable for industry, irrigation, and habitat for fish and wildlife. Escalating population growth and increasing demands for the multiple water uses make water availability, now measured in terms of quantity *and* quality, even more critical to the long-term sustainability of our communities and ecosystems.

The USGS implemented the National Water-Quality Assessment (NAWQA) Program to support national, regional, and local information needs and decisions related to water-quality management and policy. Shaped by and coordinated with ongoing efforts of other Federal, State, and local agencies, the NAWQA Program is designed to answer: What is the condition of our Nation's streams and ground water? How are the conditions changing over time? How do natural features and human activities affect the quality of streams and ground water, and where are those effects most pronounced? By combining information on water chemistry, physical characteristics, stream habitat, and aquatic life, the NAWQA Program aims to provide science-based insights for current and emerging water issues. NAWQA results can contribute to informed decisions that result in practical and effective water-resource management and strategies that protect and restore water quality.

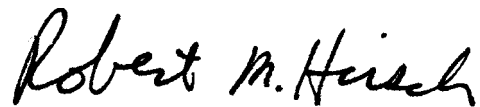
Since 1991, the NAWQA Program has implemented interdisciplinary assessments in more than 50 of the Nation's most important river basins and aquifers, referred to as Study Units. Collectively, these Study Units account for more than 60 percent of the overall water use and population served by public water supply, and are representative of the Nation's major hydrologic landscapes, priority ecological resources, and agricultural, urban, and natural sources of contamination.

Each assessment is guided by a nationally consistent study design and methods of sampling and analysis. The assessments thereby build local knowl-

edge about water-quality issues and trends in a particular stream or aquifer while providing an understanding of how and why water quality varies regionally and nationally. The consistent, multi-scale approach helps to determine if certain types of water-quality issues are isolated or pervasive, and allows direct comparisons of how human activities and natural processes affect water quality and ecological health in the Nation's diverse geographic and environmental settings. Comprehensive assessments on pesticides, nutrients, volatile organic compounds, trace metals, and aquatic ecology are developed at the national scale through comparative analysis of the Study-Unit findings.

The USGS places high value on the communication and dissemination of credible, timely, and relevant science so that the most recent and available knowledge about water resources can be applied in management and policy decisions. We hope this NAWQA publication will provide you the needed insights and information to meet your needs, and thereby foster increased awareness and involvement in the protection and restoration of our Nation's waters.

The NAWQA Program recognizes that a national assessment by a single program cannot address all water-resource issues of interest. External coordination at all levels is critical for a fully integrated understanding of watersheds and for cost-effective management, regulation, and conservation of our Nation's water resources. The Program, therefore, depends extensively on the advice, cooperation, and information from other Federal, State, interstate, Tribal, and local agencies, non-government organizations, industry, academia, and other stakeholder groups. The assistance and suggestions of all are greatly appreciated.



Robert M. Hirsch
Associate Director for Water

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CONVERSION FACTORS AND VERTICAL DATUM

Multiply	By	To obtain
Length		
inch (in)	2.54	centimeter
foot (ft)	0.3048	meter
mile (mi)	1.609	kilometer
Area		
acre	43,560	square foot
square foot (ft ²)	929.0	square centimeter
square foot (ft ²)	0.09290	square meter
square mile (mi ²)	640.0	acre
square mile (mi ²)	2.590	square kilometer
Volume		
gallon (gal)	3.785	liter
Flow rate		
foot per day (ft/d)	0.3048	meter per day
gallon per minute (gal/min)	0.06309	liter per second
Radioactivity		
picocurie per liter (pCi/L)	0.312	tritium unit

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

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

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

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

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

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

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

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ABSTRACT

A network of 74 randomly distributed domestic water-supply wells completed in the central High Plains aquifer was sampled and analyzed from April to August 1999 as part of the High Plains Regional Ground-Water Study conducted by the U. S. Geological Survey National Water-Quality Assessment Program to provide a broad-scale assessment of the ground-water-quality in this part of the High Plains aquifer.

Water properties were relatively consistent across the aquifer, with water being alkaline and well oxidized. Water was mostly of the calcium and magnesium-bicarbonate type and very hard. Sulfate concentrations in water from three wells and chloride concentration in water from one well exceeded Secondary Maximum Contaminant Levels. Fluoride concentration was equal to the Maximum Contaminant Level in one sample. Nitrate concentrations were relatively small in most samples, with the median concentration of 2.3 milligrams per liter. Dissolved organic carbon concentration was relatively low, with a median concentration of 0.5 milligram per liter. The Maximum Contaminant Level set by the U.S. Environmental Protection Agency for nitrate as nitrogen of 10 milligrams per liter was exceeded by water samples from three wells. Most samples contained detectable concentrations of the trace elements aluminum, arsenic, barium, chromium, molybdenum, selenium, zinc, and uranium. Only a few samples had trace element concentrations exceeding Maximum Contaminant Levels. Fifty-five of the samples had radon concentrations exceeding the proposed Maximum Contaminant Level of 300 picocuries per liter. The greatest radon concentrations were detected where the

Ogallala Formation overlies sandstones, shales and limestones of Triassic, Jurassic, or Cretaceous age.

Volatile organic compounds were detected in 9 of 74 samples. Toluene was detected in eight of those nine samples. All volatile organic compound concentrations were substantially less than Maximum Contaminant Levels. Detections of toluene may have been artifacts of the sampling and analytical processes.

Pesticides were detected in 18 of the 74 water samples. None of the pesticide concentrations exceeded Maximum Contaminant Levels. The most frequently detected pesticides were atrazine and its metabolite deethylatrazine, which were detected in water from 15 and 17 wells, respectively. Most of the samples with a detectable pesticide had at least two detectable pesticides. Six of the samples had more than two detectable pesticides.

Tritium concentrations were greater than 0.5 tritium unit in 10 of 51 samples, indicating recent recharge to the aquifer. Twenty-one of the samples that had nitrate concentrations greater than 4.0 milligrams per liter were assumed to have components of recent recharge. Detection of volatile organic compounds was not associated with those indicators of recent recharge, with most of volatile organic compounds being detected in water from wells with small tritium and nitrate concentrations. Detection of pesticides was associated with greater tritium or nitrate concentrations, with 16 of the 18 wells producing water with pesticides also having tritium or nitrate concentrations indicating recent recharge.

INTRODUCTION

Knowledge of the quality of the Nation's water resources is important because of the implications to

human and aquatic health and substantial costs associated with decisions involving land and water management, conservation, and regulation. In 1991, the U.S. Geological Survey (USGS) began full implementation of the National Water-Quality Assessment (NAWQA) Program. The long-term goals of the NAWQA program are to describe the status and trends in the quality of the Nation's surface- and ground-water resources and determine the natural and anthropogenic factors affecting water quality (Gilliom and others, 1995). More than 50 major river basins or aquifer systems will be investigated by the NAWQA Program. Together these basins and aquifer systems include water resources supplying more than 60 percent of the population and encompassing about one-half of the land area in the conterminous United States.

The High Plains Regional Ground-Water Study, begun under the NAWQA Program in October 1998, is a modification of the traditional NAWQA design in that ground-water is the primary focus of the study (Dennehy, 2000). The High Plains aquifer is a nationally important water resource that underlies about 174,000 square miles in parts of eight western states (fig. 1). About 27 percent of the irrigated land and 30 percent of the land irrigated with ground water in the United States overlie the High Plains aquifer (Dennehy, 2000). Due to the large areal extent of the High Plains aquifer, three geographic regions have been delineated for study: the northern High Plains (96,500 square miles); central High Plains (48,500 square miles); and southern High Plains (29,000 square miles) (fig. 1).

This report is part of a comprehensive water-quality assessment over the entire High Plains aquifer. The central High Plains aquifer is the focus of the study described in this report. The part of the central High Plains aquifer that is presented in this report extends over an area of about 38,000 square miles in parts of Colorado, Kansas, New Mexico, Oklahoma, and Texas (fig. 2).

Purpose and Scope

The purpose of this report is to describe the ground-water quality of the central High Plains aquifer in parts of Colorado, Kansas, New Mexico, Oklahoma, and Texas. Water samples collected during April-August 1999 from 74 randomly distributed domestic water-supply wells in the central High Plains aquifer

were analyzed to evaluate ground-water quality. Water samples from each well were analyzed for 186 constituents including: water properties, major ions, nutrients, dissolved organic carbon, trace elements, radon, volatile organic compounds, pesticides, and tritium. Many of these constituents are regulated in public drinking-water supplies by the U.S. Environmental Protection Agency (USEPA) under the Safe Water Drinking Act. The study area extended from about Goodland, Kansas, south to Amarillo, Texas (figs. 1 and 2).

Acknowledgments

The authors thank all who allowed access to sample their wells; Cristi Hansen and Michael and Carol Carlson, USGS, Kansas District; and Martin Schneider and Marty Phillips of the USGS Woodward, Oklahoma Field Office for working under difficult conditions to collect samples.

DESCRIPTION OF STUDY AREA

The study area for this report encompasses about 38,000 square miles that includes parts of southeastern Colorado, southwestern Kansas, northeastern New Mexico, northwestern Oklahoma, and northwestern Texas. Study area boundaries are restricted to the saturated area of the central High Plains aquifer extending from slightly north of the Arkansas River in Kansas to slightly south of the Canadian River in Texas. The western, southwestern, and eastern boundaries in the rest of the study area are formed by the erosional extent of the aquifer. The eastern boundary extends to about 30 miles east of Dodge City, Kansas, where the Ogallala Formation thins and grades into younger sediments.

Physiography and Geology

Most of the study area is in the Great Plains physiographic province (Fenneman, 1928). Flat to gently rolling terrain covers much of the study area (Dennehy, 2000), with escarpments located adjacent to major drainages. Pleistocene- and Holocene-age terrace deposits occur on the sides of the major alluvial valleys, opposite of the prevailing winds. Uncultivated areas consist of grasslands, with shrubs and trees adjacent to and within stream valleys. The study area

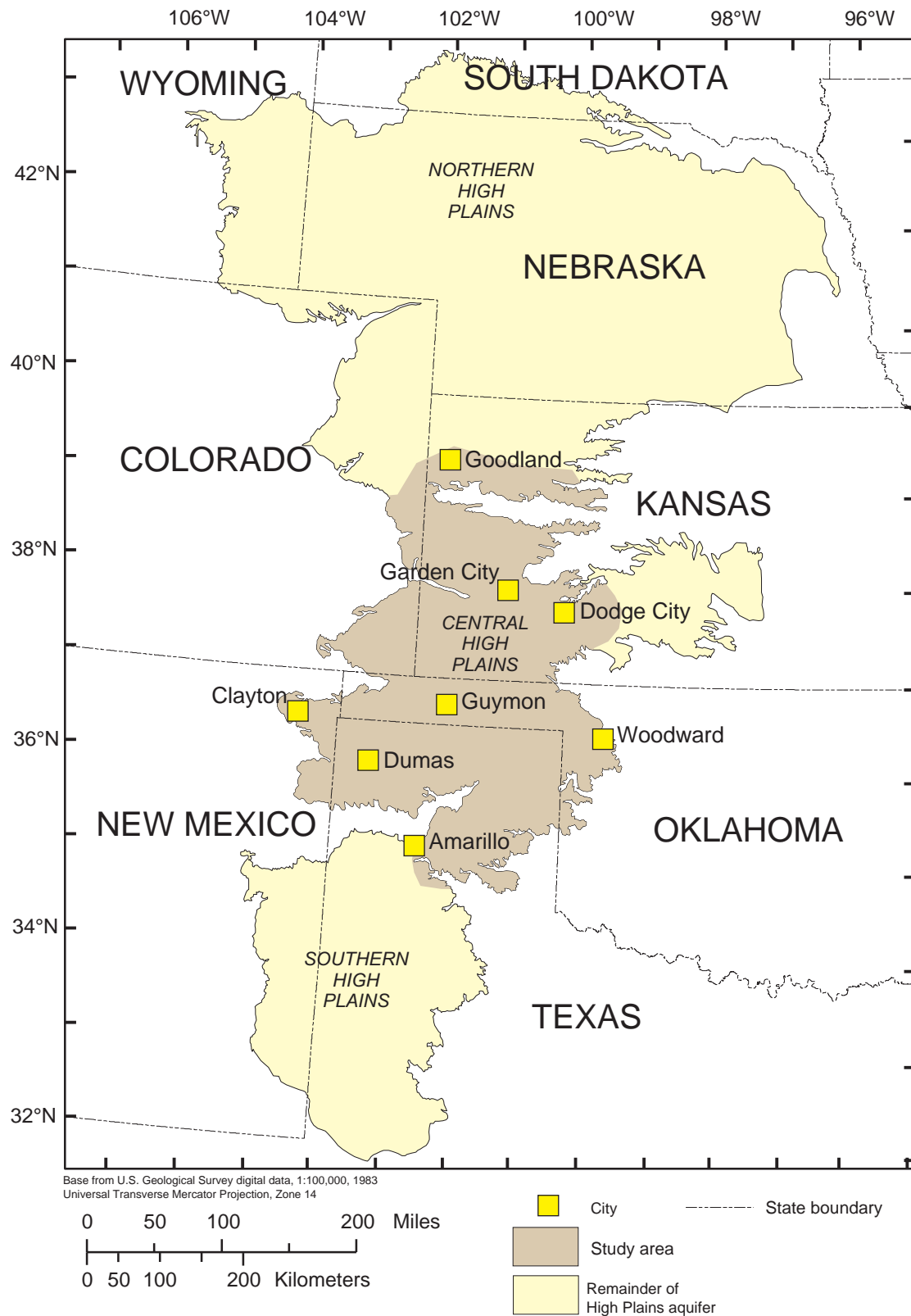


Figure 1. Location of study area.

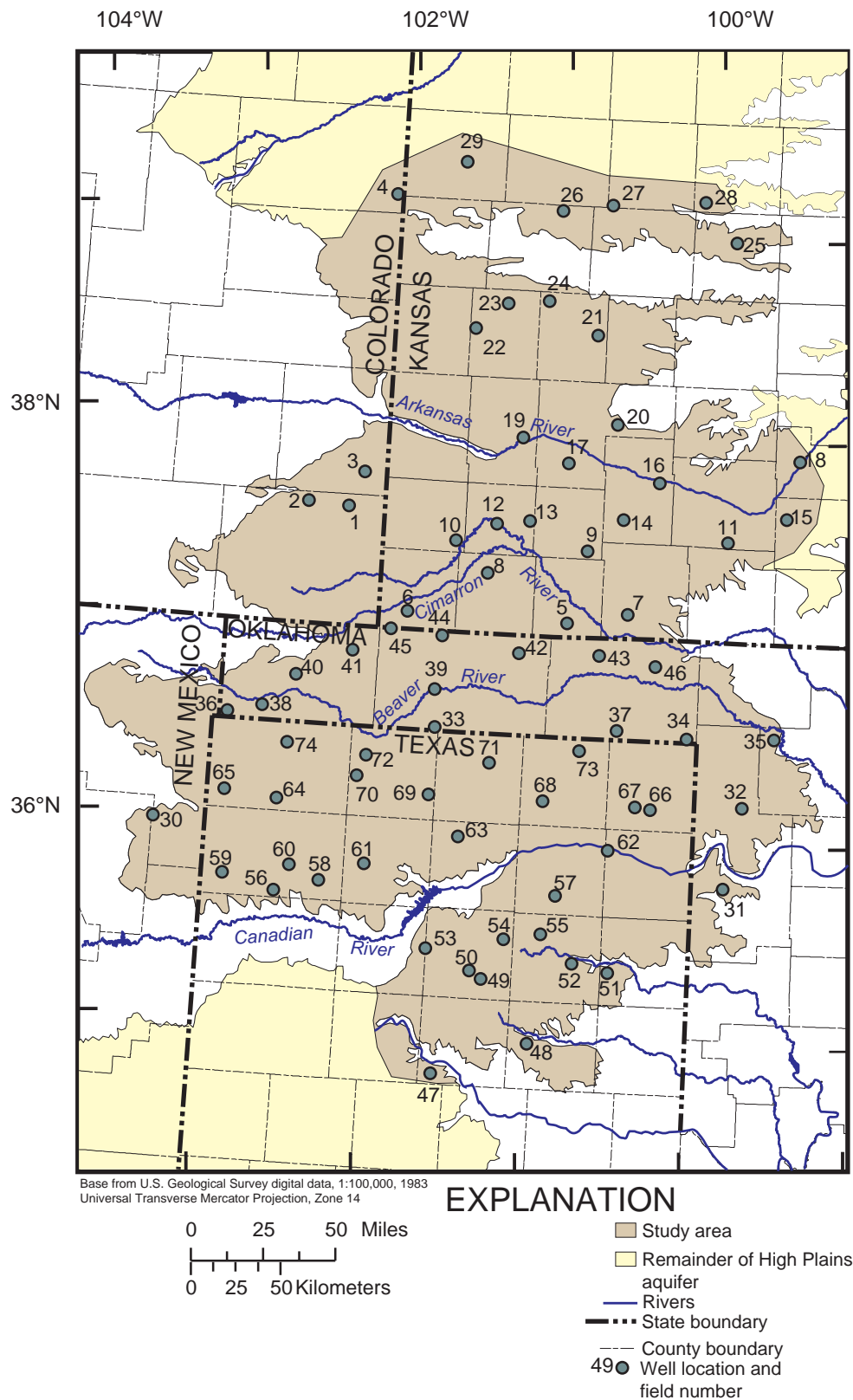


Figure 2. Locations of 74 domestic water-supply wells sampled for assessment of ground-water quality in the central High Plains aquifer, 1999.

is semi-arid, receiving an average of 16-20 inches of precipitation annually (Weeks and others, 1988). More detailed descriptions of the physiography and geology of the area are in Gutentag and others (1984).

Hydrogeology

The central High Plains aquifer consists of sediments of varying ages and compositions. The Ogallala Formation, which is primarily Pliocene in age, is the largest hydrogeologic unit in the aquifer (Smith, 1940; Gutentag and others, 1981; Gutentag and others, 1984). The aquifer consists primarily of unconsolidated clay, silt, sand, and gravel with scattered zones cemented by calcium carbonate, known as caliche. Some parts of the aquifer include alluvial and wind-blown deposits of Pleistocene and Holocene age (Smith, 1940; Gutentag and others, 1984). Some of these younger sediments are in hydraulic connection with the Ogallala Formation and in some cases the contact between the Ogallala Formation and younger sediments is not easily identified. Therefore, in this report sediments of the Ogallala Formation or younger are referred to as the central High Plains aquifer.

Wells completed in the central High Plains aquifer support intensive agriculture from western Kansas to the Texas panhandle, as well as rural domestic and municipal drinking-water supplies. Gutentag and others (1984) reported that the thickness of the Ogallala Formation in the study area ranges from 0 to 550 feet. Hart and others (1976) reported that the maximum thickness of the aquifer in Oklahoma exceeded 650 feet. One of the wells sampled for this study indicates the thickness of the Ogallala Formation in Texas is greater than 700 feet.

In 1999, depth to the water table in the central High Plains aquifer ranged from less than one foot to more than 500 feet with a median of about 165 feet (V.L. McGuire, U.S. Geological Survey, written commun., 2001). Water levels in parts of the aquifer have declined from 10 to more than 100 feet since irrigation began in the 1940s (Dennehy, 2000). The regional hydraulic gradient in the central High Plains aquifer indicates that ground-water movement is generally from west to east.

Well yields vary depending on the saturated thickness, specific yield, and hydraulic conductivity of the aquifer. In the central High Plains, drillers logs have reported yields in excess of 2,000 gallons per

minute for newly-completed irrigation wells. Aquifer depletion has led to decreased well yields in some areas. The additional lift required to pump from greater water-table depths reduces the pump capacities. Saturated thickness, the distance from the water table to the base of the aquifer, ranged from 0 to more than 600 feet in 1997 in the central High Plains aquifer (McGuire and Fischer, 1999). Specific yield, the ratio of the volume of water that will drain from a given volume of saturated rock, ranges from 10 to 20 percent (Gutentag and others, 1984), averaging about 16 percent (Luckey and Becker, 1999). Hydraulic conductivity is the rate at which water can move through a unit volume of the aquifer material per unit time at a unit gradient. Estimated hydraulic conductivities of the aquifer range from 25 to 100 feet per day (Gutentag and others, 1984), averaging 51 feet per day (Luckey and Becker, 1999).

Natural recharge to the aquifer from precipitation is variable both temporally and spatially. Local precipitation, soils characteristics, proportions of surface runoff, and land-use control the amount of recharge to the aquifer. Estimates of the mean annual potential ground-water recharge range from 0.05 to 1.85 inches per year (Gutentag and others, 1984).

Land and Water Use

The study area is sparsely populated with economic activity dominated by agriculture. Estimated population in the study area in 1998 was about 480,000. Amarillo, Texas, is the largest city in the study area, with a population of 217,000 in 2000 (U.S. Census Bureau, 2002). Most counties in the study area have estimated populations less than 5,000 (U.S. Census Bureau, 2000). Agriculture is the primary economic activity, followed by natural gas and petroleum production, and related support industries. As of 1995, land-use in the study area (fig. 3) was approximately 56 percent rangeland, 41 percent cropland, and 3 percent other uses (U.S. Geological Survey, 2000). Wheat is the primary crop in the study area, followed by corn and sorghum (U.S. Department of Commerce, 1949-92). Lesser crops include hay, other small grains, and miscellaneous crops.

Irrigated agriculture was responsible for 95 percent of the water use from the central High Plains aquifer in the study area in 1995 (Tortorelli, 2000; Dee Lurry and Joan Kenny, U.S. Geological Survey,

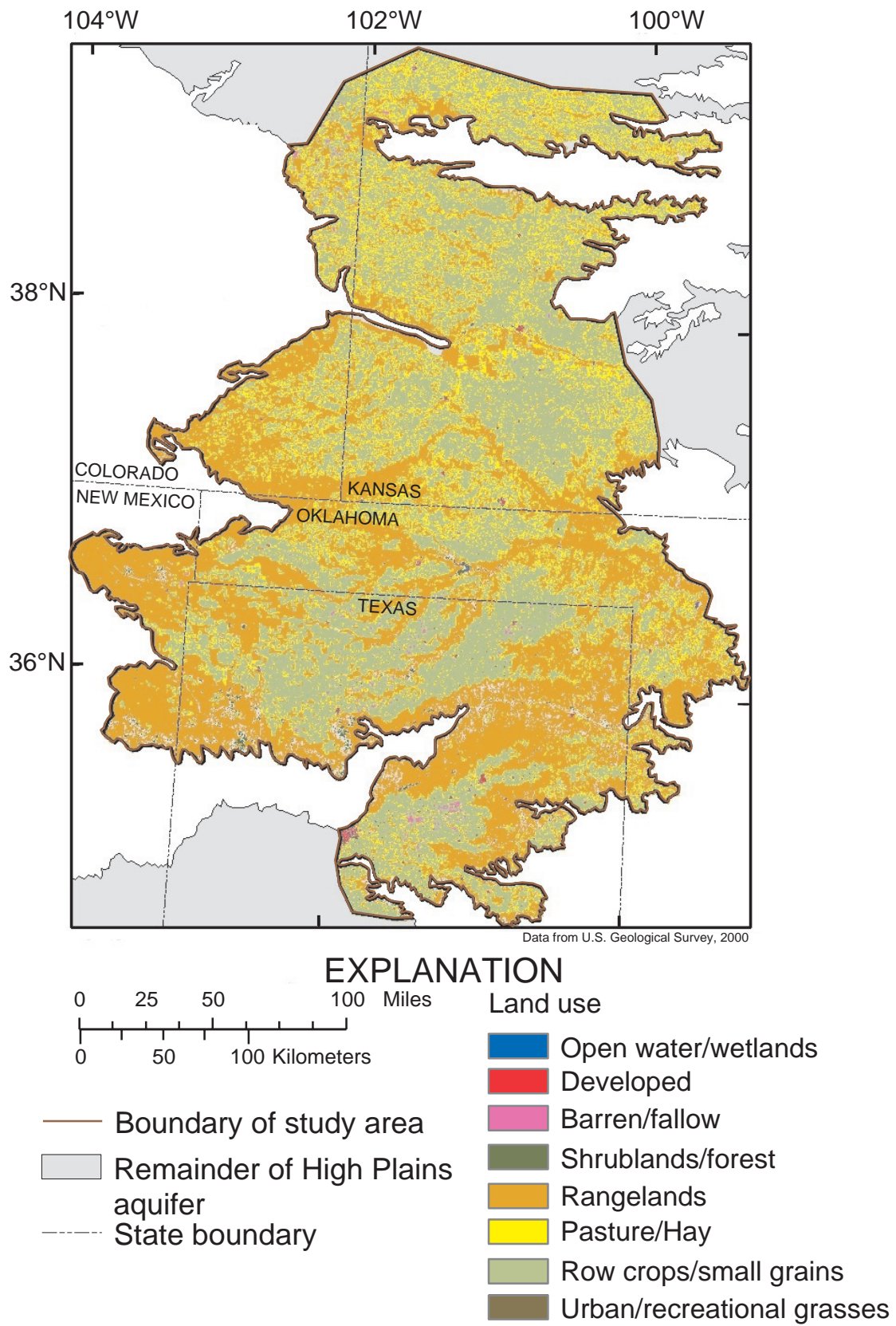


Figure 3. Land use over the central High Plains aquifer, 1995.

Table 1. Estimated water use for parts of Kansas and Oklahoma in 1995, and Texas in 1990 from the central High Plains aquifer (Kenny, 1999; Tortorelli, 2000; and Lurry, 1994)

[values are in the millions of gallons per day; <, less than; numbers in parentheses are percentages of total water use]

State	Irrigation	Public supply	Livestock	Public power supply	Domestic and commercial	Industrial and mining	Total
Kansas	1,961 (97)	18 (1)	27 (1)	2 (<1)	4 (<1)	7 (<1)	2,028
Oklahoma	637 (95)	11 (2)	19 (3)	0 (0)	1 (<1)	1 (<1)	669
Texas	1,464 (95)	20 (1)	17 (1)	0 (0)	1 (<1)	41 (3)	1,543

written commun., 2000). In Kansas and Oklahoma, the primary uses of water, following irrigation, are livestock and public supply. In the Texas part of the study area, the order of use is irrigation, industrial supply, public supply, and livestock (table 1). The City of Amarillo, Texas, and associated industrial water use are the primary source of differences in the proportions of minor water uses between the three states listed in table 1.

METHODS

The study design for the assessment of ground-water quality in the central High Plains aquifer followed published guidelines developed for the NAWQA program (Gilliom and others, 1995; Lapham and others, 1995). The central High Plains Aquifer study area boundaries (fig. 2) outline an area of relatively homogeneous natural features and land uses. Delineation of the study area boundaries was based on work done for the Regional Aquifer-System Analysis (RASA) program (Sun and Johnston, 1994; Gutentag and others, 1984).

Well Selection

Within the central High Plains aquifer, ground-water sampling locations were determined using a grid-based random site-selection computer program (Scott, 1990). To ensure an equal-area randomized assessment of ground-water quality, 259 random

sampling areas were identified over the entire extent of the High Plains aquifer. Seventy-four of the 259 sampling areas were within the boundaries of the central High Plains aquifer. One primary and one alternate site were randomly selected in each of the 74 selected areas. The average distance between primary sites was about 22 miles. Potential sampling locations represented a density of one primary site for each 500 square miles of the study area. Alternate sites were located if no well suitable for sampling could be located near the primary site. A well was considered suitable for sampling if: 1) it was within a 4-mile radius of the randomly selected site; 2) it was a domestic well that was actively being used as a household drinking-water supply; 3) it could be determined from a driller's log or other means that the well was completed in the central High Plains aquifer; 4) information could be obtained about well construction, including well depth, screened interval, and casing information; and 5) it was possible to collect a water sample prior to any water treatment device or storage tank. At 11 of the 74 primary sites, no domestic wells fitting these criteria could be located. Acceptable wells were chosen at the alternate sites for these 11 locations. Figure 2 shows the distribution of the 74 domestic wells sampled in the central High Plains aquifer in 1999. Well screen depths ranged from 34 to 706 feet below land surface (table 2). Water levels ranged from 14 to 416 feet below land surface (table 2), with a median depth of 150 feet.

Table 2. Construction information for 74 sampled domestic water-supply wells completed in the central High Plains aquifer

[depths are in feet below land surface; --, no data]

Field well number	Station number	State	Data of well construction	Screened interval		
				Depth to top of well screen	Depth to bottom of well screen	Depth to water
1	373507102162001	Colorado	9/20/1978	165	200	177
2	373559102314901	Colorado	9/15/1974	100	240	177
3	374535102110301	Colorado	12/2/1966	176	196	176
4	390830102052001	Colorado	6/10/1986	150	170	90
5	370358100510301	Kansas	1/5/1985	220	265	169
6	370458101514401	Kansas	4/16/1976	90	150	89
7	370724100281601	Kansas	3/9/1982	170	210	130
8	371738101220301	Kansas	4/10/1985	310	360	206
9	372534100443501	Kansas	7/24/1992	280	380	259
10	372649101344701	Kansas	9/6/1985	342	382	225
11	372956099512201	Kansas	8/8/1989	250	290	205
12	373229101193201	Kansas	12/1/1989	263	303	196
13	373345101070801	Kansas	3/16/1994	380	480	350
14	373527100312701	Kansas	--	246	286	137
15	373732099291201	Kansas	10/26/1993	90	110	63
16	374650100181901	Kansas	10/29/1979	147	207	46
17	375129100532301	Kansas	7/30/1988	299	339	159
18	375447099245001	Kansas	10/7/1991	40	60	15
19	375828101111801	Kansas	9/11/1989	315	355	62
20	380331100352801	Kansas	4/7/1979	45	65	28
21	382947100443201	Kansas	7/15/1986	115	135	85
22	383008101315601	Kansas	8/4/1982	155	175	127
23	383758101195801	Kansas	5/12/1994	190	210	158
24	383919101040101	Kansas	9/3/1987	176	196	165
25	385904099522201	Kansas	10/7/1997	72	112	61
26	390622101003201	Kansas	8/14/1987	182	202	154
27	390838100411701	Kansas	3/1988	198	208	110
28	391044100051001	Kansas	11/11/1981	69	89	42
29	391921101385501	Kansas	8/26/1981	230	250	157
30	355916103215201	New Mexico	10/31/1986	36	63	36
31	354656099480301	Oklahoma	10/7/1983	75	155	91
32	361114099420501	Oklahoma	2/1/1979	74, 114, 154	94, 134, 194	83
33	363057101384701	Oklahoma	12/5/1989	280	360	208
34	363104100035501	Oklahoma	6/15/1981	260	360	83
35	363154099310401	Oklahoma	10/1/1996	40	60	14
36	363157102565601	Oklahoma	9/13/1994	180	225	169

Table 2. Construction information for 74 sampled domestic water-supply wells completed in the central High Plains

Field well number	Station number	State	Data of well construction	Screened interval		
				Depth to top of well screen	Depth to bottom of well screen	Depth to water
37	363239100301801	Oklahoma	8/13/1988	260	320	175
38	363427102440401	Oklahoma	9/26/1990	220	240	115
39	364219101394101	Oklahoma	11/6/1991	140	200	76
40	364411102321201	Oklahoma	--	220	260	232
41	365223102113001	Oklahoma	3/30/1996	260	300	88
42	365422101083701	Oklahoma	4/17/1990	210	270	88
43	365445100381901	Oklahoma	9/19/1997	140	160	92
44	365821101375301	Oklahoma	2/5/1996	360	420	270
45	365934101573001	Oklahoma	1/2/1997	260	300	252
46	365210100164501	Oklahoma	3/24/1986	180	300	135
47	344800101324901	Texas	1990	100	150	111
48	345826100580501	Texas	7/1/1982	85	95	58
49	351656101161101	Texas	--	460	500	368
50	351914101204401	Texas	8/10/1972	562	605	398
51	352035100293301	Texas	1959	34	68	29
52	352249100425401	Texas	10/5/1998	80	150	87
53	352513101372101	Texas	11/13/1996	590	610	416
54	352909101084001	Texas	5/19/1995	380	490	377
55	353110100550401	Texas	1/26/1971	427, 455, 497	437, 475, 520	359
56	353941102350201	Texas	11/3/1981	320	331	316
57	354248100501501	Texas	7/15/1986	200	260	385
58	354331102183601	Texas	12/31/1994	530	550	404
59	354348102543601	Texas	6/10/1994	380	400	133
60	354728102295901	Texas	4/1/1986	261	280	38
61	354918102020901	Texas	--	664, 700	688, 706	330
62	355701100313001	Texas	9/11/1975	60	95	32
63	355852101274101	Texas	3/23/1982	420	540	291
64	360703102361901	Texas	6/28/1971	308	468	316
65	360838102560301	Texas	9/17/1993	220	240	167
66	360944100162101	Texas	6/19/1985	120	160	18
67	361014100221001	Texas	9/12/1995	141	201	72
68	361049100564901	Texas	6/1/1972	433	453	388
69	361054101393601	Texas	1/23/1984	380	460	290
70	361517102065301	Texas	2/25/1986	445	535	284
71	362115101173901	Texas	10/17/1994	322	422	338
72	362134102035101	Texas	5/1/1989	360	415	286
73	362615100435801	Texas	5/30/1991	260	340	252
74	362744102334901	Texas	9/14/1970	181	221	118

Table 3. Laboratory analyses methods for analyzed water-quality constituents

[GC/MS, gas chromatography/mass spectrometry; LC/MS, liquid chromatography/mass spectrometry; HPLC/DAD, high-performance liquid chromatography/diode array detection; HPLC/MS, high-performance liquid chromatography/mass spectrometry; UV, ultra violet; LCAA, liquid chromatography/atomic adsorption]

Constituent or constituent group	USGS schedule or lab code	Analysis method	Method reference
Major ions	2750	Atomic absorption spectrometric	Fishman (1993)
Nutrients	2752	Various methods	Fishman (1993)
Dissolved organic carbon	2085	UV-promoted persulfate oxidation and infrared spectrometry	Brenton and Arnett (1993)
Trace elements	2703	Atomic absorption spectrometric	Faires (1993)
Radon	1369	Liquid scintillation	American Society for Testing and Materials (1996)
Volatile organic compounds	2020	Purge and trap capillary-column GC/MS	Connor and others (1998)
Pesticides	2001	Solid phase extraction using a sorbent cartridge and GC/MS	Zaugg and others, (1995)
Pesticide metabolites	LCAA	HPLC/DAD and HPLC/MS	Hostetle and Thurman (1999)
Tritium	1565	Electrolytic enrichment and gas counting	Ostlund and Dorsey (1975)

Sample Collection

Procedures consistent with NAWQA sampling protocols described in Koterba and others (1995) were used to collect ground-water samples. Ground-water samples were collected and processed in a mobile water-quality laboratory. Existing submersible pumps along with the spigots, hydrants, or fittings installed near the wellhead were used for the sampling. All tubing and fittings attached to existing plumbing were stainless steel or Teflon and all sample bottles used in sample collection were made of pre-cleaned glass or plastic. All sample collection and preservation took place in plastic lined enclosures to prevent introduction of airborne contaminants. Sampling equipment was thoroughly cleaned between each site using tap water and Alconox soap, rinsed with deionized water, rinsed with methanol, and a final deionized water rinse. The exception to that procedure was the filter

used for dissolved organic carbon, which was not rinsed with methanol.

Wells sampled were purged of several standing well volumes prior to sampling to ensure that stagnant water was not being sampled. Water purged from the wells was directed into an enclosed flow cell where water properties, including specific conductance, pH, temperature, dissolved oxygen, and turbidity, were measured every five minutes. After the water property measurements were stable, water flow was redirected to an enclosed sampling chamber where water samples were collected for analysis.

Once collected, samples were shipped to the appropriate laboratory for analysis. Time sensitive samples such as radon and nutrients were shipped to the laboratory within 12 hours of being collected. Analyses were performed at the USGS National Water-Quality Laboratory in Lakewood, Colorado. Table 3 lists references for analytical methods used for all analyses.

Quality Control

Quality-control samples are collected and analyzed to evaluate the degree of accuracy, precision, and bias of environmental samples. Quality-control samples analyzed for this study consisted of four types of blanks, replicate environmental samples, and environmental-matrix spike samples. In addition to quality-control samples submitted from the field, the USGS National Water-Quality Laboratory runs set blanks, duplicates, and spikes with each analytical run.

Blanks

Blank samples test for bias from introduction of contaminants to environmental samples. The blank source solution consisted of organic-free or inorganic-free waters prepared and tested by the USGS National Water Quality Laboratory and the USGS Quality of Water Service Unit for the NAWQA Program. Four types of blank samples were collected: source solution, equipment, field, and trip.

Source-solution blanks document the purity of the blank solution used for field and equipment blanks. Toluene was the only volatile organic compound detected in the five source-solution blank samples.

Two equipment blanks were collected prior to the collection of the first environmental samples to determine if the equipment or sample collection process would bias the data.

At the time environmental samples were collected, a total of eight (six were analyzed for volatile organic compounds) field blanks were collected at regular intervals on site to determine if sample contamination occurred from equipment decontamination, contamination of the vehicle, or data-collection methods in the field. Field blanks were taken on site following the collection of the environmental sample and cleaning of the equipment. Field blank samples were collected by pumping blank water through all decontaminated sampling equipment and processing the samples using the same protocols for the environmental samples. Equipment and field blank samples were analyzed for concentrations of major ions, nutrients, dissolved organic carbon, trace elements, volatile organic compounds, and pesticides. Aluminum concentrations in the environmental samples ranged from less than 1.0 to 6.2 micrograms per liter. Aluminum concentrations in field blank samples ranged from less than 1.0 to 4.8 micrograms per liter.

Dissolved organic carbon was detected in seven of eight field blank samples at concentrations ranging from less than 0.1 to 6.6 milligrams per liter. The concentration of dissolved organic carbon in environmental samples ranged from 0.2 to 2.0 milligrams per liter. Some of the contamination by organic carbon may have been caused by residues of Alconox soap or traces of methanol used to rinse field equipment between samples. Orthophosphate was detected in three of eight field blanks, ranging in concentrations from less than 0.01 to 0.021 milligram per liter. Orthophosphate concentrations in the environmental samples ranged from less than 0.01 to 0.052 milligram per liter. Toluene was detected in all six field blanks analyzed for volatile organic compounds in similar concentrations (0.05 to 0.16 microgram per liter) to those detected in environmental samples.

Trip blanks were sealed vials of purified water prepared in the laboratory, transported into the field, and shipped to the lab for analysis to assess the possibility of contamination during transport or shipping of samples to the lab. Trip blanks were analyzed for volatile organic compounds. Toluene was detected in three of the five trip blanks.

Data from blank samples indicate that sampling procedures and decontamination of equipment caused nominal contamination of water samples by a few constituents. Aluminum, dissolved organic carbon, orthophosphate, and toluene were the only constituents detected in the field blank samples. Detections of all four constituents in both environmental samples and equipment blank samples indicate possible positive bias of concentrations of those constituents in the environmental samples. Toluene was detected in 35 of 221 set blank samples analyzed at the National Water Quality Laboratory at concentrations ranging from 0.0004 to 0.052 microgram per liter (Donna Rose, U.S. Geological Survey, written commun., 2002). Detections of greater concentrations of toluene in trip blanks and field blank samples may be due to environmental contamination at the time of sampling and during shipment.

Replicates

Replicate quality-control samples are used to evaluate variability in water-quality data due to analytical or sample collection processes. Replicate samples were collected sequentially, following the collection of environmental samples, and were analyzed for

concentrations of major ions, nutrients, dissolved organic carbon, trace elements, and radon. Replication of analyses of volatile organic compounds and pesticides was achieved through analyses of environmental-matrix spikes. Precision is calculated from two replicate samples, expressed as relative percent difference (RPD):

$$RPD = \frac{|C_1 - C_2|}{\left(\frac{C_1 + C_2}{2}\right)} \times 100$$

where C_1 is the larger of the two values and C_2 is the smaller of the two values.

If the estimated concentration of a constituent in one sample of a pair was less than the analytical reporting level, the reporting level was substituted for that concentration to calculate the RPD. If both constituent concentrations in the replicate pair were less than the reporting level, then the RPD was not calculated and the concentrations were assumed to be the same. Most of the RPD values were less than 2 percent. For many constituent concentrations, relatively small differences in replicate concentrations led to large RPD values, but those differences were not substantial. Replicate samples generally indicated an acceptable degree of reproducibility of results.

Environmental-matrix spikes

Environmental-matrix spikes are environmental samples collected and spiked in the field with a known quantity of analytes. Analytical recoveries of the spiked compounds are expressed in percentages of the expected concentrations. Environmental-matrix spikes test analytical recoveries and matrix interferences of volatile organic compounds and pesticides.

Mean percent recoveries of volatile organic compounds were biased low, with the mean percent recovery for all 85 compounds being 76 percent. Two of the 85 compounds had mean recoveries exceeding 100 percent. Mean recoveries ranged from 39 percent (carbon disulfide) to 145 percent (m,p-xylene). These relatively small percent recoveries indicate that the methods used to collect, preserve, and analyze these compounds may somewhat underestimate environmental concentrations of those compounds.

Data from 18 environmental-matrix spikes indicated that for most pesticides, analytical results were

close to true concentrations. Of the 47 pesticides in the spike mixture, 33 of 47 had mean percent recoveries between 90 and 110 percent. Deethylatrazine generally had recoveries less than 60 percent and poor analytical accuracy and as a result, all detections are reported as estimated concentrations. Four pesticides—DDE, pendimethalin, permethrin, and propargite had mean percent recoveries less than 70 percent. Six pesticides—alachlor, carbaryl, carbendazim, propanil, simazine, and tebuthiuron, had mean percent recoveries greater than 100 percent. Generally, the recovery of pesticides was close to the ideal of 100 percent. With the exception of deethylatrazine, reported concentrations for environmental samples are considered to be close to the true concentrations.

GROUND-WATER QUALITY

To evaluate ground-water quality of the central High Plains aquifer, water properties and chemical constituents were analyzed in water samples from 74 domestic water-supply wells completed in the aquifer (table 4, Appendix 1).

Maximum Contaminant Levels set by the USEPA for public water supplies are the primary standards of water quality referenced in this report. Those levels are set for water properties and dissolved constituents to prevent adverse effects on human health (Maximum Contaminant Level) or to prevent nuisances such as foul odors, staining, or usability of water (Secondary Maximum Contaminant Level) (U.S. Environmental Protection Agency, 2001a). These levels apply to public water supplies and are not enforceable for private domestic water supplies. These levels are, however, useful benchmarks for owners of private wells. Ground-water quality of the central High Plains aquifer will be described in the following sections in relation to Maximum Contaminant Levels and potential sources of the water-quality constituents.

Water Properties

Water properties are general indicators of the quality of water, which are readily measured in the field as samples are collected. Water properties measured at the time of sample collection were specific conductance, pH, water temperature, turbidity, dissolved oxygen, and alkalinity (table 5). Specific

Table 4. Water-quality constituents analyzed in water samples collected in 1999 from 74 domestic water-supply wells completed in the central High Plains aquifer

[USGS, U.S. Geological Survey; SC, analytical schedule code; LC, analytical laboratory code; N, nitrogen; P, phosphorous; pCi/L, picocurie per liter]

Constituent	Analytical reporting level	Constituent	Analytical reporting level
Major ions, USGS SC2750, in milligrams per liter (“*” denotes units in micrograms per liter)			
Dissolved solids	10.0	Sulfate	0.1
Calcium	0.02	Chloride	0.1
Magnesium	0.01	Fluoride	0.10
Sodium	0.06	Silica	0.05
Potassium	0.10	Iron*	10.0
Bromide	0.01		
Trace elements, USGS SC2703, in micrograms per liter			
Aluminum	1.0	Antimony	0.048
Arsenic	2.0	Barium	1.0
Beryllium	0.06	Cadmium	0.037
Chromium	0.8	Cobalt	0.015
Copper	0.23	Lead	0.08
Manganese	0.1	Molybdenum	0.2
Nickel	0.06	Selenium	2.4
Silver	1.0	Uranium, natural	0.018
Zinc	1.0		
Nutrients, USGS SC2752; and dissolved organic carbon USGS SC2085, in milligrams per liter			
Nitrogen, nitrite	0.01	Nitrogen, ammonia + organic nitrogen	0.1
Nitrogen, nitrite + nitrate	0.05	Phosphorus	0.004
Nitrogen, ammonia	0.02	Orthophosphate	0.01
Dissolved organic carbon	.1		
Volatile organic compounds, USGS SC2090, in micrograms per liter			
1,1,1,2-Tetrachloroethane	0.044	1,1,1-Trichloroethane	0.032
1,1,2,2-tetrachloroethane	0.13	1,1,2-Trichloroethane	0.064
1,1,2-Trichlorotrifluoroethane	0.032	1,1-Dichloroethane	0.066
1,1-Dichloroethylene	0.044	1,1-Dichloropropene	0.026
1,2,3,4-Tetramethylbenzene	0.23	1,2,3,5-Tetramethylbenzene	0.2
1,2,3-Trichlorobenzene	0.27	1,2,3-Trichloropropane	0.16
1,2,3-Trimethylbenzene	0.12	1,2,4-Trichlorobenzene	0.19
1,2,4-Trimethylbenzene	0.056	1,2-Dibromo-3-chloropropane	0.21
1,2-Dibromoethane	0.036	1,2-Dichlorobenzene	0.048
1,2-Dichloroethane	0.13	1,2-Dichloropropane	0.068
1,3,5-Trimethylbenzene	0.044	1,3-Dichlorobenzene	0.054
Volatile organic compounds, SC2090, in micrograms per liter			
1,3-Dichloropropane	0.12	1,4-Dichlorobenzene	0.05
2,2-Dichloropropane	0.078	2-Butanone	1.6

Table 4. Water-quality constituents analyzed in water samples collected in 1999 from 74 domestic water-supply wells completed in the central High Plains aquifer—Continued

Constituent	Analytical reporting level	Constituent	Analytical reporting level
2-Chlorotoluene	0.042	2-Hexanone	0.7
3-Chloropropene	0.2	4-Chlorotoluene	0.056
4-Isopropyl-1-methylbenzene	0.11	4-Methyl-2-pentanone	0.37
Acetone	5	Acrylonitrile	1.2
Benzene	0.1	Bromobenzene	0.036
Bromochloromethane	0.044	Bromodichloromethane	0.048
Bromoethene	0.1	Bromoform	0.1
Bromomethane	0.15	Butylbenzene	0.19
Carbon disulfide	0.37	Chlorobenzene	0.028
Chloroethane	0.12	Chloroform	0.052
Chloromethane	0.25	Dibromochloromethane	0.18
Dibromomethane	0.05	Dichlorodifluoromethane	0.14
Dichloromethane	0.38	Diethyl ether	0.17
Diisopropyl ether	0.098	Ethyl methacrylate	0.28
Ethyl tert-butyl ether	0.054	Ethylbenzene	0.03
Hexachlorobutadiene	0.14	Hexachloroethane	0.36
Isopropylbenzene	0.032	Methyl acrylate	1.4
Methyl acrylonitrile	0.57	Methyl iodide	0.21
Methyl methacrylate	0.35	Naphthalene	0.25
Styrene	0.042	Tetrachloroethylene	0.1
Tetrachloromethane	0.088	Tetrahydrofuran	9
Toluene	0.05	Trichloroethylene	0.038
Trichlorofluoromethane	0.09	Vinyl chloride	0.11
cis-1,2-Dichloroethylene	0.038	cis-1,3-Dichloropropene	0.09
m- and p- Xylene	0.06	n-Propylbenzene	0.042
o-Ethyl toluene	0.1	o-Xylene	0.06
sec-Butylbenzene	0.048	tert-Butyl methyl ether	0.17
tert-Butylbenzene	0.1	tert-Pentyl methyl ether	0.11
trans-1,2-Dichloroethylene	0.032	trans-1,3-Dichloropropene	0.13
trans-1,4-Dichloro-2-butene	0.7		
Pesticides, USGS SC2001, in micrograms per liter			
2,6-diethylaniline	0.003	Acetochlor	0.002
Alachlor	0.002	alpha-BHC	0.002
Atrazine	0.001	Azinphos-methyl	0.001
Benfluralin	0.002	Butylate	0.002
Pesticides, USGS SC2001, in micrograms per liter			
Carbaryl	0.003	Carbofuran	0.003
Chlorpyrifos	0.004	cis-Permethrin	0.005
Cyanazine	0.004	Dacthal	0.002

Table 4. Water-quality constituents analyzed in water samples collected in 1999 from 74 domestic water-supply wells completed in the central High Plains aquifer—Continued

Constituent	Analytical reporting level	Constituent	Analytical reporting level
Deethylatrazine	0.002	Diazinon	0.002
Dieldrin	0.001	Disulfoton	0.017
EPTC	0.002	Ethalfuralin	0.004
Ethoprophos	0.003	Fonofos	0.003
Lindane	0.004	Linuron	0.002
Malathion	0.005	Metolachlor	0.002
Metribuzin	0.004	Molinate	0.004
Napropamide	0.003	p,p'-DDE	0.006
Parathion	0.004	Parathion-methyl	0.006
Pebulate	0.004	Pendimethalin	0.004
Phorate	0.002	Prometon	0.018
Propachlor	0.007	Propanil	0.004
Propargite	0.013	Propyzamide	0.003
Simazine	0.005	Tebuthiuron	0.01
Terbacil	0.007	Terbufos	0.013
Thiobencarb	0.002	Tri-allate	0.001
Trifluralin	0.002		
Pesticide metabolites, LCAA, in micrograms per liter			
Acetochlor OA	0.05	Acetochlor ESA	0.05
Alachlor OA	0.05	Alachlor ESA	0.05
Metolachlor OA	0.05	Metolachlor ESA	0.05
Radionuclides and other constituents (units as noted)			
Radon, USGS LC1369 in pCi/L	26	Tritium, USGS LC1565 in pCi/L	1.0

Table 5. Summary statistics for water properties, major ions, nutrients, organic carbon, and trace elements for samples collected in 1999 from 74 domestic water-supply wells completed in the central High Plains aquifer

[<, signifies analytical reporting level; NTU, nephelometric turbidity units; mg/L, milligrams per liter; $\mu\text{S}/\text{cm}$, microsiemens per centimeter; $^{\circ}\text{C}$, degrees Celsius; $\mu\text{g}/\text{L}$, micrograms per liter; Maximum Contaminant Level, regulatory drinking-water standard set by the U.S. Environmental Protection Agency for public water supplies, *, Secondary Maximum Contaminant Level, non-regulatory drinking-water standard set by the U.S. Environmental Protection Agency for public water supplies; --, no data]

Constituents	Samples collected	Analytical reporting level	Minimum	Median	Maximum	Maximum Contaminant Level
Water properties						
Specific conductance, 25 $^{\circ}\text{C}$, in $\mu\text{S}/\text{cm}$	74	1	280	500	1,600	--
pH, in standard units	74	--	7.2	7.6	8.3	6.5-8.5*
Temperature, in $^{\circ}\text{C}$	74	--	12	17	21	--
Turbidity, in NTU	73	0.01	0.07	0.29	11	--
Dissolved oxygen, in mg/L	74	--	0.3	6.2	8.5	--
Alkalinity as CaCO_3 , in mg/L	74	1	120	180	320	--
Dissolved solids and major ions, in mg/L						
Solids, residue on evaporation, 180 $^{\circ}\text{C}$	73	10	180	330	1,100	500*
Calcium	74	0.02	7.4	48	140	--
Magnesium	74	0.01	4.2	20	56	--
Sodium	74	0.06	6.8	29	280	--
Potassium	74	0.1	<0.1	4.3	7.6	--
Sulfate	74	0.31	6.4	37	430	250*
Chloride	74	0.29	3.0	16	260	250*
Fluoride	74	0.1	0.3	1.1	4.0	4.0
Bromide	74	0.01	0.04	0.12	1.7	--
Silica	74	0.09	14	30	61	--
Hardness as CaCO_3	74	0.5	82	200	500	--
Nutrients and organic carbon, in mg/L						
Nitrite	74	0.01	<0.01	<0.01	0.01	1.0
Nitrate	74	0.05	<0.05	2.3	20	10
Ammonia	74	0.02	<0.02	<0.02	0.04	--
Ammonia+organic nitrogen	74	0.1	<0.1	<0.1	1.0	--
Phosphorus, total	74	0.004	<0.004	0.005	0.054	--
Orthophosphate	74	0.01	<0.01	0.015	0.052	--
Dissolved organic carbon	74	0.1	0.2	0.5	2.0	--
Trace elements, in $\mu\text{g}/\text{L}$						
Aluminum	74	1	<1	3	6	50 - 200*
Antimony	74	1	<1	<1	<1	6
Arsenic	74	1	<1	2	9.7	50
Barium	74	1	20	80	560	2000
Beryllium	74	1	<1	<1	<1	4
Cadmium	74	1	<1	<1	<1	5
Chromium	68	1	<1	1.1	5.2	100
Cobalt	74	1	<1	<1	<1	--

Table 5. Summary statistics for water properties, major ions, nutrients, organic carbon, and trace elements for samples collected in 1999 from 74 domestic water-supply wells completed in the central High Plains aquifer—Continued

Constituents	Samples collected	Analytical reporting level	Minimum	Median	Maximum	Maximum Contaminant Level
Copper	74	1	<1	<1	6.3	1300
Iron	74	10	<10	<10	38	300
Lead	74	1	<1	<1	2.3	0
Manganese	74	1	<1	<1	85	50*
Molybdenum	74	1	<1	4.9	52	--
Nickel	74	1	<1	<1	2.7	--
Selenium	74	1	<1	3	18	50
Silver	74	1	<1	<1	<1	100*
Uranium	74	1	<1	7.2	31	--
Zinc	74	1	<1	13	170	5000

conductance is a measure of the ability of water to conduct electrical current. Greater dissolved ion concentration conducts greater current, so specific conductance is an indirect measurement of the amount of dissolved ionic substances in water. Specific conductances in the water samples ranged from 285 microsiemens per centimeter at 25 degrees Celsius to 1,060 microsiemens per centimeter at 25 degrees Celsius indicated that the water samples were relatively low in dissolved solids (table 5). The pH's of samples were near neutral to alkaline, but did not exceed Secondary Maximum Contaminant Levels of less than 6.5 or greater than 8.5 (table 5). The median water temperature was 17 degrees Celsius. Turbidity indirectly measures the amount of suspended particulate matter in water. As with water from most domestic wells, turbidities were relatively small in the water samples (table 5). The median dissolved oxygen concentration was 6.2 milligrams per liter, indicating that most of the aquifer is well-oxygenated (table 5). Alkalinity is the capacity of a filtered water sample to neutralize a strong acid, or the buffering capacity of a solution, and is expressed in milligrams per liter as calcium carbonate. Dissolution of carbonate minerals is typically the primary source of alkalinity and directly affects "hardness" of water. About 60 percent of the water samples had hardnesses greater than 180

milligrams per liter as calcium carbonate, which is classified as "very hard" (Hem, 1989, p. 159), potentially affecting performance of soaps and detergents and contributing calcitic or gypsiferous scales to pipes, water heaters, and boilers.

Dissolved Solids and Major Ions

Dissolved solids are an indicator of general water quality and the suitability of water for drinking, agricultural, and industrial use. Dissolved solids are the mass of solids per unit remaining when a filtered water sample is evaporated to dryness. The Secondary Maximum Contaminant Level of 500 milligrams per liter for dissolved solids was exceeded in 16 samples, with two samples having dissolved solids concentrations greater than 1,000 milligrams per liter. The standard for dissolved solids is set to minimize deposits in boilers, colored water, staining, and salty taste (U.S. Environmental Protection Agency, 2001a). Krothe and others (1982) reported that dissolved solids concentrations greater than 1,000 milligrams per liter occur in less than 3 percent of the area of the High Plains aquifer and that greatest dissolved solids concentrations generally occurs in the Texas portion of the aquifer. Krothe and others (1982) also reported that proportions of major ions are related to dissolved

solids concentrations as follows: samples with dissolved solids concentrations less than 250 milligrams per liter are typically dominated by calcium and bicarbonate, samples with dissolved solids concentrations from 250 to 500 milligrams per liter are dominated by sodium and sulfate, and samples with dissolved solids concentrations greater than 500 milligrams per liter have mixed water chemistry. Three of the samples from the 74 wells (4 percent) had a dissolved solids concentration less than 250 milligrams per liter. Ratios between major ions in those samples were similar to those having dissolved solids concentrations between 250 and 500 milligrams per liter, except that the majority of those samples had somewhat greater chloride concentrations and lesser alkalinities (fig. 4). Samples with dissolved solids concentrations greater than 500 milligrams per liter tended to have greater proportions of sodium and potassium relative to calcium and increased proportions of chloride and sulfate (fig. 4), as described by Krothe and others (1982). Much of the central High Plains aquifer is underlain by sedimentary rocks of Permian or later ages that contain waters having dissolved solids concentrations greater than 500 milligrams per liter, due to sulfate enrichment from gypsum dissolution and/or sodium and chloride from seepage of diluted brines (Krothe and others, 1982; Irwin and Morton, 1969).

Calcium concentrations ranged from less than 10 to nearly 140 milligrams per liter (table 5, fig. 5). Major sources of calcium include dissolution of carbonate minerals such as calcite and dolomite and gypsum. Caliche layers and interstitial carbonate cements in the sand and gravel layers in the central High Plains aquifer are composed primarily of calcite (Hart and others, 1976; Krothe and others, 1982). Dissolution of gypsum in the underlying units also is a contributor of calcium and sulfate (Hart and others, 1976).

Magnesium concentrations was generally one-third to one-half those of calcium in the water samples (table 5, fig. 5). Common sources of magnesium include dolomite, calcite with magnesium impurities, and a number of mafic minerals, which are likely to have been components of igneous and metamorphic rocks forming the ancestral Rocky Mountains, the source of most of the sediments forming the aquifer (Gutentag and others, 1984, p. 8).

Sodium concentrations ranged from less than 7 to nearly 280 milligrams per liter (table 5). Possible sources of sodium include: ion exchange with clays;

dissolution of sodium-bearing minerals; seepage of brines from underlying aquifers; contamination by brines from oil and gas production; or contamination by sewage or animal wastes. Excessive concentrations of sodium can be harmful to plants when used for irrigation. The sodium-adsorption ratio (SAR), as expressed by the following equation:

$$SAR = \frac{Na^{+}}{\sqrt{\frac{(Ca^{+2} + Mg^{+2})}{2}}}$$

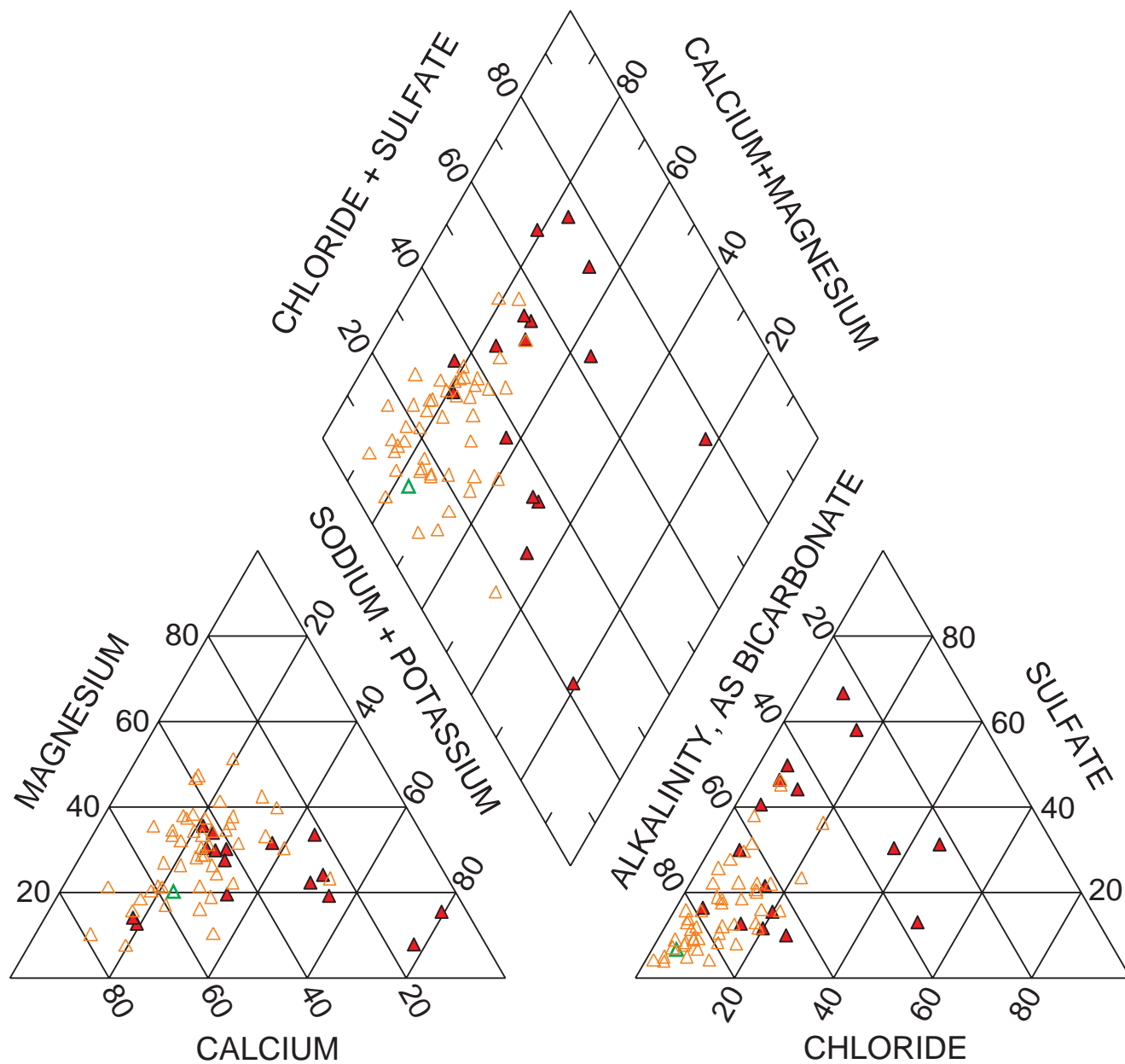
(concentrations in milliequivalents per liter)

is an index of the likelihood of damage to crops by sodium in water. The two samples with the greatest sodium concentration had a "medium" sodium hazard (SAR between 10 and 18), as defined by U.S. Salinity Laboratory Staff (1954). The other 72 samples had SARs in the low hazard range (SAR less than 10).

Sulfate concentrations ranged from less than 7 to nearly 430 milligrams per liter (table 5, fig. 5). Three samples had a sulfate concentration exceeding the Secondary Maximum Contaminant Level of 250 milligrams. Gypsum in underlying rocks of Permian age may be the primary source of sulfate in the central High Plains aquifer.

Chloride concentrations ranged from 3 to 260 milligrams per liter (table 5, fig. 5). One sample had a chloride concentration exceeding the Secondary Maximum Contaminant Level of 250 milligrams. Possible sources of chloride include: dissolution of chloride-bearing minerals; seepage of brackish waters from underlying aquifers; contamination by brines from oil and gas production; or contamination by sewage or animal wastes. Irrigation water that becomes more saline due to evaporation (Hem, 1989, p. 213-217) also may contribute to elevated chloride and sulfate concentrations.

Fluoride concentration equaled the Maximum Contaminant Level of 4 milligrams per liter in one sample and exceeded the Secondary Maximum Contaminant Level of 2 milligrams per liter in six samples. Fluoride strongly influences bone and tooth formation, but concentrations greater than 0.7 but less than 2 milligrams per liter may lead to mottled discoloration of teeth. Fluoride concentration greater than 4 milligrams per liter will cause discoloration of teeth and can result in pain and tenderness in bones (U.S. Environmental Protection Agency, 2001b).



PERCENTAGE REACTING VALUES

EXPLANATION

- △ Dissolved Solids Concentration Less than 250 milligrams per liter
- △ Dissolved Solids Concentration 250 to 500 milligrams per liter
- △ Dissolved Solids Concentration Greater than 500 milligrams per liter

Figure 4. Major ion concentrations (expressed as percentages of total milliequivalents per liter) in samples collected in 1999 from 74 domestic water-supply wells completed in the central High Plains aquifer.

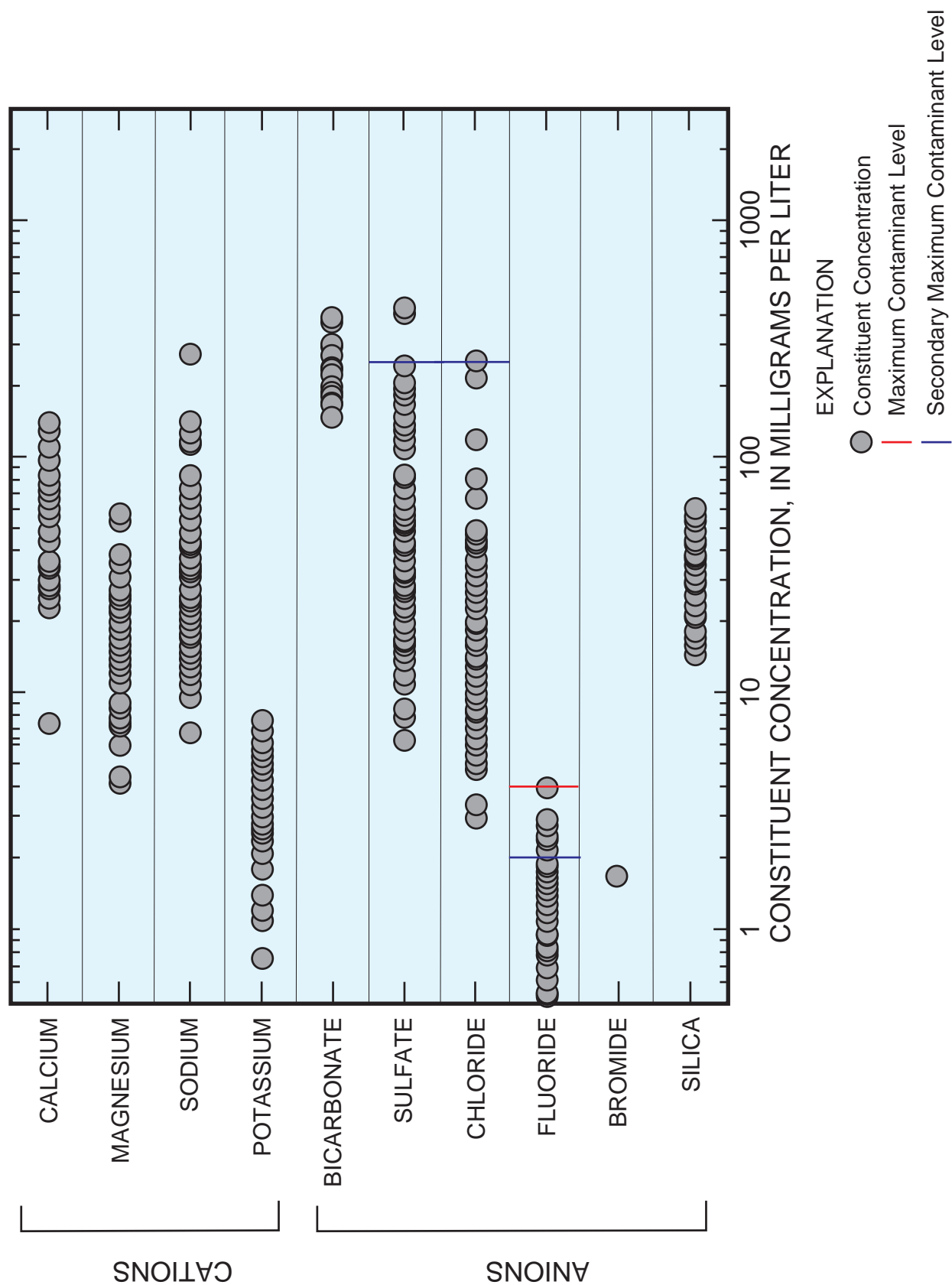


Figure 5. Distribution of concentrations of major ions in samples collected in 1999 from 74 domestic water-supply wells completed in the central High Plains aquifer.

There are no Maximum Contaminant Levels set for potassium, bicarbonate, bromide, and silica and concentrations of those constituents in water from the Central High Plains aquifer were not unusual for ground water.

Nutrients and Dissolved Organic Carbon

Nutrients are molecules containing the elements nitrogen and phosphorus that are essential for the metabolism of a variety of biota. Nutrient sources include the breakdown of soil organic material, fertilizers, livestock, and sewage. A report reviewing NAWQA nutrient data determined that 2 milligrams per liter of nitrate is an upper limit for natural background concentration (Mueller and Helsel, 1996). Elevated concentrations of nutrients in ground water can indicate that the aquifer is susceptible to contamination. Greater nutrient concentrations can affect the health of humans, livestock, and surface-water habitats.

Dissolved nitrogen in water commonly occurs in two forms, ammonium (referred to as ammonia in this report) and nitrate. Ammonia as nitrogen is the reduced form of nitrogen. Twenty of 74 samples had measured ammonia concentrations equal to or greater than the analytical reporting limit (0.02 milligram per liter). The greatest ammonia concentration was 0.04 milligram per liter (table 5). Organic nitrogen plus ammonia as nitrogen concentrations also were small; eight samples exceeded the analytical method reporting limit of 0.1 milligram per liter. The maximum concentration for organic nitrogen was 1.0 milligram per liter. Relatively low concentrations of organic substances and oxygenated conditions indicate that ammonia seeping from the land surface is likely to be nitrified to nitrate.

The USGS National Water Quality Laboratory reports the sum of nitrite plus nitrate. Because nitrite concentration is typically negligible compared to nitrate concentration in ground water, for this report “nitrate” refers to the sum of nitrite plus nitrate as nitrogen. Nitrate concentrations ranged from less than 0.05 to 20 milligrams per liter, with a median of 2.3 milligrams per liter (table 5). The Maximum Contaminant Level for nitrate-nitrogen of 10 milligrams per liter was exceeded in three samples (fig. 6). Forty-five of the 74 samples had nitrate concentrations greater than 2 milligrams per liter, indicating the aquifer is

vulnerable to nitrate contamination. Nitrate could remain stable, with little likelihood of reduction to nitrogen gas by denitrification, due to the presence of dissolved oxygen and little to no organic substrate in the aquifer.

Phosphorus readily adsorbs to soils and minerals and dissolved phosphorus concentration in ground water is typically very small. Dissolved phosphorus concentrations ranged from less than 0.004 to 0.054 milligram per liter, with a median concentration of 0.005 milligram per liter. Orthophosphate-phosphorus concentrations ranged from less than 0.01 to 0.052 milligram per liter, with a median concentration of 0.015 milligram per liter (table 5). Orthophosphate concentrations may have been partly an artifact of the sampling process, as it was detected in three of eight field blanks at concentrations ranging from less than 0.01 to 0.021 milligram per liter.

The amount of organic carbon present in ground water can have substantial influence on microbial communities in the aquifer and in turn affect the concentration of redox-sensitive species such as dissolved oxygen, nutrients, and metals. Dissolved organic carbon was measured in relatively small concentrations, ranging from 0.2 to 2.0 milligrams per liter, with a median concentration of 0.5 milligram per liter. Dissolved oxygen is the first redox sensitive constituent to be depleted during microbial consumption of organic carbon. The sample having the greatest concentration of dissolved organic carbon, 2.0 milligrams per liter, had a dissolved oxygen concentration of 7.2 milligrams per liter (Appendix 1), indicating that there is not sufficient dissolved organic carbon in the central High Plains aquifer for nitrate to be reduced by denitrification. Dissolved organic carbon also was detected in most blank samples, in similar or greater concentrations than in the environmental samples, indicating that actual environmental concentrations may have been less than the reported values.

Trace Elements

Trace elements are generally defined as elements occurring in natural water at concentrations less than 1 milligram per liter (Drever, 1988). Most of the trace elements analyzed (table 4) are metals or semi-metallic elements, which occur naturally from the weathering of minerals. Some trace elements such as aluminum, chromium, copper, iron, lead, nickel,

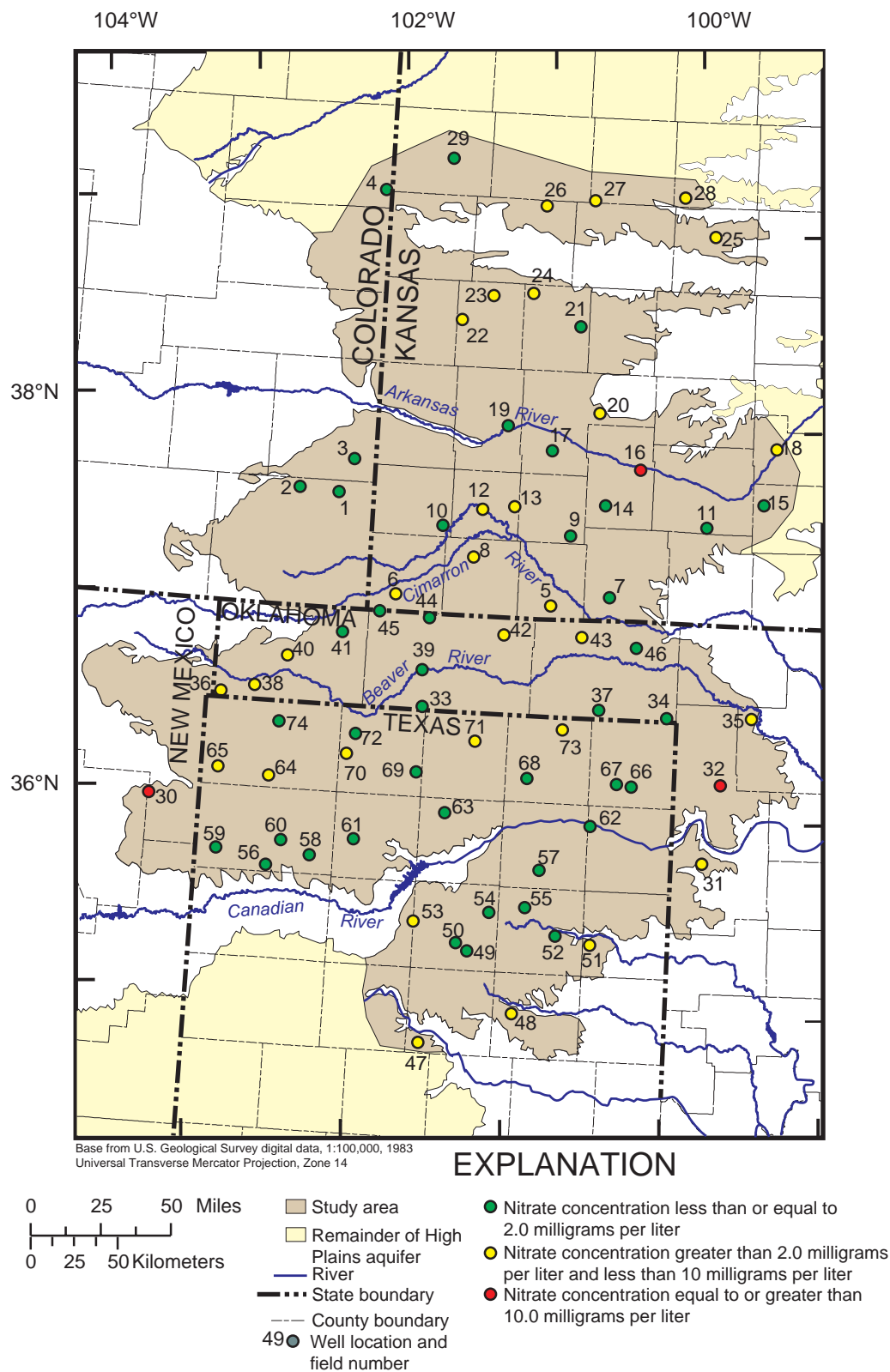


Figure 6. Distribution of nitrate as nitrogen concentration in samples collected in 1999 from 74 domestic water-supply wells completed in the central High Plains aquifer.

and zinc also can be derived from plumbing and well construction materials. Antimony, beryllium, cadmium, cobalt, and silver were not detected in any of the samples (fig. 7).

Aluminum may be derived from the dissolution of clay minerals. Aluminum was detected in 48 (fig. 7) of the samples, with a median concentration of 3.0 micrograms per liter (table 5). Blank samples contained a median aluminum concentration of 4.3 micrograms per liter. The source of aluminum in blank samples is unknown, but similar concentrations in blank and environmental samples qualifies the detection of aluminum in the environmental samples.

Arsenic was detected in 63 of the 74 samples, with a median concentration of 2 micrograms per liter. None of the samples had arsenic exceeding the proposed Maximum Contaminant Level of 10 micrograms per liter (fig. 7, U.S. Environmental Protection Agency, 2001a). Arsenic may be derived from natural trace minerals in the High Plains aquifer or underlying bedrock units. Prior to the advent of modern organic pesticides, arsenic compounds commonly were used as pesticides in agricultural areas (Reigart and Roberts, 1998, chapter 14).

Barium was detected in all 74 samples (fig. 7), but at concentrations substantially less than the Maximum Contaminant Level of 2,000 micrograms per liter (U.S. Environmental Protection Agency, 2001a). Barium is probably related to dissolution of the naturally-occurring mineral barite.

Chromium and copper were both detected in substantial numbers of samples (fig. 7, Appendix 1), but detected concentrations were much less than Maximum Contaminant Levels (U.S. Environmental Protection Agency, 2001a). Both of these metals may be derived from dissolution of naturally-occurring metallic minerals or may leach from well casings and other components of plumbing systems.

Lead also may be derived from solder used in plumbing systems and from natural sources. Three water samples contained low concentrations of lead, which exceeded the Maximum Contaminant Level (non-detect), but none of the samples had lead concentrations sufficiently high to exceed the Treatment Technique Level (15 micrograms per liter), at which public water suppliers are required to treat water to remove lead (U.S. Environmental Protection Agency, 2001a).

Only six samples had detectable concentrations of iron, and four samples had detectable concentra-

tions of manganese. Secondary Maximum Contaminant Levels are set for iron and manganese due to staining of laundry and porcelain caused by those metals. No iron concentrations exceeded the Secondary Maximum Contaminant Level of 300 micrograms per liter (table 5, fig. 7, U.S. Environmental Protection Agency, 2001a). Manganese concentration exceeded the Secondary Maximum Contaminant Level of 50 micrograms per liter in one sample. That particular sample had a dissolved oxygen concentration of 6 milligrams per liter, so the relatively high detected manganese concentration may have been due to colloidal material in the aquifer or in the plumbing system of that well. Manganese is naturally-occurring and its solubility in water is governed by oxidation conditions. Manganese and iron typically occur in greater concentrations in reducing conditions, as the presence of oxygen facilitates formation of low-solubility oxide and hydroxide compounds. Exposure to elevated concentrations of manganese, particularly airborne manganese, has been tentatively associated with central-nervous system disorders such as learning disabilities (Collipp and others, 1983; Cotzias and others, 1968; Cotzias, 1974)) and muscle control (Gorrell and others; 1996), and susceptibility to infection (World Health Organization, 2001).

Molybdenum was detected in 67 samples. Molybdenum is associated with dissolution of molybdenite and is highly soluble under oxidizing conditions. It is an essential element in animal and plant nutrition (Hem, 1989, p. 40) and has no Maximum Contaminant Level (U.S. Environmental Protection Agency, 2001a).

Selenium, a semi-metallic element, was detected in 64 samples at concentrations ranging up to 18 micrograms per liter (fig. 7, table 5). Like molybdenum, selenium is a nutrient for plants and animals, but it may have toxic effects in small doses, leading to establishment of a Maximum Contaminant Level of 50 micrograms per liter. Selenium may be associated with ferric oxyhydroxides associated with uranium ore deposits in sandstones of the Western United States (Hem, 1989, p. 145).

Zinc was detected in 70 samples at concentrations as great as 170 micrograms per liter. Zinc occurs in crustal rocks in similar abundance as copper and nickel, but is substantially more soluble in natural waters than those metals. Zinc also is a component of brass and bronze and is used to galvanize steel pipes and sheets. Galvanized metals associated with

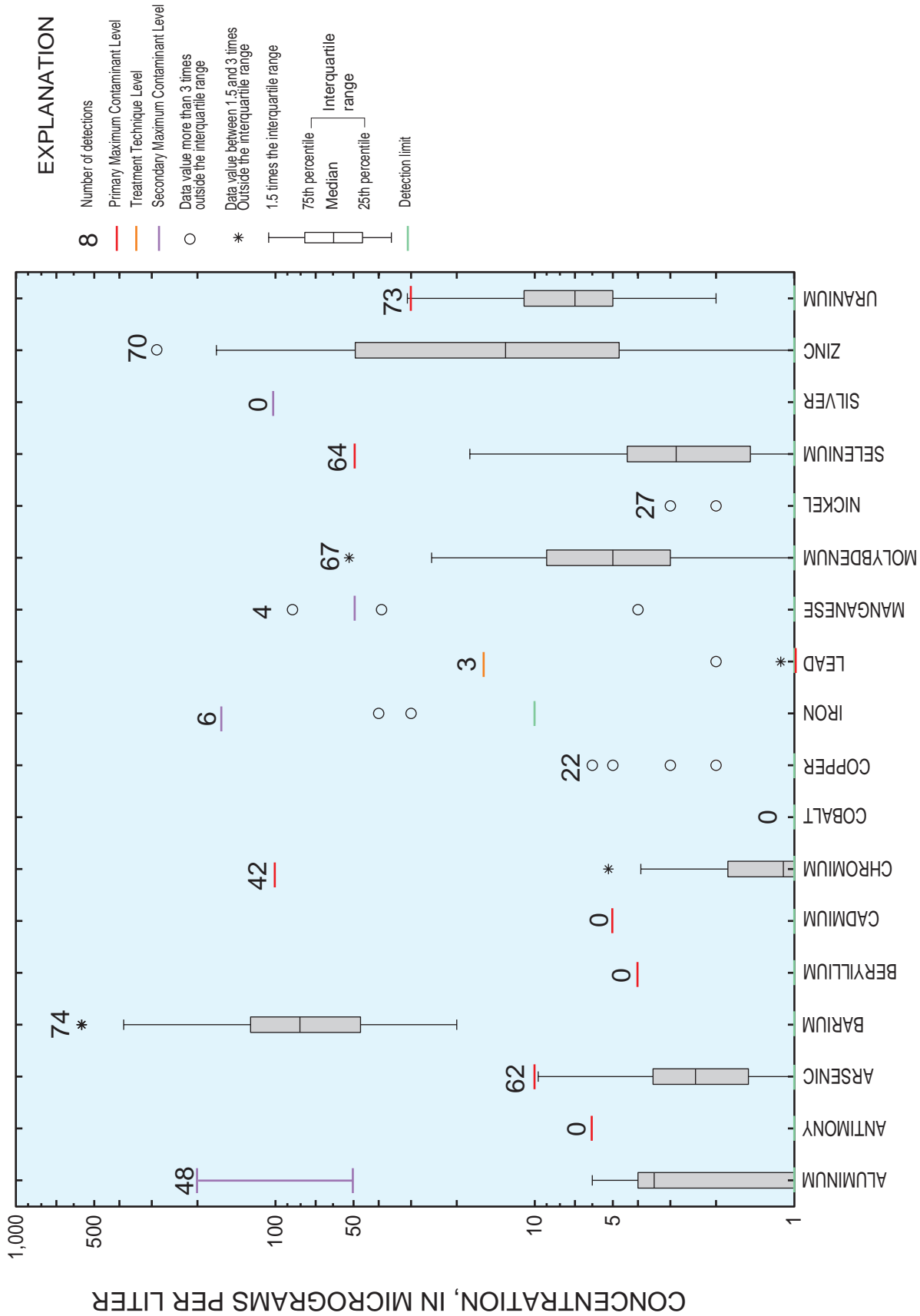


Figure 7. Concentrations of trace elements in samples collected in 1999 from 74 domestic water-supply wells completed in the central High Plains aquifer.

Table 6. Frequencies of ranges of radon concentration compared to underlying bedrock units for samples collected in 1999 from 74 domestic water-supply wells completed in the central High Plains aquifer

[percentages of group in parentheses]

Underlying bedrock group	Number of wells producing water with radon concentration less than 300 picocuries per liter	Number of wells producing water with radon concentration equal to or greater than 300 picocuries per liter	Total number of wells
Upper Cretaceous Period shales, chinks, lime-stones, and sandstones	2 (14)	12 (86)	14 (100)
Lower Cretaceous Period sandstones and shales	1 (8)	12 (92)	13 (100)
Jurassic and Triassic Period sandstones and shales	3 (19)	13 (81)	16 (100)
Permian Period oxidized sandstones and evaporites, with minor shales	13 (42)	18 (58)	31 (100)
Total Number of Wells	19 (26)	55 (74)	74 (100)

plumbing or well casing may augment concentrations of zinc in water from wells constructed of such materials.

Uranium was detected in 73 water samples (fig. 7). Uranium concentration exceeded the proposed Maximum Contaminant Level of 30 micrograms per liter (U.S. Environmental Protection Agency, 2001a) in one sample. Unlike manganese and iron, uranium tends to be more soluble under oxidizing conditions (Hem, 1985, p. 148). Exposure to uranium in drinking water may affect the kidneys and prolonged exposure at concentrations exceeding the Maximum Contaminant level may increase the risk of cancer (U.S. Environmental Protection Agency, 2001b).

Radon

Radon-222 is a product of the radioactive decay of the radium-226 isotope that occurs in most aquifers containing uranium (Hem, 1989, p. 149). Radon is a water-soluble gas that is highly volatile and is short-lived, with a half-life of 3.8 days. Most of the hazard associated with radon is associated with inhalation of the gas as it volatilizes from water used in showers, washing machines, and other appliances. Lubin and

Boice (1997) reported that radon concentrations in air of 4 picocuries per liter may increase lung cancer risks by about 14 percent over a 30-year period. There is a proposed Maximum Contaminant Level ranging from 300 to 4,000 picocuries per liter for radon, dependent on whether a state or utility has developed mitigation programs for indoor airborne radon (U.S. Environmental Protection Agency, 1999). Radon concentrations greater than 300 picocuries per liter are common in ground water samples from the central High Plains aquifer. Fifty-five of the samples had radon concentrations exceeding the proposed Maximum Contaminant Level of 300 picocuries per liter. Water, and dissolved substances and gases such as radon may seep up into the High Plains aquifer from underlying units (Gutentag and others, 1984, p. 15) and the concentration of radon in ground water may be related to the amount of radioactive minerals in the geologic units directly underlying the central High Plains aquifer. Samples from areas underlain by sandstones, shales and limestones of Triassic, Jurassic, or Cretaceous age (fig. 8, table 6) tend to have greater concentrations of radon. Uranium, a source of radon gas, is associated with sandstones in the western United States (Hem, 1985). Reducing conditions associated with organic

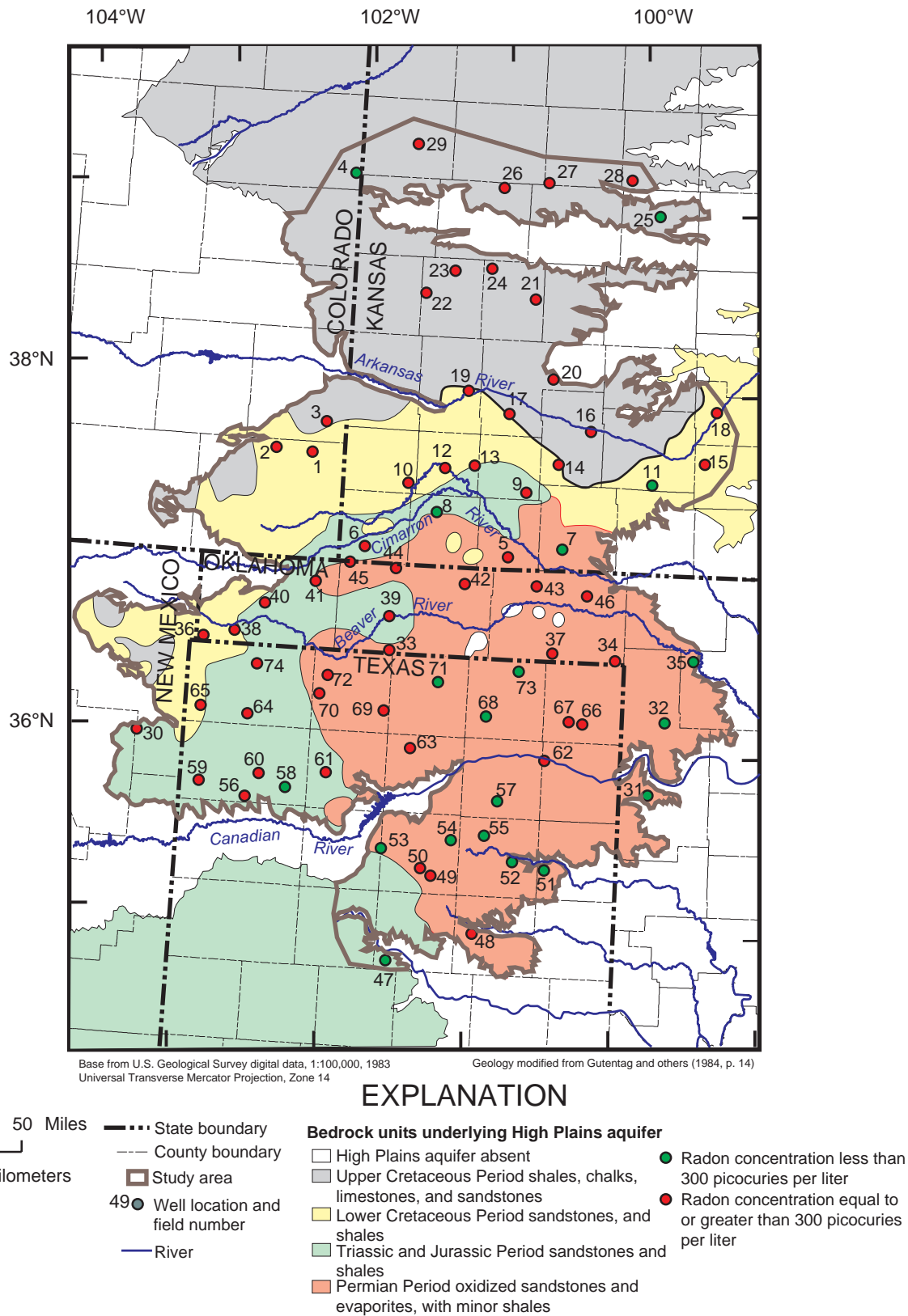


Figure 8. Radon concentration in samples collected in 1999 from 74 domestic water-supply wells completed in the central High Plains aquifer.

matter in shales in those units also may be conducive to precipitation and concentration of uranium. Radon concentrations exceeded 300 picocuries per liter in 89 percent of ground-water samples from areas where rocks of Cretaceous age directly underlie the central High Plains aquifer. In areas where the aquifer is directly underlain by rocks of Triassic and Jurassic age, 81 percent of ground-water samples had radon concentrations exceeding 300 picocuries per liter. Radon in 58 percent of the samples exceeded that concentration in areas where Permian age rocks directly underlie the aquifer. The Permian-age units are typically well-oxidized sandstones and shales known as “red beds.” The oxidizing conditions in which those units were deposited may have minimized precipitation and concentration of uranium.

Volatile Organic Compounds

Volatile organic compounds are relatively low molecular-weight hydrocarbons that volatilize at low temperatures, and have great aqueous solubility, mobility, and resistance to degradation. Some volatile organic compounds have been judged to be carcinogenic. Some volatile organic compounds are produced naturally from the decomposition of organic matter and are emitted from living vegetation (Pepper and others, 1996). However, use of or production of volatile organic compounds in industrial, manufacturing, and agricultural activities pose the greatest potential for volatile organic compound contamination of ground-water. In agricultural areas, land application of some pesticides in crop production and the use of fumigants during grain storage are potential sources of volatile organic compounds (U.S. Environmental Protection Agency, 2001b). In parts of the central High Plains, lighter fractions of petroleum, such as benzene, toluene, ethylbenzene, and xylenes (“BTEX” compounds) may be introduced to the aquifer by spills and leaks in the vicinity of petroleum production wells and related facilities.

Nine wells produced water with detectable concentrations of one or more volatile organic compounds (figs. 9 and 10). All detected concentrations of volatile organic compounds were substantially less than Maximum Contaminant Levels (fig. 9). Toluene was the most commonly detected volatile organic compound, being detected in eight samples

(wells 21, 31, 37, 43, 53, 62, 68, 73), ranging in concentration from 0.05 to 0.16 microgram per liter. Toluene was detected in quality-control samples in similar concentrations, indicating contamination in the sampling or analytical processes, lessening the likelihood that toluene was present in the central High Plains aquifer.

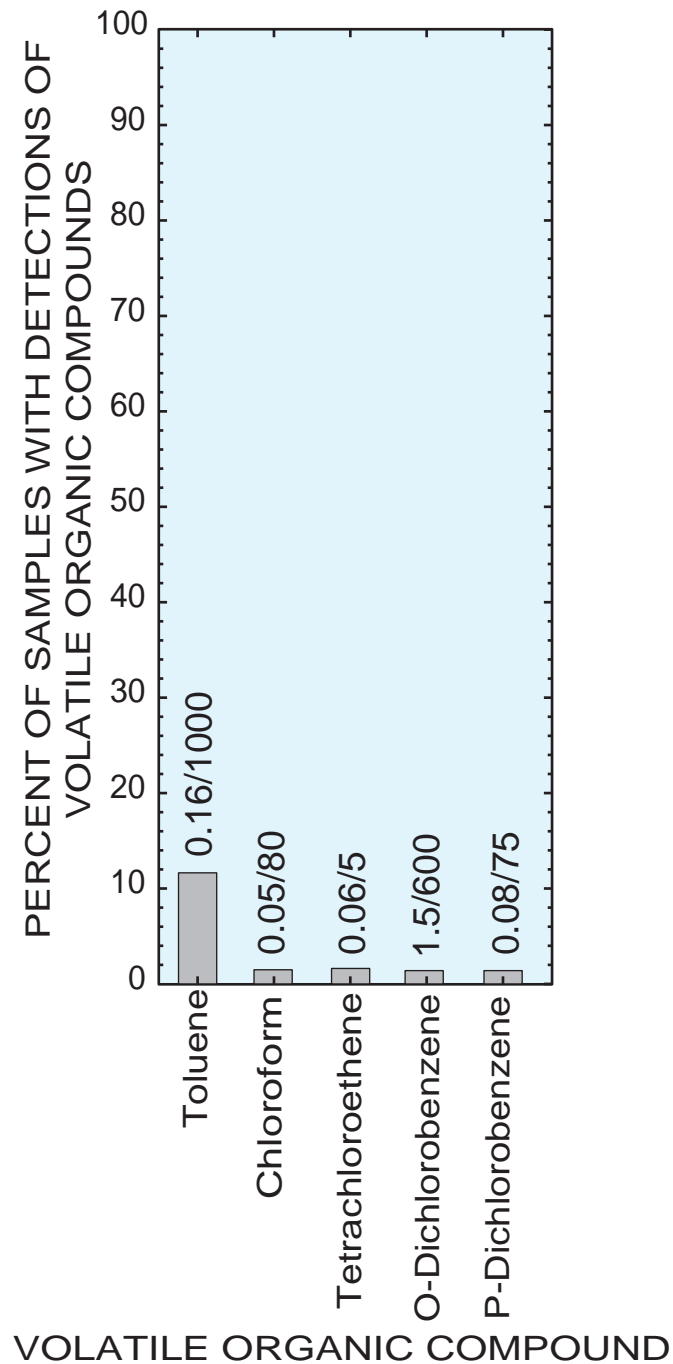
The sample from well number 74 did not contain toluene, but did contain detectable concentrations of chloroform, tetrachloroethene, *o*-dichlorobenzene, and *p*-dichlorobenzene. Chloroform is used in manufacturing of refrigerants and propellants, fumigants, and solvents and is a by-product of chlorination of natural organic compounds in water (Vershueren, 1983). Chloroform also was detected in one of six field blank samples. Tetrachloroethene commonly is used as a degreaser and for dry cleaning. Sources of *o*-dichlorobenzene and *p*-dichlorobenzene include: solvents, metal polishes, soil fumigants, and insecticides (Vershueren, 1983).

Pesticides

Pesticides are compounds generally used to control or kill undesirable vegetation and insects. The primary uses of pesticides in the study area are on cropland to enhance crop production or around homes and livestock to control pests. Widespread use of pesticides creates the potential for movement of pesticides or pesticide breakdown products into ground water. The presence of pesticides in ground water is a human-health concern for those using ground water as a drinking-water supply. Human health problems ranging from liver and kidney damage to cancer and reproductive failure are some of the effects of chronic exposure to pesticides (U.S. Environmental Protection Agency, 2001b).

Forty-seven pesticides and six pesticide metabolites (breakdown products) were analyzed (table 4), including the following pesticide classes: triazines, chloroacetanilides, organophosphorus, carbamates, and organochlorines. One or more pesticides were detected in 18 water samples (24 percent). Thirteen different pesticides were detected (fig. 11). All of the detected pesticides that have Maximum Contaminant Levels were measured at concentrations substantially less than those levels.

The most frequently detected pesticides were deethylatrazine (a metabolite of atrazine) and atrazine



EXPLANATION

0.16/1000 - Maximum detected concentration, in micrograms per liter/
Maximum Contaminant Limit, in micrograms per liter

Figure 9. Frequencies of detection of volatile organic compounds in samples collected in 1999 from 74 domestic water-supply wells completed in the central High Plains aquifer.

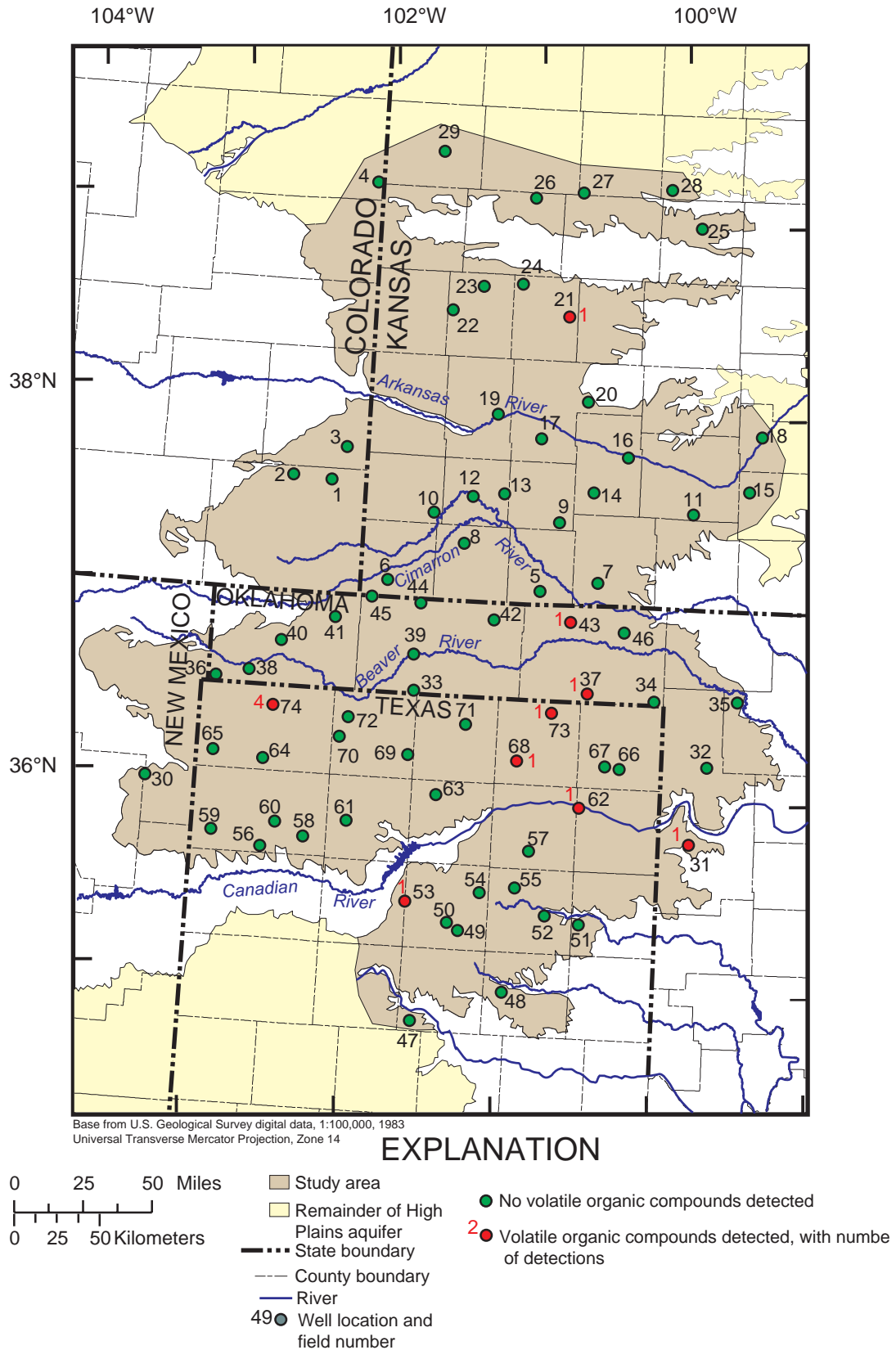


Figure 10. Distribution of volatile organic compound detections in samples collected in 1999 from 74 domestic water-supply wells completed in the central High Plains aquifer.

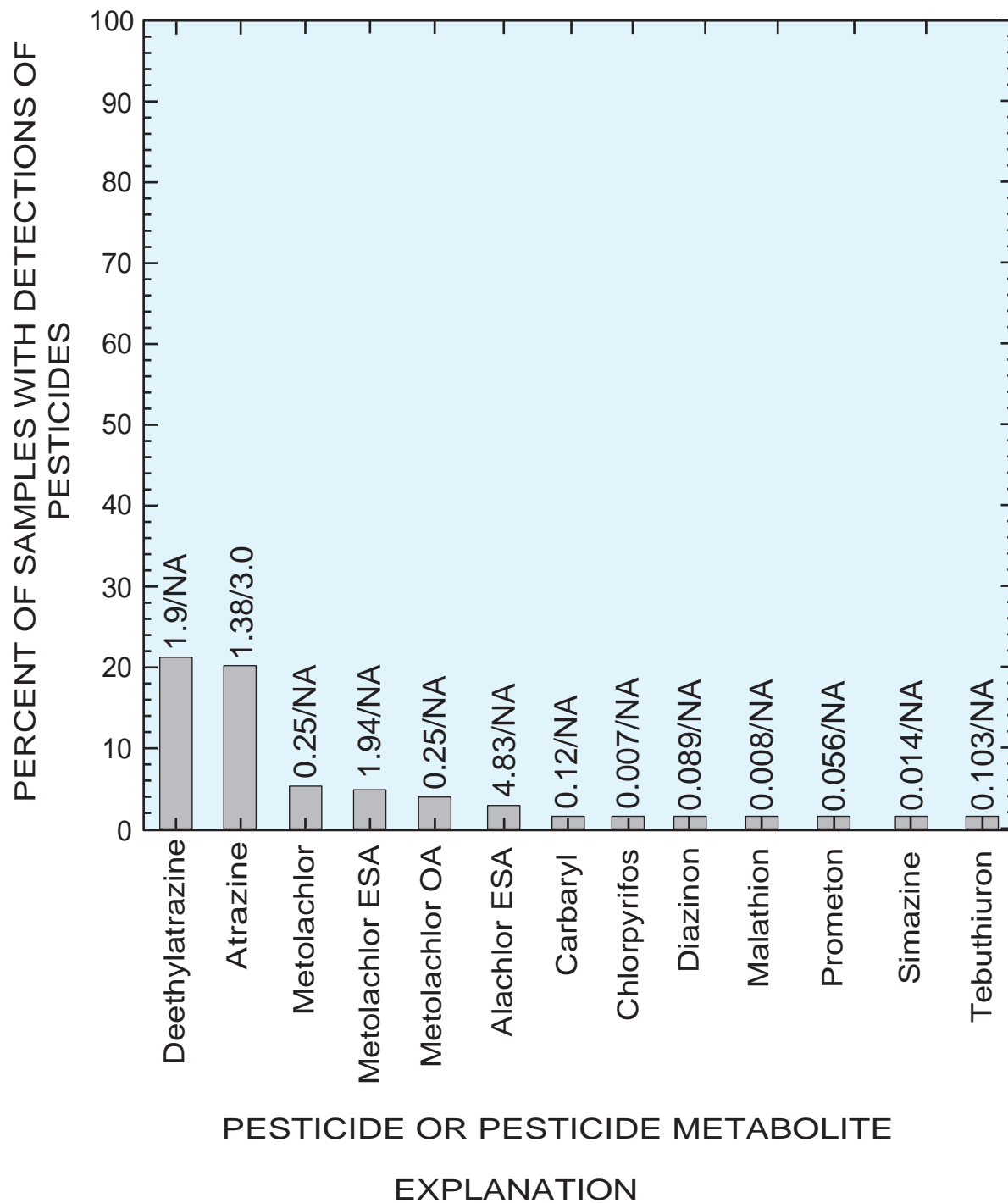


Figure 11. Frequencies of detection of pesticides in samples collected in 1999 from 74 domestic water-supply wells completed in the central High Plains aquifer.

Table 7. Occurrence of detectable concentration of pesticides in samples collected in 1999 from 74 domestic water-supply wells completed in the central High Plains aquifer

[percentage of group in parentheses]

Number of pesticides detected in water sample from each well	Number of wells
0	56 (76)
1	3 (4)
2	9 (12)
3	2 (3)
4	1 (1)
5	1 (1)
6	2 (3)
Total	74 (100)

(fig. 11). Deethylatrazine was detected in 17 samples (wells 1, 4, 9, 13, 15, 16, 18, 22, 23, 24, 25, 26, 27, 29, 37, 51, 71) and atrazine was detected in 15 water samples (wells 9, 13, 15, 16, 18, 22, 23, 24, 25, 26, 29, 37, 51, 61, and 71) (fig. 12). In 14 of 15 of the samples with detectable atrazine, deethylatrazine also was detected.

The next most commonly detected pesticides were metolachlor, detected in water from four wells (16, 26, 29, and 61), and its breakdown products metolachlor ethane sulfonic acid (ESA) (wells 16, 18, 25, 26) and metolachlor oxanilic acid (OA) (wells 16 and 26) (figs. 11 and 12).

A metabolite of alachlor, alachlor ESA, was detected in a sample from well 16 (figs. 11 and 12). The remainder of detected herbicides—chlorpyrifos (used in Dursban and Lorsban), diazinon, malathion, prometon, simazine, and tebuthiuron—were detected in small concentrations in the sample from well 61 (figs. 11 and 12).

Additional detected pesticides included simazine, alachlor ESA (a breakdown product of alachlor), carbaryl, chlorpyrifos, diazinon, malathion, prometon, pendimethalin, and tebuthiuron. Three of

the insecticides, carbaryl, chlorpyrifos, and diazinon, were all detected in the sample from well number 61.

Although pesticide detections were scattered from the southernmost to the northernmost sampled well, 11 of the 18 wells with pesticide detections were in the Kansas portion of the study area (fig. 12). Variability of detections of pesticides is probably due to factors such as land use in the area contributing water to the well, ground-water flow velocities, soil characteristics such as permeability and organic carbon content, permeabilities of geologic materials, and well construction. Most of the detected pesticides are restricted-use pesticides typically associated with cropland. In 14 of 18 samples with one or more detectable pesticides, the depth to water in the sampled wells was less than 200 feet below the land surface (table 2, Appendix 1). However, pesticides were detected in three samples from wells having depths to water greater than 300 feet.

Of the 18 wells with detectable pesticides, it was most common to have two compounds detected (table 7). Six of the samples had more than two detectable pesticides (fig. 12). Two wells (numbers 16 and 61) produced water with six detectable pesticides (fig. 12).

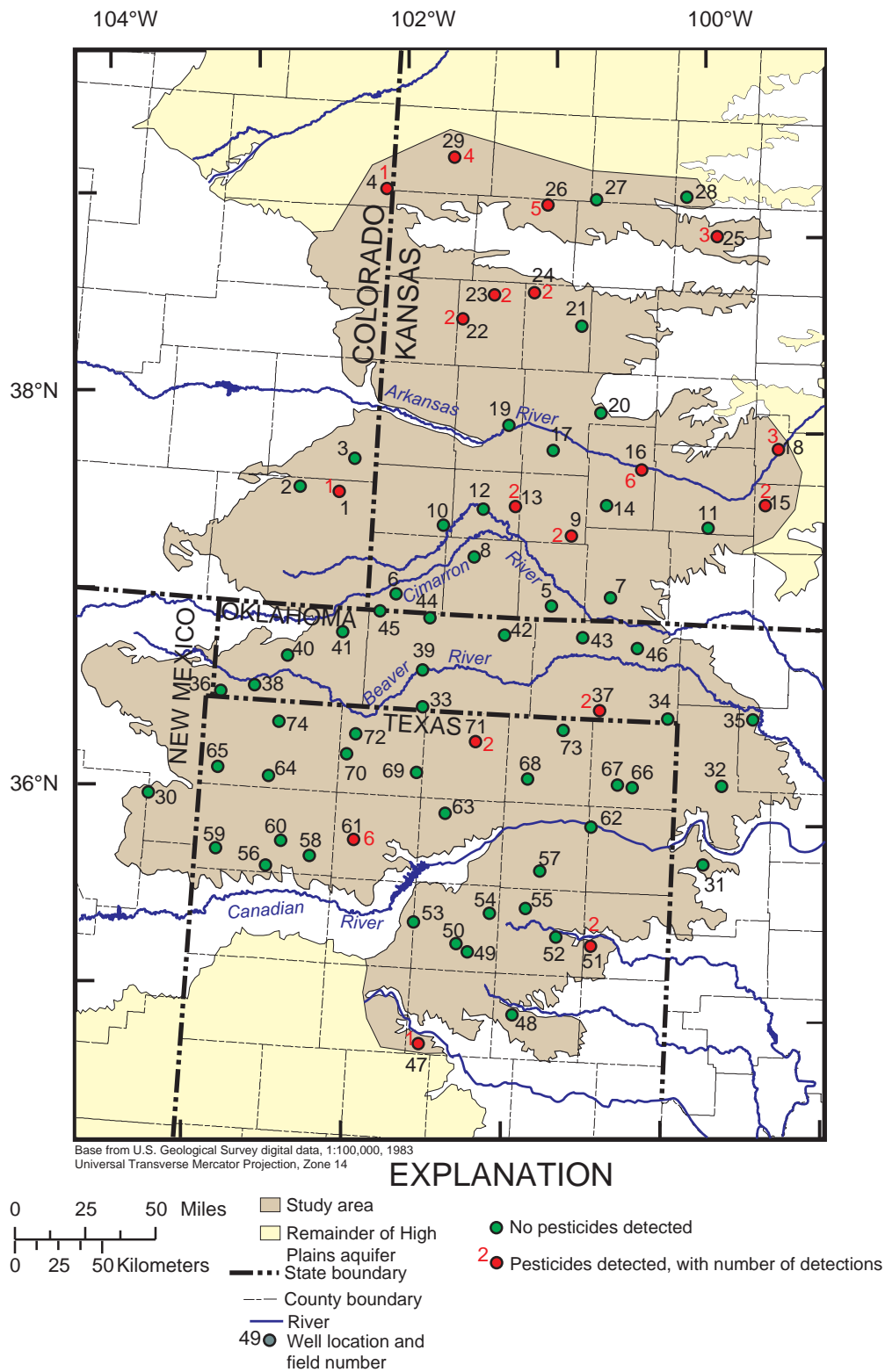


Figure 12. Distribution of pesticide detections in samples collected in 1999 from 74 domestic water-supply wells completed in the central High Plains aquifer.

Tritium

Tritium is a naturally occurring radioactive isotope of hydrogen that is present in some water molecules. Prior to the atmospheric testing of nuclear weapons, the tritium concentration in precipitation was approximately 8 tritium units (Thatcher, 1962). Nuclear testing introduced large concentrations of tritium into the atmosphere, peaking to concentrations of up to 8,000 tritium units in 1963 (Hem, 1989, p. 150). The large flux of tritium into the atmosphere during a relatively short period and the constant rate of decay with time makes tritium a useful tool for determining recharge ages of ground water. Due to the rapid rate of radioactive decay of tritium (half life of 12.4 years), the minimum concentration of tritium in ground water indicating “post-bomb” recharge (since 1953) is about 0.5 tritium unit (McMahon, 2000). The tritium analysis used for this study has a reporting level of 0.32 tritium unit, or 1.0 picocurie per liter.

A subset of 51 of the ground-water samples were analyzed for tritium. The tested sites had nitrate concentrations less than 4.0 milligrams per liter. Twenty-two water samples containing nitrate concentrations greater than 4.0 milligrams per liter were assumed to be composed of recent, or “post-bomb” recharge, so were not analyzed for tritium concentration. Ten of 51 analyzed samples had tritium concentration greater than 0.5 tritium unit and are distributed throughout the study area (fig. 13). Wells with screens set deeper below the land surface are less likely to be recharged recently. The tops of the screens of the 42 wells with tritium concentration less than or equal to 0.5 tritium unit (indicating pre-1953 recharge) had a median depth of 260 feet below land surface, whereas the tops of the screens of the 22 wells with elevated nitrate concentration (indicating recent recharge) had a median depth of 147 feet below land surface, and the tops of the screens of the 10 wells producing tritium greater than 0.5 tritium unit (also indicating recent recharge) had a median depth of 152 feet below land surface (fig. 14). Mann-Whitney statistical tests (Mann, 1945) indicated that the depths of the tops of well screens were significantly (p-values of tests less than 0.05) deeper for samples with tritium concentrations indicating pre-1953 recharge, whereas the wells producing samples with nitrate concentration greater than 4.0 milligrams per liter and tritium concentration indicating post-1953 recharge had similar depths of well screen tops (fig. 14). In general, wells with

screens deeper than 250 feet below land surface were less likely to have indications of recent recharge.

Because nitrate or tritium concentration and depths of the tops of well screens may be related to dates of recharge, and to vulnerability to contamination by manmade materials used at the land surface, there may be an association between nitrate and tritium and manmade organic compounds, which may be used, applied, or spilled at the land surface. However, six of the nine wells that produced water with detectable volatile organic compounds did not have detectable tritium, indicating that they were not recently recharged (table 8). Five of the eight samples with detectable toluene and the sample with the other four detected volatile organic compounds (well number 74) did not have detectable tritium. Some of the detected volatile organic compounds may be artifacts of the sampling process or simply may have seeped to ground water prior to 1953. Toluene and chloroform may be naturally occurring, particularly near organic deposits such as peats or petroleum. Fourteen of the 18 wells producing water with detectable pesticide concentrations also had elevated nitrate or tritium concentration (table 8). The majority of the samples not containing detectable pesticides (39 of 56) also did not have tritium concentration greater than 0.5 tritium unit (table 8), which also indicates that recently recharged ground water is the probable source of pesticides in the ground-water samples.

SUMMARY

The central High Plains aquifer, which consists of interbedded caliche, clay, sand, and gravel, extends over 38,000 square miles of southeastern Colorado, southwestern Kansas, northeastern New Mexico, northwestern Oklahoma, and northwestern Texas. The area overlying the central High Plains aquifer is sparsely populated, with agriculture being the primary activity. Wheat is the primary crop in the study area, followed by corn and sorghum. Irrigation of grain crops accounted for 95 percent of the water use in 1995 from the central High Plains aquifer. This report describes water-quality data collected between April and August 1999 from 74 domestic-supply wells completed in the central High Plains aquifer for a broad-scale assessment of water-quality over the central High Plains study area.

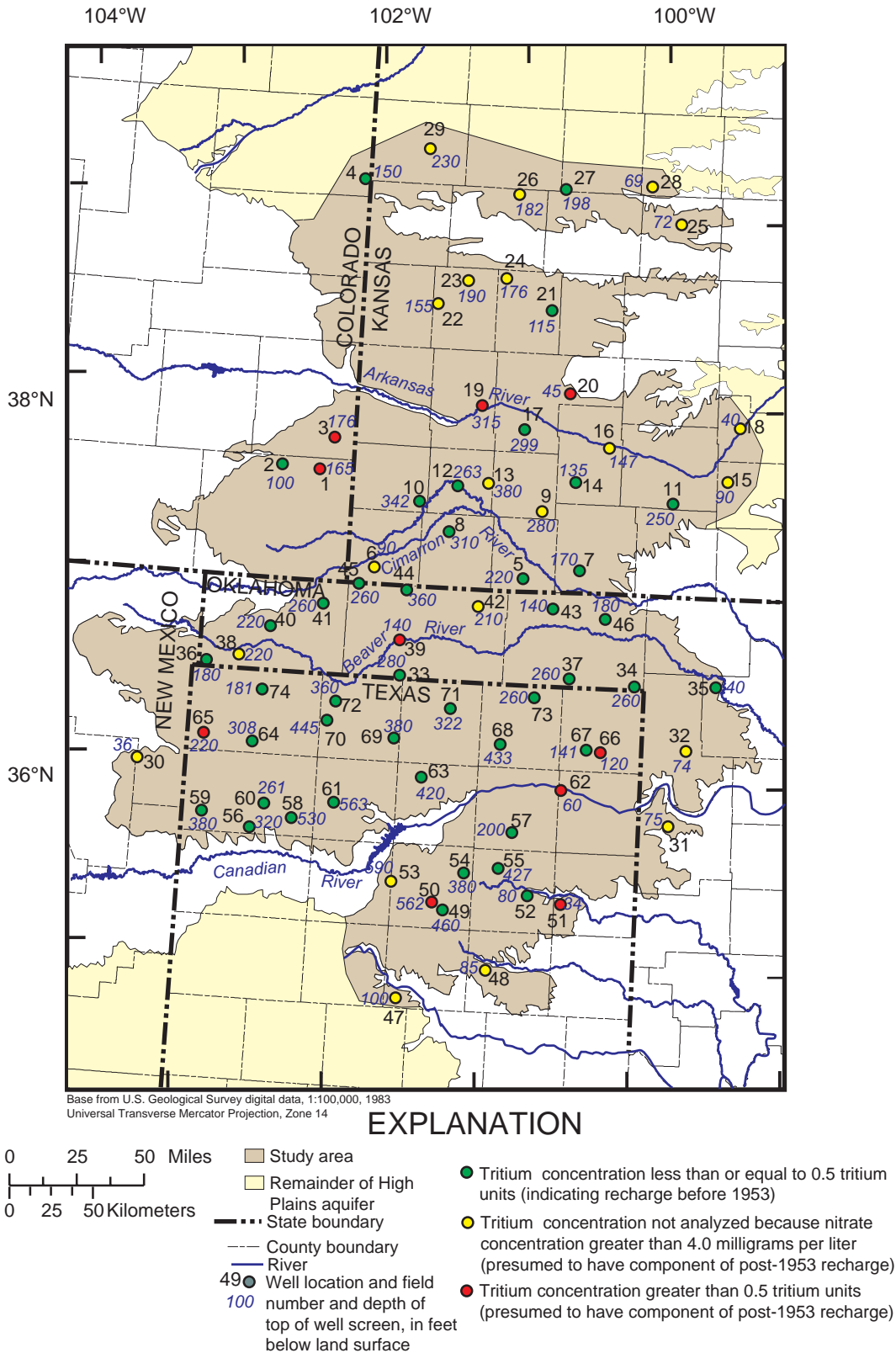


Figure 13. Distribution of tritium concentration in samples collected in 1999 from 74 domestic water-supply wells completed in the central High Plains aquifer.

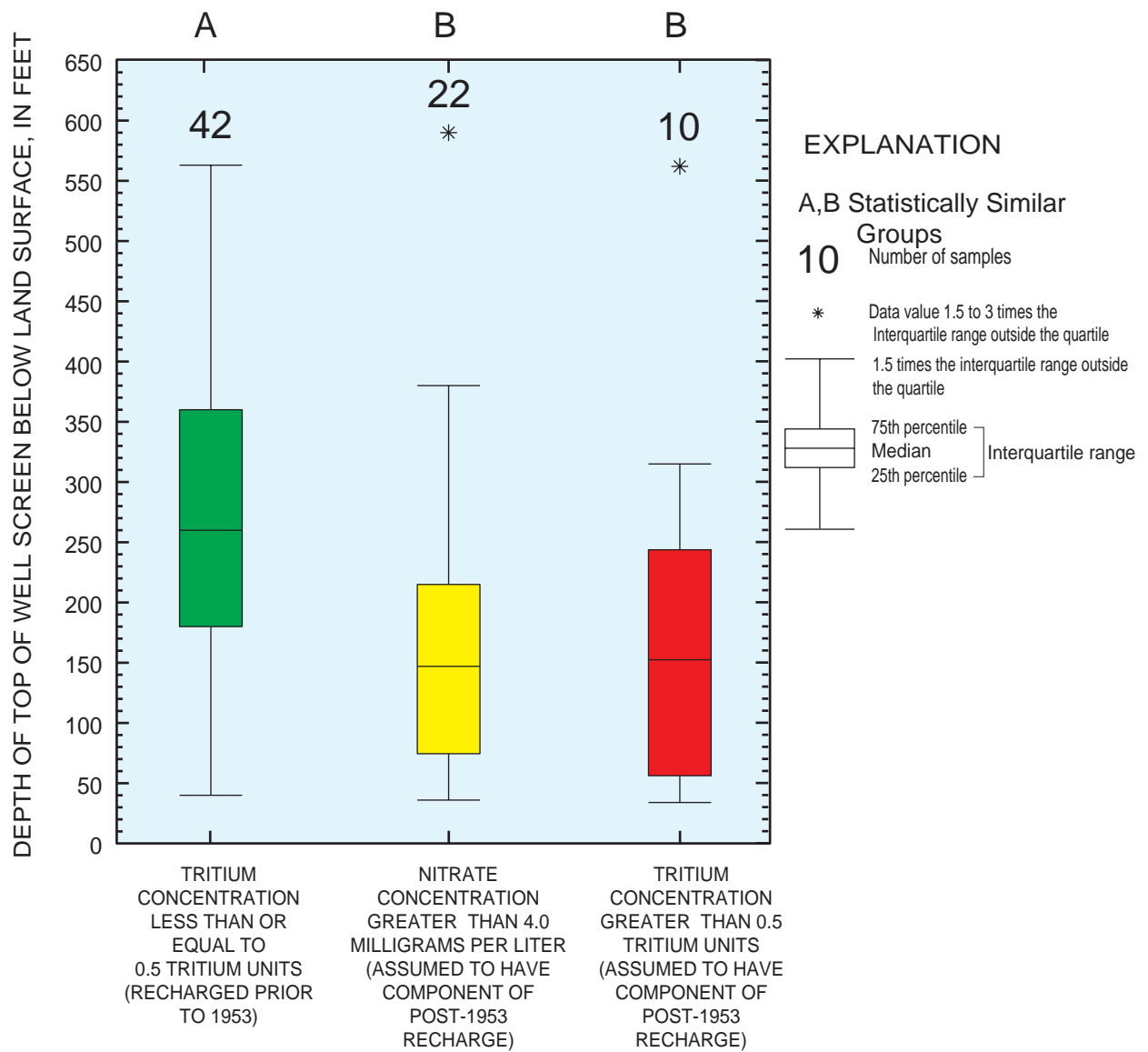


Figure 14. Depths to tops of well screens, grouped by likely pre-1953 and post-1953 recharge age dates for 74 domestic water-supply wells completed in the central High Plains aquifer.

Table 8. Frequencies of detection of volatile organic compounds and pesticides compared to ranges of nitrate-nitrogen and tritium concentration in samples collected in 1999 from 74 domestic water supply wells completed in the central High Plains aquifer

[>, greater than; <, less than or equal to; percentages of group in parentheses]

Group, by nitrate-nitrogen or tritium concentration	Number of wells producing water with detectable volatile organic compounds per group	Number of wells producing water with no detectable volatile organic compounds per group	Total number of wells with detectable volatile organic compounds per group	Number of wells producing water with detectable pesticides per group	Number of wells producing water with no detectable pesticides per group	Total number of wells with detectable pesticides per group
Nitrate-nitrogen concentration >4.0 milligrams per liter (component of recharge assumed to be post-1953)	2 (9)	19 (91)	21 (100)	12 (57)	9 (43)	21 (100)
Tritium concentration <0.5 tritium unit (recharge assumed to be pre-1953)	6 (14)	37 (86)	43 (100)	4 (9)	39 (91)	43 (100)
Tritium concentration >0.5 tritium unit (component of recharge assumed to be post-1953)	1 (10)	9 (90)	10 (100)	2 (20)	8 (80)	10 (100)
Total number of wells	9 (12)	65 (88)	74 (100)	18 (24)	56 (76)	74 (100)

Water properties were variable, reflecting the wide range in depths to water, broad spatial distribution, and heterogeneity of the aquifer. Water samples were near neutral to alkaline, well-oxygenated, and relatively hard. Dissolved solids concentrations exceeded the Secondary Maximum Contaminant Level of 500 milligrams per liter in 16 of the 74 wells.

Calcium, from dissolution of calcite, dolomite, and gypsum, was the principal cation in most water samples from the aquifer. Magnesium was present in lesser amounts. Sodium may be from dissolution of sodium-bearing minerals and also may be related to seepage of brines from underlying bedrock units and from disposal of brines from petroleum production.

Sulfate concentrations were generally small, with 3 of 74 samples producing water with sulfate concentrations exceeding the Secondary Maximum Contaminant Level of 250 milligrams per liter. Chloride concentration was generally small, with water from one of the samples exceeding the Secondary Maximum Contaminant Level of 250 milligrams per liter. Fluoride concentration was equal to the Maximum Contaminant Level of 4 milligrams per liter in one sample and equaled or exceeded the Secondary Maximum Contaminant Level of 2 milligrams per liter six samples.

Nitrate concentrations exceeded the Maximum Contaminant Level of 10 milligrams per liter as nitrogen in water from 3 samples. If 2 milligrams per

liter is used as a threshold for manmade contamination, 45 samples had nitrate concentrations indicative of manmade contamination. Well-oxygenated water and little dissolved organic carbon in the aquifer indicate that nitrate is not likely to be removed from the aquifer by denitrification. Dissolved phosphorus was measured at relatively small concentrations in the aquifer.

Aluminum, arsenic, barium, chromium, molybdenum, selenium, zinc, and uranium were detected in a majority of the water samples. Most detected trace elements were at concentrations substantially less than Maximum Contaminant Levels, although a few samples had concentrations of lead, manganese, and uranium which exceeded Maximum Contaminant Levels or Secondary Maximum Contaminant Levels. Aluminum may have been an artifact of sampling, preservation, and analyses, as equipment blank samples had similar aluminum concentrations as environmental samples. Metals such as chromium, copper, iron, lead, nickel, and zinc can be partly derived from well casings and other plumbing components of the wells. Arsenic, barium, selenium, and uranium were more likely to be from natural sources in the aquifer or underlying geologic units.

Radon gas concentration in ground water in the area appears to be associated with underlying geologic units. The frequencies of radon concentration exceeding 300 picocuries per liter related to underlying geologic units were as follows, by age: Cretaceous-age 89 percent, Triassic and Jurassic 81 percent, and Permian 58 percent. Greater radon concentration in areas underlain by sandstones, shales and limestones of Cretaceous, Triassic, and Jurassic ages may be due to increased concentration of uranium in those units, which are in hydrologic connection with the overlying High Plains aquifer. Lesser radon concentrations in areas underlain by bedrock units of Permian age, may be due to lesser deposition of uranium in the oxidizing conditions prevalent during the deposition of those units.

Nine samples had detectable concentrations of one or more of the following volatile organic compounds: toluene, chloroform, tetrachloroethene, *o*-dichlorobenzene, and *p*-dichlorobenzene. Toluene was the most commonly detected volatile organic compound, being detected in eight samples at concentrations up to 0.16 microgram per liter. Detection of toluene in similar concentrations in quality-control

samples indicates that toluene may have been introduced by sampling or analytical procedures.

One or more pesticides were detected in 18 water samples. None of the detected pesticides exceeded Maximum Contaminant Levels. Atrazine was detected in 15 samples whereas deethylatrazine, a metabolite of atrazine, was detected in 17 samples. In 14 of 15 of the samples that contained detectable atrazine, deethylatrazine also was detected. Metolachlor and the metolachlor breakdown products, metolachlor ESA and metolachlor OA, were the second most commonly detected pesticides. Metolachlor was detected in water from five wells, metolachlor ESA was detected in four samples, and metolachlor OA was detected in two samples. Additional detected pesticides included simazine, alachlor ESA, the breakdown product of alachlor; prometon, pendimethalin, and tebuthiuron. Insecticides detected in one sample each included carbaryl, chlorpyrifos, diazinon, and malathion.

The 18 sites with pesticide detections were distributed primarily in the Kansas portion of the central High Plains aquifer. In 14 of 18 samples with one or more detectable pesticides, the depth to water in the sampled wells was less than 200 feet below the land surface. However, pesticides were detected in three samples from wells having depths to water greater than 300 feet.

Tritium concentration can indicate whether ground water has been recharged in the last 50 years. Ten of 51 samples analyzed for tritium had detected tritium greater than 0.5 tritium unit. Wells producing water with elevated concentrations of tritium or nitrate, indicating recent recharge, generally had well screens less than 250 feet below land surface, whereas wells having screens deeper than 250 feet had lesser concentrations of tritium and nitrate, indicating less likelihood of recent recharge. Detections of volatile organic compounds generally did not coincide with wells having recent recharge, whereas pesticides were much more likely to be detected in water samples indicated by tritium or nitrate concentrations to be recently recharged.

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APPENDIX

Appendix 1. Water-quality data from 74 domestic water-supply wells completed in the central High Plains aquifer

[mg/L, milligrams per liter; µs/cm, microsiemens per centimeter at 25 C° °C, degree Celsius; CaCO₃, calcium carbonate; <, less than; N, nitrogen; P, phosphorus; NTU, nephelometric turbidity units; µg/L, micrograms per liter; --, no data; E, estimated]

STATION NUMBER	DATE	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	PH WATER WHOLE FIELD (STAND- ARD UNITS)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	TEMPER- ATURE WATER (DEG C)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	SODIUM, DIS- SOLVED (MG/L AS NA)	ALKA- LITY WAT DIS TOT IT FIELD MG/L AS CACO3	BROMIDE DIS- SOLVED (MG/L AS BR)
344800101324901	07-14-99	.1	7.0	7.5	502	16.5	38.6	23.6	5.31	32.7	219	.10
345826100580501	06-28-99	1.2	7.6	7.3	580	17.4	63.2	7.27	2.36	45.5	219	.19
351656101161101	05-19-99	.5	6.3	7.5	470	18.9	39.5	20.2	5.19	32.6	230	.07
351914101204401	07-01-99	.2	5.4	7.5	504	18.8	37.9	25.7	6.17	34.2	242	.08
352035100293301	07-13-99	.2	5.5	7.3	446	18.0	71.8	6.00	1.13	31.1	198	.17
352249100425401	06-30-99	.3	7.8	7.5	335	17.7	55.9	4.42	1.22	9.6	156	.04
352513101372101	05-20-99	.6	7.0	7.7	395	19.5	33.4	23.7	5.20	11.3	163	.12
352909101084001	07-01-99	.2	6.8	7.7	1640	18.5	44.1	17.0	4.27	275	182	.17
353110100550401	06-29-99	.2	6.5	7.6	800	18.1	42.5	21.9	5.83	83.8	223	.12
353941102350201	07-15-99	1.1	8.2	7.7	440	20.0	23.3	23.4	4.74	42.2	191	.13
354248100501501	07-19-99	1.0	7.1	7.6	451	18.8	37.1	24.7	<.10	33.2	192	.08
354331102183601	06-23-99	1.2	5.6	7.7	429	21.1	33.7	20.1	5.36	25.1	180	.12
354348102543601	07-21-99	.1	7.1	7.7	368	17.9	34.9	16.4	2.84	19.3	163	.10
354656099480301	05-17-99	.5	6.8	7.3	430	17.5	66.8	4.24	1.44	20.5	194	.05
354728102295901	07-16-99	.5	5.6	7.6	475	18.1	33.8	25.1	4.98	28.1	194	.18
354918102020901	06-23-99	5.5	4.6	8.0	509	19.9	24.5	15.3	5.41	61.4	222	.10
355701100313001	05-18-99	3.8	7.4	7.4	527	17.6	49.0	25.7	4.73	19.8	202	.07
355852101274101	07-02-99	.2	6.8	7.6	445	17.7	38.2	24.2	5.04	18.2	198	.07
355916103215201	06-25-99	8.5	7.2	7.7	1380	15.5	54.8	54.1	6.93	128	224	1.69
360703102361901	06-22-99	.6	7.2	7.7	463	17.7	37.3	27.6	7.16	12.5	176	.14
360838102560301	06-24-99	.1	5.7	7.6	406	16.8	40.0	19.6	3.56	13.9	170	.10
360944100162101	04-12-99	.4	5.3	7.8	497	16.1	46.2	23.1	4.27	26.7	211	.09
361014100221001	04-08-99	.9	5.6	7.5	635	16.2	57.8	30.0	4.00	29.3	212	.17
361049100564901	05-21-99	1.3	8.3	7.7	648	18.3	41.8	27.2	5.53	54.9	214	.10
361054101393601	06-21-99	1.5	3.2	7.6	551	18.0	43.8	30.5	6.08	26.2	209	.16
361114099420501	07-22-99	8.6	8.3	7.3	526	16.7	96.6	8.61	2.09	18.9	198	.08
361517102065301	05-26-99	1.2	5.5	7.8	529	17.5	35.5	23.1	5.96	43.1	197	.19
362115101173901	05-25-99	.3	7.3	7.6	645	17.6	50.3	26.6	5.38	37.5	173	.36
362134102035101	05-25-99	.1	7.1	7.9	458	18.1	27.6	26.0	5.39	30.9	189	.12
362615100435801	05-24-99	.2	7.3	7.6	573	17.5	35.4	21.5	5.56	51.4	197	.10
362744102334901	07-20-99	.4	2.4	8.3	740	16.8	7.37	15.6	5.48	141	310	.21
363057101384701	05-27-99	.2	6.8	7.7	414	16.9	32.8	21.3	4.26	24.1	172	.06
363104100035501	04-09-99	.1	7.3	7.6	468	16.7	49.9	20.1	1.37	16.6	221	.10
363154099310401	07-22-99	.2	6.7	7.4	471	16.4	72.4	7.92	1.76	21.8	224	.07
363157102565601	04-16-99	.1	7.1	8.1	413	15.4	45.1	18.8	2.81	14.3	172	.12
363239100301801	04-06-99	.1	5.6	7.8	569	17.0	31.4	15.2	4.30	72.9	217	.04
363427102440401	04-15-99	.7	7.4	8.1	498	15.5	48.3	23.7	3.51	18.5	161	.26
364219101394101	06-11-99	.7	6.9	7.8	503	17.2	29.1	27.3	6.80	39.3	214	.10
364411102321201	06-10-99	.1	7.5	7.7	533	16.5	48.2	26.0	4.07	25.1	173	.20
365223102113001	04-14-99	.1	7.5	7.9	464	16.8	30.0	31.8	5.00	20.7	163	.20
365422101083701	06-11-99	.1	6.8	7.6	482	17.0	56.8	23.0	3.73	12.0	171	.23
365445100381901	04-07-99	.1	8.5	7.6	572	16.9	54.5	22.6	4.02	31.6	180	.14
365821101375301	05-28-99	.1	4.8	7.4	732	17.5	74.9	32.2	4.81	44.4	230	.15
365934101573001	04-13-99	.1	1.8	7.5	9301	17.5	50.7	32.3	5.23	119	321	.20
370358100510301	04-15-99	.7	3.7	7.6	509	16.7	48.2	21.7	3.16	25.9	184	.13
370458101514401	04-22-99	.8	5.1	7.5	539	14.7	64.3	14.0	2.10	23.9	168	.21
370724100281601	04-23-99	.2	4.2	7.5	930	14.0	126	15.7	3.65	40.0	149	.10
371738101220301	04-20-99	.1	6.0	7.5	514	18.1	50.1	23.4	3.59	24.1	164	.15
372534100443501	04-16-99	.3	2.4	7.6	574	17.1	59.1	14.5	3.81	34.4	168	.13
372649101344701	04-19-99	2.4	5.2	7.6	457	17.6	43.3	14.9	3.27	29.2	155	.11
372956099512201	05-26-99	.2	5.4	7.5	435	17.3	44.6	15.9	3.86	23.7	190	.08
373229101193201	04-21-99	.3	3.6	7.5	679	16.9	67.5	31.4	5.11	50.1	172	.23
373345101070801	04-06-99	.6	5.2	7.6	528	17.8	58.5	17.6	3.11	26.4	166	.24
373507102162001	06-09-99	.1	7.0	7.6	566	15.4	53.3	17.2	3.49	37.5	138	.21
373527100312701	04-09-99	3.6	5.7	7.7	365	17.0	46.2	8.40	3.27	28.3	142	.09
373559102314901	06-09-99	.2	6.8	7.8	462	16.0	47.6	11.1	3.80	33.2	134	.15
373732099291201	05-19-99	.3	7.6	7.5	444	19.2	64.0	9.01	2.88	16.5	172	.06
374535102110301	06-08-99	11	6.0	7.7	569	18.6	67.6	14.8	<.10	25.5	132	.18
374650100181901	04-14-99	.7	6.0	7.5	602	15.8	74.7	12.8	.76	22.1	154	.07
375129100532301	04-18-99	2.3	5.4	7.6	377	17.9	46.7	8.21	2.57	19.3	155	.06
375447099245001	05-19-99	.2	.3	7.3	1390	15.5	139	38.4	5.49	114	197	.30
375828101111801	04-07-99	.4	2.4	7.5	1300	16.4	105	55.5	6.51	67.2	154	.35
380331100352801	04-17-99	1.1	5.7	7.5	981	14.9	82.9	36.5	7.15	54.2	217	.29
382947100443201	04-08-99	.2	4.3	7.4	819	15.4	75.8	31.1	7.58	54.8	208	.26
383008101315601	04-28-99	.2	6.2	7.8	392	13.5	43.9	13.3	3.69	15.0	133	.12
383758101195801	05-22-99	.1	5.7	7.5	706	15.4	66.8	26.9	6.01	34.6	138	.47
383919101040101	04-29-99	1.3	6.7	7.6	494	13.9	54.1	19.9	4.81	29.6	151	.31
385210100164501	06-07-99	.1	7.5	7.4	477	17.0	59.7	12.3	2.99	18.6	191	.10
385904099522201	05-24-99	.5	4.7	7.2	780	15.5	105	14.7	5.66	28.4	247	.16
390622101003201	05-23-99	.2	6.5	7.7	591	E16.6	56.0	20.7	5.96	30.5	181	.27
390830102052001	04-30-99	.5	7.4	7.9	285	12.1	34.9	7.46	3.00	13.5	122	.05
390838100411701	05-21-99	.6	4.0	7.5	459	15.5	47.9	18.6	6.29	15.9	208	.07
391044100051001	05-25-99	.3	5.1	7.5	431	14.8	59.7	11.5	4.33	6.8	170	.07
391921101385501	05-20-99	.2	5.3	7.8	365	15.7	36.4	11.4	3.95	30.3	170	.06

Appendix 1. Water-quality data from 74 domestic water-supply wells completed in the central High Plains aquifer—Continued

STATION NUMBER	CHLORIDE, DIS- SOLVED (MG/L AS CL)	FLUORIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO ₂)	SULFATE DIS- SOLVED (MG/L AS SO ₄)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, AM- MONIA + ORGANIC DIS. (MG/L AS N)	NITRO- GEN, NO ₂ +NO ₃ DIS- SOLVED (MG/L AS N)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	PHOS- PHORUS DIS- SOLVED (MG/L AS P)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)
344800101324901	9.7	2.5	36.8	27.6	325	<.020	<.10	2.67	<.010	.007	.011	.50
345826100580501	24.0	.6	27.9	32.9	359	<.020	<.10	6.06	<.010	.005	<.010	.80
351656101161101	6.4	1.2	31.3	12.2	291	.020	<.10	1.50	<.010	.004	.014	.40
351914101204401	8.4	1.1	35.4	19.4	330	<.020	<.10	1.52	<.010	.004	.022	.50
352035100293301	27.3	.3	28.5	20.1	299	<.020	.13	2.97	<.010	.004	.013	1.1
352249100425401	5.1	.3	23.8	6.4	213	.022	<.10	2.04	<.010	.020	.018	.50
352513101372101	8.6	1.2	26.0	13.5	250	<.020	<.10	4.52	<.010	<.004	<.010	.40
352909101084001	259	1.2	25.9	250	1030	<.020	<.10	1.38	<.010	.005	.016	.40
353110100550401	47.6	.9	25.9	54.8	416	<.020	<.10	1.59	<.010	.004	.012	.50
353941102350201	20.5	1.2	26.1	25.6	285	<.020	<.10	1.07	<.010	.004	.010	.60
354248100501501	23.4	1.0	30.1	41.1	322	<.020	<.10	1.33	<.010	.005	<.010	.50
354331102183601	12.8	1.2	32.2	18.8	274	<.020	<.10	2.29	<.010	<.004	.025	.50
354348102543601	9.6	1.1	30.0	16.0	243	<.020	<.10	1.37	<.010	.004	.012	.40
354656099480301	3.0	.3	21.7	8.1	279	<.020	<.10	5.50	<.010	.042	.040	.60
354728102295901	16.0	1.8	34.6	27.5	297	<.020	<.10	1.50	<.010	.004	<.010	.50
354918102020901	8.0	1.2	23.6	33.2	324	<.020	<.10	2.07	<.010	.007	.024	.50
355701100313001	31.9	1.4	37.1	19.8	328	<.020	<.10	1.45	<.010	.005	.011	.40
355852101274101	5.5	1.7	35.4	24.0	294	<.020	<.10	1.78	.011	.005	.015	.40
355916103215201	218	2.8	33.1	83.6	864	<.020	.21	16.5	<.010	.007	.022	2.0
360703102361901	18.7	1.1	28.2	23.2	302	<.020	<.10	3.98	<.010	.004	.033	.60
360838102560301	9.0	1.3	33.5	15.8	267	<.020	<.10	3.63	<.010	<.004	.011	.50
360944100162101	16.9	1.5	32.9	15.7	314	<.020	<.10	.845	<.010	.006	.022	.40
361014100221001	42.7	2.0	41.8	37.9	397	<.020	<.10	2.03	<.010	<.004	<.010	1.1
361049100564901	35.8	1.5	34.7	74.3	420	<.020	<.10	1.95	<.010	<.004	.013	.60
361054101393601	10.3	1.8	32.4	60.6	367	<.020	<.10	1.91	<.010	.005	.016	.50
361114099420501	19.8	.3	29.8	15.1	413	<.020	E.10	14.7	<.010	.023	.029	.90
361517102065301	16.8	1.6	22.1	44.9	329	.030	<.10	3.87	<.010	.006	.013	.30
362115101173901	50.1	1.7	28.4	71.0	416	<.020	.11	5.49	<.010	.005	.015	.60
362134102035101	10.3	1.7	26.4	35.9	283	.025	<.10	2.37	<.010	.004	.010	.30
362615100435801	37.4	1.8	42.4	35.2	382	.025	<.10	2.71	<.010	.006	.017	.40
362744102334901	13.8	2.4	16.4	66.5	468	<.020	<.10	1.12	<.010	.010	.015	.70
363057101384701	6.1	1.9	38.1	28.3	268	<.020	<.10	1.54	<.010	<.004	.011	.30
363104100035501	14.7	.6	46.1	12.5	308	<.020	1.0	1.10	<.010	.004	.011	.40
363154099310401	10.3	.3	32.0	10.9	288	<.020	<.10	3.44	<.010	.018	.022	.90
363157102565601	10.2	1.0	33.7	23.7	276	<.020	<.10	3.19	<.010	.004	.018	.30
363239100301801	31.3	1.7	42.1	40.2	381	.021	<.10	1.60	<.010	.005	.014	.30
363427102440401	32.5	1.5	55.1	25.7	346	<.020	<.10	4.07	<.010	.004	.012	.40
364219101394101	11.1	4.0	30.9	28.3	312	<.020	<.10	1.25	<.010	<.004	.014	.30
364411102321201	26.6	.9	35.2	52.6	466	.023	<.10	2.81	<.010	.005	.023	.70
365223102113001	20.9	2.8	29.6	41.6	303	<.020	<.10	1.67	<.010	<.004	<.010	.30
365422101083701	22.8	.9	45.1	28.2	328	<.020	<.10	4.46	<.010	.005	.015	.30
365445100381901	44.4	.9	30.8	42.6	363	<.020	<.10	2.71	<.010	.015	<.010	.50
365821101375301	14.1	.7	30.2	172	545	.031	<.10	1.67	<.010	.004	.015	.20
365934101573001	19.9	.8	24.9	150	--	<.020	<.10	1.18	<.010	.008	.018	.70
370358100510301	19.1	.7	28.8	58.5	323	<.020	<.10	2.94	<.010	.007	.010	.40
370458101514401	32.4	.4	25.8	39.4	351	<.020	<.10	6.69	<.010	.012	.011	.60
370724100281601	117	.9	25.9	142	517	<.020	<.10	1.38	<.010	.026	.023	.20
371738101220301	13.6	.6	28.2	74.1	347	.025	<.10	3.25	<.010	.006	.022	.30
372534100443501	15.6	.8	22.6	84.4	360	.025	<.10	1.99	<.010	<.004	.012	.40
372649101344701	9.2	1.4	18.0	62.1	296	<.020	<.10	2.05	<.010	.004	<.010	.30
372956099512201	12.2	.8	31.5	19.6	297	.020	<.10	1.85	<.010	.005	.014	.20
373229101193201	14.5	1.1	27.2	192	529	.024	<.10	2.98	<.010	.004	.011	.60
373345101070801	24.8	.6	21.0	55.3	345	<.020	<.10	5.11	<.010	.006	.024	.50
373507102162001	12.7	1.0	14.5	125	380	<.020	<.10	2.31	<.010	.004	.030	.20
373527100312701	6.1	.9	43.0	50.1	283	<.020	<.10	1.78	<.010	<.004	<.010	.30
373559102314901	9.0	.8	14.9	85.7	312	<.020	<.10	1.93	<.010	<.004	.017	.20
373732099291201	10.6	.4	27.0	18.2	288	.020	<.10	6.85	<.010	.054	.052	.60
374535102110301	14.4	.6	17.1	123	381	<.020	.14	2.24	<.010	<.004	.016	.30
374650100181901	10.8	.4	25.5	37.8	370	<.020	<.10	20.3	<.010	.005	<.010	.50
375129100532301	3.4	.4	20.5	29.1	243	.020	<.10	2.34	<.010	.005	.019	.20
375447099245001	81.5	.5	28.6	430	1060	.020	<.10	4.94	<.010	.008	.019	.90
375828101111801	37.5	.9	22.1	412	862	<.020	<.10	1.68	<.010	.004	.016	.70
380331100352801	35.5	2.2	57.6	210	666	<.020	<.10	3.55	<.010	.006	.025	.60
382947100443201	16.5	2.9	61.4	198	601	<.020	<.10	1.41	<.010	.005	<.010	.50
383008101315601	10.9	1.1	38.8	32.2	269	<.020	<.10	4.22	<.010	<.004	.015	1.0
383758101195801	45.1	1.5	27.1	115	453	.022	.15	9.48	<.010	<.004	.014	1.2
383919101040101	29.1	1.7	33.1	52.2	381	.039	.11	8.32	.014	.004	.022	.80
385210100164501	21.8	.3	27.8	19.4	311	.035	<.10	2.49	<.010	.006	.015	.30
385904099522201	68.1	.3	37.4	41.0	493	<.020	<.10	5.10	<.010	.032	.039	1.0
390622101003201	28.9	1.3	32.1	54.2	365	<.020	<.10	7.38	<.010	<.004	.017	.40
390830102052001	4.9	1.1	21.2	8.5	181	.021	<.10	2.28	<.010	.009	.025	.30
390838100411701	7.2	.8	32.6	16.4	282	<.020	<.10	3.29	<.010	.010	.018	.70
391044100051001	19.1	.5	38.2	8.0	289	<.020	.47	4.77	<.010	.015	.023	.30
391921101385501	5.4	1.3	49.5	16.6	276	.023	<.10	2.34	<.010	<.004	.015	.40

Appendix 1. Water-quality data from 74 domestic water-supply wells completed in the central High Plains aquifer—Continued

STATION NUMBER	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ANTI- MONY, DIS- SOLVED (UG/L AS SB)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
344800101324901	<1	<1.00	5.6	89.8	<1.00	<1.00	1.1	<1.00	<1.0	<10	<1.00	<1.0
345826100580501	<1	<1.00	3.0	92.1	<1.00	<1.00	<1.0	<1.00	<1.0	<10	<1.00	<1.0
351656101161101	5	<1.00	1.6	116	<1.00	<1.00	2.7	<1.00	<1.0	<10	<1.00	<1.0
351914101204401	<1	<1.00	1.4	160	<1.00	<1.00	5.2	<1.00	2.8	<10	1.89	<1.0
352035100293301	<1	<1.00	2.1	248	<1.00	<1.00	<1.0	<1.00	6.3	<10	<1.00	<1.0
352249100425401	<1	<1.00	2.0	560	<1.00	<1.00	<1.0	<1.00	<1.0	<10	<1.00	<1.0
352513101372101	5	<1.00	<1.0	157	<1.00	<1.00	<1.0	<1.00	<1.0	<10	<1.00	<1.0
352909101084001	<1	<1.00	3.4	36.9	<1.00	<1.00	3.5	<1.00	<1.0	<10	<1.00	4.4
353110100550401	<1	<1.00	3.2	64.4	<1.00	<1.00	3.5	<1.00	2.3	<10	<1.00	<1.0
353941102350201	<1	<1.00	2.8	102	<1.00	<1.00	<1.0	<1.00	<1.0	<10	<1.00	<1.0
354248100501501	<1	<1.00	1.6	67.7	<1.00	<1.00	1.2	<1.00	<1.0	<10	<1.00	<1.0
354331102183601	<1	<1.00	3.3	124	<1.00	<1.00	<1.0	<1.00	<1.0	<10	<1.00	<1.0
354348102543601	<1	<1.00	2.3	161	<1.00	<1.00	<1.0	<1.00	<1.0	<10	<1.00	<1.0
354656099480301	6	<1.00	3.5	558	<1.00	<1.00	<1.0	<1.00	1.2	<10	<1.00	<1.0
354728102295901	<1	<1.00	1.9	85.2	<1.00	<1.00	2.2	<1.00	<1.0	<10	<1.00	<1.0
354918102020901	<1	<1.00	<1.0	49.7	<1.00	<1.00	2.2	<1.00	<1.0	<10	<1.00	<1.0
355701100313001	5	<1.00	1.2	150	<1.00	<1.00	1.0	<1.00	<1.0	<10	<1.00	<1.0
355852101274101	<1	<1.00	1.6	103	<1.00	<1.00	2.0	<1.00	<1.0	<10	<1.00	<1.0
355916103215201	1	<1.00	3.6	109	<1.00	<1.00	<1.0	<1.00	4.8	<10	<1.00	1.2
360703102361901	<1	<1.00	2.4	121	<1.00	<1.00	<1.0	<1.00	<1.0	<10	<1.00	<1.0
360838102560301	<1	<1.00	1.9	117	<1.00	<1.00	<1.0	<1.00	<1.0	<10	<1.00	<1.0
360944100162101	4	<1.00	2.8	248	<1.00	<1.00	3.5	<1.00	<1.0	<10	<1.00	<1.0
361014100221001	3	<1.00	3.0	117	<1.00	<1.00	1.1	<1.00	<1.0	<10	<1.00	<1.0
361049100564901	3	<1.00	1.6	76.8	<1.00	<1.00	3.2	<1.00	<1.0	10	<1.00	<1.0
361054101393601	<1	<1.00	2.1	51.8	<1.00	<1.00	1.3	<1.00	<1.0	<10	<1.00	<1.0
361114099420501	<1	<1.00	1.8	385	<1.00	<1.00	<1.0	<1.00	<1.0	<10	<1.00	<1.0
361517102065301	5	<1.00	<1.0	58.5	<1.00	<1.00	3.3	<1.00	<1.0	<10	<1.00	<1.0
362115101173901	5	<1.00	2.4	49.6	<1.00	<1.00	1.8	<1.00	<1.0	<10	<1.00	<1.0
362134102035101	6	<1.00	1.4	46.6	<1.00	<1.00	1.8	<1.00	1.0	<10	<1.00	<1.0
362615100435801	4	<1.00	5.5	81.5	<1.00	<1.00	3.9	<1.00	2.3	<10	<1.00	<1.0
362744102334901	<1	<1.00	7.6	34.8	<1.00	<1.00	--	<1.00	<1.0	<10	<1.00	<1.0
363057101384701	6	<1.00	5.2	47.0	<1.00	<1.00	1.2	<1.00	<1.0	<10	<1.00	<1.0
363104100035501	2	<1.00	4.5	188	<1.00	<1.00	<1.0	<1.00	<1.0	<10	<1.00	<1.0
363154099310401	<1	<1.00	2.9	220	<1.00	<1.00	<1.0	<1.00	<1.0	<10	<1.00	<1.0
363157102565601	4	<1.00	2.0	138	<1.00	<1.00	1.1	<1.00	1.9	<10	2.29	<1.0
363239100301801	3	<1.00	9.7	104	<1.00	<1.00	1.8	<1.00	1.2	<10	<1.00	<1.0
363427102440401	5	<1.00	2.6	97.9	<1.00	<1.00	1.5	<1.00	<1.0	<10	<1.00	<1.0
364219101394101	<1	<1.00	6.0	86.1	<1.00	<1.00	1.2	<1.00	<1.0	<10	<1.00	<1.0
364411102321201	<1	<1.00	2.8	50.3	<1.00	<1.00	<1.0	<1.00	<1.0	<10	<1.00	<1.0
365223102113001	4	<1.00	1.4	58.7	<1.00	<1.00	1.1	<1.00	2.2	<10	<1.00	<1.0
365422101083701	1	<1.00	3.5	79.2	<1.00	<1.00	3.7	<1.00	<1.0	<10	<1.00	<1.0
365445100381901	3	<1.00	4.2	72.7	<1.00	<1.00	2.4	<1.00	<1.0	<10	<1.00	<1.0
365821101375301	5	<1.00	1.5	42.4	<1.00	<1.00	1.4	<1.00	<1.0	<10	<1.00	<1.0
365934101573001	4	<1.00	<1.0	21.5	<1.00	<1.00	<1.0	<1.00	2.5	<10	<1.00	<1.0
370358100510301	4	<1.00	1.5	47.4	<1.00	<1.00	2.2	<1.00	<1.0	<10	<1.00	<1.0
370458101514401	4	<1.00	2.1	79.1	<1.00	<1.00	1.8	<1.00	<1.0	<10	<1.00	<1.0
370724100281601	4	<1.00	2.9	90.4	<1.00	<1.00	1.9	<1.00	<1.0	<10	<1.00	<1.0
371738101220301	4	<1.00	1.8	41.0	<1.00	<1.00	1.9	<1.00	<1.0	<10	<1.00	<1.0
372534100443501	5	<1.00	1.4	47.2	<1.00	<1.00	<1.0	<1.00	<1.0	10	<1.00	39.2
372649101344701	5	<1.00	<1.0	39.7	<1.00	<1.00	<1.0	<1.00	<1.0	30	<1.00	<1.0
372956099512201	4	<1.00	2.5	109	<1.00	<1.00	<1.0	<1.00	1.0	<10	<1.00	<1.0
373229101193201	4	<1.00	<1.0	20.6	<1.00	<1.00	2.8	<1.00	2.0	<10	<1.00	<1.0
373345101070801	5	<1.00	<1.0	61.6	<1.00	<1.00	1.3	<1.00	<1.0	<10	<1.00	<1.0
373507102162001	<1	<1.00	<1.0	20.0	<1.00	<1.00	--	<1.00	<1.0	<10	<1.00	<1.0
373527100312701	3	<1.00	3.4	42.1	<1.00	<1.00	1.2	<1.00	1.0	<10	<1.00	<1.0
373559102314901	<1	<1.00	<1.0	29.8	<1.00	<1.00	<1.0	<1.00	<1.0	<10	<1.00	<1.0
373732099291201	4	<1.00	1.4	196	<1.00	<1.00	1.4	<1.00	<1.0	<10	<1.00	<1.0
374535102110301	<1	<1.00	<1.0	26.0	<1.00	<1.00	<1.0	<1.00	<1.0	40	<1.00	85.9
374650100181901	3	<1.00	1.5	70.4	<1.00	<1.00	1.1	<1.00	<1.0	<10	<1.00	<1.0
375129100532301	4	<1.00	<1.0	63.1	<1.00	<1.00	1.5	<1.00	<1.0	<10	<1.00	<1.0
375447099245001	4	<1.00	2.5	42.0	<1.00	<1.00	<1.0	<1.00	1.8	<10	<1.00	<1.0
375828101111801	3	<1.00	2.2	19.7	<1.00	<1.00	<1.0	<1.00	1.7	<10	<1.00	<1.0
380331100352801	4	<1.00	4.1	26.2	<1.00	<1.00	1.0	<1.00	1.8	<10	<1.00	<1.0
382947100443201	2	<1.00	6.7	20.4	<1.00	<1.00	<1.0	<1.00	1.2	<10	<1.00	<1.0
383008101315601	4	<1.00	5.3	67.5	<1.00	<1.00	<1.0	<1.00	<1.0	<10	<1.00	<1.0
383758101195801	4	<1.00	3.5	88.1	<1.00	<1.00	<1.0	<1.00	1.6	<10	<1.00	<1.0
383919101040101	5	<1.00	3.6	75.9	<1.00	<1.00	1.0	<1.00	<1.0	<10	<1.00	<1.0
385210100164501	<1	<1.00	1.2	127	<1.00	<1.00	--	<1.00	<1.0	<10	<1.00	<1.0
385904099522201	4	<1.00	3.4	251	<1.00	<1.00	<1.0	<1.00	2.8	<10	<1.00	<1.0
390622101003201	5	<1.00	2.6	52.0	<1.00	<1.00	1.2	<1.00	1.8	<10	<1.00	<1.0
390830102052001	5	<1.00	4.2	154	<1.00	<1.00	<1.0	<1.00	<1.0	<10	<1.00	<1.0
390838100411701	5	<1.00	4.1	151	<1.00	<1.00	1.1	<1.00	1.8	<10	<1.00	<1.0
391044100051001	4	<1.00	5.9	298	<1.00	<1.00	<1.0	<1.00	<1.0	<10	<1.00	<1.0
391921101385501	4	<1.00	2.0	102	<1.00	<1.00	1.3	<1.00	<1.0	<10	1.18	<1.0

Appendix 1. Water-quality data from 74 domestic water-supply wells completed in the central High Plains aquifer—Continued

STATION NUMBER	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)	2,4-D METHYL ESTER, WATER FLTRD REC (UG/L)	2,4-D, DIS- SOLVED (UG/L)	2,4-DB WATER, FLTRD, GF 0.7U REC (UG/L)	2,6-DI- ETHYL ANILINE WAT FLT 0.7 U GF, REC (UG/L)	ACETO- CHLOR ESA FLTRD 0.7 UM GF REC (UG/L)	ACETO- CHLOR OA FLTRD 0.7 UM GF REC (UG/L)	ACETO- CHLOR, WATER FLTRD REC (UG/L)
344800101324901	4.0	<1.00	5.0	<1.0	10	<.086	<.08	<.05	<.003	<.05	<.05	<.002
345826100580501	<1.0	<1.00	4.0	<1.0	12	<.086	<.08	<.05	<.003	<.05	<.05	<.002
351656101161101	4.3	<1.00	1.2	<1.0	35	<.086	<.08	<.05	<.003	<.05	<.05	<.002
351914101204401	2.7	<1.00	3.0	<1.0	96	<.086	<.08	<.05	<.003	<.05	<.05	<.002
352035100293301	<1.0	<1.00	1.3	<1.0	3	<.086	<.08	<.05	<.003	<.05	<.05	<.002
352249100425401	<1.0	<1.00	1.1	<1.0	4	<.086	<.08	<.05	<.003	<.05	<.05	<.002
352513101372101	5.4	<1.00	<1.0	<1.0	135	<.086	<.08	<.05	<.003	<.05	<.05	<.002
352909101084001	10.8	<1.00	1.7	<1.0	1	<.086	<.08	<.05	<.003	<.05	<.05	<.002
353110100550401	2.8	<1.00	2.6	<1.0	136	<.086	<.08	<.05	<.003	<.05	<.05	<.002
353941102350201	5.1	<1.00	2.9	<1.0	49	<.086	<.08	<.05	<.003	<.05	<.05	<.002
354248100501501	3.4	<1.00	<1.0	<1.0	28	<.086	<.08	<.05	<.003	<.05	<.05	<.002
354331102183601	6.5	<1.00	1.7	<1.0	60	<.086	<.08	<.05	<.003	<.05	<.05	<.002
354348102543601	<1.0	<1.00	1.7	<1.0	8	<.086	<.08	<.05	<.003	<.05	<.05	<.002
354656099480301	1.3	1.12	<1.0	<1.0	12	<.086	<.08	<.05	<.003	<.05	<.05	<.002
354728102295901	5.8	<1.00	3.9	<1.0	12	<.086	<.08	<.05	<.003	<.05	<.05	<.002
354918102020901	6.3	<1.00	2.2	<1.0	76	<.086	<.08	<.05	<.003	<.05	<.05	<.002
355701100313001	1.7	1.06	<1.0	<1.0	6	<.086	<.08	<.05	<.003	<.05	<.05	<.002
355852101274101	8.1	<1.00	2.3	<1.0	12	<.086	<.08	<.05	<.003	<.05	<.05	<.002
355916103215201	3.8	1.98	9.7	<1.0	3	<.086	<.08	<.05	<.003	<.05	<.05	<.002
360703102361901	4.5	<1.00	3.3	<1.0	52	<.086	<.08	<.05	<.003	<.05	<.05	<.002
360838102560301	3.9	<1.00	2.0	<1.0	3	<.086	<.08	<.05	<.003	<.05	<.05	<.002
360944100162101	2.1	<1.00	1.2	<1.0	1	<.086	<.08	<.05	<.003	<.05	<.05	<.002
361014100221001	1.1	1.29	3.3	<1.0	36	<.086	<.08	<.05	<.003	<.05	<.05	<.002
361049100564901	4.9	<1.00	2.7	<1.0	119	<.086	<.08	<.05	<.003	<.05	<.05	<.002
361054101393601	9.3	<1.00	6.9	<1.0	63	<.086	<.08	<.05	<.003	<.05	<.05	<.002
361114099420501	<1.0	1.99	<1.0	<1.0	18	<.086	<.08	<.05	<.003	<.05	<.05	<.002
361517102065301	8.2	<1.00	3.2	<1.0	81	<.086	<.08	<.05	<.003	<.05	<.05	<.002
362115101173901	9.1	2.27	4.8	<1.0	93	<.086	<.08	<.05	<.003	--	--	<.002
362134102035101	15.4	<1.00	2.0	<1.0	94	<.086	<.08	<.05	<.003	<.05	<.05	<.002
362615100435801	6.0	<1.00	1.7	<1.0	11	<.086	<.08	<.05	<.003	<.05	<.05	<.002
362744102334901	21.9	<1.00	1.7	<1.0	18	<.086	<.08	<.05	<.003	<.05	<.05	<.002
363057101384701	4.9	<1.00	<1.0	<1.0	51	<.086	<.08	<.05	<.003	<.05	<.05	<.002
363104100035501	1.0	<1.00	1.4	<1.0	11	<.086	<.08	<.05	<.003	<.05	<.05	<.002
363154099310401	<1.0	<1.00	<1.0	<1.0	1	<.086	<.08	<.05	<.003	<.05	<.05	<.002
363157102565601	3.8	<1.00	2.8	<1.0	2	<.086	<.08	<.05	<.003	<.05	<.05	<.002
363239100301801	9.0	<1.00	<1.0	<1.0	28	<.086	<.08	<.05	<.003	<.05	<.05	<.002
363427102440401	6.7	2.31	3.3	<1.0	5	<.086	<.08	<.05	<.003	<.05	<.05	<.002
364219101394101	8.7	<1.00	<1.0	<1.0	8	<.086	<.08	<.05	<.003	<.05	<.05	<.002
364411102321201	3.4	<1.00	4.0	<1.0	6	<.086	<.08	<.05	<.003	<.05	<.05	<.002
365223102113001	11.1	1.04	4.1	<1.0	8	<.086	<.08	<.05	<.003	<.05	<.05	<.002
365422101083701	2.7	<1.00	4.5	<1.0	31	<.086	<.08	<.05	<.003	<.05	<.05	<.002
365445100381901	5.1	1.33	5.8	<1.0	10	<.086	<.08	<.05	<.003	<.05	<.05	<.002
365821101375301	4.7	<1.00	1.8	<1.0	169	<.086	<.08	<.05	<.003	<.05	<.05	<.002
365934101573001	4.2	2.18	1.3	<1.0	78	<.086	<.08	<.05	<.003	<.05	<.05	<.002
370358100510301	3.4	<1.00	4.4	<1.0	33	<.086	<.08	<.05	<.003	<.05	<.05	<.002
370458101514401	1.9	2.20	5.1	<1.0	7	<.086	<.08	<.05	<.003	<.05	<.05	<.002
370724100281601	5.9	1.93	6.1	<1.0	2	<.086	<.08	<.05	<.003	<.05	<.05	<.002
371738101220301	3.3	<1.00	3.8	<1.0	15	<.086	<.08	<.05	<.003	<.05	<.05	<.002
372534100443501	25.5	1.69	3.4	<1.0	14	<.086	<.08	<.05	<.003	<.05	<.05	<.002
372649101344701	11.1	1.22	2.6	<1.0	154	<.086	<.08	<.05	<.003	<.05	<.05	<.002
372956099512201	4.9	<1.00	2.5	<1.0	8	<.086	<.08	<.05	<.003	<.05	<.05	<.002
373229101193201	13.3	1.02	9.6	<1.0	2	<.086	<.08	<.05	<.003	<.05	<.05	<.002
373345101070801	11.4	1.51	6.3	<1.0	23	<.086	<.08	<.05	<.003	<.05	<.05	<.002
373507102162001	6.9	<1.00	4.2	<1.0	<1	<.086	<.08	<.05	<.003	<.05	<.05	<.002
373527100312701	8.9	<1.00	2.9	<1.0	<1	<.086	<.08	<.05	<.003	<.05	<.05	<.002
373559102314901	13.5	<1.00	3.7	<1.0	<1	<.086	<.08	<.05	<.003	<.05	<.05	<.002
373732099291201	2.0	1.15	1.4	<1.0	7	<.086	<.08	<.05	<.003	<.05	<.05	<.002
374535102110301	9.8	<1.00	4.4	<1.0	77	<.086	<.08	<.05	<.003	<.05	<.05	<.002
374650100181901	4.4	1.03	2.5	<1.0	27	<.086	<.08	<.05	<.003	<.05	<.05	<.002
375129100532301	4.4	1.29	2.5	<1.0	11	<.086	<.08	<.05	<.003	<.05	<.05	<.002
375447099245001	2.7	2.73	6.7	<1.0	1	<.086	<.08	<.05	<.003	<.05	<.05	<.002
375828101111801	5.1	1.22	4.8	<1.0	2	<.086	<.08	<.05	<.003	<.05	<.05	<.002
380331100352801	4.7	1.13	17.8	<1.0	6	<.086	<.08	<.05	<.003	<.05	<.05	<.002
382947100443201	51.7	1.06	8.0	<1.0	38	<.086	<.08	<.05	<.003	<.05	<.05	<.002
383008101315601	9.2	<1.00	3.7	<1.0	24	<.086	<.08	<.05	<.003	<.05	<.05	<.002
383758101195801	12.9	1.46	11.5	<1.0	50	<.086	<.08	<.05	<.003	<.05	<.05	<.002
383919101040101	11.4	1.06	6.5	<1.0	15	<.086	<.08	<.05	<.003	<.05	<.05	<.002
385210100164501	<1.0	<1.00	3.1	<1.0	1	<.086	<.08	<.05	<.003	<.05	<.05	<.002
385904099522201	1.6	2.23	3.5	<1.0	3	<.086	<.08	<.05	<.003	<.05	<.05	<.002
390622101003201	7.1	<1.00	6.1	<1.0	53	<.086	<.08	<.05	<.003	<.05	<.05	<.002
390830102052001	5.0	<1.00	1.0	<1.0	40	<.086	<.08	<.05	<.003	<.05	<.05	<.002
390838100411701	3.4	<1.00	2.3	<1.0	15	<.086	<.08	<.05	<.003	<.05	<.05	<.002
391044100051001	2.2	1.40	<1.0	<1.0	<1	<.086	<.08	<.05	<.003	<.05	<.05	<.002
391921101385501	7.0	<1.00	1.5	<1.0	27	<.086	<.08	<.05	<.003	<.05	<.05	<.002

Appendix 1. Water-quality data from 74 domestic water-supply wells completed in the central High Plains aquifer—Continued

STATION	NUMBER	ALA- CHLOR, OA FLTRD 0.7 UM GF REC (UG/L)	ALA- CHLOR, (ESA) WAT FLT GF 0.7U REC (UG/L)	ALA- CHLOR, WATER, DISS, REC, (UG/L)	ALDI- CARB SULFONE WAT, FLT GF 0.7U REC (UG/L)	ALDICA- RB SUL- FOXIDE, WAT, FLT GF 0.7U REC (UG/L)	ALDI- CARB, WATER, FLTRD, GF 0.7U REC (UG/L)	ALPHA BHC DIS- SOLVED (UG/L)	ATRA- ZINE, WATER, DISS, REC (UG/L)	BENDIO- CARB, WATER FLTRD REC (UG/L)	BEN- FLUR- ALIN WAT FLD 0.7 U GF, REC (UG/L)	BEN- SUL- FURON METHYL WAT FLT REC (UG/L)	BENTA- ZON, WATER, FLTRD, GF 0.7U REC (UG/L)
344800101324901		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
345826100580501		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
351656101161101		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
351914101204401		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
352035100293301		<.05	<.050	<.002	<.16	<.03	<.08	<.002	.005	<.061	<.002	<.0482	<.02
352249100425401		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
352513101372101		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
352909101084001		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
353110100550401		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
353941102350201		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
354248100501501		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
354331102183601		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
354348102543601		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
354656099480301		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
354728102295901		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
354918102020901		<.05	<.050	<.002	<.16	<.03	<.08	<.002	.019	<.061	<.002	<.0482	<.02
355701100313001		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
355852101274101		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
355916103215201		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
360703102361901		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
360838102560301		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
360944100162101		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
361014100221001		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
361049100564901		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
361054101393601		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
361114099420501		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
361517102065301		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
362115101173901		--	--	<.002	<.16	<.03	<.08	<.002	1.06	<.061	<.002	<.0482	<.02
362134102035101		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
362615100435801		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
362744102334901		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
363057101384701		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
363104100035501		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
363154099310401		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
363157102565601		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
363239100301801		<.05	<.050	<.002	<.16	<.03	<.08	<.002	.014	<.061	<.002	<.0482	<.02
363427102440401		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
364219101394101		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
364411102321201		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
365223102113001		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
365422101083701		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
365445100381901		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
365821101375301		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
365934101573001		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
370358100510301		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
370458101514401		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
370724100281601		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
371738101220301		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
372534100443501		<.05	<.050	<.002	<.16	<.03	<.08	<.002	.044	<.061	<.002	<.0482	<.02
372649101344701		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
372956099512201		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
373229101193201		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
373345101070801		<.05	<.050	<.002	<.16	<.03	<.08	<.002	.936	<.061	<.002	<.0482	<.02
373507102162001		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
373527100312701		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
373559102314901		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
373732099291201		<.05	<.050	<.002	<.16	<.03	<.08	<.002	.005	<.061	<.002	<.0482	<.02
374535102110301		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
374650100181901		<.05	4.83	<.002	<.16	<.03	<.08	<.002	.617	<.061	<.002	<.0482	<.02
375129100532301		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
375447099245001		<.05	.150	<.002	<.16	<.03	<.08	<.002	.008	<.061	<.002	<.0482	<.02
375828101111801		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
380331100352801		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
382947100443201		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
383008101315601		<.05	<.050	<.002	<.16	<.03	<.08	<.002	.040	<.061	<.002	<.0482	<.02
383758101195801		<.05	<.050	<.002	<.16	<.03	<.08	<.002	.102	<.061	<.002	<.0482	<.02
383919101040101		<.05	<.050	<.002	<.16	<.03	<.08	<.002	.017	<.061	<.002	<.0482	<.02
385210100164501		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
385904099522201		<.05	<.050	<.002	<.16	<.03	<.08	<.002	1.38	<.061	<.002	<.0482	<.02
390622101003201		<.05	<.050	<.002	<.16	<.03	<.08	<.002	.199	<.061	<.002	<.0482	<.02
390830102052001		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
390838100411701		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
391044100051001		<.05	<.050	<.002	<.16	<.03	<.08	<.002	<.001	<.061	<.002	<.0482	<.02
391921101385501		<.05	<.050	<.002	<.16	<.03	<.08	<.002	.012	<.061	<.002	<.0482	<.02

Appendix 1. Water-quality data from 74 domestic water-supply wells completed in the central High Plains aquifer—Continued

STATION NUMBER	BRO-MACIL, WATER, DISS, REC (UG/L)	BRO-MOXYNIL, WATER, FLTRD, GF 0.7U REC (UG/L)	BUTYL- ATE, WATER, DISS, REC (UG/L)	CAF- FEINE, WATER, FLTRD REC (UG/L)	CAR-BARYL, WATER, FLTRD, GF 0.7U REC (UG/L)	CAR-BARYL, WATER, FLTRD 0.7 U GF, REC (UG/L)	CARBO-FURAN, WATER, FLTRD, GF 0.7U REC (UG/L)	CARBO-FURAN, WATER, FLTRD 0.7 U GF, REC (UG/L)	CHLOR-AMBEN, METHYL ESTER WATER FLTRD (UG/L)	CHLORI-MURON, WATER FLTRD REC (UG/L)	CHLORO-THALO-NIL, WAT,FLT GF 0.7U REC (UG/L)	CHLOR-PYRIPOS DIS-SOLVED (UG/L)
344800101324901	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
345826100580501	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
351656101161101	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
351914101204401	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
352035100293301	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
352249100425401	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
352513101372101	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
352909101084001	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
353110100550401	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
353941102350201	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
354248100501501	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
354331102183601	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
354348102543601	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
354656099480301	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
354728102295901	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
354918102020901	<.08	<.06	<.002	<.081	<.06	E.116	<.06	<.003	<.11	<.037	<.05	.007
355701100313001	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
355852101274101	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
355916103215201	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
360703102361901	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
360838102560301	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
360944100162101	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
361014100221001	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
361049100564901	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	--	<.037	<.05	<.004
361054101393601	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
361114099420501	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
361517102065301	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
362115101173901	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
362134102035101	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
362615100435801	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
362744102334901	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
363057101384701	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
363104100035501	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
363154099310401	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
363157102565601	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
363239100301801	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
363427102440401	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
364219101394101	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
364411102321201	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
365223102113001	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
365422101083701	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
365445100381901	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
365821101375301	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
365934101573001	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
370358100510301	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
370458101514401	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
370724100281601	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
371738101220301	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
372534100443501	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
372649101344701	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
372956099512201	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
373229101193201	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
373345101070801	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
373507102162001	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
373527100312701	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
373559102314901	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
373732099291201	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
374535102110301	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
374650100181901	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
375129100532301	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
375447099245001	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
375828101111801	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
380331100352801	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
382947100443201	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
383008101315601	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
383758101195801	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
383919101040101	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
385210100164501	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
385904099522201	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
390622101003201	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
390830102052001	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
390838100441701	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
391044100051001	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004
391921101385501	<.08	<.06	<.002	<.081	<.06	<.003	<.06	<.003	<.11	<.037	<.05	<.004

Appendix 1. Water-quality data from 74 domestic water-supply wells completed in the central High Plains aquifer—Continued

STATION NUMBER	CLOPYR- ALID, WATER, FLTRD, GF 0.7U REC (UG/L)	CYANA- ZINE, WATER, DISS, REC (UG/L)	SI- CLOATE, WATER, DISS, REC (UG/L)	DACTHAL MONO- ACID, WAT,FLT GF 0.7U REC (UG/L)	DCPA WATER FLTRD 0.7 U GF, REC (UG/L)	DEETHYL ATRA- ZINE, WATER, DISS, REC (UG/L)	DEETHYL DEISO- PROPYL ATRAZIN DISS, REC (UG/L)	DEISO- PROPYL ATRAZIN WATER, DISS, REC (UG/L)	DI- AZINON, DIS- SOLVED (UG/L)	DICAMBA WATER, FLTRD, GF 0.7U REC (UG/L)	DICHLOR PROP, WATER, FLTRD, GF 0.7U REC (UG/L)	DI- ELDRIN DIS- SOLVED (UG/L)
344800101324901	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
345826100580501	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
351656101161101	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
351914101204401	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
352035100293301	<.04	<.004	<.05	<.07	<.002	E.011	<.06	<.07	<.002	<.10	<.05	<.001
352249100425401	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
352513101372101	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
352909101084001	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
353110100550401	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
353941102350201	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
354248100501501	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
354331102183601	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
354348102543601	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
354656099480301	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
354728102295901	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
354918102020901	<.04	<.004	<.05	<.07	<.002	<.006	<.06	<.07	.089	<.10	<.05	<.001
355701100313001	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
355852101274101	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	--	<.001
355916103215201	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
360703102361901	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
360838102560301	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
360944100162101	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
361014100221001	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
361049100564901	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
361054101393601	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
361114099420501	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
361517102065301	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
362115101173901	<.04	<.004	<.05	<.07	<.002	E.318	<.06	<.07	<.002	<.10	<.05	<.001
362134102035101	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
362615100435801	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
362744102334901	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
363057101384701	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
363104100035501	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
363154099310401	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
363157102565601	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
363239100301801	<.04	<.004	<.05	<.07	<.002	E.006	<.06	<.07	<.002	<.10	--	<.001
363427102440401	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
364219101394101	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
364411102321201	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
365223102113001	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
365422101083701	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
365445100381901	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
365821101375301	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
365934101573001	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
370358100510301	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
370458101514401	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
370724100281601	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
371738101220301	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
372534100443501	<.04	<.004	<.05	<.07	<.002	E.046	<.06	<.07	<.002	<.10	<.05	<.001
372649101344701	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
372956099512201	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
373229101193201	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
373345101070801	<.04	<.004	<.05	<.07	<.002	E.462	<.06	<.07	<.002	<.10	--	<.001
373507102162001	<.04	<.004	<.05	<.07	<.002	E.004	<.06	<.07	<.002	<.10	<.05	<.001
373527100312701	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
373559102314901	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
373732099291201	<.04	<.004	<.05	<.07	<.002	E.008	<.06	<.07	<.002	<.10	<.05	<.001
374535102110301	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
374650100181901	<.04	<.004	<.05	<.07	<.002	E1.9	.15	<.07	<.002	<.10	<.05	<.001
375129100532301	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
375447099245001	<.04	<.004	<.05	<.07	<.002	E.083	<.06	<.07	<.002	<.10	<.05	<.001
375828101111801	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
380331100352801	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
382947100443201	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
383008101315601	<.04	<.004	<.05	<.07	<.002	E.052	<.06	<.07	<.002	<.10	<.05	<.001
383758101195801	<.04	<.004	<.05	<.07	<.002	E.139	<.06	<.07	<.002	<.10	<.05	<.001
383919101040101	<.04	<.004	<.05	<.07	<.002	E.026	<.06	<.07	<.002	<.10	<.05	<.001
385210100164501	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
385904099522201	<.04	<.004	<.05	<.07	<.002	E.605	<.06	<.07	<.002	<.10	<.05	<.001
390622101003201	<.04	<.004	<.05	<.07	<.002	E.132	<.06	<.07	<.002	<.10	<.05	<.001
390830102052001	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	<.10	<.05	<.001
390838100411701	<.04	<.004	<.05	<.07	<.002	E.003	<.06	<.07	<.002	<.10	<.05	<.001
391044100051001	<.04	<.004	<.05	<.07	<.002	<.002	<.06	<.07	<.002	--	<.05	<.001
391921101385501	<.04	<.004	<.05	<.07	<.002	E.061	<.06	<.07	<.002	<.10	<.05	<.001

Appendix 1. Water-quality data from 74 domestic water-supply wells completed in the central High Plains aquifer—Continued

STATION NUMBER	DINOSEB WATER, FLTRD, GF 0.7U REC (UG/L)	DIPHEN- AMID, WATER, DISS, REC (UG/L)	DISUL- FOTON WATER FLTRD 0.7 U GF, REC (UG/L)	DIURON, WATER, FLTRD, GF 0.7U REC (UG/L)	EPTC WATER FLTRD 0.7 U GF, REC (UG/L)	ETHAL- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L)	ETHO- PROP WATER FLTRD 0.7 U GF, REC (UG/L)	FEN- URON, WATER, FLTRD, GF 0.7U REC (UG/L)	FLUMET- SULAM WATER FLTRD REC (UG/L)	FLUO- METURON WATER, FLTRD, GF 0.7U REC (UG/L)	FONOFOS WATER DISS REC (UG/L)	HCH ALPHA D6 SRC WAT FLT 0.7 U GF, REC PERCENT
344800101324901	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	90
345826100580501	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	76
351656101161101	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	86
351914101204401	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	87
352035100293301	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	111
352249100425401	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	88
352513101372101	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	110
352909101084001	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	85
353110100550401	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	96
353941102350201	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	91
354248100501501	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	86
354331102183601	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	108
354348102543601	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	78
354656099480301	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	94
354728102295901	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	93
354918102020901	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	119
355701100313001	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	100
355852101274101	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	95
355916103215201	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	90
360703102361901	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	99
360838102560301	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	103
360944100162101	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	65
361014100221001	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	96
361049100564901	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	92
361054101393601	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	104
361114099420501	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	88
361517102065301	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	98
362115101173901	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	86
362134102035101	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	99
362615100435801	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	98
362744102334901	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	108
363057101384701	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	107
363104100035501	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	89
363154099310401	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	98
363157102565601	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	99
363239100301801	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	101
363427102440401	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	95
364219101394101	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	96
364411102321201	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	72
365223102113001	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	100
365422101083701	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	97
365445100381901	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	95
365821101375301	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	102
365934101573001	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	55
370358100510301	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	107
370458101514401	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	93
370724100281601	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	81
371738101220301	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	101
372534100443501	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	90
372649101344701	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	95
372956099512201	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	103
373229101193201	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	92
373345101070801	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	94
373507102162001	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	103
373527100312701	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	85
373559102314901	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	97
373732099291201	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	99
374535102110301	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	96
374650100181901	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	107
375129100532301	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	99
375447099245001	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	97
375828101111801	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	86
380331100352801	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	95
382947100443201	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	90
383008101315601	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	86
383758101195801	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	101
383919101040101	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	87
385210100164501	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	84
385904099522201	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	80
390622101003201	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	97
390830102052001	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	96
390838100411701	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	93
391044100051001	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	96
391921101385501	<.04	<.06	<.017	<.08	<.002	<.004	<.003	<.07	<.0866	<.06	<.003	111

Appendix 1. Water-quality data from 74 domestic water-supply wells completed in the central High Plains aquifer—Continued

STATION NUMBER	HYDROXY ATRA- ZINE WATER FLTRD REC (UG/L)	IMAZ- AQUIN WATER FLTRD REC (UG/L)	IMAZE- THAPYR WATER FLTRD REC (UG/L)	IMID- ACLOP- RID WATER FLTRD REC (UG/L)	LINDANE DIS- SOLVED (UG/L)	LINURON WATER, FLTRD, GF 0.7U REC (UG/L)	LIN- URON WATER FLTRD 0.7 U GF, REC (UG/L)	MALA- THION, DIS- SOLVED (UG/L)	MCPA, WATER, FLTRD, GF 0.7U REC (UG/L)	MCPB, WATER, FLTRD, GF 0.7U REC (UG/L)	METAL- AXYL WATER FLTRD REC (UG/L)	METHIO- CARB, WATER, FLTRD, GF 0.7U REC (UG/L)
344800101324901	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
345826100580501	<.193	<.103	--	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
351656101161101	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
351914101204401	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
352035100293301	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
352249100425401	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
352513101372101	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
352909101084001	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
353110100550401	<.193	<.103	--	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
353941102350201	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
354248100501501	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
354331102183601	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
354348102543601	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
354656099480301	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
354728102295901	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
354918102020901	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
355701100313001	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
355852101274101	--	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
355916103215201	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
360703102361901	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
360838102560301	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
360944100162101	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
361014100221001	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
361049100564901	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
361054101393601	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
361114099420501	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
361517102065301	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
362115101173901	E.325	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
362134102035101	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
362615100435801	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
362744102334901	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
363057101384701	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
363104100035501	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
363154099310401	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
363157102565601	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
363239100301801	--	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
363427102440401	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
364219101394101	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
364411102321201	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
365223102113001	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
365422101083701	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
365445100381901	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
365821101375301	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
365934101573001	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
370358100510301	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
370458101514401	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
370724100281601	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
371738101220301	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
372534100443501	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
372649101344701	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
372956099512201	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
373229101193201	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
373345101070801	--	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
373507102162001	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
373527100312701	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
373559102314901	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
373732099291201	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
374535102110301	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
374650100181901	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
375129100532301	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
375447099245001	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
375828101111801	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
380331100352801	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
382947100443201	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
383008101315601	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
383758101195801	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
383919101040101	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
385210100164501	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
385904099522201	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
390622101003201	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
390830102052001	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
390838100411701	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
391044100051001	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	<.005	<.06	<.06	<.057	<.08
391921101385501	<.193	<.103	<.088	<.1060	<.004	<.07	<.002	.008	<.06	<.06	<.057	<.08

Appendix 1. Water-quality data from 74 domestic water-supply wells completed in the central High Plains aquifer—Continued

STATION	NUMBER	METH- OMYL WATER FLTRD REC (UG/L)	METH- OMYL, WATER, FLTRD, GF 0.7U REC (UG/L)	METHYL AZIN- PHOS WAT FLT 0.7 U GF, REC (UG/L)	METHYL PARA- THION WAT FLT 0.7 U GF, REC (UG/L)	METOLA- CHLOR ESA FLTRD 0.7 UM GF REC (UG/L)	METOLA- CHLOR OA FLTRD 0.7 UM GF REC (UG/L)	METO- LACHLOR WATER DISSOLV (UG/L)	METRI- BUZIN SENCOR WATER DISSOLV (UG/L)	MET- SUL- FURON METHYL WAT FLT REC (UG/L)	MOL- INATE WATER FLTRD 0.7 U GF, REC (UG/L)	NAPROP- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L)	NEB- URON, WATER, FLTRD, GF 0.7U REC (UG/L)
344800101324901		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
345826100580501		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
351656101161101		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
351914101204401		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
352035100293301		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
352249100425401		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
352513101372101		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
352909101084001		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
353110100550401		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
353941102350201		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
354248100501501		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
354331102183601		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
354348102543601		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
354656099480301		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
354728102295901		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
354918102020901		<.0102	<.08	<.007	<.006	<.05	<.05	.029	<.004	<.1138	<.004	<.003	<.07
355701100313001		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
355852101274101		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
355916103215201		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
360703102361901		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
360838102560301		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
360944100162101		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
361014100221001		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
361049100564901		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
361054101393601		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
361114099420501		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
361517102065301		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
362115101173901		<.0102	<.08	<.001	<.006	--	--	<.002	<.004	<.1138	<.004	<.003	<.07
362134102035101		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
362615100435801		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
362744102334901		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
363057101384701		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
363104100035501		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
363154099310401		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
363157102565601		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
363239100301801		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
363427102440401		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
364219101394101		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
364411102321201		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
365223102113001		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
365422101083701		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
365445100381901		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
365821101375301		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
365934101573001		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
370358100510301		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
370458101514401		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
370724100281601		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
371738101220301		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
372534100443501		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
372649101344701		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
372956099512201		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
373229101193201		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
373345101070801		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
373507102162001		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
373527100312701		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
373559102314901		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
373732099291201		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
374535102110301		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
374650100181901		<.0102	<.08	<.001	<.006	1.94	.25	E.003	<.004	<.1138	<.004	<.003	<.07
375129100532301		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
375447099245001		<.0102	<.08	<.001	<.006	.29	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
375828101111801		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
380331100352801		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
382947100443201		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
383008101315601		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
383758101195801		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
383919101040101		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
385210100164501		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
385904099522201		<.0102	<.08	<.001	<.006	.14	<.05	.005	<.004	<.1138	<.004	<.003	<.07
390622101003201		<.0102	<.08	<.001	<.006	.19	.15	.006	<.004	<.1138	<.004	<.003	<.07
390830102052001		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
390838100411701		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
391044100051001		<.0102	<.08	<.001	<.006	<.05	<.05	<.002	<.004	<.1138	<.004	<.003	<.07
391921101385501		<.0102	<.08	<.001	<.006	<.05	<.05	.005	<.004	<.1138	<.004	<.003	<.07

Appendix 1. Water-quality data from 74 domestic water-supply wells completed in the central High Plains aquifer—Continued

STATION	NUMBER	NICOSUL FURON WATER FLTRD REC (UG/L)	NORFLUR AZON, WATER, FLTRD, GF 0.7U REC (UG/L)	ORY- ZALIN, WATER, FLTRD, GF 0.7U REC (UG/L)	OXAMYL OXIME WATER FLTRD REC (UG/L)	OXAMYL, WATER, FLTRD, GF 0.7U REC (UG/L)	P,P' DDE DISSOLV (UG/L)	PARA- THION, DIS- SOLVED (UG/L)	PEB- ULATE WATER FLTRD 0.7 U GF, REC (UG/L)	PENDI- METH- ALIN WAT FLT 0.7 U GF, REC (UG/L)	PER- METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L)	PHORATE WATER FLTRD 0.7 U GF, REC (UG/L)	PIC- LORAM, WATER, FLTRD, GF 0.7U REC (UG/L)
344800101324901		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
345826100580501		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
351656101161101		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
351914101204401		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
352035100293301		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
352249100425401		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
352513101372101		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
352909101084001		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
353110100550401		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
353941102350201		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
354248100501501		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
354331102183601		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
354348102543601		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
354656099480301		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
354728102295901		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
354918102020901		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.010	<.005	<.002	<.07
355701100313001		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
355852101274101		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
355916103215201		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
360703102361901		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
360838102560301		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
360944100162101		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
361014100221001		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
361049100564901		<.065	--	<.07	--	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
361054101393601		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
361114099420501		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
361517102065301		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
362115101173901		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
362134102035101		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
362615100435801		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
362744102334901		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
363057101384701		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
363104100035501		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
363154099310401		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
363157102565601		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
363239100301801		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
363427102440401		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
364219101394101		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
364411102321201		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	.098	<.005	<.002	<.07
365223102113001		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
365422101083701		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
365445100381901		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
365821101375301		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
365934101573001		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
370358100510301		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
370458101514401		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
370724100281601		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
371738101220301		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
372534100443501		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
372649101344701		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
372956099512201		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
373229101193201		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
373345101070801		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
373507102162001		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
373527100312701		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
373559102314901		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
373732099291201		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
374535102110301		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
374650100181901		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
375129100532301		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
375447099245001		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
375828101111801		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
380331100352801		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
382947100443201		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
383008101315601		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
383758101195801		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
383919101040101		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
385210100164501		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
385904099522201		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	E.32
390622101003201		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	E.61
390830102052001		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
390838100411701		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
391044100051001		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07
391921101385501		<.065	<.08	<.07	<.064	<.02	<.006	<.004	<.004	<.004	<.005	<.002	<.07

Appendix 1. Water-quality data from 74 domestic water-supply wells completed in the central High Plains aquifer—Continued

STATION	NUMBER	PRO- METON, WATER, DISS, REC (UG/L)	PRON- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L)	PROPA- CHLOR, WATER, DISS, REC (UG/L)	PRO- PANIL WATER FLTRD 0.7 U GF, REC (UG/L)	PRO- PARGITE WATER FLTRD 0.7 U GF, REC (UG/L)	PRO- PHAM, WATER, FLTRD, GF 0.7U REC (UG/L)	PROP- ICONA- ZOLE , WATER FLTRD REC (UG/L)	PRO- POKUR, WATER, FLTRD, GF 0.7U REC (UG/L)	SIDURON WATER FLTRD REC (UG/L)	SI- MAZINE, WATER, DISS, REC (UG/L)	SULFO- MET- RURON METHYL WTR FLT REC (UG/L)	TEBU- THIURON WATER FLTRD 0.7 U GF, REC (UG/L)
344800101324901		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	.103
345826100580501		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
351656101161101		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
351914101204401		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
352035100293301		<.018	<.003	<.007	<.004	--	<.07	<.064	<.06	<.093	<.005	<.039	<.010
352249100425401		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
352513101372101		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
352909101084001		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
353110100550401		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
353941102350201		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
354248100501501		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
354331102183601		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	--	<.005	<.039	<.010
354348102543601		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
354656099480301		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
354728102295901		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
354918102020901		.056	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	.014	<.039	<.010
355701100313001		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
355852101274101		<.018	<.003	<.007	<.004	--	<.07	<.064	<.06	<.093	<.005	<.039	<.010
355916103215201		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
360703102361901		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
360838102560301		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
360944100162101		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
361014100221001		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
361049100564901		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
361054101393601		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
361114099420501		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
361517102065301		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
362115101173901		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
362134102035101		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
362615100435801		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
362744102334901		<.018	<.003	<.007	<.004	--	<.07	<.064	<.06	<.093	<.005	<.039	<.010
363057101384701		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
363104100035501		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
363154099310401		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
363157102565601		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
363239100301801		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
363427102440401		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
364219101394101		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
364411102321201		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
365223102113001		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
365422101083701		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
365445100381901		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
365821101375301		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
365934101573001		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
370358100510301		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
370458101514401		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.077
370724100281601		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
371738101220301		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
372534100443501		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
372649101344701		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
372956099512201		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
373229101193201		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
373345101070801		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
373507102162001		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
373527100312701		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
373559102314901		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
373732099291201		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
374535102110301		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
374650100181901		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
375129100532301		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
375447099245001		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
375828101111801		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
380331100352801		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
382947100443201		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
383008101315601		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
383758101195801		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
383919101040101		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
385210100164501		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
385904099522201		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	.011	<.039	<.010
390622101003201		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
390830102052001		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
3908381004411701		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
391044100051001		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010
391921101385501		<.018	<.003	<.007	<.004	<.013	<.07	<.064	<.06	<.093	<.005	<.039	<.010

Appendix 1. Water-quality data from 74 domestic water-supply wells completed in the central High Plains aquifer—Continued

STATION	NUMBER	TER- BACIL, WATER, DISS, REC	TER- BACIL WATER FLTRD 0.7 U GF, REC	TER- BUFOS WATER FLTRD 0.7 U GF, REC	THIO- BENCARB FLTRD 0.7 U GF, REC	TRIAL- LATE WATER FLTRD 0.7 U GF, REC	TRI- BENURON METHYL WATER FLTRD	TRI- CLOPYR, WATER, GF 0.7U REC	TRI- FLUR- ALIN WAT FLT 0.7 U GF, REC	1,1,1- TRI- CHLORO- ETHANE TOTAL	1,1,2- TRI- CHLORO- ETHANE TOTAL	1,1-DI- CHLORO- ETHANE TOTAL	1,1-DI- CHLORO- ETHYL- ENE TOTAL
		(UG/L)	(UG/L)	(UG/L)	(UG/L)	(UG/L)	(UG/L)	(UG/L)	(UG/L)	(UG/L)	(UG/L)	(UG/L)	(UG/L)
344800101324901		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
345826100580501		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
351656101161101		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
351914101204401		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
352035100293301		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
352249100425401		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
352513101372101		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
352909101084001		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
353110100550401		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
353941102350201		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
354248100501501		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
354331102183601		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
354348102543601		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
354656099480301		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
354728102295901		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
354918102020901		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
355701100313001		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
355852101274101		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
355916103215201		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
360703102361901		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
360838102560301		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
360944100162101		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
361014100221001		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
361049100564901		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
361054101393601		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
361114099420501		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
361517102065301		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
362115101173901		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
362134102035101		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
362615100435801		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
362744102334901		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
363057101384701		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
363104100035501		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
363154099310401		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
363157102565601		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
363239100301801		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
363427102440401		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
364219101394101		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
364411102321201		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
365223102113001		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
365422101083701		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
365445100381901		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
365821101375301		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
365934101573001		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
370358100510301		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
370458101514401		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
370724100281601		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
371738101220301		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
372534100443501		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
372649101344701		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
372956099512201		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
373229101193201		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
373345101070801		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
373507102162001		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
373527100312701		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
373559102314901		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
373732099291201		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
374535102110301		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
374650100181901		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
375129100532301		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
375447099245001		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
375828101111801		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
3803311004352801		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
382947100443201		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
383008101315601		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
383758101195801		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
383919101040101		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
385210100164501		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
385904099522201		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
390622101003201		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
390830102052001		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
390838100411701		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
391044100051001		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04
391921101385501		<.10	<.007	<.013	<.002	<.001	<.07	<.10	<.002	<.03	<.06	<.07	<.04

Appendix 1. Water-quality data from 74 domestic water-supply wells completed in the central High Plains aquifer—Continued

STATION NUMBER	1,1-DI- CHLORO- PRO- PENE, WAT, WH TOTAL (UG/L)	123-TRI- CHLORO- PROPANE WATER WHOLE TOTAL (UG/L)	1,2- DIBROMO ETHANE WATER WHOLE TOTAL (UG/L)	1,2-DI- CHLORO- ETHANE TOTAL (UG/L)	1,2-DI- CHLORO- PROPANE TOTAL (UG/L)	TRANS- 1,2-DI- CHLORO- ETHENE TOTAL (UG/L)	2,2-DI- CHLORO- PRO- PANE WAT, WH TOTAL (UG/L)	2BUTENE TRANS-1 4-DI- CHLORO UNFLTRD RECOVER (UG/L)	2-HEXA- NONE WATER WHOLE TOTAL (UG/L)	ACETONE WATER WHOLE TOTAL (UG/L)	ACRYLO- NITRILE TOTAL (UG/L)	1,2,3- TRI- CHLORO BENZENE WAT, WH REC (UG/L)
344800101324901	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
345826100580501	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
351656101161101	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
351914101204401	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
352035100293301	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
352249100425401	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
352513101372101	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
352909101084001	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
353110100550401	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
353941102350201	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
354248100501501	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
354331102183601	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
354348102543601	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
354656099480301	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
354728102295901	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
354918102020901	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
355701100313001	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
355852101274101	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
355916103215201	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
360703102361901	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
360838102560301	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
360944100162101	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
361014100221001	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
361049100564901	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
361054101393601	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
361114099420501	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
361517102065301	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
362115101173901	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
362134102035101	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
362615100435801	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
362744102334901	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
363057101384701	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
363104100035501	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
363154099310401	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
363157102565601	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
363239100301801	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
363427102440401	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
364219101394101	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
364411102321201	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
365223102113001	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
365422101083701	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
365445100381901	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
365821101375301	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
365934101573001	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
370358100510301	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
370458101514401	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
370724100281601	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
371738101220301	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
372534100443501	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
372649101344701	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
372956099512201	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
373229101193201	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
373345101070801	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
373507102162001	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
373527100312701	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
373559102314901	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
373732099291201	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
374535102110301	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
374650100181901	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
375129100532301	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
375447099245001	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
375828101111801	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
380331100352801	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
382947100443201	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
383008101315601	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
383758101195801	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
383919101040101	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
385210100164501	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
385904099522201	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
390622101003201	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
390830102052001	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
390838100441701	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
391044100051001	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3
391921101385501	<.03	<.2	<.04	<.1	<.07	<.03	<.08	<.7	<.7	<5	<1	<.3

Appendix 1. Water-quality data from 74 domestic water-supply wells completed in the central High Plains aquifer—Continued

STATION	NUMBER	BENZENE 123-TRI- METHYL- WATER UNFLTRD RECOVER (UG/L)	BENZENE 1,2,4- TRI- CHLORO- WAT UNF REC (UG/L)	BENZENE 124-TRI- METHYL UNFLTRD RECOVER (UG/L)	BENZENE 135-TRI- METHYL WATER UNFLTRD REC (UG/L)	BENZENE 1,3-DI- CHLORO- WATER UNFLTRD REC (UG/L)	BENZENE 1,4-DI- CHLORO- WATER UNFLTRD REC (UG/L)	ISO- PROPYL- BENZENE WATER WHOLE REC (UG/L)	BENZENE N-BUTYL WATER UNFLTRD REC (UG/L)	BENZENE N-PROPY WATER UNFLTRD REC (UG/L)	BENZENE O-DI- CHLORO- WATER UNFLTRD REC (UG/L)	BENZENE SEC BUTYL- WATER UNFLTRD REC (UG/L)	BENZENE TERT- BUTYL- WATER UNFLTRD REC (UG/L)
344800101324901		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
345826100580501		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
351656101161101		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
351914101204401		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
352035100293301		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
352249100425401		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
352513101372101		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
352909101084001		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
353110100550401		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
353941102350201		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
354248100501501		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
354331102183601		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
354348102543601		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
354656099480301		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
354728102295901		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
354918102020901		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
355701100313001		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
355852101274101		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
355916103215201		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
360703102361901		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
360838102560301		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
360944100162101		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
361014100221001		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
361049100564901		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
361054101393601		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
361114099420501		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
361517102065301		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
362115101173901		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
362134102035101		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
362615100435801		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
362744102334901		<.1	<.2	<.06	<.04	<.05	E.08	<.03	<.2	<.04	1.50	<.05	<.10
363057101384701		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
363104100035501		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
363154099310401		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
363157102565601		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
363239100301801		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
363427102440401		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
364219101394101		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
364411102321201		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
365223102113001		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
365422101083701		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
365445100381901		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
365821101375301		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
365934101573001		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
370358100510301		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
370458101514401		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
370724100281601		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
371738101220301		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
372534100443501		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
372649101344701		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
372956099512201		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
373229101193201		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
373345101070801		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
373507102162001		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
373527100312701		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
373559102314901		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
373732099291201		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
374535102110301		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
374650100181901		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
375129100532301		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
375447099245001		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
375828101111801		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
380331100352801		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
382947100443201		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
383008101315601		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
383758101195801		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
383919101040101		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
385210100164501		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
385904099522201		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
390622101003201		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
390830102052001		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
390838100411701		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
391044100051001		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10
391921101385501		<.1	<.2	<.06	<.04	<.05	<.05	<.03	<.2	<.04	<.05	<.05	<.10

Appendix 1. Water-quality data from 74 domestic water-supply wells completed in the central High Plains aquifer—Continued

STATION NUMBER	BENZENE TOTAL (UG/L)	BROMO- BENZENE WATER, WHOLE, TOTAL (UG/L)	BROMO- ETHENE WATER UNFLTRD RECOVER (UG/L)	BROMO- FORM TOTAL (UG/L)	CARBON DI- SULFIDE WATER WHOLE TOTAL (UG/L)	CARBON TETRA- CHLO- RIDE TOTAL (UG/L)	CHLORO- BENZENE TOTAL (UG/L)	CHLORO- DI- BROMO- METHANE TOTAL (UG/L)	CHLORO- ETHANE TOTAL (UG/L)	CHLORO- FORM TOTAL (UG/L)	CIS-1,2 -DI- CHLORO- ETHENE WATER TOTAL (UG/L)	CIS 1,3-DI- CHLORO- PROPENE TOTAL (UG/L)
344800101324901	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
345826100580501	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
351656101161101	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
351914101204401	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
352035100293301	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
352249100425401	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
352513101372101	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
352909101084001	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
353110100550401	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
353941102350201	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
354248100501501	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
354331102183601	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
354348102543601	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
354656099480301	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
354728102295901	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
354918102020901	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
355701100313001	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
355852101274101	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
355916103215201	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
360703102361901	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
360838102560301	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
360944100162101	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
361014100221001	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
361049100564901	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
361054101393601	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
361114099420501	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
361517102065301	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
362115101173901	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
362134102035101	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
362615100435801	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
362744102334901	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	E.05	<.04	<.09
363057101384701	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
363104100035501	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
363154099310401	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
363157102565601	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
363239100301801	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
363427102440401	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
364219101394101	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
364411102321201	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
365223102113001	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
365422101083701	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
365445100381901	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
365821101375301	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
365934101573001	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
370358100510301	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
370458101514401	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
370724100281601	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
371738101220301	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
372534100443501	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
372649101344701	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
372956099512201	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
373229101193201	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
373345101070801	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
373507102162001	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
373527100312701	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
373559102314901	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
373732099291201	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
374535102110301	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
374650100181901	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
375129100532301	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
375447099245001	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
375828101111801	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
380331100352801	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
382947100443201	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
383008101315601	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
383758101195801	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
383919101040101	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
385210100164501	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
385904099522201	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
390622101003201	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
390830102052001	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
390838100411701	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
391044100051001	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09
391921101385501	<.10	<.04	<.1	<.10	<.37	<.09	<.03	<.2	<.1	<.05	<.04	<.09

Appendix 1. Water-quality data from 74 domestic water-supply wells completed in the central High Plains aquifer—Continued

STATION	NUMBER	DIBROMO- CHLORO- PROPANE WATER WHOLE TOT.REC (UG/L)	DI- BROMO- METHANE WATER WHOLE RECOVER (UG/L)	BROMO- DI- CHLORO- METHANE TOTAL (UG/L)	DI- CHLORO- DI- FLUORO- METHANE TOTAL (UG/L)	DI-ISO- PROPYL- ETHER, WATER, UNFLTRD RECOVER (UG/L)	ETHANE, 1112- TETRA- CHLORO- WAT UNF REC (UG/L)	ETHANE, 1,1,2,2 TETRA- CHLORO- WAT UNF REC (UG/L)	ETHANE 12DICL SURROG VOC UNFLTRD REC PERCENT	ETHANE HEXA- CHLORO- WATER UNFLTRD RECOVER (UG/L)	ETHER ETHYL WATER UNFLTRD RECOVER (UG/L)	ETHER TERT- BUTYL ETHYL UNFLTRD RECOVER (UG/L)	ETHER TERT- PENTYL METHYL UNFLTRD RECOVER (UG/L)
344800101324901		<.2	<.05	<.05	<.1	<.1	<.04	<.13	100	<.4	<.2	<.05	<.1
345826100580501		<.2	<.05	<.05	<.1	<.1	<.04	<.13	99	<.4	<.2	<.05	<.1
351656101161101		<.2	<.05	<.05	<.1	<.1	<.04	<.13	99	<.4	<.2	<.05	<.1
351914101204401		<.2	<.05	<.05	<.1	<.1	<.04	<.13	106	<.4	<.2	<.05	<.1
352035100293301		<.2	<.05	<.05	<.1	<.1	<.04	<.13	106	<.4	<.2	<.05	<.1
352249100425401		<.2	<.05	<.05	<.1	<.1	<.04	<.13	101	<.4	<.2	<.05	<.1
352513101372101		<.2	<.05	<.05	<.1	<.1	<.04	<.13	100	<.4	<.2	<.05	<.1
352909101084001		<.2	<.05	<.05	<.1	<.1	<.04	<.13	109	<.4	<.2	<.05	<.1
353110100550401		<.2	<.05	<.05	<.1	<.1	<.04	<.13	103	<.4	<.2	<.05	<.1
353941102350201		<.2	<.05	<.05	<.1	<.1	<.04	<.13	107	<.4	<.2	<.05	<.1
354248100501501		<.2	<.05	<.05	<.1	<.1	<.04	<.13	101	<.4	<.2	<.05	<.1
354331102183601		<.2	<.05	<.05	<.1	<.1	<.04	<.13	109	<.4	<.2	<.05	<.1
354348102543601		<.2	<.05	<.05	<.1	<.1	<.04	<.13	121	<.4	<.2	<.05	<.1
354656099480301		<.2	<.05	<.05	<.1	<.1	<.04	<.13	103	<.4	<.2	<.05	<.1
354728102295901		<.2	<.05	<.05	<.1	<.1	<.04	<.13	101	<.4	<.2	<.05	<.1
354918102020901		<.2	<.05	<.05	<.1	<.1	<.04	<.13	114	<.4	<.2	<.05	<.1
355701100313001		<.2	<.05	<.05	<.1	<.1	<.04	<.13	100	<.4	<.2	<.05	<.1
355852101274101		<.2	<.05	<.05	<.1	<.1	<.04	<.13	107	<.4	<.2	<.05	<.1
355916103215201		<.2	<.05	<.05	<.1	<.1	<.04	<.13	101	<.4	<.2	<.05	<.1
360703102361901		<.2	<.05	<.05	<.1	<.1	<.04	<.13	111	<.4	<.2	<.05	<.1
360838102560301		<.2	<.05	<.05	<.1	<.1	<.04	<.13	106	<.4	<.2	<.05	<.1
360944100162101		<.2	<.05	<.05	<.1	<.1	<.04	<.13	95	<.4	<.2	<.05	<.1
361014100221001		<.2	<.05	<.05	<.1	<.1	<.04	<.13	112	<.4	<.2	<.05	<.1
361049100564901		<.2	<.05	<.05	<.1	<.1	<.04	<.13	105	<.4	<.2	<.05	<.1
361054101393601		<.2	<.05	<.05	<.1	<.1	<.04	<.13	109	<.4	<.2	<.05	<.1
361114099420501		<.2	<.05	<.05	<.1	<.1	<.04	<.13	100	<.4	<.2	<.05	<.1
361517102065301		<.2	<.05	<.05	<.1	<.1	<.04	<.13	111	<.4	<.2	<.05	<.1
362115101173901		<.2	<.05	<.05	<.1	<.1	<.04	<.13	98	<.4	<.2	<.05	<.1
362134102035101		<.2	<.05	<.05	<.1	<.1	<.04	<.13	110	<.4	<.2	<.05	<.1
362615100435801		<.2	<.05	<.05	<.1	<.1	<.04	<.13	109	<.4	<.2	<.05	<.1
362744102334901		<.2	<.05	<.05	<.1	<.1	<.04	<.13	107	<.4	<.2	<.05	<.1
363057101384701		<.2	<.05	<.05	<.1	<.1	<.04	<.13	99	<.4	<.2	<.05	<.1
363104100035501		<.2	<.05	<.05	<.1	<.1	<.04	<.13	93	<.4	<.2	<.05	<.1
363154099310401		<.2	<.05	<.05	<.1	<.1	<.04	<.13	105	<.4	<.2	<.05	<.1
363157102565601		<.2	<.05	<.05	<.1	<.1	<.04	<.13	109	<.4	<.2	<.05	<.1
363239100301801		<.2	<.05	<.05	<.1	<.1	<.04	<.13	110	<.4	<.2	<.05	<.1
363427102440401		<.2	<.05	<.05	<.1	<.1	<.04	<.13	105	<.4	<.2	<.05	<.1
364219101394101		<.2	<.05	<.05	<.1	<.1	<.04	<.13	100	<.4	<.2	<.05	<.1
364411102321201		<.2	<.05	<.05	<.1	<.1	<.04	<.13	105	<.4	<.2	<.05	<.1
365223102113001		<.2	<.05	<.05	<.1	<.1	<.04	<.13	107	<.4	<.2	<.05	<.1
365422101083701		<.2	<.05	<.05	<.1	<.1	<.04	<.13	105	<.4	<.2	<.05	<.1
365445100381901		<.2	<.05	<.05	<.1	<.1	<.04	<.13	115	<.4	<.2	<.05	<.1
365821101375301		<.2	<.05	<.05	<.1	<.1	<.04	<.13	113	<.4	<.2	<.05	<.1
365934101573001		<.2	<.05	<.05	<.1	<.1	<.04	<.13	95	<.4	<.2	<.05	<.1
370358100510301		<.2	<.05	<.05	<.1	<.1	<.04	<.13	97	<.4	<.2	<.05	<.1
370458101514401		<.2	<.05	<.05	<.1	<.1	<.04	<.13	107	<.4	<.2	<.05	<.1
370724100281601		<.2	<.05	<.05	<.1	<.1	<.04	<.13	107	<.4	<.2	<.05	<.1
371738101220301		<.2	<.05	<.05	<.1	<.1	<.04	<.13	98	<.4	<.2	<.05	<.1
372534100443501		<.2	<.05	<.05	<.1	<.1	<.04	<.13	109	<.4	<.2	<.05	<.1
372649101344701		<.2	<.05	<.05	<.1	<.1	<.04	<.13	98	<.4	<.2	<.05	<.1
372956099512201		<.2	<.05	<.05	<.1	<.1	<.04	<.13	105	<.4	<.2	<.05	<.1
373229101193201		<.2	<.05	<.05	<.1	<.1	<.04	<.13	108	<.4	<.2	<.05	<.1
373345101070801		<.2	<.05	<.05	<.1	<.1	<.04	<.13	110	<.4	<.2	<.05	<.1
373507102162001		<.2	<.05	<.05	<.1	<.1	<.04	<.13	111	<.4	<.2	<.05	<.1
373527100312701		<.2	<.05	<.05	<.1	<.1	<.04	<.13	95	<.4	<.2	<.05	<.1
373559102314901		<.2	<.05	<.05	<.1	<.1	<.04	<.13	113	<.4	<.2	<.05	<.1
373732099291201		<.2	<.05	<.05	<.1	<.1	<.04	<.13	102	<.4	<.2	<.05	<.1
374535102110301		<.2	<.05	<.05	<.1	<.1	<.04	<.13	109	<.4	<.2	<.05	<.1
374650100181901		<.2	<.05	<.05	<.1	<.1	<.04	<.13	95	<.4	<.2	<.05	<.1
375129100532301		<.2	<.05	<.05	<.1	<.1	<.04	<.13	110	<.4	<.2	<.05	<.1
375447099245001		<.2	<.05	<.05	<.1	<.1	<.04	<.13	100	<.4	<.2	<.05	<.1
375828101111801		<.2	<.05	<.05	<.1	<.1	<.04	<.13	108	<.4	<.2	<.05	<.1
380331100352801		<.2	<.05	<.05	<.1	<.1	<.04	<.13	109	<.4	<.2	<.05	<.1
382947100443201		<.2	<.05	<.05	<.1	<.1	<.04	<.13	119	<.4	<.2	<.05	<.1
383008101315601		<.2	<.05	<.05	<.1	<.1	<.04	<.13	107	<.4	<.2	<.05	<.1
383758101195801		<.2	<.05	<.05	<.1	<.1	<.04	<.13	97	<.4	<.2	<.05	<.1
383919101040101		<.2	<.05	<.05	<.1	<.1	<.04	<.13	113	<.4	<.2	<.05	<.1
385210100164501		<.2	<.05	<.05	<.1	<.1	<.04	<.13	105	<.4	<.2	<.05	<.1
385904099522201		<.2	<.05	<.05	<.1	<.1	<.04	<.13	98	<.4	<.2	<.05	<.1
390622101003201		<.2	<.05	<.05	<.1	<.1	<.04	<.13	95	<.4	<.2	<.05	<.1
390830102052001		<.2	<.05	<.05	<.1	<.1	<.04	<.13	102	<.4	<.2	<.05	<.1
390838100411701		<.2	<.05	<.05	<.1	<.1	<.04	<.13	110	<.4	<.2	<.05	<.1
391044100051001		<.2	<.05	<.05	<.1	<.1	<.04	<.13	102	<.4	<.2	<.05	<.1
391921101385501		<.2	<.05	<.05	E.2	<.1	<.04	<.13	103	<.4	<.2	<.05	<.1

Appendix 1. Water-quality data from 74 domestic water-supply wells completed in the central High Plains aquifer—Continued

STATION NUMBER	ETHYL- BENZENE TOTAL (UG/L)	FREON- 113 WATER UNFLTRD REC (UG/L)	FURAN, TETRA- HYDRO- WATER UNFLTRD RECOVER (UG/L)	HEXA- CHLORO- BUT- ADIENE TOTAL (UG/L)	ISO- DURENE WATER UNFLTRD RECOVER (UG/L)	METHAC- RYLATE ETHYL- WATER UNFLTRD RECOVER (UG/L)	METHAC- RYLATE METHYL WATER UNFLTRD RECOVER (UG/L)	METH- ACRYLO- NITRILE WATER UNFLTRD RECOVER (UG/L)	METHANE BROMO- CHLORO- WAT UNFLTRD REC (UG/L)	METHYL ACRY- LATE WATER UNFLTRD RECOVER (UG/L)	METHYL IODIDE WATER UNFLTRD RECOVER (UG/L)	METHYL TERT- BUTYL ETHER WAT UNF REC (UG/L)
344800101324901	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
345826100580501	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
351656101161101	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
351914101204401	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
352035100293301	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
352249100425401	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
352513101372101	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
352909101084001	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
353110100550401	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
353941102350201	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
354248100501501	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
354331102183601	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
354348102543601	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
354656099480301	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
354728102295901	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
354918102020901	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
355701100313001	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
355852101274101	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
355916103215201	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
360703102361901	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
360838102560301	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
360944100162101	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
361014100221001	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
361049100564901	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
361054101393601	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
361114099420501	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
361517102065301	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
362115101173901	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
362134102035101	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
362615100435801	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
362744102334901	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
363057101384701	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
363104100035501	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
363154099310401	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
363157102565601	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
363239100301801	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
363427102440401	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
364219101394101	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
364411102321201	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
365223102113001	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
365422101083701	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
365445100381901	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
365821101375301	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
365934101573001	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
370358100510301	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
370458101514401	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
370724100281601	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
371738101220301	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
372534100443501	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
372649101344701	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
372956099512201	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
373229101193201	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
373345101070801	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
373507102162001	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
373527100312701	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
373559102314901	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
373732099291201	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
374535102110301	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
374650100181901	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
375129100532301	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
375447099245001	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
375828101111801	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
380331100352801	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
382947100443201	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
383008101315601	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
383758101195801	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
383919101040101	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
385210100164501	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
385904099522201	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
390622101003201	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
390830102052001	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
390838100411701	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
391044100051001	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2
391921101385501	<.03	<.03	<9	<.1	<.2	<.3	<.3	<.6	<.04	<1	<.2	<.2

Appendix 1. Water-quality data from 74 domestic water-supply wells completed in the central High Plains aquifer—Continued

STATION NUMBER	METHYL- BROMIDE TOTAL (UG/L)	METHYL- CHLO- RIDE TOTAL (UG/L)	METHYL ENE CHLO- RIDE TOTAL (UG/L)	METHYL- ETHYL- KETONE WATER WHOLE TOTAL (UG/L)	METHYL ISO- BUTYL KETONE WAT. WH. TOTAL (UG/L)	META/ PARA- XYLENE WATER UNFLTRD REC (UG/L)	NAPHTH- ALENE TOTAL (UG/L)	O- CHLORO- TOLUENE WATER WHOLE TOTAL (UG/L)	O- XYLENE WATER WHOLE TOTAL (UG/L)	P-ISO- PROPYL- TOLUENE WATER WHOLE REC (UG/L)	1234- TETRA METHYL BENZENE UNFLTRD REC (UG/L)	1,3-DI- CHLORO- PROPANE WAT. WH TOTAL (UG/L)
344800101324901	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
345826100580501	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
351656101161101	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
351914101204401	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
352035100293301	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
352249100425401	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
352513101372101	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
352909101084001	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
353110100550401	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
353941102350201	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
354248100501501	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
354331102183601	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
354348102543601	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
354656099480301	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
354728102295901	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
354918102020901	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
355701100313001	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
355852101274101	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
355916103215201	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
360703102361901	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
360838102560301	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
360944100162101	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
361014100221001	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
361049100564901	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
361054101393601	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
361114099420501	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
361517102065301	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
362115101173901	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
362134102035101	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
362615100435801	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
362744102334901	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
363057101384701	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
363104100035501	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
363154099310401	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
363157102565601	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
363239100301801	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
363427102440401	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
364219101394101	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
364411102321201	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
365223102113001	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
365422101083701	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
365445100381901	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
365821101375301	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
365934101573001	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
370358100510301	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
370458101514401	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
370724100281601	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
371738101220301	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
372534100443501	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
372649101344701	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
372956099512201	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
373229101193201	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
373345101070801	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
373507102162001	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
373527100312701	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
373559102314901	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
373732099291201	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
374535102110301	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
374650100181901	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
375129100532301	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
375447099245001	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
375828101111801	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
380331100352801	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
382947100443201	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
383008101315601	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
383758101195801	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
383919101040101	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
385210100164501	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
385904099522201	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
390622101003201	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
390830102052001	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
390838100411701	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
391044100051001	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1
391921101385501	<.1	<.2	<.4	<2	<.4	<.06	<.2	<.04	<.06	<.11	<.2	<.1

Appendix 1. Water-quality data from 74 domestic water-supply wells completed in the central High Plains aquifer—Continued

STATION NUMBER	PROPENE 3- CHLORO- WATER UNFLTRD RECOVER (UG/L)	STYRENE TOTAL (UG/L)	TETRA- CHLORO- ETHYL- ENE TOTAL (UG/L)	TOLUENE O-ETHYL WATER UNFLTRD RECOVER (UG/L)	TOLUENE P-CHLOR WATER UNFLTRD REC (UG/L)	TOLUENE TOTAL (UG/L)	TRANS- 1,3-DI- CHLORO- PROPENE TOTAL (UG/L)	TRI- CHLORO- ETHYL- ENE TOTAL (UG/L)	TRI- CHLORO- FLUORO- METHANE TOTAL (UG/L)	VINYL CHLO- RIDE TOTAL (UG/L)	RADON 222 TOTAL (PCI/L)	TRITIUM TOTAL (PCI/L)
344800101324901	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	225	--
345826100580501	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	486	--
351656101161101	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	1440	<1.0
351914101204401	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	457	18.9
352035100293301	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	249	2.6
352249100425401	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	274	<1.0
352513101372101	<.2	<.04	<.1	<.10	<.06	E.05	<.13	<.04	<.09	<.1	299	--
352909101084001	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	260	<1.0
353110100550401	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	247	<1.0
353941102350201	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	683	<1.0
354248100501501	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	236	--
354331102183601	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	296	<1.0
354348102543601	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	468	<1.0
354656099480301	<.2	<.04	<.1	<.10	<.06	E.05	<.13	<.04	<.09	<.1	213	--
354728102295901	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	642	<1.0
354918102020901	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	325	<1.0
355701100313001	<.2	<.04	<.1	<.10	<.06	E.06	<.13	<.04	<.09	<.1	332	33.3
355852101274101	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	465	<1.0
355916103215201	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	704	--
360703102361901	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	595	<1.0
360838102560301	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	516	13.4
360944100162101	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	492	2.6
361014100221001	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	379	1.0
361049100564901	<.2	<.04	<.1	<.10	<.06	E.06	<.13	<.04	<.09	<.1	156	1.6
361054101393601	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	1120	<1.0
361114099420501	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	271	--
361517102065301	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	827	<1.0
362115101173901	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	266	--
362134102035101	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	623	<1.0
362615100435801	<.2	<.04	<.1	<.10	<.06	.14	<.13	<.04	<.09	<.1	232	<1.0
362744102334901	<.2	<.04	E.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	323	1.0
363057101384701	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	499	<1.0
363104100035501	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	435	<1.0
363154099310401	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	228	<1.0
363157102565601	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	459	<1.0
363239100301801	<.2	<.04	<.1	<.10	<.06	E.05	<.13	<.04	<.09	<.1	401	--
363427102440401	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	726	--
364219101394101	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	364	<1.0
364411102321201	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	2040	<1.0
365223102113001	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	2030	1.3
365422101083701	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	618	--
365445100381901	<.2	<.04	<.1	<.10	<.06	E.05	<.13	<.04	<.09	<.1	344	<1.0
365821101375301	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	545	<1.0
365934101573001	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	477	1.0
370358100510301	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	738	<1.0
370458101514401	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	322	--
370724100281601	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	260	<1.0
371738101220301	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	282	<1.0
372534100443501	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	965	--
372649101344701	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	453	<1.0
372956099512201	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	257	<1.0
373229101193201	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	787	<1.0
373345101070801	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	1010	--
373507102162001	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	2950	1.9
373527100312701	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	1110	<1.0
373559102314901	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	1400	1.3
373732099291201	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	378	--
374535102110301	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	420	8.3
374650100181901	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	775	--
375129100532301	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	383	<1.0
375447099245001	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	1580	--
375828101111801	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	514	18.2
380331100352801	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	992	10.2
382947100443201	<.2	<.04	<.1	<.10	<.06	.16	<.13	<.04	<.09	<.1	937	1.0
383008101315601	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	986	--
383758101195801	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	768	--
383919101040101	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	722	--
385210100164501	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	370	<1.0
385904099522201	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	227	--
390622101003201	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	458	--
390830102052001	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	237	1.0
390838100441701	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	812	10.6
391044100051001	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	461	--
391921101385501	<.2	<.04	<.1	<.10	<.06	<.05	<.13	<.04	<.09	<.1	688	--

Appendix 1. Water-quality data from 74 domestic water-supply wells completed in the central High Plains aquifer—Continued

STATION NUMBER	TRITIUM 2 SIGMA WATER, WHOLE, TOTAL (PCI/L)	URANIUM NATURAL DIS- SOLVED (UG/L AS U)
344800101324901	--	5.48
345826100580501	--	1.36
351656101161101	1.0	5.33
351914101204401	1.6	7.95
352035100293301	1.0	1.15
352249100425401	1.0	<1.00
352513101372101	--	4.07
352909101084001	1.0	4.65
353110100550401	1.0	6.80
353941102350201	1.0	7.77
354248100501501	--	4.46
354331102183601	1.0	6.71
354348102543601	1.0	2.95
354656099480301	--	2.18
354728102295901	1.0	7.11
354918102020901	1.0	7.24
355701100313001	2.6	4.95
355852101274101	1.0	6.89
355916103215201	--	6.59
360703102361901	1.0	5.78
360838102560301	1.3	4.54
360944100162101	1.0	8.83
361014100221001	1.0	6.52
361049100564901	1.0	9.98
361054101393601	1.0	11.6
361114099420501	--	1.55
361517102065301	1.0	8.56
362115101173901	--	7.84
362134102035101	1.0	11.5
362615100435801	1.0	7.88
362744102334901	1.0	13.4
363057101384701	1.0	8.56
363104100035501	1.0	9.04
363154099310401	1.0	1.63
363157102565601	1.0	3.76
363239100301801	--	8.55
363427102440401	--	6.12
364219101394101	1.0	14.9
364411102321201	1.0	6.90
365223102113001	1.0	9.88
365422101083701	--	8.05
365445100381901	1.0	11.5
365821101375301	1.0	13.9
365934101573001	1.0	21.2
370358100510301	1.0	7.40
370458101514401	--	2.65
370724100281601	1.0	4.88
371738101220301	1.0	6.75
372534100443501	--	13.5
372649101344701	1.0	8.30
372956099512201	1.0	6.03
373229101193201	1.0	15.7
373345101070801	--	8.73
373507102162001	1.0	6.28
373527100312701	1.0	11.9
373559102314901	1.0	9.81
373732099291201	--	2.48
374535102110301	1.0	5.17
374650100181901	--	4.43
375129100532301	1.0	3.48
375447099245001	--	11.8
375828101111801	1.3	30.7
380331100352801	1.3	18.9
382947100443201	1.0	19.8
383008101315601	--	10.1
383758101195801	--	17.5
383919101040101	--	12.1
385210100164501	1.0	2.51
385904099522201	--	3.98
390622101003201	--	13.0
390830102052001	1.0	6.09
390838100411701	1.0	10.5
391044100051001	--	3.91
391921101385501	--	13.4

