Ground-Water Levels and Flow at Selected Study Sites in the Walnut Creek Management System Evaluation Area, Boone and Story Counties, Iowa, 1991–93

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CONVERSION FACTORS, ABBREVIATIONS, AND VERTICAL DATUM

Multiply	By	To obtain
	Length	
inch (in.)	25.4	millimeter
foot (ft)	0.3048	meter
mile (mi)	1.609	kilometer
	Area	
square mile (mi^2)	2.590	square kilometer
	Flow	
cubic foot per second (ft^3/s)	0.02832	cubic meter per second

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

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Abstract

Data collected from May 1991 through September 1993 to determine seasonal fluctuations in ground-water levels and to estimate directions of ground-water flow in the saturated zone at selected study sites at the Iowa Management Systems Evaluation Area in the Walnut Creek Watershed are presented. The Walnut Creek Watershed is located on glacial deposits of Wisconsinan age in central Iowa and includes about 20 square miles. The upper glacial materials appear to be supraglacial tills rather than basal glacial tills and contain both oxidized and unoxidized zones. Water levels were measured in 102 wells from 38 locations at 7 study sites in the watershed. Water levels fluctuated in response to local climatic conditions and ranged from at or near the land surface to more than 30 feet below land surface. In general, ground water flowed towards Walnut Creek or large drainage tiles. Potentiometric-surface maps at the selected study sites can be used to determine which locations might be affected by agricultural management practices in place at each site.

INTRODUCTION

Recognition of the potential impacts of agricultural management systems on surface and ground water has resulted in a Federal program entitled the Midwest Water Quality Initiative. The Management Systems Evaluation Area (MSEA) program was begun in 1990 as a multi-agency effort by the U.S. Geological Survey (USGS) and the Agricultural Research Service and Cooperative State Research Service of the U.S. Department of Agriculture as part of the Initiative. MSEAs were established in five States—Iowa, Minnesota, Missouri, Nebraska, and Ohio. The study areas in these States were selected to be representative of typical hydrogeologic environments within the corn- and soybean-growing areas of the Midwest (Soenksen and others, 1992).

The focus of study for the overall MSEA program in Iowa is to evaluate the impact of current and emerging farming systems and practices on water quality. This research is being conducted at four study areas in Iowa (fig. 1) that represent three types of hydrogeologic settings. The study areas are: near Nashua, thin glacial till overlying bedrock; near Treynor, thick loess; and two areas near Ames, thick glacial till.

The USGS is conducting surface-water and ground-water research at the Walnut Creek study area near Ames. This study area is a watershed of about 20 mi^2 and is located about 3 mi south of Ames in eastern Boone County and western Story County. The Walnut Creek Watershed has its headwaters on nearly level terrain of western Story County and flows eastward to its confluence with the South Skunk River. The stream gradient becomes steeper as it approaches the flood plain of the South Skunk River. The mean daily discharge of Walnut Creek where it enters the flood plain was 14.0 ft^3/s in 1992. The total relief of the watershed is about 200 ft.

The USGS role in the Iowa MSEA is centered on three objectives: (1) to estimate ground-water flow in the saturated zone at selected study sites within the watershed; (2) to evaluate the ability of the Precipitation-Runoff Modeling System (PRMS), a surface-

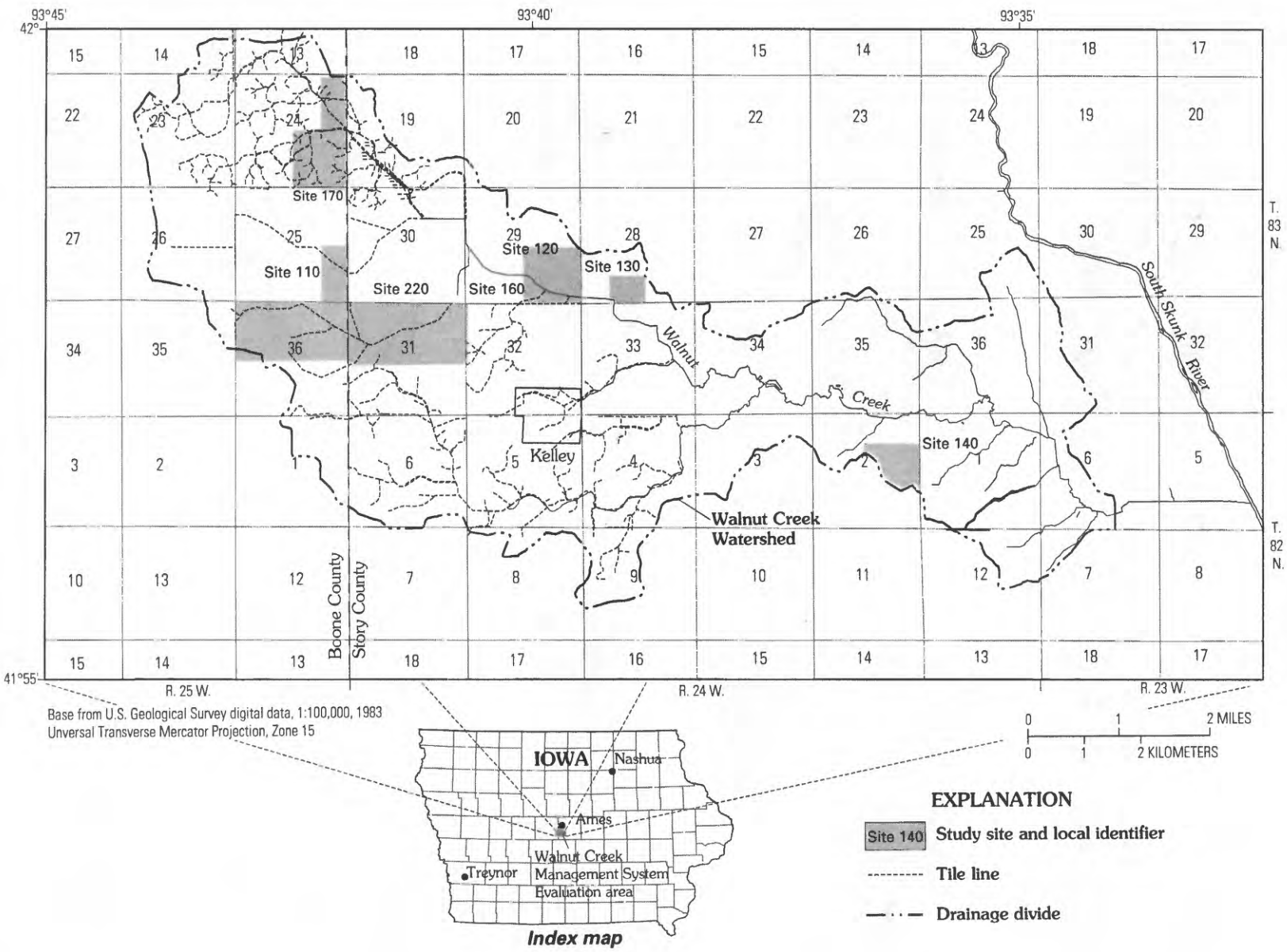


Figure 1. Location of Walnut Creek Management Systems Evaluation Area and selected study sites in Boone and Story Counties, Iowa.

water digital modeling package of the USGS (Leavesley and others, 1983), to simulate the major flow processes in the watershed; and (3) to relate the loadings of agricultural chemicals and sediment observed in streamflow from the watershed to the major flow processes.

Purpose and Scope

The purpose of this report is to present the results obtained from May 1991 through September 1993 for objective 1. Descriptions of the geologic materials penetrated during the drilling of observation wells, water-level fluctuations, and generalized lateral ground-water-flow directions at selected study sites are presented. The information presented can be used to assist interpretation of the results of water-quality analyses on samples collected from observation wells in the watershed and thereby help to determine the effects of agricultural management practices on water quality.

Geologic Setting

Walnut Creek Watershed is located on glacial deposits of Wisconsinan age in central Iowa. The watershed is near the southern boundary of the Des Moines Lobe landform that resulted from glaciers that advanced into Iowa between 12,000 and 14,000 years ago (Prior, 1991). The Des Moines Lobe is characterized by low-relief topography, a poorly developed natural drainage system, and soils that have formed on the glacial drift. Wisconsinan drift overlies older pre-Illinoian glacial deposits in the study area. The glacial deposits within the watershed are as much as 300 ft thick and overlie sedimentary bedrock of Mississippian and Pennsylvanian age. These glacial deposits, because of their clay-rich content, do not form aquifers.

Wisconsinan glacial deposits of the Des Moines Lobe have been categorized by Kemmis and others (1981) into two primary units according to their mode of deposition. Supraglacial sediments refer to material that was incorporated into or lying on the surface of the ice and deposited as the ice melted. Basal till refers to deposits formed beneath the glacier. Supraglacial sediments are till-like deposits interbedded with silty and sandy deposits. Supraglacial sediments are variable in texture and geotechnical properties, whereas basal till is characterized by uniform texture and geotechnical properties. Kemmis and others (1981) report the mean percentages of clay, silt, and sand for supraglacial sediments of the Des Moines Lobe to be 14.1, 42.3, and 43.6, respectively, with standard deviations of 5.2, 14.4, and 15.0, respectively. They also report that basal till in the same area has clay, silt, and sand percentages of 15.5, 36.7, and 47.7, respectively, with standard deviations of 2.4, 3.2, and 3.4, respectively. The smaller standard deviations of the basal till particle sizes indicates its more uniform composition.

In comparison, Hallberg (1980) summarizes particle-size percentages for clay, silt, and sand of pre-Illinoian till in east-central Iowa as 22.6, 37.0, and 40.0, respectively, with standard deviations of 4.1, 5.7, and 6.5, respectively. In general, it appears from these reports that pre-Illinoian till in Iowa contains a larger percentage of clay and a smaller percentage of sand than Wisconsinan glacial deposits.

Glacial deposits in the study area also can be divided into two other classifications—oxidized material and unoxidized material. The oxidized material is glacial material that has been exposed to near land-surface conditions. The oxidized material is tan to brown in color and fractured. The minerals that comprise the clay matrix have been oxidized or selectively leached by water moving through the material. The unoxidized material is characterized by its dark-gray color and the absence of apparent fractures. Often there is a transition zone between the oxidized material and the unoxidized material. This transition zone contains evidence of fracturing, and areas of the material near the fractures appear oxidized whereas interfracture areas appear unoxidized. Precipitates of calcium carbonate and calcium sulfate and oxidation rinds appear within and along fractures in this transition zone, indicating open fractures and preferential ground-water flow. Oxidation zones occur in both Wisonsinan and pre-Illinoian deposits.

The oxidized and unoxidized materials in much of the upper 20 to 30 ft of the glacial deposits throughout the Walnut Creek Watershed appear to be supraglacial tills rather than basal tills. These upper materials contain substantially greater percentages of sand content than those reported for basal Wisconsinan-age tills in Iowa (Kemmis and others, 1981). The presence of a very sandy zone within the upper 10 ft of material at many locations indicates these materials might have been sorted during deposition. Table 1 shows a summary of the percentages of sand, silt, and clay at

Table 1. Summary of particle-size data for Iowa glacial deposits

Deposit	Percentage of		
	Sand	Silt	Clay
Wisconsinan supraglacial till[1]	43.6	42.3	14.1
Wisconsinan basal till[1]	47.8	36.7	15.5
Pre-Illinoian till[2]	40.2	37.2	22.6
Till in Walnut Creek Watershed at well site WC–4 (mean of four samples from depths of 5.5 to 25 feet below land surface)[3]	55.2	25.5	19.3

[1]Kemmis and others (1981).
[2]Hallberg (1980).
[3]Location of well site WC–4 shown in figure 8.

one well site in the Walnut Creek Watershed compared to percentages of sand, silt, and clay for glacial till in Iowa.

Acknowledgments

The author acknowledges and thanks the staff and management of the National Soil Tilth Laboratory, Agricultural Research Service, Ames, Iowa, for their assistance and cooperation in this study. Karen Keck and Donna Schmitz of that agency arranged for permission to install observation wells and make measurements on private property. They also collected and collated the water-level information from the observation wells that is used in this report. The cooperation of local landowners and farmers also is greatly appreciated; without them this study would not have been possible.

GROUND-WATER LEVELS AND FLOW AT STUDY SITES

Fields and subdrainage basins within Walnut Creek Watershed were selected for study of the effects of land use and farm-management practices on water quality by the Agricultural Research Service. The areas were selected to provide information on a variety of land use and farm-management practices. Most of the land within the watershed is used for the production of corn and soybeans. Drainage tile lines have been installed beneath the plow layer in many fields throughout the watershed to facilitate drainage, particularly in the poorly drained areas of the western part of the watershed. The tile lines form a quasi-dendritic drainage network that discharges to the stream network at various points throughout the watershed. The tile lines supply water to the stream throughout all but the driest of times. The location of some, but not all, tile lines is known or can be inferred from surface drainage patterns. The approximate location of known major tile lines is shown along with the location and identification of the study sites in figure 1.

A total of 102 wells were installed at 38 well-drilling locations at seven study sites. Observation wells were installed using a nested approach at each location. A nest of wells consists of two or more 2-in. diameter wells with poylvinyl chloride casings drilled within close proximity to each other. Wells within each nest were screened at different intervals to provide information from various depths at approximately the same geographic location. The boreholes were drilled using 3.5-in. diameter, solid-stem augers. The augers were used to construct a borehole that, because of the cohesiveness of the materials penetrated, would not collapse upon removal of the augers. The observation well was constructed by lowering an assembly consisting of a 2.5-ft length of 0.020-in. slotted well screen and attached riser into the borehole. The borehole adjacent to and approximately 1 ft above the well screen was packed with washed sand of appropriate size to match the screen slot size. The remainder of the borehole was backfilled with bentonite pellets to prevent vertical hydraulic interconnection of the materials penetrated and to prevent the infiltration of surface runoff along the outside of the well casing. Wells were developed by repeated bailings.

Locations for installing well nests were selected to be at the edges of fields or topographically downslope of the various selected fields where possible. Typically, one well nest was located upgradient of other well nests at a site to provide information on lateral hydraulic-head gradients. Informative logs of material encountered while drilling the deepest well at each well-nest location are given in table 2 at the back of this report. The top of each well was surveyed for vertical control by differential leveling from established bench marks. Water levels were measured from

the top of each well by calibrated steel tape or electrical line.

Figure 2 is a hydrograph of water levels measured in well WC–16–16 at a depth of about 16 ft below land surface and is typical of the seasonal water-level fluctuations observed in most observation wells within the watershed during the time of study. In general, seasonal water levels in most observation wells fluctuated in response to wet and dry periods. Water levels were highest in many wells during the spring of 1991 shortly after well nests WC–1 through WC–25 were drilled. Within a month of well construction, a steady decline of water levels occurred until November 1991. The lowest water levels in many wells were measured during October 1991. During the late summer and fall of 1991, water levels declined below the bottom of the screened interval in many wells less than about 6 ft deep. Water levels rose from November 1991 to early 1992 and fluctuated for the remainder of 1992 between the two extremes set in May and October of 1991. A general rise in water levels began in March 1993, and water levels remained high throughout the summer of 1993 in response to above-normal rainfall during this time. Water levels in some wells during 1993 were higher than water levels measured in May 1991.

A description of the geologic materials, water-level fluctuations, and estimated direction of lateral ground-water flow at each of the seven study sites follows. A description of the vertical component of flow at each well nest is not possible at this time because the purging and collection of water-quality

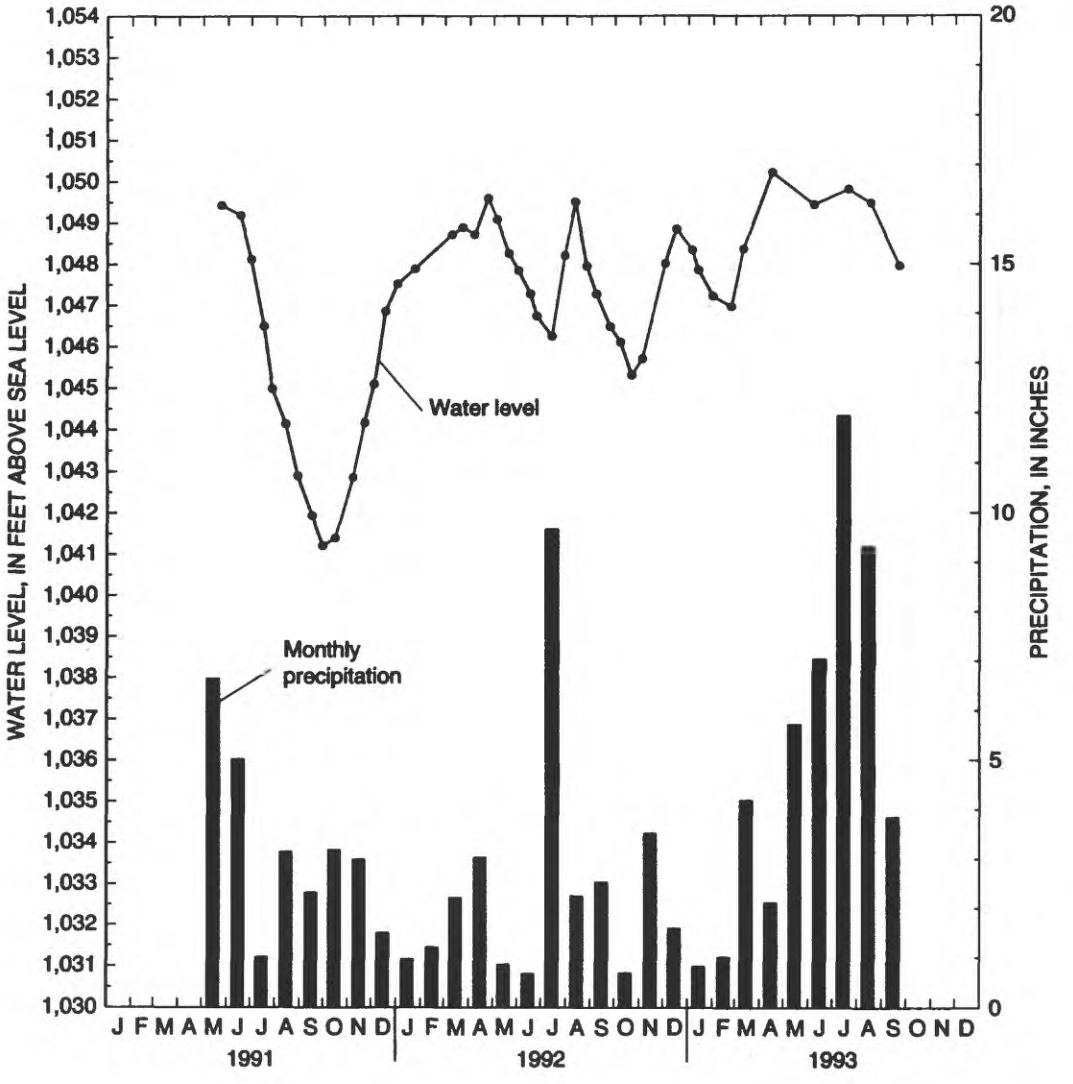


Figure 2. Hydrograph of water levels in well WC–16–16, May 1991 through September 1993.

samples from the wells on a regular basis can result in water levels that have not reached equilibrium with the surrounding earth materials. The shallowest well that contained water was used to construct potentiometric-surface maps of water levels at the study sites for selected dates. The maps coincide with times when water levels were between observed 1991–93 maximums and minimums and are believed to be representative of the general patterns of ground-water flow. Data on the materials encountered during drilling the deepest borehole at each well nest (table 2), well construction (table 3), and measured water levels from May 1991 through September 1993 (table 4) are listed at the back of this report.

Site 110

Site 110 is located in the southeastern part of sec. 25, T. 83 N., R. 25 W. (fig. 1). Surface drainage from central parts of the site is generally towards the east. Five nests of observation wells, WC–5, WC–7, WC–9, WC–10, and WC–11 (fig. 3) were installed in 1991 for a total of 15 wells at the site. The deepest well is located at WC–7 and is about 22 ft deep.

Unoxidized glacial material was reached at depths from 9.5 to 16 ft below land surface at the well nests. The top of a sandy zone that ranged in depth from 2.5 to 4 ft and in thickness from 3 to 10 ft was encountered at each well nest.

Water levels measured during the study period at this study site ranged from slightly less than 1,024 ft above sea level to about 1,038.5 ft. The maximum water level measured occurred during May 1991, and the lowest water level occurred during October 1991. The largest measured water-level fluctuation, 9.91 ft, occurred in the well about 14 ft deep at well nest WC–7. A potentiometric-surface map of water levels at the site on June 1, 1992 (fig. 3), shows the general direction of ground-water flow (from high to low hydraulic head and perpendicular to potentiometric contours) at the site to be toward a large drainage tile line that lies between well nests WC–7 and WC–9. Flow in the tile is towards the east. The hydraulic-head gradient towards the tile indicates that the tile is a line of lateral ground-water discharge. Well nests WC–7 and WC–9 are downgradient on ground-water flow paths beneath site 110. Ground-water flow paths extend beyond the north and west boundaries of site 110. Water levels and water quality at well nests WC–10 and WC–11, because they are located on the western boundary of site 110, probably are affected by water originating beyond site 110.

Site 120

Study site 120 is located in the southeastern part of sec. 29, T. 83 N., R. 24 W. (fig. 1) and slopes gradually from the northern part of the field to Walnut Creek, which forms the southern boundary of the study site. Six nests of observation wells were installed—WC–15, WC–17, and WC–19 in the spring of 1991 and WC–29, WC–30, and WC–31 in the spring of 1992 (fig. 4). A total of 19 wells have been constructed at this study site; the deepest well, at WC–29, is about 18 ft below land surface.

The depth to the unoxidized material is between 9 and 13 ft below land surface. A zone of sand or sandy clay was penetrated at each of the six well nests. The zone was encountered between 2 and 11 ft below land surface and was from 1.5 to 8.0 ft thick.

Water levels at the site ranged from about 995 ft above sea level to nearly 1,018 ft. The maximum water level measured during the study period was during April 1993, and the minimum was during July 1992. The largest measured water-level fluctuation, 5.75 ft, occurred in a well about 9 ft deep at well nest WC–17. Water levels in the shallowest wells, 4 to 6 ft deep, were below the bottom of the well screen at times during 1991 and 1992. The direction of ground-water movement on June 4, 1992 (fig. 4), followed the southerly topographic slope of the site towards Walnut Creek. Lateral ground-water flow towards Walnut Creek from the adjacent site 160 indicates that Walnut Creek is a line of ground-water discharge for both sites. Well nests WC–15, WC–17, and WC–19 along Walnut Creek are located downgradient on ground-water flow paths. The length of the flow paths north of well nests WC–29, WC–30, and WC–31 and whether the flow paths extend beyond the management practice in place on site 120 have not been determined.

Site 130

Site 130 is located in the southern part of sec. 28, T. 83 N., R. 24 W. (fig. 1). Walnut Creek is adjacent to the southwestern part of the field that is being studied. The field is affected by drainage tile as evidenced by a field drainage tile (not shown) discharging to Walnut Creek between well nests WC–2 and WC–3 (fig. 5). The extent and location of the tile is not known. Four

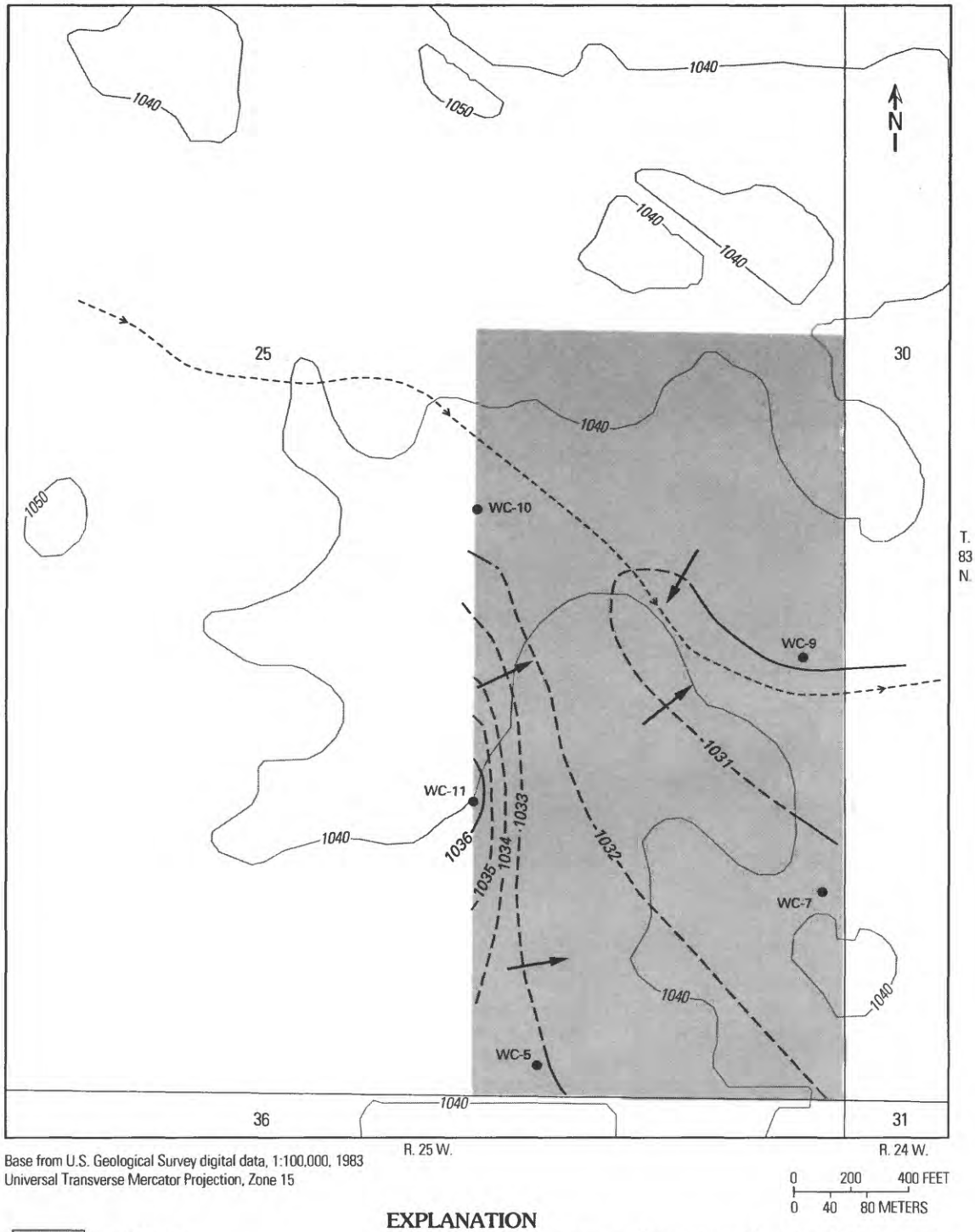
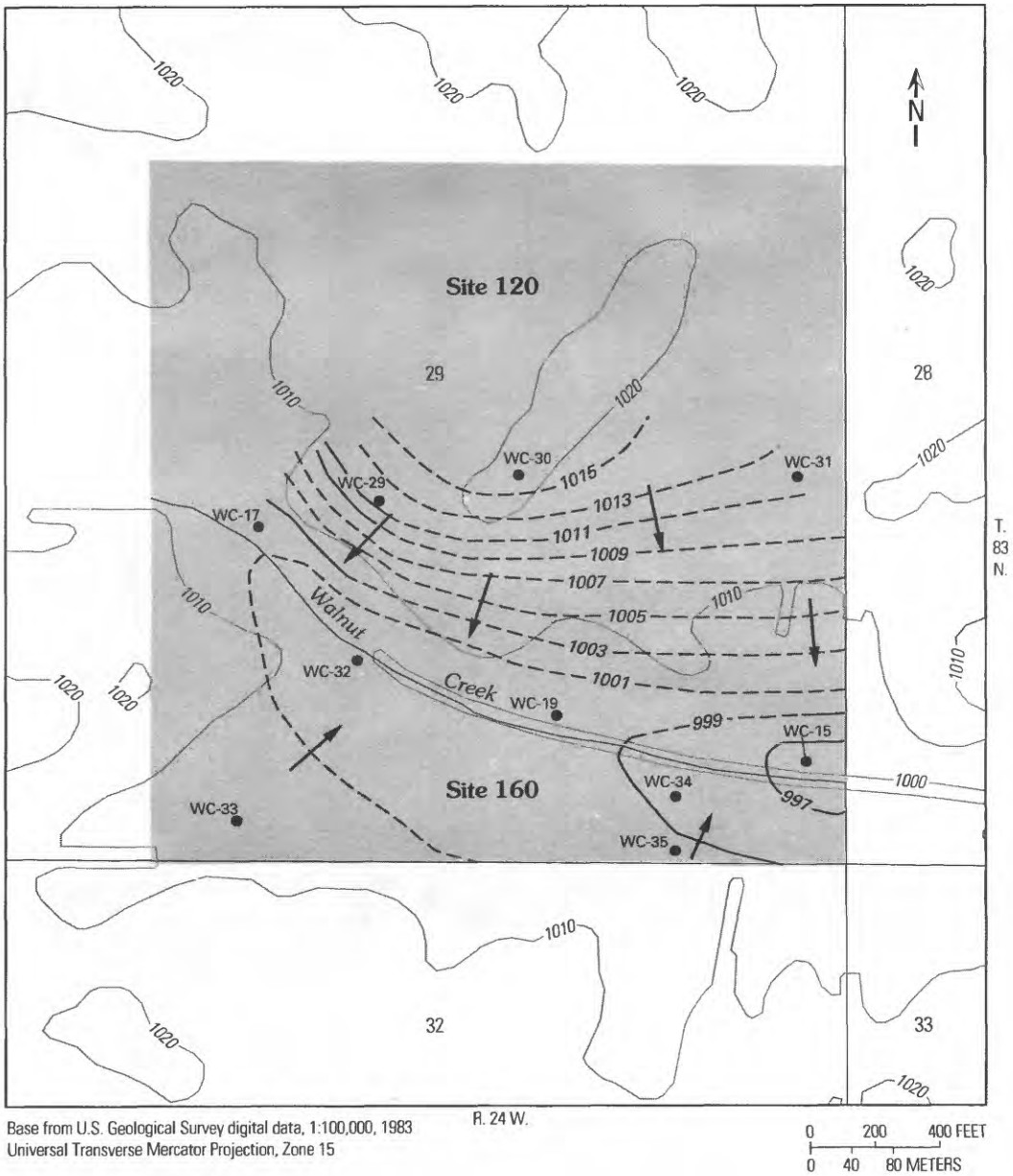


Figure 3. Potentiometric surface, site 110, June 1, 1992.



EXPLANATION

Study site

—1015— **Potentiometric contour**—Shows altitude at which water levels would have stood in tightly cased wells. Dashed where approximately located. Contour interval is 2 feet. Datum is sea level

—1020— **Topographic contour**—Shows altitude of land surface. Contour interval is 10 feet. Datum is sea level

Approximate direction of ground-water flow

● WC-19 **Well nest and local number**

Figure 4. Potentiometric surface, sites 120 and 160, June 4, 1992.

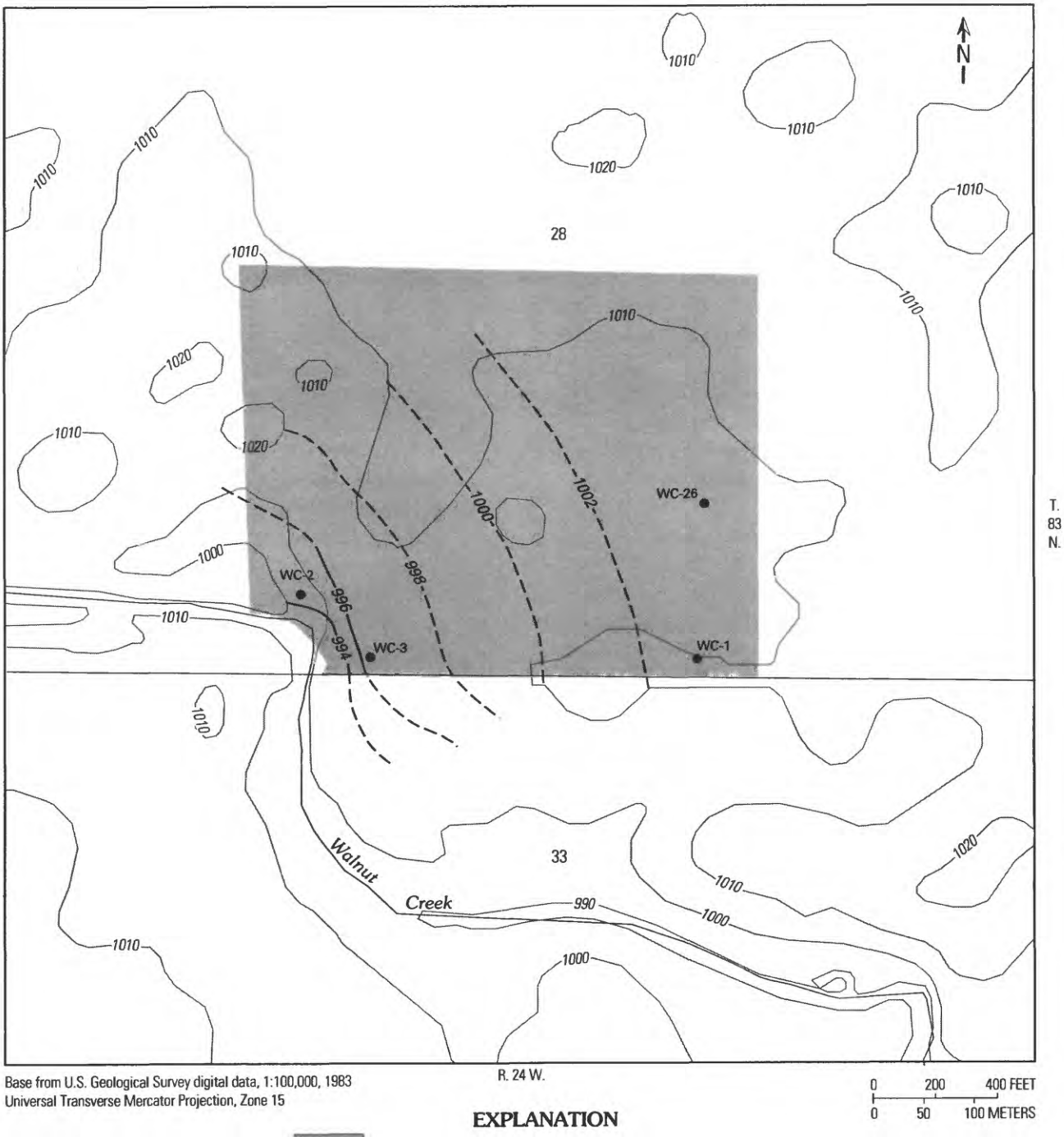


Figure 5. Potentiometric surface, site 130, June 4, 1992.

nests of observation wells were installed; well nests WC–1, WC–2, and WC–3 in the spring of 1991 and well nest WC–26 in the spring of 1992. A total of 13 wells have been constructed at this study site; the deepest, at well nest WC–2, is about 21 ft below land surface.

The depth to the top of the unoxidized material at the well nests is between 7 and 13 ft below land surface. A sandy zone was present at well nests WC–1, WC–3, and WC–26. The sandy zone was not as evident at well nest WC–2, and the transition from oxidized to unoxidized material was more gradual at this well nest.

Water levels measured during the study period at this study site ranged from less than 990 ft above sea level to more than 1,007 ft. The highest water level, 1,007.48 ft, occurred in the 16-ft deep well at well nest WC–26 on July 15, 1993. Water levels in the two deepest wells at well nest WC–2, 14 and 21 ft below land surface, were lower than 990 ft above sea level but exhibited a pattern of fluctuation, particularly during 1992, that indicates the wells were recovering from water-sample collection and were not fully recovered prior to the next water-level measurement. Water levels in these wells are not considered static water levels. However, these slower recovery rates compared to shallower wells at this well nest indicate that the deeper, unoxidized material has a smaller hydraulic conductivity than the shallower, oxidized material.

The shallowest wells at each well nest were completed at depths between about 4 and 6 ft below land surface. Water levels declined below the screened interval of these wells at times during 1991 and 1992. The maximum measured static water-level fluctuation, 7.49 ft, occurred in a well about 9 ft deep at well nest WC–1.

Ground-water movement at site 130 on June 4, 1992 (fig. 5), was towards the southwest, towards Walnut Creek. Well nests WC–2 and WC–3 are downgradient on ground-water flow paths beneath site 130. Well nest WC–1 is probably downgradient of the eastern parts of site 130. The extent of the ground-water flow system draining towards Walnut Creek from this site has not been determined.

Site 140

This study site is located in the eastern part of sec. 2, T. 82 N., R. 24 W. (fig.1). A ravine leading to Walnut Creek begins on the northern edge of the study site. Two nests of observation wells were installed during the spring of 1992—WC–27 and WC–28 (fig. 6). The deepest well at this study site is about 30 ft deep at well nest WC–27.

Unoxidized glacial material was reached at 28 and 14 ft below land surface at nests WC–27 and WC–28, respectively. About 2.5 ft of sandy material was penetrated at a depth of 5 ft at well nest WC–28. No substantial amounts of sand were found at nest WC–27.

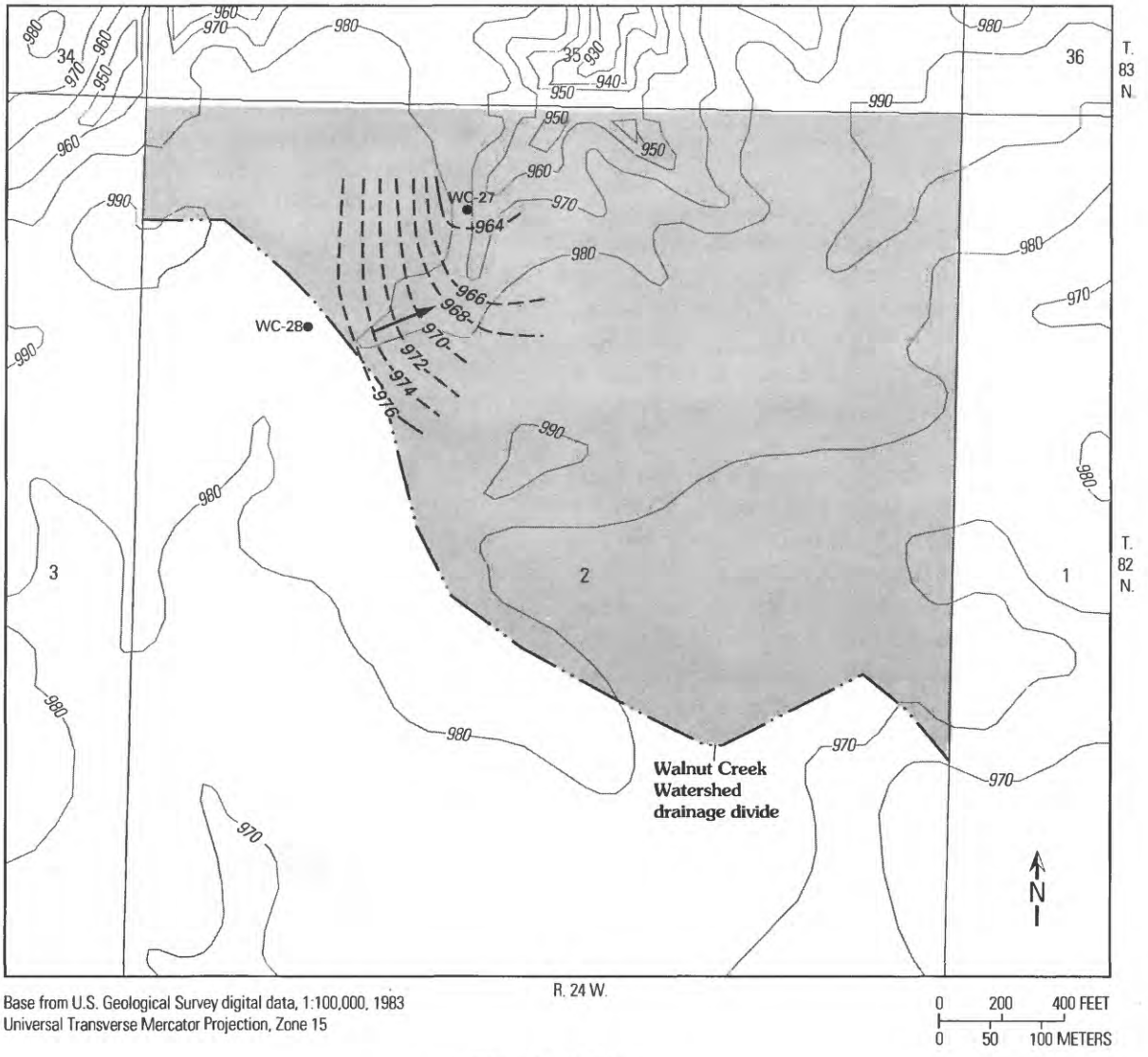
Water levels measured during the study period ranged from less than 939 ft above sea level to more than 979 ft. The highest water level measured at this site was during April 1993, and the lowest was during October 1992. There was an 18.68-ft water-level fluctuation, the maximum measured for this site, in the well about 30 ft deep at nest WC–27. The relatively steep topographic relief at site 140 has a direct effect on the direction of ground-water flow. Flow is towards the ravine, which probably serves as an area of lateral ground-water discharge (fig. 6). Well nest WC–27 is downgradient on a ground-water flow path beneath site 140. The extent of the flow paths beyond nest WC–28 is not known.

Site 160

Study site 160 is located in the southeastern part of sec. 29, T. 83 N., R. 24 W. (fig. 1). Walnut Creek flows along the northern boundary of the study site. A total of 11 wells at four well nests, WC–32, WC–33, WC–34, and WC–35 (fig. 4), were installed during the spring of 1992. The deepest well drilled at this site is about 30 ft below land surface at nest WC–34.

The depth to the unoxidized material at the well nests ranged from 7.5 to 10 ft below land surface. A sandy zone was reached at each of the four nests at depths of 1 to 11.5 ft below land surface. Thicknesses of the sandy material ranged from 2 to 6.5 ft.

Water levels measured during the study period at this site ranged from about 996 to 1,005 ft above sea level. The highest water level measured at the study site occurred at nest WC–33 during April 1993. The lowest water level was at well nest WC–34 during October 1992. The largest measured water-level fluctuation, 4.34 ft, occurred in a well 6 ft deep at nest WC–33 . Lateral ground-water flow at site 160 on June 4, 1992, was northeasterly towards Walnut Creek (fig. 4). Well nests WC–32 and WC–34 are down-



EXPLANATION

Study site

—972— **Potentiometric contour**—Shows altitude at which water levels would have stood in tightly cased wells. Dashed where approximately located. Contour interval is 2 feet. Datum is sea level

—980— **Topographic contour**—Shows altitude of land surface. Contour interval is 10 feet. Datum is sea level

Approximate direction of ground-water flow

WC-28 **Well nest and local number**

Figure 6. Potentiometric surface, site 140, June 4, 1992.

gradient on ground-water flow paths from beneath site 160. Well nests WC–33 and WC–35 are located on the upgradient boundary of the study site and probably are affected by lateral ground-water flow from offsite areas to the south.

Site 170

Site 170 is located in the eastern part of sec. 24, T. 8 N., R. 25 W. (fig. 1). Surface drainage is generally towards the east. Three nests of observation wells, WC–36, WC–37, and WC–38 (fig. 7), were installed during the spring of 1992. The deepest well, about 24 ft below land surface, is located at well nest WC–36.

Unoxidized glacial materials were reached at depths of 9.5 to 17 ft below land surface. About 4 ft of sand was penetrated at each well nest, and the top of the sand ranged in depth from 2.5 to 4 ft.

Water levels measured at this site during the period of study ranged from less than 1,023 to more than 1,040 ft above sea level. The highest measured water level was at nest WC–36 during July 1993, and the lowest water level was measured at nest WC–38 during October 1992. The well about 24 ft deep at nest WC–30 had the greatest measured water-level fluctuation, 5.95 ft.

Well nest WC–36 (fig. 7) is located near a topographic high on the south boundary of the study site, probably near a ground-water divide. Well nest WC–37 (fig. 7) is located on the west-central boundary of the study site, and water levels are affected by offsite areas to the west. Well nests WC–37 and WC–38 are located near tile lines. The potentiometric surface at site 170 has not been mapped because of insufficient well control to define the direction of flow throughout the site. However, it is hypothesized that ground-water flow is from the northern and southern boundary areas towards the east-central parts of the study site.

Site 220

This study site is located in the northern halves of sec. 36, T. 83 N., R. 25 W., and sec. 31, T. 83 N., R. 24 W. (fig. 1). Interior areas of the study site are drained by a network of drainage tiles that connect to a large drainage tile that discharges to a ditch and discharges to Walnut Creek northeast of site 220. The site contains a small drainage basin comprised of a variety of management systems. Fifteen nests of observation wells were installed in 1991 throughout the drainage basin (fig. 8).

The depth to the unoxidized glacial material was determined at 12 of the 15 well nests. Depths to the unoxidized zone ranged from 10.5 ft at nest WC–21 to 20 ft at nest WC–13. Sandy material was encountered at each of the well nests. The top of the sandy zone ranged in depth from 2.5 to 12.5 ft at nests WC–12 and WC–23, respectively. Thicknesses of the sandy zone ranged from about 1 to 6.5 ft. Well nests WC–18 and WC–25 consist of only one well at each location because saturated sand reached at a depth of about 9 ft prevented the borehole from remaining open to allow installation of a deeper well.

Water levels measured at this site during the study period ranged from less than 1,020 to more than 1,051 ft above sea level. The maximum water level measured at the site was at nest WC–16 during May 1991. The lowest water level occurred during October 1991 at well nest WC–14. There was a 12.83-ft water-level fluctuation, the maximum measured during the study at this site, at nest WC–24. The generalized flow of ground water in the eastern half of study site 220 was towards a large drainage tile line that discharges to a ditch that forms part of the headwaters of Walnut Creek at the extreme northeast corner of the site (fig. 8). The pattern of potentiometric contours indicates that the drainage tile is a line of lateral discharge in this part of the study site. The western half of the study site is a hummocky, pothole terrain, and the location of all the small tile lines draining the area are not known. This has apparently resulted in a complicated ground-water flow system that generally can be described as flow from the higher parts of hummocks towards the potholes where discharge to drainage tiles, if present, occurs. The extent of the ground-water drainage area beyond site 220 has not been determined. Most well nests within the study site probably are affected by multiple management systems in use within the site 220 area.

SUMMARY

Ground-water data were collected from May 1991 through September 1993 from observation wells installed in the Walnut Creek Watershed near Ames, Iowa, as part of the Iowa Management Systems Evaluation Area effort. The purpose of the data collection was to determine the direction of ground-

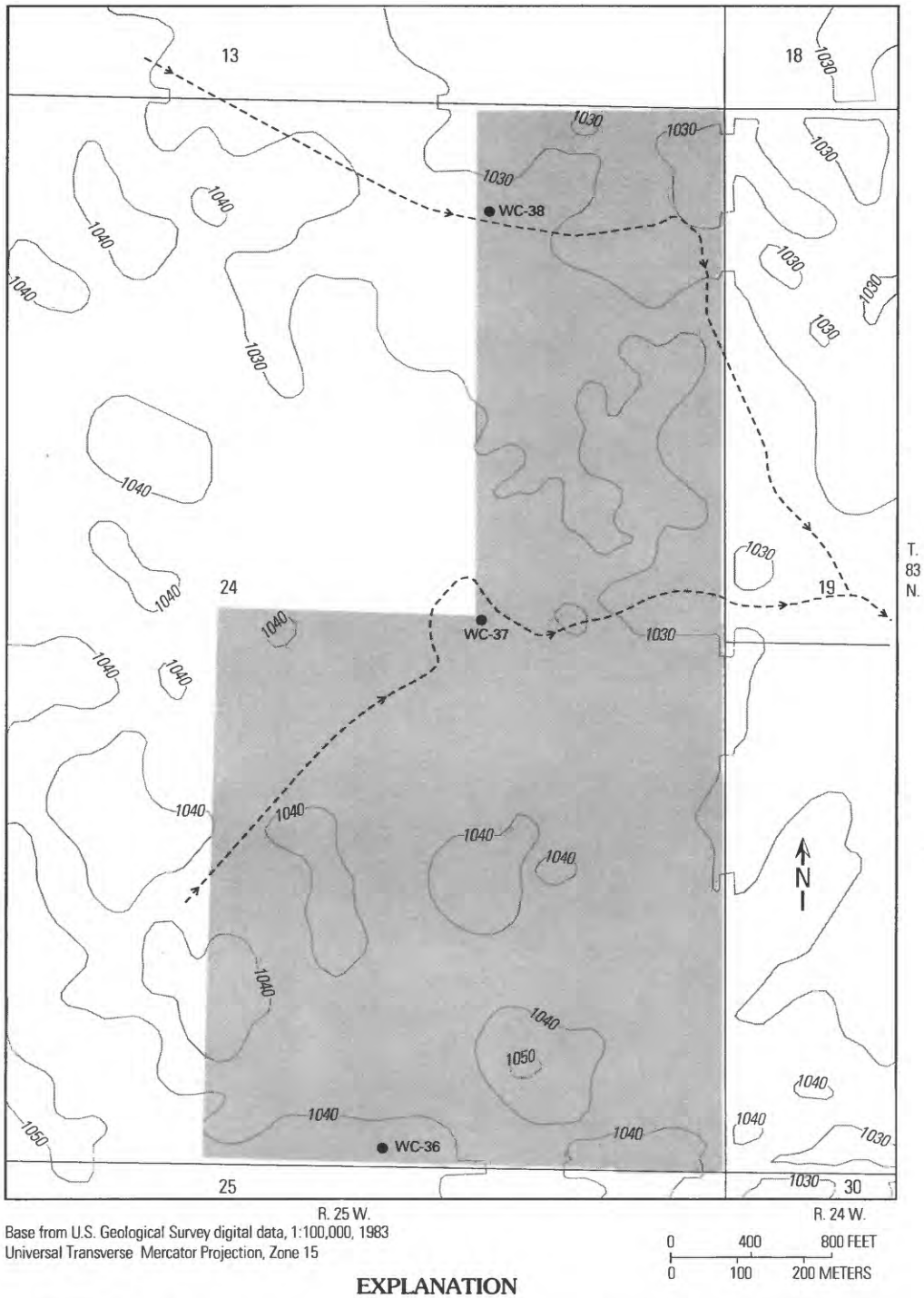
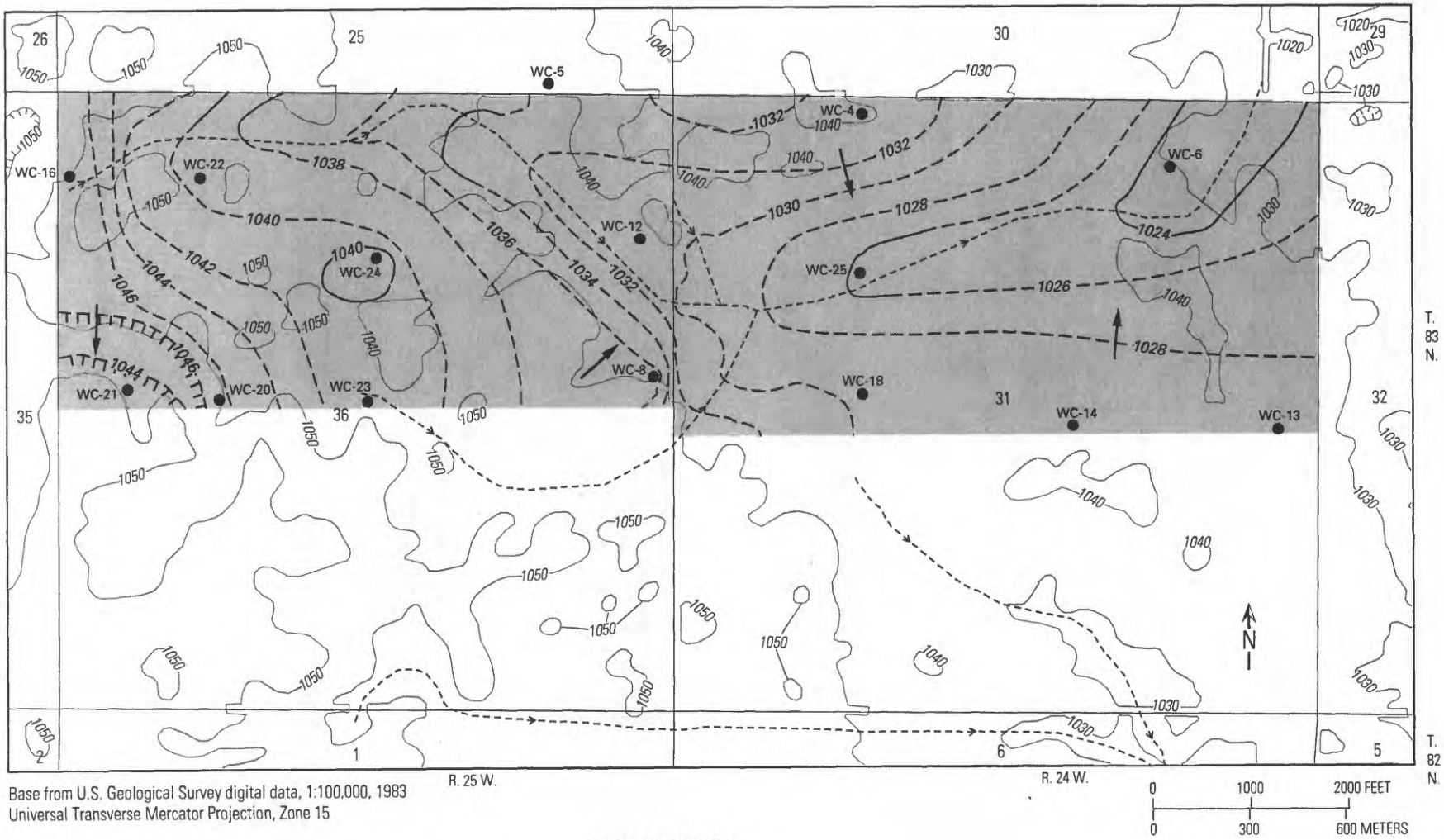


Figure 7. Topography at site 170.



EXPLANATION

- **Study site**
- —1044— **Potentiometric contour**—Shows altitude at which water levels would have stood in tightly cased wells. Dashed where approximately located. Contour interval is 2 feet. Datum is sea level
- —1050— **Topographic contour**—Shows altitude of land surface. Contour interval is 10 feet. Datum is sea level
- **Approximate location of drainage tile line**—Arrow shows direction of flow
- **Approximate direction of ground-water flow**
- ● WC-18 **Well nest and local number**

Figure 8. Potentiometric surface, site 220, June 2–4, 1992.

water flow at selected study sites where a variety of agricultural management practices are being studied.

Glacial deposits of Wisconsinan and pre-Illinoian age underly the watershed. These non-aquifer materials are more than 200 ft thick in some areas of the watershed and overly bedrock of Mississippian or Pennsylvanian age. The upper glacial deposits appear to be supraglacial tills rather than basal tills, based on particle-size analysis, and occur in both oxidized and unoxidized conditions.

Water levels were measured in 102 wells from 38 locations at 7 study sites in the watershed. Water levels fluctuated in response to local climatic conditions and ranged from at or near the land surface to more than 30 ft below land surface. In general, ground water flowed towards Walnut Creek or large drainage tiles. Potentiometric maps at the selected study sites can be used to determine which locations might be affected by agricultural management practices in place at each site.

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Table 2. Descriptive logs of selected boreholes drilled in the Walnut Creek Watershed, Boone and Story Counties, Iowa

Local number: WC–1–14 **Date: 2/25/91**
Location: T. 83N., R. 24W., sec. 28, SW1/4 **Altitude of land surface: 1,008 feet**

Description	Depth interval (feet)
Topsoil, black, organic, frozen	0 – 1.0
Topsoil, black, clayey, cohesive	1.0 – 3.0
Clay, medium-brown, oxidized, sandy, cohesive	3.0 – 7.0
Clay, brown to gray, very sandy, mottled, appears fractured, water saturated	7.0 – 7.5
Clay, as above, less sand, very cohesive	7.5 – 10.5
Clay, medium- to dark-gray, sandy, pebbles, unoxidized, very cohesive	10.5 – 15.0
Clay, as above	12.5 – 15.0

Local number: WC–2–21 **Date: 2/26/91**
Location: T. 83N., R. 24W., sec. 28, SW1/4 **Altitude of land surface: 998 feet**

Description	Depth interval (feet)
Topsoil, black, organic, frozen	0 – 0.5
Topsoil, black, organic	0.5 – 2.0
Soil, medium-brown, clayey, cohesive	2.0 – 5.5
Clay, mottled brown-gray, very sandy, pebbles	5.5 – 6.0
Clay, bluish-gray, wet	6.0 – 8.0
Clay, blue-gray, pebbles, appears dry, very stiff	8.0 – 9.0
Clay, blue-gray grading to dark-gray with depth, pebbles, stiff, cohesive	9.0 – 18.0
Clay, dark-gray, stiff, cohesive	18.0 – 22.0

Local number: WC–3–11 **Date: 2/26/91**
Location: T. 83N., R. 24W., sec. 28, SW1/4 **Altitude of land surface: 1,000 feet**

Description	Depth interval (feet)
Topsoil, black, organic	0 – 1.5
Sand, medium-brown, clayey, cohesive, oxidized	1.5 – 6.0
Clay, medium-brown to gray, mottled, sandy, pebbles, cohesive, oxidized	6.0 – 7.0
Clay, medium-gray, dense, slightly sandy, some pebbles, cohesive	7.0 – 12.5

Table 2. Descriptive logs of selected boreholes drilled in the Walnut Creek Watershed, Boone and Story Counties, Iowa—Continued

Local number: WC–4–16 **Date: 2/26/91**
Location: T. 83N., R. 24W., sec. 31, NW1/4 **Altitude of land surface: 1,037 feet**

Description	Depth interval (feet)
Topsoil, black, organic	0 – 4.0
Clay, brown to brown-gray, mottled, sandy, gravelly, cohesive	4.0 – 8.5
Clay, gray and brown, mottled, sand, pebbles, appears fractured	8.5 – 11.5
Clay, dark-gray, dense, cohesive, less sand and pebbles than above	11.5 – 17.5

Local number: WC–5–14 **Date: 2/27/91**
Location: T. 83N., R. 25W., sec. 25, SE1/4 **Altitude of land surface: 1,037 feet**

Description	Depth interval (feet)
Topsoil, black, organic, frozen	0 – 1.0
Topsoil, black, organic	1.0 – 2.5
Clay, brown-gray, mottled, sandy, pebbles, cohesive, oxidized, becomes more gray with depth	2.5 – 9.0
Clay, gray, sandy, pebbles, less sand than above, cohesive	9.0 – 15.0

Local number: WC–6–19 **Date: 2/27/91**
Location: T. 83N., R. 24W., sec. 31, NE1/4 **Altitude of land surface: 1,027 feet**

Description	Depth interval (feet)
Topsoil, black, organic, frozen	0 – 0.5
Topsoil, black, organic	0.5 – 2.0
Clay, brown to slightly gray, mottled, sandy, pebbles, cohesive, oxidized	2.0 – 9.0
Clay, brown to gray, very sandy, poorly sorted sand, fine to coarse, pebbles up to 1-inch diameter	9.0 – 15.0
Clay, dark-gray, sandy, gravelly, cohesive at the bottom	15.0 – 20.5

Table 2. Descriptive logs of selected boreholes drilled in the Walnut Creek Watershed, Boone and Story Counties, Iowa—Continued

Local number: WC–7–21 **Date: 3/26/91**
Location: T. 83N., R. 25W., sec. 25, SE1/4 **Altitude of land surface: 1,037 feet**

Description	Depth interval (feet)
Topsoil, black, sandy, organic	0 – 3.0
Clay, light-gray to brown, sandy, cohesive, oxidized	3.0 – 8.0
Clay, as above, but increasing sand with depth	8.0 – 11.0
Clay, as above, but less sand, oxidized	11.0 – 13.0
Clay, brown-gray, mottled, stiff, cohesive, pebbles, less oxidation and sand	13.0 – 16.0
Clay, dark-gray, cohesive, very gravelly, sandy	16.0 – 18.0
Clay, as above, but less gravel	18.0 – 22.5

Local number: WC–8–19 **Date: 3/27/91**
Location: T. 83N., R. 25W., sec. 36, NE1/4 **Altitude of land surface: 1,042 feet**

Description	Depth interval (feet)
Topsoil, black, clayey, organic	0 – 3.0
Clay, medium-brown, very sandy and gravelly	3.0 – 4.0
Clay, medium-brown, sandy	4.0 – 8.0
Clay, medium-brown, slight mottling, less sand	8.0 – 14.0
Clay, gray-brown, mottled, sandy, gravelly	14.0 – 15.5
Clay, blue-gray, slightly sandy, slightly pebbly, cohesive	15.5 – 20.5

Local number: WC–9–13 **Date: 4/01/91**
Location: T. 83N., R. 25W., sec. 25, SE1/4 **Altitude of land surface: 1,035 feet**

Description	Depth interval (feet)
Topsoil, black, clayey, sandy, organic	0 – 2.5
Clay, gray-brown, sandy, oxidized	2.5 – 4.0
Clay, olive-brown, very sandy, sand grain size increases with depth	4.0 – 7.0
Clay, gray-brown, mottled, sandy	7.0 – 9.5
Clay, dark-gray, sandy, cohesive	9.5 – 14.5

Table 2. Descriptive logs of selected boreholes drilled in the Walnut Creek Watershed, Boone and Story Counties, Iowa—Continued

Local number: WC–10–17 **Date: 4/02/91**
Location: T. 83N., R. 25W., sec. 25, SE1/4 **Altitude of land surface: 1,036 feet**

Description	Depth interval (feet)
Topsoil, black, clayey, organic	0 – 3.5
Clay, gray olive-brown, sandy, oxidized	3.5 – 6.0
Clay, brown-gray, mottled, sandy, oxidized, appears dry	6.0 – 8.0
Clay, rusty-brown, no mottling, wet at 9.0 feet, sandy	8.0 – 11.0
Clay, brown-gray, mottled, sandy	11.0 – 12.0
Clay, dark-gray, sandy, pebbles, cohesive	12.0 – 18.5

Local number: WC–11–15 **Date: 4/02/91**
Location: T. 83N., R. 25W., sec. 25, SE1/4 **Altitude of land surface: 1,039 feet**

Description	Depth interval (feet)
Topsoil, black, clayey, organic	0 – 3.0
Clay, olive-gray, sandy	3.0 – 5.5
Clay, rusty-brown, very sandy, becoming more cohesive with depth, water entering the hole at 4.0 feet	5.5 – 9.0
Clay, rusty-brown, streaks of gray, very sandy, gravelly, less water	9.0 – 10.5
Clay, brown-gray, mottled, very sandy, pebbles, stiff in places	10.5 – 12.0
Clay, dark-gray, sandy, pebbles	12.0 – 16.5

Local number: WC–12–16 **Date: 4/02/91**
Location: T. 83N., R. 25W., sec. 36, NE1/4 **Altitude of land surface: 1,035 feet**

Description	Depth interval (feet)
Topsoil, black, clayey, organic	0 – 2.5
Clay, dark gray-brown, sandy	2.5 – 4.5
Clay, olive-gray, sandy, oxidized	4.5 – 6.5
Clay, rusty-brown, sandy	6.5 – 9.0
Clay, rusty-brown with gray streaks, sandy	9.0 – 10.5
Clay, as above, stiffer with increasing gray clay content with depth	10.5 – 12.0
Clay, dark-gray, pebbles	12.0 – 17.5

Table 2. Descriptive logs of selected boreholes drilled in the Walnut Creek Watershed, Boone and Story Counties, Iowa—Continued

Local number: WC–13–24 **Date: 4/03/91**
Location: T. 83N., R. 24W., sec. 31, NE1/4 **Altitude of land surface: 1,035 feet**

Description	Depth interval (feet)
Topsoil, black, organic	0 – 3.5
Clay, olive brown-gray	3.5 – 4.5
Clay, olive-gray, sandy, light-gray streaks at 6.5 feet	4.5 – 6.5
Clay, rusty-brown with light-gray streaks, sandy	6.5 – 11.0
Clay, as above, tighter, shading to olive-gray with depth	11.0 – 17.5
Clay, dark-gray, mottled, sandy, gravel zone at 18.0 feet	17.5 – 20.0
Clay, dark-gray, cohesive	20.0 – 25.5

Local number: WC–14–16 **Date: 4/03/91**
Location: T. 83N., R. 24W., sec. 31, NE1/4 **Altitude of land surface: 1,034 feet**

Description	Depth interval (feet)
Topsoil, black, organic	0 – 3.5
Clay, olive-brown, sandy, oxidized	3.5 – 6.0
Clay, olive-gray with light-gray streaks, sandy, soft	6.0 – 9.0
Clay, rusty-brown with gray streaks, sandy, stiff	9.0 – 11.0
Clay, olive-gray with gray streaks, sandy, pebbles, mottled, appears heavily oxidized	11.0 – 13.0
Clay, dark-gray	13.0 – 17.5

Local number: WC–15–16 **Date: 4/04/91**
Location: T. 83N., R. 24W., sec. 29, SE1/4 **Altitude of land surface: 1,003 feet**

Description	Depth interval (feet)
Topsoil, black, clayey, organic	0 – 6.0
Soil, as above, gray-black, pebbly	6.0 – 6.5
Clay, brown-gray, very sandy, pebbly, oxidized	6.5 – 7.5
Clay, olive-gray with dark-gray streaks, sandy, pebbly	7.5 – 11.0
Clay, dark-gray	11.0 – 17.0

Local number: WC–16–16 **Date: 4/12/91**
Location: T. 83N., R. 25W., sec. 36, NW1/4 **Altitude of land surface: 1,054 feet**

Description	Depth interval (feet)
Topsoil, dark-brown, silty, organic	0 – 2.0
Soil, light-brown, silty, clayey, pebbly, oxidized	2.0 – 5.5
Clay, medium brown-gray, sandy, silty, mottled, pebbly	5.5 – 12.0
Clay, bright blue, silty, pebbly, stiff and cohesive	12.0 – 17.5

Table 2. Descriptive logs of selected boreholes drilled in the Walnut Creek Watershed, Boone and Story Counties, Iowa—Continued

Local number: WC–17–14 **Date: 5/09/91**
Location: T. 83N., R. 24W., sec. 29, SE1/4 **Altitude of land surface: 1,006 feet**

Description	Depth interval (feet)
Topsoil, brown to black, organic	0 – 2.5
Sand, dark-brown, clayey	2.5 – 4.5
Sand, as above, with increasing clay	4.5 – 6.5
Sand, medium-gray to light-brown, coarse to fine-grained, some oxidized zones	6.5 – 7.5
Sand, as above, mottled, gravelly	7.5 – 8.0
Sand, light- to medium-brown, clayey, oxidized fractures	8.0 – 9.5
Sand, as above, mottled, increasing clay content	9.5 – 10.0
Clay, dark-gray, small amount of sand	10.0 – 15.5

Local number: WC–18–9 **Date: 5/09/91**
Location: T. 83N., R. 24W., sec. 31, NW1/4 **Altitude of land surface: 1,034 feet**

Description	Depth interval (feet)
Topsoil, black, silty, sandy	0 – 2.5
Soil, brown-black	2.5 – 3.5
Clay, dark gray-brown, silty	3.5 – 4.5
Clay, as above, with increasing sand	4.5 – 6.0
Sand, brown to light-gray, coarse to fine, some mottling	6.0 – 7.5
Sand, brown, coarse, hard drilling	7.5 – 10.0
Sand, as above, no cuttings, hole caving	10.0 – 12.5

Local number: WC–19–14 **Date: 5/10/91**
Location: T. 83N., R. 24W., sec. 29, SE1/4 **Altitude of land surface: 1,00[illegible] feet**

Description	Depth interval (feet)
Topsoil, black to brown	0 – 2.0
Clay, brown, sandy, small sand lenses	2.0 – 2.5
Clay, black to dark-brown, sandy	2.5 – 4.5
Clay, as above, with increasing clay	4.5 – 6.5
Clay, gray, sandy, mottled	6.5 – 7.0
Sand, gray, medium-grained, mottled, soupy	7.0 – 7.5
Sand, as above, with increasing clay	7.5 – 8.5
Clay, gray with some brown streaks, firmer drilling	8.5 – 10.0
Clay, gray, unoxidized, gravelly	10.0 – 12.5
Clay, gray, unoxidized, very gravelly, losing cuttings	12.5 – 15.0

Table 2. Descriptive logs of selected boreholes drilled in the Walnut Creek Watershed, Boone and Story Counties, Iowa—Continued

Local number: WC–20–16 **Date: 5/10/91**
Location: T. 83N., R. 25W., sec. 36, SW1/4 **Altitude of land surface: 1,052 feet**

Description	Depth interval (feet)
Topsoil, black, organic, silty	0 – 2.5
Soil, black to dark-brown, with increasing clay content	2.5 – 4.5
Clay, light-brown, sandy, pebbly, sandy fractures	4.5 – 7.5
Clay, as above, large gravel, very sandy	7.5 – 9.5
Clay, as above, firmer, sandier, less gravel	9.5 – 12.5
Clay, as above, no sand and gravel	12.5 – 13.0
Clay, blue-green shading to gray with depth, pebbly to gravelly	13.0 – 17.5

Local number: WC–21–14 **Date: 5/10/91**
Location: T. 83N., R. 25W., sec. 36, SW1/4 **Altitude of land surface: 1,046 feet**

Description	Depth interval (feet)
Topsoil, black, organic, silty	0 – 3.0
Clay, light-gray, sandy, soft	3.0 – 4.0
Clay, light-gray, sandy, mottled	4.0 – 4.5
Clay, as above, becoming darker	4.5 – 5.0
Sand, brown, clayey, soft, some pebbles	5.0 – 8.0
Clay, gray, oxidized fractures, stiff	8.0 – 10.5
Clay, gray, unoxidized	10.5 – 15.5

Local number: WC–22–14 **Date: 5/10/91**
Location: T. 83N., R. 25W., sec. 36, NW1/4 **Altitude of land surface: 1,043 feet**

Description	Depth interval (feet)
Topsoil, black, organic	0 – 2.5
Clay, light-brown, sandy	2.5 – 3.0
Clay, light-gray, sandy, lots of oxidized fractures, becoming sandier and pebbly with depth	3.0 – 7.5
Clay, light-brown, sandy, pebbles	7.5 – 8.0
Clay, medium-brown, sandy, stiffer	8.0 – 9.5
Clay, as above, with oxidized blue-gray zones	9.5 – 10.0
Clay, blue-gray to gray with depth, unoxidized	10.0 – 12.5

Table 2. Descriptive logs of selected boreholes drilled in the Walnut Creek Watershed, Boone and Story Counties, Iowa—Continued

Local number: WC–23–16 **Date: 5/11/91**
Location: T. 83N., R. 25W., sec. 36, NE1/4 **Altitude of land surface: 1,045 feet**

Description	Depth interval (feet)
Topsoil, black to dark-brown, silty	0 – 2.5
Clay, dark-brown, silty, firm and cohesive	2.5 – 5.0
Clay, medium-gray, some mottling, no sand	5.0 – 6.5
Clay, light-gray, no sand, very tight and cohesive, increased oxidized fractures with depth	6.5 – 12.5
Sand, gray, coarse, mottled	12.5 – 13.0
Clay, blue-gray, unoxidized, gravelly	13.0 – 16.0
Gravel, blue-gray, clayey	16.0 – 16.5
Clay, gray, unoxidized	16.5 – 17.5

Local number: WC–24–16 **Date: 5/11/91**
Location: T. 83N., R. 25W., sec. 36, NE1/4 **Altitude of land surface: 1,046 feet**

Description	Depth interval (feet)
Topsoil, black	0 – 2.5
Clay, dark-brown, silty	2.5 – 3.0
Clay, light-brown, sandy, pebbly, fractures	3.0 – 6.0
Clay, light-gray, sandy, silty, abundant fractures, sand lenses, wet, pebbly	6.0 – 7.5
Clay, light-brown, sandy, becoming firmer and cohesive with depth	7.5 – 10.0
Clay, light-brown, sandy, mottled with light-gray streaks	10.0 – 12.5
Clay, blue-green	12.5 – 13.0
Clay, dark-gray, gravelly	13.0 – 17.5

Local number: WC–25–7 **Date: 5/11/91**
Location: T. 83N., R. 24W., sec. 31, NW1/4 **Altitude of land surface: 1,052 feet**

Description	Depth interval (feet)
Topsoil, black	0 – 2.5
Clay, dark-brown, silty	2.5 – 3.0
Clay, light-gray, sandy, pebbly, some fractures	3.0 – 4.5
Clay, light-gray, increasing sand content with depth	4.5 – 8.0

Table 2. Descriptive logs of selected boreholes drilled in the Walnut Creek Watershed, Boone and Story Counties, Iowa—Continued

Well identification: WC–26–16 **Date: 4/4/92**
Location: T. 83N., R. 24W., sec. 28, SW1/4 **Altitude of land surface: 1,008 feet**

Description	Depth interval (feet)
Topsoil, black, organic	0 – 1.0
Clay, light-brown, rust mottling	1.0 – 2.5
Clay, red-brown, sandy, light-gray mottling, very rusty oxidation	2.5 – 5.0
Clay, olive-brown, sandy, wet, large rust-red mottles and light-gray streaks	5.0 – 7.5
Clay, dark-gray, olive-green mottling	7.5 – 9.5
Clay, dark-gray	9.5 – 16.5

Well identification: WC–27–30 **Date: 3/26/92**
Location: T. 82N., R. 24W., sec. 2, NE1/4 **Altitude of land surface: 969 feet**

Description	Depth interval (feet)
Topsoil, black, organic	0 – 2.5
Clay, tan, some sand and gravel	2.5 – 5.0
Clay, orange, pebbles, dry	5.0 – 7.5
Clay, orange-brown, iron stains, disintegrated gravel	7.5 – 10.0
Clay, tan, less orange, iron-stained	10.0 – 12.5
Same, less iron	12.5 – 15.0
Clay, brown-gray mottled, dry, firm, hard to drill, pebbles	15.0 – 20.0
Clay, light-gray, mottled, minor amount of tan clay, pebbles	20.0 – 22.5
Same	22.5 – 28.0
Clay, dark-gray, cohesive, firm	28.0 – 30.0
Same	30.0 – 32.5

Well identification: WC–28–18 **Date: 3/26/92**
Location: T. 82N., R.24W., sec. 2, NE1/4 **Altitude of land surface: 980 feet**

Description	Depth interval (feet)
Topsoil, black grading to tan, organic	0 – 2.5
Clay, light-brown, sandy	2.5 – 5.0
Clay, tan, very sandy with fine-to-coarse gravel, firmer at 7.5 feet	5.0 – 7.5
Clay, tan, sandy, some gravel, oxidized iron stains	7.5 – 10.0
Clay, tan, sandy, slightly less sand, dryer, firmer	10.0 – 12.5
Clay, tan to brown, sandy, firm	12.5 – 14.0
Clay, dark-gray	14.0 – 15.0
No cutting returned	15.0 – 20.0

Table 2. Descriptive logs of selected boreholes drilled in the Walnut Creek Watershed, Boone and Story Counties, Iowa—Continued

Well identification: WC–29–18 **Date: 3/27/92**
Location: T. 83N., R. 24W., sec. 29, SE1/4 **Altitude of land surface: 1,0[illegible]2 feet**

Description	Depth interval (feet)
Topsoil, black, organic	0 – 1.0
Subsoil, brown, clayey, moist	1.0 – 2.0
Clay, tan, sandy, water in hole at 5.0 feet, soft	2.0 – 5.0
Same	5.0 – 6.5
Same, firmer	6.5 – 7.0
Clay, light-gray, sandy, orange oxidized streaks	7.0 – 10.0
Same, tanner, firmer, drier	10.0 – 13.0
Clay, dark-gray, sandy, soft	13.0 – 15.5
Same	15.5 – 20.0

Well identification: WC–30–15 **Date: 3/27/92**
Location: T. 83N., R. 24W., sec. 29, SE1/4 **Altitude of land surface: 1,0[illegible]9 feet**

Description	Depth interval (feet)
Topsoil, black-brown, organic	0 – 2.0
Clay, tan, sandy, soft	2.0 – 5.0
Same, mottled with gray, increasingly firm	5.0 – 7.5
Same, softer	7.5 – 10.0
Same, firmer, iron-mottled	10.0 – 12.5
Clay, dark-gray, firm	13.0 – 15.0
Same	15.0 – 20.0

Well identification: WC–31–13 **Date: 3/27/92**
Location: T. 83N., R. 24W., sec. 29, SE1/4 **Altitude of land surface: 1,0[illegible]7 feet**

Description	Depth interval (feet)
Topsoil, black, organic	0 – 2.0
Clay, tan, slightly sandy, some gray mottling	2.0 – 5.0
Same, iron stains	5.0 – 7.5
Clay, tan, sandy, soft	7.5 – 9.0
Clay, dark-gray, firm	9.0 – 10.0
Same	10.0 – 15.0

Table 2. Descriptive logs of selected boreholes drilled in the Walnut Creek Watershed, Boone and Story Counties, Iowa—Continued

Well identification: WC–32–16 **Date: 4/2/92**
Location: T. 83N., R. 24W., sec. 29, SE1/4 **Altitude of land surface: 1,007 feet**

Description	Depth interval (feet)
Topsoil, black, organic	0 – 2.0
Same	2.0 – 5.0
Clay, dark gray-black, sandy	5.0 – 6.0
Clay, tan, sandy, mottled black	6.0 – 7.0
Clay, tan, sandy, mottled gray	7.0 – 10.0
Clay, dark-gray, sandy	10.0 – 11.5
Same	11.5 – 16.5

Well identification: WC–33–16 **Date: 4/3/92**
Location: T. 83N., R. 24W., sec. 29, SE1/4 **Altitude of land surface: 1,008 feet**

Description	Depth interval (feet)
Topsoil, black, organic	0 – 1.0
Clay, brown, sandy, pebbles	1.0 – 3.0
Clay, as above, with rust-red and light-gray mottling	3.0 – 6.0
Same, deeper red mottling	6.0 – 7.5
Clay, dark-gray, rust mottling	7.5 – 9.5
Clay, dark-gray	9.5 – 16.5

Well identification: WC–34–16 **Date: 4/2/92**
Location: T. 83N., R. 24W., sec. 29, SE1/4 **Altitude of land surface: 1,004 feet**

Description	Depth interval (feet)
Topsoil, black, organic	0 – 3.0
Clay, olive-gray, mottled with iron stains	3.0 – 5.0
Clay, olive-gray	5.0 – 6.0
Clay, olive-gray, sandy, mottled with reddish-brown and gray clay	6.0 – 9.0
Clay, dark-gray, very firm, pebbly	9.0 – 16.5

Table 2. Descriptive logs of selected boreholes drilled in the Walnut Creek Watershed, Boone and Story Counties, Iowa—Continued

Well Identification: WC–35–17 **Date: 4/3/92**
Location: T. 83N., R. 24W., sec. 29, SE1/4 **Altitude of land surface: 1,014 feet**

Description	Depth Interval (feet)
Topsoil, black, organic	0 – 1.0
Clay, brown-gray, sandy, pebbles	1.0 – 3.0
Same	3.0 – 4.0
Clay, brown, rust-red and gray mottles	4.0 – 5.0
Clay, olive-gray, sandy, pebbly, rust-red and light-gray mottling	5.0 – 7.5
Same, some dark rust-brown mottling, wet	7.5 – 8.5
Clay, dark-gray, some rust-dark green mottles	8.5 – 10.5
Clay, dark-gray, dense	10.5 – 18.0

Well Identification: WC–36–24 **Date: 4/4/92**
Location: T. 83N., R. 25W., sec. 24, SE1/4 **Altitude of land surface: 1,014 feet**

Description	Depth Interval (feet)
Topsoil, black, organic	0 – 1.5
Clay, brown, pebbly	1.5 – 4.0
Clay, brown, sandy	4.0 – 5.0
Clay, sandy, pebbly, some rust mottling	5.0 – 8.0
Clay, olive-gray, brown, sandy, rust and gray mottling, firmer	8.0 – 11.0
Clay, olive-gray, brown, large rust-red mottling, gray streaks, firm	11.0 – 14.0
Clay, darker olive-gray, firm, rust and gray mottling	14.0 – 16.0
Clay, dark-gray, rust mottling	17.0 – 18.0
Clay, dark-gray, olive-green mottling	18.0 – 20.0
Clay, dark-gray	20.0 – 26.0

Well Identification: WC–37–17 **Date: 4/3/92**
Location: T. 83N., R. 25W., sec. 24, NE1/4 **Altitude of land surface: 1,011 feet**

Description	Depth Interval (feet)
Topsoil, black, organic	0 – 1.0
Subsoil, brown-black, clayey	1.0 – 3.0
Clay, gray, sandy	3.0 – 4.0
Clay, gray, sandy, rust-red mottling, pebbles, firmer than above	4.0 – 6.0
Same, water	6.0 – 7.5
Clay, darker gray, olive gray-green mottling	7.5 – 10.0
Clay, dark-gray	10.0 – 17.5

Table 2. Descriptive logs of selected boreholes drilled in the Walnut Creek Watershed, Boone and Story Counties, Iowa—Continued

Well identification: WC–38–17 **Date: 4/3/92**
Location: T. 83N., R. 25W., sec. 24, NE1/4 **Altitude of land surface: 1,029 feet**

Description	Depth interval (feet)
Topsoil, black, organic	0 – 1.0
Clay, brown-black	1.0 – 2.5
Clay, brown, sandy, mottled rust and light-gray, pebbles	2.5 – 6.0
Same, more gray mottling, firmer	6.0 – 7.5
Clay, dark-gray, olive-green mottling	7.5 – 9.5
Clay, dark-gray	9.5 – 17.0

Table 3. Local numbers and construction data for selected wells drilled in the Walnut Creek Watershed, Boone and Story Counties, Iowa

Local number	Site identification (latitude, longitude, and 2-digit sequential number)	Land-surface altitude (feet above sea level)	Height of measuring point above land surface (feet)	Depth of screened interval below land surface (feet)
WC–1–6	415754093385301	1,007.70	3.10	5.0 – 7.5
WC–1–9	415754093385302	1,007.87	2.60	7.5 – 10.0
WC–1–14	415754093385303	1,007.84	2.90	12.5 – 15.0
WC–2–4	415756093391001	999.28	2.00	2.5 – 5.0
WC–2–6	415756093391002	999.35	1.80	5.0 – 7.5
WC–2–9	415756093391003	999.29	1.90	7.5 – 10.0
WC–2–14	415756093391004	999.00	1.80	12.5 – 15.0
WC–2–21	415756093391005	998.33	2.70	20.0 – 22.5
WC–3–4	415754093390701	1,001.44	1.65	2.5 – 5.0
WC–3–6	415754093390702	1,000.45	3.10	4.5 – 7.0
WC–3–11	415754093390703	1,000.32	2.60	10.0 – 12.5
WC–4–9	415752093413101	1,037.19	2.75	8.0 – 10.5
WC–4–16	415752093413102	1,037.34	2.65	15.0 – 17.5
WC–5–6	415755093420702	1,037.54	2.65	5.0 – 7.5
WC–5–14	415755093420701	1,037.46	2.55	12.5 – 15.0
WC–6–9	415748093405601	1,026.92	2.70	8.0 – 10.5
WC–6–19	415748093405602	1,027.09	2.70	18.0 – 20.5
WC–7–6	415801093415401	1,036.46	2.25	5.0 – 7.5
WC–7–9	415801093415402	1,036.61	2.15	8.0 – 10.5
WC–7–14	415801093415403	1,036.55	2.25	13.0 – 15.5
WC–7–21	415801093415404	1,036.67	2.35	20.0 – 22.5
WC–8–14	415730093415501	1,041.51	2.30	13.0 – 15.5
WC–8–19	415730093415502	1,041.52	2.30	18.0 – 20.5
WC–9–4	415809093415501	1,034.72	2.25	3.0 – 5.5
WC–9–7	415809093415502	1,035.11	2.25	6.0 – 8.5
WC–9–13	415809093415503	1,034.98	3.50	12.0 – 14.5
WC–10–5	415814093421001	1,036.17	2.10	3.5 – 6.0
WC–10–10	415814093421002	1,036.11	1.95	8.5 – 11.0
WC–10–17	415814093421003	1,036.17	2.25	16.0 – 18.5
WC–11–6	415804093421001	1,038.86	2.90	5.0 – 7.5
WC–11–10	415804093421002	1,038.84	1.40	9.0 – 11.5
WC–11–15	415804093421003	1,038.87	1.60	14.0 – 16.5

Table 3. Local numbers and construction data for selected wells drilled in the Walnut Creek Watershed, Boone and Story Counties, Iowa—Continued

Local number	Site identification (latitude, longitude, and 2-digit sequential number)	Land-surface altitude (feet above sea level)	Height of measuring point above land surface (feet)	Depth of screened interval below land surface (feet)
WC–12–10	415742093415601	1,034.69	1.65	9.0 – 11.5
WC–12–16	415742093415602	1,034.58	3.00	15.0 – 17.5
WC–13–6	415726093404403	1,034.18	2.70	5.0 – 7.5
WC–13–18	415726093404401	1,033.87	3.30	17.0 – 19.5
WC–13–24	415726093404402	1,033.99	2.25	23.0 – 25.5
WC–14–6	415726093410703	1,034.13	2.60	5.0 – 7.5
WC–14–11	415726093410701	1,034.00	2.90	10.0 – 12.5
WC–14–16	415726093410702	1,034.23	2.70	15.0 – 17.5
WC–15–5	415758093393301	1,002.81	4.15	4.0 – 6.5
WC–15–9	415758093393302	1,002.60	2.45	8.0 – 10.5
WC–15–16	415758093393303	1,002.89	3.50	14.5 – 17.0
WC–16–6	415747093430101	1,053.96	3.10	5.0 – 7.5
WC–16–16	415747093430102	1,053.70	2.95	15.0 – 17.5
WC–17–4	415806093400001	1,006.72	3.00	3.0 – 5.5
WC–17–6	415806093400002	1,006.54	3.00	5.0 – 7.5
WC–17–9	415806093400003	1,006.58	3.20	7.5 – 10.0
WC–17–14	415806093400004	1,006.45	3.10	12.5 – 15.0
WC–18–9	415729093413101	1,033.97	2.93	7.5 – 10.0
WC–19–4	415759093394501	1,003.99	2.85	2.5 – 5.0
WC–19–6	415759093394502	1,003.85	3.10	5.0 – 7.5
WC–19–9	415759093394503	1,003.96	2.90	7.5 – 10.0
WC–19–14	415759093394504	1,003.92	3.33	10.0 – 12.5
WC–20–9	415728093424401	1,052.30	2.90	7.5 – 10.0
WC–20–16	415728093424402	1,052.20	3.15	14.5 – 17.0
WC–21–6	415729093425401	1,046.27	3.24	5.0 – 7.5
WC–21–14	415729093425402	1,046.30	2.90	13.0 – 15.5
WC–22–6	415747093424601	1,043.14	2.91	5.0 – 7.5
WC–22–14	415747093424602	1,043.23	2.72	12.5 – 15.0
WC–23–9	415728093422701	1,044.61	2.68	7.5 – 10.0
WC–23–16	415728093422702	1,044.70	2.90	15.0 – 17.5

Table 3. Local numbers and construction data for selected wells drilled in the Walnut Creek Watershed, Boone and Story Counties, Iowa—Continued

Local number	Site identification (latitude, longitude, and 2-digit sequential number)	Land-surface altitude (feet above sea level)	Height of measuring point above land surface (feet)	Depth of screened interval below land surface (feet)
WC–24–9	415740093422601	1,045.73	2.57	8.0 – 10.5
WC–24–16	415740093422602	1,046.27	3.60	15.0 – 17.5
WC–25–7	415739093413101	1,031.68	3.11	5.5 – 8.0
WC–26–3	415759093384601	1,008.36	1.40	1.0 – 3.5
WC–26–6	415759093384602	1,008.40	1.31	4.0 – 6.5
WC–26–16	415759093384603	1,008.39	1.17	14.0 – 16.5
WC–27–15	415646093362201	969.58	3.38	14.0 – 16.5
WC–27–20	415646093362202	969.01	3.27	18.0 – 20.5
WC–27–30	415646093362203	969.38	3.40	29.0 – 31.5
WC–28–7	415642093362801	980.03	1.71	6.0 – 8.5
WC–28–11	415642093362802	980.02	2.96	10.0 – 12.5
WC–28–18	415642093362803	980.02	1.02	16.5 – 19.0
WC–29–3	415807093395401	1,012.72	1.10	2.0 – 4.5
WC–29–9	415807093395402	1,012.65	0.75	8.0 – 10.5
WC–29–18	415807093395403	1,012.36	0.89	16.5 – 19.0
WC–30–4	415808093394701	1,018.29	0.94	2.0 – 4.5
WC–30–8	415808093394702	1,018.60	0.63	6.5 – 9.0
WC–30–15	415808093394703	1,018.58	0.96	14.0 – 16.5
WC–31–6	415808093393301	1,017.22	0.70	4.0 – 6.5
WC–31–13	415808093393302	1,017.22	0.50	11.5 – 14.0
WC–32–4	415801093395501	1,007.11	2.85	3.0 – 5.5
WC–32–10	415801093395502	1,007.11	2.60	8.0 – 10.5
WC–32–16	415801093395503	1,007.10	1.56	14.0 – 16.5
WC–33–6	415755093400101	1,007.73	1.19	4.0 – 6.5
WC–33–16	415755093400102	1,007.54	1.63	14.0 – 16.5
WC–34–5	415756093393901	1,004.21	2.29	3.0 – 5.5
WC–34–16	415756093393902	1,004.15	2.84	14.0 – 16.5
WC–34–30	415756093393903	1,004.18	3.29	28.0 – 30.5

Table 3. Local numbers and construction data for selected wells drilled in the Walnut Creek Watershed, Boone and Story Counties, Iowa—Continued

Local number	Site identification (latitude, longitude, and 2-digit sequential number)	Land-surface altitude (feet above sea level)	Height of measuring point above land surface (feet)	Depth of screened interval below land surface (feet)
WC–35–3	415754093393901	1,004.02	1.71	1.0 – 3.5
WC–35–6	415754093393902	1,004.01	1.83	3.5 – 6.0
WC–35–17	415754093393903	1,003.84	1.44	15.0 – 17.5
WC–36–8	415847093421601	1,043.82	2.13	6.0 – 8.5
WC–36–13	415847093421602	1,043.58	2.19	11.0 – 13.5
WC–36–24	415847093421603	1,043.78	2.45	22.0 – 24.5
WC–37–3	415913093421001	1,030.61	2.00	1.0 – 3.5
WC–37–6	415913093421002	1,030.45	1.00	4.0 – 6.5
WC–37–17	415913093421003	1,030.50	3.10	15.0 – 17.5
WC–38–3	415933093421001	1,028.11	2.00	1.0 – 3.5
WC–38–6	415933093421002	1,028.52	1.04	4.0 – 6.5
WC–38–17	415933093421003	1,029.28	2.01	15.0 – 17.5

Table 4. Water-level measurements in selected wells in the Walnut Creek Watershed, Boone and Story Counties, Iowa, May 1991–September 1993

[Water levels, in feet above sea level; --, no data]

Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level
Site identification: 415754093385301											
Local number: WC–1–6											
May 07, 1991	1,006.43	Sept. 04, 1991	--	Jan. 02, 1992	1,004.96	July 06, 1992	1,002.20	Nov. 13, 1992	1,003.35	May 18, 1993	1,004.59
24	1,005.72	16	--	27	1,005.11	17	1,005.01	Dec. 10	1,003.79	June 08	1,005.41
June 17	1,004.71	Oct. 09	--	Mar. 10	1,005.83	Aug. 03	1,005.76	12	1,004.91	July 15	1,005.87
July 09	1,002.59	10	--	23	1,004.78	13	1,005.07	Jan. 08, 1993	1,003.78	Aug. 10	1,005.97
15	1,002.21	17	--	Apr. 15	1,003.97	Sept. 03	1,002.81	22	1,003.00	Sept. 10	1,003.60
Aug. 01	1,001.00	Nov. 12	1,003.58	30	1,005.36	17	1,002.47	28	1,003.78		
02	--	27	1,004.01	May 19	1,003.66	Oct. 01	1,002.10	Feb. 24	1,002.84		
14	1,001.00	Dec. 11	1,005.40	June 04	1,003.26	13	1,001.88	Apr. 02	1,006.02		
Sept. 03	1,000.67	16	1,005.54	15	1,002.88	29	1,001.65	23	1,005.58		
	Lowest water level 1,000.67		Sept. 03, 1991								
	Highest water level 1,006.43		May 07, 1991								
Site identification:: 415754093385302											
Local number: WC–1–9											
May 07, 1991	1,006.45	Sept. 16, 1991	999.78	Jan. 02, 1992	1,004.99	July 17, 1992	1,005.93	Dec. 10, 1992	1,003.84	May 18, 1993	1,004.63
23	1,005.75	Oct. 09	999.91	27	1,004.42	Aug. 03	1,005.78	22	1,004.90	June 08	1,005.43
June 17	1,004.66	10	--	Mar. 10	1,005.85	13	1,005.08	Jan. 08, 1993	1,003.70	July 15	1,005.88
July 09	1,002.61	17	999.76	23	1,004.82	Sept. 03	999.26	28	1,003.10	Aug. 10	1,005.90
15	1,002.22	Nov. 12	1,003.52	Apr. 30	1,005.39	17	1,002.50	Feb. 24	1,002.86	Sept. 10	1,001.83
Aug. 01	1,000.96	27	1,004.04	June 04	1,003.25	Oct. 01	1,002.12	Mar. 17	1,004.75		
14	1,000.40	Dec. 11	1,004.71	15	1,002.89	03	1,001.90	Apr. 02	1,006.04		
Sept. 03	998.96	16	1,005.55	July 06	1,002.19	Nov. 13	1,003.39	23	1,005.57		
	Lowest water level 998.96		Sept. 03, 1991								
	Highest water level 1,006.45		May 07, 1991								
Site identification: 415754093385303											
Local number: WC–1–14											
May 07, 1991	1,006.13	Aug. 01, 1991	1,001.03	Oct. 09, 1991	999.89	Dec. 11, 1991	1,004.98	Mar. 10, 1992	1,005.81	May 19, 1992	1,003.71
23	1,005.43	14	1,000.47	17	999.79	16	1,005.50	23	1,004.84	June 04	1,003.32
July 09	1,002.68	Sept. 03	999.05	Nov. 12	1,003.52	Jan. 02, 1992	1,004.98	Apr. 15	1,004.02	15	1,002.92
15	1,002.20	16	999.75	27	1,004.01	27	1,004.77	30	1,005.33	July 06	1,002.20

Table 4. Water-level measurements in selected wells in the Walnut Creek Watershed, Boone and Story Counties, Iowa, May 1991–September 1993—Continued

Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level
Site identification: 415754093385303—Continued											
Local number: WC–1–14											
July 17, 1992	1,004.99	Sept. 17, 1992	1,002.54	Dec. 10, 1992	1,003.84	Jan. 28, 1993	1,003.11	Apr. 23, 1993	1,005.56	Aug. 10, 1993	1,005.82
Aug. 03	1,005.77	Oct. 01	1,002.16	22	1,004.97	Feb. 24	1,002.88	May 18	1,004.67	Sept. 10	1,003.14
13	1,005.09	29	1,001.69	Jan. 08, 1993	1,003.51	Mar. 17	1,004.74	June 08	1,005.42		
Sept. 03	1,002.87	Nov. 13	1,003.41	22	1,003.05	Apr. 02	1,006.00	July 15	1,005.88		
Lowest water level	999.05	Sept. 03, 1991									
Highest water level	1,006.13	May 07, 1991									
Site identification: 415756093391001											
Local number: WC–2–4											
May 07, 1991	996.64	Sept. 03, 1991	--	Dec. 11, 1991	995.63	June 04, 1992	994.30	Dec. 10, 1992	994.79	June 08, 1993	995.08
24	996.01	04	--	16	995.45	15	--	22	995.06	July 15	996.11
June 17	995.92	16	994.78	Jan. 02, 1992	995.02	July 06	--	Jan. 08, 1993	994.59	Aug. 10	996.18
July 09	994.93	Oct. 09	994.87	27	994.90	17	995.23	28	994.51	Sept. 10	994.28
10	--	10	--	Mar. 10	995.79	Aug. 03	995.34	Feb. 24	994.34		
15	--	18	--	23	994.90	13	996.62	Mar. 17	994.91		
Aug. 01	--	Nov. 12	--	Apr. 15	994.75	Sept. 03	--	Apr. 02	996.18		
02	--	13	--	30	995.16	17	--	23	995.26		
14	--	28	993.95	May 19	994.42	Nov. 13	994.46	May 18	994.82		
Lowest water level	993.95	Nov. 28, 1991									
Highest water level	996.64	May 07, 1991									
Site identification: 415756093391002											
Local number: WC–2–6											
May 07, 1991	996.60	Sept. 16, 1991	992.07	Jan. 02, 1992	995.01	July 06, 1992	993.57	Nov. 13, 1992	994.45	Apr. 02, 1993	996.10
23	995.99	Oct. 09	992.07	27	994.87	17	995.23	Dec. 10	994.78	23	995.25
June 17	995.89	10	--	Mar. 10	995.75	Aug. 03	995.30	22	995.03	May 18	994.82
July 09	994.92	17	--	23	994.89	13	994.81	Jan. 08, 1993	994.58	June 08	995.08
15	994.65	Nov. 12	992.05	Apr. 15	994.74	Sept. 03	993.82	22	994.51	July 15	996.08
Aug. 01	993.50	13		30	995.14	17	993.58	28	994.51	Aug. 10	996.21
14	992.96	27	994.01	May 19	994.42	Oct. 01	993.46	Feb. 24	994.34	Sept. 10	994.58
Sept. 03	992.15	Dec. 11	995.65	June 04	994.31	13	993.45	Mar. 17	994.50		
04	--	16	995.42	15	994.13	29	993.47				
Lowest water level	992.05	Nov. 12, 1991									
Highest water level	996.60	May 07, 1991									

Table 4. Water-level measurements in selected wells in the Walnut Creek Watershed, Boone and Story Counties, Iowa, May 1991–September 1993—Continued

Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level
Site identification: 415756093391003											
Local number: WC–2–9											
May 07, 1991	996.65	Sept. 16, 1991	991.29	Jan. 02, 1992	994.84	July 06, 1992	993.61	Nov. 13, 1992	994.43	Apr. 23, 1993	995.25
23	995.68	Oct. 09	990.81	27	994.77	17	995.33	Dec. 10	994.71	May 18	994.82
June 17	995.92	10		Mar. 10	995.68	Aug. 03	995.34	22	994.99	June 08	995.08
July 09	994.95	18	990.35	23	994.83	13	994.80	Jan. 08, 1993	994.55	July 15	996.19
17	994.62	Nov. 12	989.94	Apr. 15	994.72	Sept. 03	993.86	22	994.47	Aug. 10	996.12
Aug. 01	993.59	13		30	995.19	17	993.58	28	994.48	Sept. 10	994.61
14	993.04	27	993.15	May 19	994.41	Oct. 01	993.45	Feb. 24	994.28		
Sept. 03	991.44	Dec. 11	995.16	June 04	994.37	13	993.43	Mar. 17	994.89		
04	--	16	995.09	15	994.17	29	993.44	Apr. 02	996.09		
Lowest water level 989.94 Nov. 12, 1991											
Highest water level 996.65 May 07, 1991											
Site identification: 415756093391004											
Local number: WC–2–14											
May 07, 1991	993.61	Sept. 16, 1991	989.71	Jan. 02, 1992	993.15	June 15, 1992	992.55	Oct. 01, 1992	993.36	May 18, 1993	995.11
June 17	993.85	Oct. 09	991.72	27	994.15	July 06	993.78	Jan. 22, 1993	992.86	June 08	996.40
July 15	990.04	18	988.18	Mar. 10	994.40	17	991.82	28	993.44	Aug. 10	995.38
Aug. 01	993.51	Nov. 12	990.33	23	994.51	Aug. 03	995.09	Feb. 24	993.72	Sept. 10	995.47
14	992.20	27	990.56	Apr. 15	994.22	13	993.00	Mar. 17	994.00		
Sept. 03	989.55	Dec. 11	992.70	30	994.89	Sept. 03	994.41	Apr. 02	995.70		
04	--	16	991.01	June 04	994.14	17	992.70	23	995.05		
Lowest water level 988.18 Oct. 18, 1991											
Highest water level 996.40 June 08, 1993											
Site identification: 415756093391005											
Local number: WC–2–21											
May 07, 1991	987.05	Oct. 09, 1991	991.46	Mar. 23, 1992	993.85	July 17, 1992	986.18	Jan. 28, 1993	990.37	July 15, 1993	996.71
June 17	989.94	17	984.14	Apr. 15	992.47	Aug. 03	992.32	Feb. 24	990.84	Aug. 10	995.80
July 09	991.73	Nov. 12	989.24	30	993.66	13	987.04	Mar. 17	989.81	Sept. 10	995.78
Aug. 01	991.72	27	987.53	May 19	990.24	Sept. 03	993.05	Apr. 02	994.91		
14	989.96	Dec. 11	990.22	June 04	993.06	17	987.97	23	994.85		
Sept. 03	988.13	16	986.32	15	987.23	Oct. 01	991.62	May 18	994.72		
16	988.20	Jan. 02, 1992	988.35	July 06	992.35	Jan. 22, 1993	987.35	June 08	994.74		
Lowest water level 984.14 Oct. 17, 1991											
Highest water level 996.71 July 15, 1993											

Table 4. Water-level measurements in selected wells in the Wainut Creek Watershed, Boone and Story Counties, Iowa, May 1991–September 1993—Continued

Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level
Site identification: 415754093390701											
Local number: WC–3–4											
May 07, 1991	1,000.79	Sept. 04, 1991	--	Jan. 02, 1992	999.14	July 06, 1992	995.87	Dec. 22, 1992	998.53	June 08, 1993	998.58
24	999.68	16	997.67	27	998.74	17	998.80	Jan. 08, 1993	997.19	July 15	999.30
June 17	999.34	Oct. 09	997.88	Mar. 10	999.77	Aug. 03	999.20	22	997.03	Aug. 10	999.26
July 09	997.70	10	--	23	998.49	13	998.44	28	997.28	Sept. 10	997.39
15	997.42	17	997.43	Apr. 15	998.04	Sept. 03	996.70	Feb. 24	996.86		
Aug. 01	996.78	Nov. 12	998.49	30	998.62	17	996.19	Mar. 17	998.06		
02	--	27	998.88	May 19	997.35	Oct. 01	996.54	Apr. 02	999.62		
14	997.02	Dec. 11	999.66	June 04	996.93	Nov. 13	997.83	23	998.79		
Sept. 03	996.76	16	999.11	15	996.39	Dec. 10	998.61	May 18	997.96		
	Lowest water level 995.87	July 06, 1992									
	Highest water level 1,000.79	May 07, 1991									
Site identification: 415754093390702											
Local number: WC–3–6											
May 07, 1991	999.71	Sept. 04, 1991	--	Jan. 02, 1992	999.13	June 15, 1992	996.44	Oct. 29, 1992	996.24	Mar. 17, 1993	998.17
24	998.83	16	996.32	27	998.78	July 06	995.92	Nov. 13	997.86	Apr. 02	999.72
June 17	998.27	Oct. 09	996.74	Mar. 10	999.80	17	998.84	Dec. 10	998.61	23	998.89
July 09	996.61	17	996.27	23	998.54	Aug. 03	999.26	22	998.55	May 18	998.06
15	996.37	Nov. 12	998.40	Apr. 15	998.08	13	998.46	Jan. 08, 1993	997.31	June 08	998.67
Aug. 01	995.41	27	998.82	30	998.65	Sept. 17	997.04	22	997.16	July 15	999.39
14	995.88	Dec. 11	998.59	May 19	997.39	Oct. 01	996.61	28	997.42	Aug. 10	999.33
Sept. 03	994.41	16	999.03	June 04	996.97	13	996.35	Feb. 24	996.98	Sept. 10	997.46
	Lowest water level 994.41	Sept. 03, 1991									
	Highest water level 999.80	Mar. 10, 1992									
Site identification: 415754093390703											
Local number: WC–3–11											
May 07, 1991	999.73	Sept. 16, 1991	995.49	Jan. 02, 1992	999.10	June 15, 1992	996.57	Oct. 01, 1992	996.67	Jan. 22, 1993	997.18
24	999.19	Oct. 09	996.02	27	998.72	July 06	996.03	13	996.51	28	997.42
June 17	999.35	17	995.88	Mar. 10	999.48	17	998.82	29	996.28	Feb. 24	996.99
July 09	996.75	Nov. 12	998.21	23	998.46	Aug. 03	999.28	Nov. 13	997.86	Mar. 17	998.05
15	997.02	27	998.60	Apr. 15	998.10	13	998.50	Dec. 10	998.35	Apr. 02	999.54
Aug. 01	995.57	Dec. 11	999.53	30	998.67	Sept. 03	996.94	22	998.55	23	998.91
14	995.69	16	999.11	May 19	997.47	17	997.03	Jan. 08, 1993	997.32	May 18	998.04

Table 4. Water-level measurements in selected wells in the Walnut Creek Watershed, Boone and Story Counties, Iowa, May 1991–September 1993—Continued

Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level
Site identification: 415754093390703—Continued											
Local number: WC–3–11											
June 08, 1993	998.54	July 15, 1993	999.35	Aug. 10, 1993	999.21	Sept. 10, 1993	997.51				
Lowest water level	995.49	Sept. 16, 1991									
Highest water level	999.73	May 07, 1991									
Site identification: 415752093413101											
Local number: WC–4–9											
May 07, 1991	1,035.27	Sept. 16, 1991	1,028.50	Jan. 02, 1992	1,031.74	June 17, 1992	1,031.65	Oct. 22, 1992	1,030.15	Apr. 18, 1993	1,032.89
22	1,034.51	30	1,027.79	24	1,032.25	25	1,031.25	Nov. 04	1,029.93	July 20	1,035.35
29	1,035.19	Oct. 01	--	Mar. 10	1,034.39	July 14	1,030.38	Dec. 03	1,031.29	Aug. 18	1,035.30
June 17	1,034.38	16	1,027.59	23	1,033.66	30	1,031.38	17	1,032.55	Sept. 21	1,032.48
July 01	1,032.68	Nov. 07	1,027.62	Apr. 07	1,033.34	Aug. 12	1,032.64	Jan. 06, 1993	1,032.26		
17	1,031.63	08	--	24	1,035.46	27	1,031.90	15	1,032.02		
29	1,031.01	22	1,028.00	May 05	1,033.88	Sept. 08	1,031.40	Feb. 01	1,031.70		
Aug. 14	1,030.66	Dec. 04	1,028.76	21	1,032.74	25	1,031.44	24	1,031.56		
29	1,031.01	18	1,031.39	June 02	1,032.28	Oct. 08	1,030.71	Mar. 11	1,033.56		
Lowest water level	1,027.59	Oct.16, 1991									
Highest water level	1,035.46	Apr. 24, 1992									
Site identification: 415752093413102											
Local number: WC–4–16											
May 07, 1991	1,035.32	Sept. 30, 1991	1,027.89	Mar. 10, 1992	1,034.29	June 25, 1992	1,031.23	Oct. 22, 1992	1,030.16	Mar. 11, 1993	1,033.34
22	1,034.67	Oct. 16	1,027.60	23	1,033.69	July 14	1,030.53	Nov. 04	1,030.04	Apr. 18	1,035.20
28	1,034.37	Nov. 07	1,027.73	Apr. 07	1,033.29	30	1,031.71	Dec. 03	1,031.31	June 07	1,033.93
June 17	1,034.24	22	1,028.54	24	1,035.37	Aug. 12	1,032.76	17	1,032.45	July 20	1,035.35
July 29	1,031.04	Dec. 04	1,029.23	May 05	1,033.88	27	1,031.93	Jan. 06, 1993	1,032.31	Aug. 17	1,035.29
Aug. 14	1,030.72	18	1,030.86	21	1,032.87	Sept. 08	1,031.39	15	1,032.07	Sept. 21	1,035.29
29	1,029.90	Jan. 02, 1992	1,031.63	June 02	1,032.50	25	1,030.94	Feb. 01	1,031.66		
Sept. 16	1,028.48	24	1,032.42	17	1,031.72	Oct. 08	1,030.45	24	1,031.54		
Lowest water level	1,027.60	Oct. 16, 1991									
Highest water level	1,035.37	Apr. 24, 1992									

Table 4. Water-level measurements in selected wells in the Walnut Creek Watershed, Boone and Story Counties, Iowa, May 1991–September 1993—Continued

Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level
Site identification: 415755093420702											
Local number: WC–5–6											
May 06, 1991	1,034.71	Oct. 09, 1991	1,031.60	Mar. 10, 1992	1,035.44	July 27, 1992	1,035.29	Dec. 30, 1992	1,034.03	July 16, 1993	1,035.51
22	1,034.78	10	--	23	1,034.80	Aug. 12	1,034.83	Jan. 25, 1993	1,033.09	Aug. 10	1,035.64
30	1,035.46	16	1,031.37	Apr. 15	1,033.85	Sept. 01	1,032.72	Feb. 24	1,033.05	18	1,035.53
June 17, 1991	1,035.14	Nov. 12, 1991	1,033.53	30	1,035.16	23	1,032.59	Mar. 09	1,035.53	Sept. 09	1,033.32
July 09	1,032.96	27	1,033.72	May 20	1,033.49	Oct. 08	1,032.30	Apr. 06	1,035.20	21	1,033.61
Aug. 01	1,032.28	Dec. 11	1,034.94	June 01	1,033.11	20	1,032.14	21	1,034.91		
14	1,033.08	16, 1991	1,035.24	17	1,032.77	Nov. 04	1,033.75	May 12	1,035.71		
Sept. 03	1,031.74	Jan. 02, 1992	1,034.86	29	1,032.38	Dec. 04	1,033.44	24	1,034.37		
16	1,032.21	27	1,035.04	July 14	1,032.68	17	1,034.87	June 21	1,035.29		
	Lowest water level 1,031.37	Oct. 16, 1991									
	Highest water level 1,035.71	May 12, 1993									
Site identification: 415755093420701											
Local number: WC–5–14											
May 06, 1991	1,034.60	Oct. 09, 1991	1,031.65	Mar. 23, 1992	1,034.77	Aug. 12, 1992	1,034.82	Jan. 25, 1993	1,033.12	Aug. 10, 1993	1,035.51
22	1,034.78	17	1,031.48	Apr. 15	1,033.89	Sept. 01	1,032.79	Feb. 24	1,033.00	18	1,035.59
30	1,035.07	Nov. 12	1,033.52	30	1,035.15	23	1,032.62	Mar. 09	1,034.46	Sept. 09	1,034.45
June 17	1,035.11	27	1,033.70	May 20	1,033.51	Oct. 09	1,032.41	Apr. 06	1,035.05	21	1,033.66
July 09	1,032.99	Dec. 11	1,034.68	June 01	1,033.15	20	1,032.29	21	1,034.84		
Aug. 01	1,032.39	16	1,035.19	17	1,032.83	Nov. 04	1,033.67	May 12	1,035.71		
14	1,033.18	Jan. 02, 1992	1,034.80	29	1,032.51	Dec. 04	1,033.41	24	1,034.31		
Sept. 03	1,031.89	27	1,034.96	July 14	1,032.74	17	1,034.74	June 21	1,035.30		
16	1,032.24	Mar. 10	1,035.38	27	1,035.28	30	1,034.03	July 16	1,035.53		
	Lowest water level 1,031.48	Oct. 17, 1991									
	Highest water level 1,035.71	May 12, 1993									
Site identification: 415748093405601											
Local number: WC–6–9											
May 07, 1991	1,025.87	Aug. 14, 1991	1,023.06	Dec. 04, 1991	1,024.13	Apr. 24, 1992	1,026.26	July 30, 1992	1,026.72	Nov. 04, 1992	1,024.07
22	1,025.31	29	1,022.34	18	1,024.29	May 05	1,024.59	Aug. 12	1,024.46	Dec. 03	1,024.02
29	1,025.19	Sept. 16	1,022.48	Jan. 02, 1992	1,024.14	21	1,024.21	27	1,023.64	17	1,024.86
June 17	1,024.89	30	1,022.10	24	1,023.96	June 02	1,023.85	Sept. 08	1,023.39	Jan. 06, 1993	1,023.54
July 01	1,023.92	Oct. 16	1,022.38	Mar. 10	1,024.87	17	1,023.59	25	1,023.12	15	1,025.24
17	1,023.29	Nov. 07	1,023.78	23	1,024.36	25	1,023.06	Oct. 08	1,022.90	Feb. 01	1,023.04
29	1,022.75	22	1,024.09	Apr. 07	1,022.67	July 14	1,023.55	22	1,022.70	24	1,022.82

Table 4. Water-level measurements in selected wells in the Walnut Creek Watershed, Boone and Story Counties, Iowa, May 1991–September 1993—Continued

Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level
Site identification: 415748093405601—Continued **Local number: WC–6–9**											
Mar. 11, 1993	1,023.62	Apr. 18, 1993	1,025.18	June 07, 1993	1,025.31	July 20, 1993	1,024.72	Aug. 17, 1993	1,024.99	Sept. 21, 1993	1,024.33
	Lowest water level 1,022.10		Sept. 30, 1991								
	Highest water level 1,026.72		July 30, 1992								
Site identification: 415748093405602 **Local number: WC–6–19**											
May 07, 1991	1,025.30	Sept. 16, 1991	1,022.50	Jan. 24, 1992	1,024.22	June 17, 1992	1,023.51	Oct. 08, 1992	1,022.81	Feb. 24, 1993	1,023.02
22	1,025.49	30	1,022.26	Mar. 10	1,025.57	25	1,023.21	22	1,022.77	Mar. 11	1,023.57
June 17	1,023.89	Oct. 16	1,021.64	23	1,024.39	July 14	1,023.29	Nov. 04	1,023.49	Apr. 18	1,025.80
July 01	1,024.37	Nov. 07	1,023.42	Apr. 07	1,024.49	30	1,025.55	Dec. 03	1,024.08	June 07	1,023.55
17	1,023.52	22	1,022.29	24	1,026.33	Aug. 12	1,024.65	17	1,024.70	July 20	1,025.32
29	1,023.01	Dec. 04	1,024.10	May 05	1,024.81	27	1,023.74	Jan. 06, 1993	1,023.75	Aug. 17	1,025.51
14	1,022.89	18	1,023.68	21	1,024.30	Sept. 08	1,023.36	15	1,023.34	Sept. 21	1,024.76
Aug. 29	1,022.64	Jan. 02, 1992	1,024.19	June 02	1,024.13	25	1,023.22	Feb. 01	1,023.22		
	Lowest water level 1,021.64		Oct. 16, 1991								
	Highest water level 1,026.33		Apr. 24, 1992								
Site identification: 415801093415401 **Local number: WC–7–6**											
May 06, 1991	1,032.92	Sept. 04, 1991	--	Dec. 16, 1991	1,032.32	June 17, 1992	1,030.99	Dec. 04, 1992	1,030.52	May 12, 1993	1,033.26
23	1,032.61	16	--	Jan. 02, 1992	1,031.45	29	1,030.70	17	1,031.80	24	1,032.44
30	1,034.02	Oct. 09	--	27	1,031.49	July 14	1,030.38	20	1,031.31	June 21	1,032.45
June 17	1,032.30	10	--	Mar. 10	1,032.35	27	1,031.10	30	1,031.31	July 16	1,033.81
July 09	1,030.73	17	--	23	1,031.79	Aug. 12	1,031.16	Jan. 26, 1993	1,030.56	26	1,032.57
15	1,030.37	Nov. 12	--	Apr. 15	1,031.56	Sept. 01	1,030.23	Feb. 24	1,030.03	Aug. 10	1,032.72
Aug. 01	1,029.51	13	--	30	1,032.51	Oct. 09	1,029.48	Mar. 09	1,033.13	18	1,034.22
14	1,029.09	27	1,029.64	May 20	1,031.79	20	1,029.38	Apr. 06	1,032.22	Sept. 09	1,031.32
Sept. 03	1,028.76	Dec. 11	1,032.31	June 01	1,031.35	Nov. 04	1,029.71	21	1,032.46	21	1,030.55
	Lowest water level 1,028.76		Sept. 03, 1991								
	Highest water level 1,034.22		Aug. 18, 1993								

Table 4. Water-level measurements in selected wells in the Walnut Creek Watershed, Boone and Story Counties, Iowa, May 1991–September 1993—Continued

Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level
Site identification: 415801093415402											
Local number: WC-7-9											
May 06, 1991	1,032.90	Sept. 04, 1991	--	Jan. 02, 1992	1,031.47	July 14, 1992	1,030.38	Dec. 30, 1992	1,031.30	July 16, 1993	1,033.83
23	1,032.53	16	1,026.19	27	1,031.51	27	1,032.04	Jan. 14, 1993	1,030.84	26	1,032.60
30	1,033.92	Oct. 09	1,026.17	Mar. 10	1,032.36	Aug. 12	1,031.17	26	1,030.59	Aug. 10	1,032.73
31	1,032.32	10	--	23	1,031.81	Sept. 01	1,030.25	Feb. 24	1,030.05	18	1,033.25
June 17	1,032.32	17	--	Apr. 15	1,031.57	23	1,029.66	Mar. 09	1,033.14	Sept. 09	1,031.39
July 09	1,030.73	Nov. 12	1,028.18	30	1,032.51	Oct. 08	1,029.47	Apr. 06	1,033.56	21	1,030.58
15	1,030.36	13	--	May 20	1,031.81	20	1,029.36	21	1,032.48		
Aug. 01	1,029.49	27	1,029.57	June 01	1,031.37	Nov. 04	1,029.71	May 12	1,033.29		
14	1,029.09	Dec. 11	1,032.38	17	1,031.01	Dec. 04	1,030.53	24	1,032.47		
Sept. 03	1,026.39	16	1,032.33	29	1,030.70	17	1,031.83	June 21	1,032.46		
	Lowest water level 1,026.17	Oct. 09, 1991									
	Highest water level 1,033.92	May 30, 1991									
Site identification: 415801093415403											
Local number: WC-7-14											
May 06, 1991	1,032.87	Sept. 16, 1991	1,025.30	Mar. 10, 1992	1,032.32	July 27, 1992	1,031.08	Dec. 30, 1992	1,031.28	June 21, 1993	1,032.44
23	1,032.63	Oct. 09	1,024.56	23	1,031.77	Aug. 12	1,031.15	Jan. 14, 1993	1,030.82	July 16	1,033.82
30	1,033.80	17	1,023.91	Apr. 15	1,031.54	Sept. 01	1,030.24	26	1,030.56	26	1,032.57
June 17	1,032.29	Nov. 12	1,028.17	30	1,032.49	23	1,029.66	Feb. 24	1,030.05	Aug. 10	1,032.69
July 09	1,030.71	27	1,029.50	May 20	1,031.78	Oct. 08	1,029.47	Mar. 09	1,033.20	18	1,033.25
15	1,030.35	Dec. 11	1,032.37	June 01	1,031.36	20	1,029.35	Apr. 06	1,032.20	Sept. 09	1,031.37
Aug. 01	1,029.49	16	1,032.32	17	1,030.97	Nov. 04	1,029.69	21	1,032.43	21	1,030.57
14	1,029.08	Jan. 02, 1992	1,031.46	29	1,030.68	Dec. 04	1,030.52	May 12	1,033.24		
Sept. 03	1,026.38	27	1,031.48	July 14	1,030.37	17	1,031.80	29	1,032.43		
	Lowest water level 1,023.91	Oct. 17, 1991									
	Highest water level 1,033.82	July 16, 1993									
Site identification: 415801093415404											
Local number: WC-7-21											
May 06, 1991	1,032.83	Aug. 01, 1991	1,029.47	Nov. 12, 1991	1,028.16	Mar. 10, 1992	1,032.40	June 17, 1992	1,030.96	Sept. 23, 1992	1,029.66
23	1,032.45	14	1,029.08	27	1,029.41	23	1,031.72	29	1,030.68	Oct. 09	1,029.46
30	1,032.60	Sept. 03	1,026.40	Dec. 11	1,032.20	Apr. 15	1,031.50	July 14	1,030.37	20	1,029.35
June 17	1,032.28	16	1,025.31	16	1,032.27	30	1,032.44	27	1,031.04	Nov. 04	1,029.67
July 09	1,030.70	Oct. 09	1,024.62	Jan. 02, 1992	1,031.41	May 20	1,031.74	Aug. 12	1,031.15	Dec. 04	1,030.52
15	1,030.36	17	1,023.93	27	1,031.41	June 01	1,031.32	Sept. 01	1,030.24	17	1,031.76

Table 4. Water-level measurements in selected wells in the Walnut Creek Watershed, Boone and Story Counties, Iowa, May 1991–September 1993—Continued

Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level
Site identification: 415801093415404—Continued											
Local number: WC–7–21											
Dec. 30, 1992	1,031.25	Feb. 24, 1993	1,030.06	Apr. 21, 1993	1,032.40	June 21, 1993	1,032.43	Aug. 10, 1993	1,032.60	Sept. 21, 1993	1,030.58
Jan. 14, 1993	1,031.59	Mar. 09	1,033.27	May 12	1,033.22	July 16	1,033.82	18	1,033.32		
26	1,030.57	Apr. 06	1,033.23	24	1,032.41	26	1,032.62	Sept. 09	1,031.36		
Lowest water level 1,023.93 Oct. 17, 1991											
Highest water level 1,033.82 July 16, 1993											
Site identification: 415730093415501											
Local number: WC–8–14											
May 07, 1991	1,039.97	Aug. 29, 1991	1,033.52	Jan. 24, 1992	1,037.16	June 17, 1992	1,036.07	Oct. 08	1,034.58	Feb. 24, 1993	1,036.05
22	1,039.78	Sept. 30	1,031.38	Mar. 10	1,038.94	25	1,035.59	22	1,034.17	Mar. 11	1,036.65
28	1,038.46	Oct. 16	1,030.82	23	1,038.33	July 14	1,035.37	Nov. 04	1,034.56	Apr. 16	1,039.69
June 17	1,038.87	Nov. 07	1,033.31	Apr. 07	1,038.04	30	1,036.98	Dec. 03	1,035.79	June 07	1,038.31
July 01	1,036.97	22	1,034.57	24	1,040.16	Aug. 12	1,037.15	17	1,036.94	July 20	1,038.64
17	1,035.94	Dec. 04	1,035.21	May 05	1,038.34	27	1,036.36	Jan. 06, 1993	1,036.83	Aug. 17	1,039.09
29	1,035.06	18	1,036.24	21	1,037.25	Sept. 08	1,035.79	15	1,036.59	Sept. 21	1,036.90
Aug. 14	1,034.53	Jan. 02, 1992	1,036.69	June 02	1,036.77	25	1,035.08	Feb. 01	1,036.23		
Lowest water level 1,030.82 Oct. 16, 1991											
Highest water level 1,040.16 Apr. 24, 1992											
Site identification: 415730093415502											
Local number: WC–8–19											
May 07, 1991	1,039.64	Sept. 16, 1991	1,032.08	Jan. 24, 1992	1,037.02	June 17, 1992	1,036.16	Oct. 08, 1992	1,034.64	Feb. 24, 1993	1,035.99
28	1,038.47	30	1,031.54	Mar. 10	1,038.79	25	1,035.64	22	1,034.25	Mar. 11	1,036.45
June 17	1,038.83	Oct. 16	1,030.18	23	1,038.32	July 14	1,035.21	Nov. 04	1,034.31	Apr. 14	1,039.28
July 01	1,037.35	Nov. 07	1,031.50	Apr. 07	1,038.12	30	1,036.65	Dec. 03	1,035.64	June 07	1,038.27
17	1,035.64	22	1,033.07	24	1,039.63	Aug. 12	1,037.16	17	1,036.37	July 20	1,039.13
29	1,035.32	Dec. 04	--	May 05	1,038.44	27	1,036.38	Jan. 06, 1993	1,036.82	Aug. 17	1,039.20
Aug. 14	1,034.14	18	1,035.44	21	1,037.29	Sept. 08	1,035.75	15	1,036.27	Sept. 21	1,037.00
29	1,034.08	Jan. 02, 1992	1,036.28	June 02	1,036.80	25	1,034.74	Feb. 01	1,036.26		
Lowest water level 1,030.18 Oct. 16, 1991											
Highest water level 1,039.64 May 07, 1991											

Table 4. Water-level measurements in selected wells in the Walnut Creek Watershed, Boone and Story Counties, Iowa, May 1991–September 1993—Continued

Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level
Site identification: 415809093415501											
Local number: WC–9–4											
May 06, 1991	1,033.45	Aug. 02, 1991	--	Nov. 12, 1991	1,030.06	Mar. 10, 1992	1,033.08	July 14, 1992	1,029.99	Dec. 04, 1992	1,030.48
23	1,033.02	Sept. 03	--	13	--	23	1,032.16	27	1,032.41	17	1,031.66
30	1,033.81	04	--	27	1,030.90	Apr. 30	1,032.77	Aug. 12	1,032.17	30	1,030.93
June 17	1,032.80	16	--	Dec. 11	1,032.14	May 20	1,031.23	Sept. 01	1,030.26		
July 09	1,030.34	Oct. 09	--	16	1,032.66	June 01	1,031.11	Oct. 09	1,029.64		
15	--	10	--	Jan. 02, 1992	1,032.13	17	1,030.47	20	1,029.60		
Aug. 01	--	17	--	27	1,031.84	29	1,030.03	Nov. 04	1,030.72		
Lowest water level 1,029.60 Oct. 20, 1992											
Highest water level 1,033.81 May 30, 1991											
Site identification: 415809093415502											
Local number: WC–9–7											
May 06, 1991	1,033.59	Oct. 09, 1991	1,027.46	Mar. 10, 1992	1,032.99	Sept. 01, 1992	1,030.16	Jan. 26, 1993	1,029.84	July 26, 1993	1,033.25
23	1,033.30	16	1,027.71	23	1,032.08	23	1,029.51	Feb. 24	1,029.65	Aug. 10	1,032.97
30	1,034.12	17	--	Apr. 30	1,032.68	Oct. 08	1,028.73	Mar. 09	1,032.24	18	1,033.71
June 17	1,032.95	Nov. 12	1,030.48	May 20	1,031.44	20	1,028.95	Apr. 06	1,033.40	Sept. 09	1,031.79
July 09	1,030.49	27	1,031.07	June 17	1,030.37	Nov. 04	1,030.58	21	1,032.93	21	1,031.07
15	1,030.05	Dec. 11	1,032.30	29	1,029.90	Dec. 04	1,030.39	May 12	1,033.79		
Aug. 01	1,029.14	16	1,032.82	July 14	1,029.90	17	1,031.56	24	1,032.16		
14	1,029.05	Jan. 02, 1992	1,032.29	27	1,032.30	30	1,030.84	June 21	1,032.73		
Sept. 03	1,028.04	27	1,032.01	Aug. 12	1,032.06	Jan. 14, 1993	1,030.13	July 16	1,033.70		
Lowest water level 1,027.46 Oct. 09, 1991											
Highest water level 1,034.12 May 30, 1991											
Site identification: 415809093415503											
Local number: WC–9–13											
May 06, 1991	1,033.55	Sept. 03	1,027.88	Dec. 16, 1991	1,033.75	June 17, 1992	1,030.51	Oct. 20, 1992	1,029.10	Mar. 09, 1993	1,032.19
23	1,033.23	16	1,027.63	Jan. 02, 1992	1,032.21	29	1,029.89	Nov. 04	1,030.71	Apr. 06	1,033.53
30	1,033.90	Oct. 09	1,027.05	27	1,031.91	July 14	1,029.97	Dec. 04	1,030.56	21	1,033.18
June 17	1,032.91	10	1,027.51	28	1,031.91	27	1,032.40	17	1,031.70	May 12	1,034.00
July 09	1,030.46	17	1,026.98	Mar. 10	1,033.15	Aug. 12	1,032.16	30	1,031.05	24	1,032.33
15	1,029.98	Nov. 12	1,030.16	23	1,029.08	Sept. 01	1,030.31	Jan. 14, 1993	1,030.27	June 21	1,032.96
Aug. 01	1,029.04	27	1,030.98	Apr. 30	1,032.83	23	1,029.64	26	1,030.00	July 16	1,033.86
14	1,028.95	Dec. 11	1,032.15	May 20	1,031.58	Oct. 08	1,029.33	Feb. 24	1,029.81	26	1,033.41

Table 4. Water–level measurements in selected wells in the Walnut Creek Watershed, Boone and Story Counties, Iowa, May 1991–September 1993—Continued

Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level
Site identification: 415809093415503—Continued											
Local number: WC–9–13											
Aug. 10, 1993	1,032.98	Aug. 18, 1993	1,033.88	Sept. 09, 1993	1,031.97	Sept. 24, 1993	1,031.23				
Lowest water level	1,026.98	Oct. 17, 1991									
Highest water level	1,034.00	May 12, 1993									
Site identification: 415814093421001											
Local number: WC–10–5											
May 06, 1991	1,033.61	Aug. 14, 1991	--	Nov. 27, 1991	--	June 01, 1992	1,031.81	Dec. 17, 1992	1,032.58	June 21, 1993	1,033.32
22	1,034.02	Sept. 03	--	Dec. 11	1,032.66	17	1,031.36	30	1,031.87	July 16	1,035.03
June 03	1,034.59	04	--	16	1,033.02	29	1,030.98	Jan. 28, 1993	1,030.92	26	1,034.75
17	1,033.52	Sept. 16	--	Jan. 02, 1992	1,032.57	July 14	1,030.63	Feb. 24	1,034.07	Aug. 10	1,034.31
July 09	1,031.40	Oct. 09	--	27	1,032.39	27	1,032.80	Mar. 09	1,031.27	18	1,034.88
10	--	10	--	Mar. 10	1,033.42	Aug. 12	1,032.51	Apr. 06	1,034.45	Sept. 09	1,032.88
15	--	17	--	23	1,032.60	Sept. 01	1,030.89	21	1,033.32	21	1,032.28
Aug. 01	--	Nov. 12	--	Apr. 30	1,033.10	Oct. 09	1,030.59	May 12	1,035.11		
02	--	13	--	May 20	1,032.09	Dec. 04	1,031.84	24	1,032.76		
Lowest water level	1,030.59	Oct. 09, 1992									
Highest water level	1,035.11	May 12, 1993									
Site identification: 415814093421002											
Local number: WC–10–10											
May 06, 1991	1,033.55	Sept. 16, 1991	1,028.40	Mar. 10, 1992	1,033.41	Aug. 12, 1992	1,032.48	Jan. 14, 1993	1,031.10	July 16, 1993	1,035.06
23	1,033.84	Oct. 09	1,027.79	23	1,032.58	Sept. 01	1,030.88	26	1,030.92	26	1,034.76
June 03	1,034.62	17	1,027.74	Apr. 30	1,033.06	23	1,030.48	Feb. 24	1,030.62	Aug. 10	1,034.41
17	1,033.50	Nov. 12	1,030.89	May 20	1,032.07	Oct. 09	1,030.39	Mar. 09	1,031.49	18	1,035.00
July 09	1,031.41	27	1,031.57	June 01	1,031.79	20	1,030.32	Apr. 06	1,034.46	Sept. 09	1,032.87
15	1,031.07	Dec. 11	1,032.65	17	1,031.35	Nov. 04	1,031.78	21	1,033.24	21	1,032.28
Aug. 01	1,030.42	16	1,032.99	29	1,030.92	Dec. 04	1,031.79	May 12	1,035.09		
14	1,030.14	Jan. 02, 1992	1,032.53	July 14	1,030.57	17	1,032.55	24	1,032.71		
Sept. 03	1,029.19	27	1,032.36	27	1,032.80	30	1,031.91	June 21	1,033.30		
Lowest water level	1,027.74	Oct. 17, 1991									
Highest water level	1,035.09	May 12, 1993									

Table 4. Water–level measurements in selected wells in the Walnut Creek Watershed, Boone and Story Counties, Iowa, May 1991–September 1993—Continued

Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level
Site identification: 415814093421003 **Local number: WC–10–17**											
May 06, 1991	1,033.31	Sept. 16, 1991	1,028.57	Mar. 10, 1992	1,033.31	Aug. 12, 1992	1,032.63	Jan. 14, 1993	1,030.94	July 16, 1993	1,035.20
22	1,034.22	Oct. 09	1,027.90	23	1,032.55	Sept. 01	1,031.07	26	1,030.92	26	1,034.97
June 03	1,034.73	17	1,027.94	Apr. 30	1,033.22	23	1,030.41	Feb. 24	1,030.32	Aug. 10	1,033.32
17	1,033.71	Nov. 12	1,030.39	May 20	1,032.08	Oct. 09	1,030.52	Mar. 09	1,030.85	18	1,035.15
July 09	1,031.58	27	1,031.38	June 01	1,031.83	20	1,030.51	Apr.. 06	1,034.46	Sept. 09	1,033.46
15	1,031.23	Dec. 11	1,032.14	17	1,031.53	Nov. 04	1,031.03	21	1,033.22	21	1,032.34
Aug. 01	1,030.63	16	1,032.84	29	1,032.12	Dec. 04	1,031.60	May 12	1,034.97		
14	1,030.37	Jan. 02, 1992	1,032.32	July 14	1,030.69	17	1,032.07	24	1,032.65		
Sept. 03	1,029.45	27	1,032.16	27	1,032.41	30	1,031.90	June 21	1,033.48		
Lowest water level 1,027.90 Oct. 09, 1991 Highest water level 1,035.20 July 16, 1993											
Site identification: 415804093421001 **Local number: WC–11–6**											
May 06, 1991	1,038.00	Sept. 03, 1991	--	Jan. 02, 1992	1,036.85	June 29, 1992	1,035.27	Dec. 04, 1992	1,035.66	May 24, 1993	1,037.36
22	1,037.39	16	1,031.91	27	1,036.28	July 14	1,034.93	17	1,036.76	June 21	1,037.59
30	1,038.55	Oct. 09	1,031.90	Mar. 10	1,037.29	27	1,036.57	30	1,035.91	July 16	1,037.54
June 03	1,037.82	10	--	23	1,036.56	Aug. 12	1,036.06	Jan. 14, 1993	1,035.37	26	1,037.17
17	1,037.28	17	--	Apr. 15	1,036.31	Sept. 01	1,034.82	25	1,035.36	Aug. 10	1,037.47
July 09	1,035.70	Nov. 12	1,034.15	30	1,037.13	23	1,034.36	Mar. 09	1,036.96	18	1,037.34
15	1,035.37	27	1,035.13	May 20	1,036.49	Oct. 09	1,034.16	Apr. 06	1,037.17	Sept. 09	1,036.43
Aug. 01	1,034.35	Dec. 11	1,037.27	June 01	1,036.26	20	1,034.02	21	1,037.36	21	1,036.13
14	1,033.79	16	1,037.33	17	1,035.73	Nov. 04	1,035.48	May 12	1,038.43		
Lowest water level 1,031.90 Oct. 09, 1991 Highest water level 1,038.55 May 30, 1991											
Site identification: 415804093421002 **Local number: WC–11–10**											
May 06, 1991		Aug. 14, 1991	1,033.80	Dec. 16, 1991	1,037.33	June 01, 1992	1,036.20	Oct. 09, 1992	1,034.15	Feb. 24, 1993	1,033.17
22	1,037.35	Sept. 03	1,032.54	Jan. 02, 1992	1,036.82	17	1,035.70	20	1,034.01	Mar. 09	1,036.95
30	1,038.46	16	1,031.69	27	1,035.26	29	1,035.24	Nov. 04	1,035.29	Apr. 05	1,037.12
June 03	1,037.78	Oct. 09	1,031.11	Mar. 10	1,037.26	July 14	1,034.91	Dec. 04	1,035.64	21	1,037.31
17	1,037.20	17	1,031.03	23	1,036.53	27	1,033.93	17	1,036.74	May 12	1,038.39
July 09	1,035.65	Nov. 12	1,034.14	Apr. 15	1,036.29	Aug. 12	1,036.04	30	1,035.89	24	1,037.32
15	1,035.34	27	1,035.14	30	1,037.08	Sept. 01	1,034.81	Jan. 14, 1993	1,035.36	June 21	1,037.53
Aug. 01	1,034.33	Dec. 11	1,037.20	May 20	1,036.44	23	1,034.34	25	1,035.30	July 16	1,037.48

Table 4. Water–level measurements in selected wells in the Walnut Creek Watershed, Boone and Story Counties, Iowa, May 1991–September 1993—Continued

Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level
Site identification: 415804093421002—Continued											
Local number: WC–11–10											
July 26, 1993	1,037.13	Aug. 10, 1993	1,035.95	Aug. 18, 1993	1,037.31	Sept. 09, 1993	1,036.40	Sept. 21, 1993	1,036.09		
Lowest water level	1,031.03	Oct. 17, 1991									
Highest water level	1,038.46	May 30, 1991									
Site identification: 415804093421003											
Local number: WC–11–15											
May 06, 1991	1,037.99	Sept. 03, 1991	1,032.62	Jan. 27, 1992	1,036.28	July 14, 1992	1,034.92	Dec. 17, 1992	1,036.81	May 24, 1993	1,037.38
22	1,037.60	16	1,031.79	Mar. 10	1,037.52	27	1,036.74	30	1,035.91	June 21	1,037.70
30	1,038.03	Oct. 09	1,031.17	23	1,036.52	Aug. 12	1,035.99	Jan. 14, 1993	1,035.36	July 16	1,037.57
June 03	1,037.82	Oct. 17	1,031.10	Apr. 15	1,036.23	Sept. 01	1,034.83	25	1,035.29	26	1,037.24
17	1,037.29	Nov. 12	1,034.13	30	1,037.31	23	1,034.37	Feb. 24	1,032.59	Aug. 10	1,037.36
July 09	1,035.67	27	1,035.13	May 20	1,036.42	Oct. 09	1,034.17	Mar. 09	1,037.28	18	1,036.90
15	1,035.57	Dec. 11	1,037.41	June 01	1,036.21	20	1,034.03	Apr. 06	1,037.17	Sept. 09	1,036.41
Aug. 01	1,034.37	16	1,037.36	17	1,035.72	Nov. 04	1,035.46	21	1,037.44	21	1,036.13
14	1,033.84	Jan. 02, 1992	1,036.80	29	1,035.25	Dec. 04	1,035.66	May 12	1,038.36		
Lowest water level	1,031.10	Oct. 17, 1991									
Highest water level	1,038.36	May 12, 1993									
Site identification: 415742093415601											
Local number: WC–12–10											
May 07, 1991	1,033.54	Sept. 16, 1991	1,027.89	Mar. 10, 1992	1,033.45	July 30, 1992	1,033.22	Dec. 03, 1992	1,030.62	June 07, 1993	1,032.95
23	1,033.14	30	1,027.60	23	1,032.49	Aug. 12	1,031.84	17	1,032.09	July 20	1,033.76
28	1,032.11	Oct. 16	1,027.43	Apr. 06	1,032.04	27	1,030.68	Jan. 06, 1993	1,031.12	Aug. 17	1,033.06
June 17	1,033.17	Nov. 07	1,028.50	May 21	1,031.40	Sept. 08	1,030.04	15	1,030.78	Sept. 21	1,031.94
July 01	1,031.33	22	1,029.10	June 02	1,031.04	25	1,029.53	Feb. 01	1,030.42		
17	1,030.27	Dec. 04	1,028.26	17	1,030.35	Oct. 08	1,028.84	24	1,030.19		
Aug. 14	1,029.05	18	1,031.47	25	1,029.94	22	1,028.99	Mar. 11	1,033.60		
29	1,028.40	Jan. 24, 1992	1,031.92	July 14	1,029.25	Nov. 11	1,029.73	Apr. 16	1,034.27		
Lowest water level	1,027.43	Oct. 16, 1991									
Highest water level	1,034.27	Apr. 16, 1993									

Table 4. Water-level measurements in selected wells in the Walnut Creek Watershed, Boone and Story Counties, Iowa, May 1991–September 1993—Continued

Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level
Site identification: 415742093415602 **Local number: WC–12–16**											
May 07, 1991	1,033.45	Sept. 16, 1991	1,027.96	Mar. 10, 1992	1,033.56	June 25, 1992	1,029.84	Oct. 22, 1992	1,029.02	Mar. 11, 1993	1,034.48
23	1,033.46	30	1,027.68	23	1,032.44	July 14	1,029.31	Nov. 04	1,030.23	Apr. 16	1,034.19
28	1,033.03	Oct. 16	1,027.48	Apr. 07	1,031.63	30	1,031.31	Dec. 03	1,030.56	June 07	1,030.90
June 17	1,033.42	Nov. 07	1,029.74	24	1,034.10	Aug. 12	1,031.87	17	1,028.92	Aug. 17	1,032.93
July 01	1,031.41	22	1,028.83	May 05	1,032.27	27	1,030.70	Jan. 06, 1993	1,031.84	Sept. 22	1,032.76
17	1,030.35	Dec. 04	1,031.03	21	1,031.34	Sept. 08	1,030.06	15	1,030.73		
Aug. 14	1,029.15	18	1,031.36	June 02	1,031.01	25	1,029.17	Feb. 01	1,031.17		
29	1,028.47	Jan. 24, 1992	1,031.83	17	1,030.44	Oct. 08	1,029.45	24	1,030.88		
Lowest water level 1,027.48 Oct. 16, 1991											
Highest water level 1,034.48 Mar. 11, 1993											
Site identification: 415726093404403 **Local number: WC–13–6**											
May 22, 1991	1,029.83	Aug. 29, 1991	--	Nov. 22, 1991	--	Apr. 24, 1992	1,030.94	Aug. 27, 1992	1,028.01	Mar. 11, 1993	1,027.97
28	1,029.30	30	--	Dec. 04	1,028.48	May 05	1,029.83	Sept. 08	1,027.19	Apr. 18	1,030.76
June 17	1,029.31	Sept. 16	--	18	1,030.09	21	1,028.83	Dec. 03	1,028.38	June 07	1,029.51
July 01	1,028.13	30	--	Jan. 02, 1992	1,029.78	June 02	1,028.37	17	1,029.44	July 20	1,029.77
17	1,027.26	Oct. 16	--	24	1,029.83	17	1,027.77	Jan. 06, 1993	1,028.66	Aug. 17	1,029.31
29	--	Nov. 01	--	Mar. 10	1,030.75	25	1,027.41	15	1,028.19	Sept. 21	1,028.38
30	--	07	--	23	1,029.78	Aug. 03	1,029.04	Feb. 01	1,027.57		
Aug. 14	--	08	--	Apr. 07	1,029.18	12	1,028.94	24	1,027.30		
Lowest water level 1,027.19 Sept. 08, 1992											
Highest water level 1,030.94 Apr. 24, 1992											
Site identification: 415726093404401 **Local number: WC–13–18**											
May 07, 1991	1,031.11	Aug. 29, 1991	1,024.63	Jan. 02, 1992	1,029.84	June 02, 1992	1,028.45	Sept. 25, 1992	1,026.61	Feb. 01, 1993	1,027.65
22	1,031.14	Sept. 16	1,023.49	24	1,029.87	17	1,027.84	Oct. 08	1,026.33	24	1,026.99
28	1,029.34	30	1,023.27	Mar. 10	1,030.83	25	1,030.12	22	1,026.02	Mar. 11	1,028.07
June 17	1,029.43	Oct. 16	1,023.15	23	1,029.82	July 14	1,026.79	Nov. 04	1,026.61	Apr. 18	1,030.90
July 01	1,028.27	Nov. 07	1,024.88	Apr. 07	1,029.22	Aug. 03	1,029.10	Dec. 03	1,028.43	June 07	1,029.72
17	1,027.35	22	1,027.02	24	1,030.95	12	1,029.01	17	1,029.52	July 20	1,029.96
29	1,026.56	Dec. 04	1,028.49	May 05	1,029.92	27	1,028.10	Jan. 06, 1993	1,028.81	Aug. 17	1,029.46
Aug. 14	1,025.65	18	1,030.16	21	1,028.90	Sept. 08	1,027.31	15	1,028.26	Sept. 21	1,028.51
Lowest water level 1,023.15 Oct. 16, 1991											
Highest water level 1,031.14 May 22, 1991											

Table 4. Water–level measurements in selected wells in the Walnut Creek Watershed, Boone and Story Counties, Iowa, May 1991–September 1993—Continued

Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level
Site identification: 415726093404402 **Local number: WC–13–24**											
May 07, 1991	1,028.88	Sept. 30, 1991	1,023.29	Mar. 10, 1992	1,031.07	June 25, 1992	1,027.47	Oct. 23, 1992	1,025.98	Mar. 11, 1993	1,028.00
22	1,029.56	Oct. 16	1,022.37	23	1,029.82	July 14	1,026.78	Nov. 04	1,026.52	Apr. 18	1,030.80
June 17	1,028.12	Nov. 07	1,024.74	Apr. 07	1,029.24	Aug. 03	1,029.07	Dec. 03	1,028.40	June 07	1,029.60
July 01	1,028.52	22	1,024.92	24	1,030.90	12	1,029.00	17	1,029.49	July 20	1,029.85
29	1,026.48	Dec. 04	1,028.45	May 05	1,029.91	27	1,028.07	Jan. 06, 1993	1,028.72	Aug. 17	1,029.31
Aug. 14	1,024.04	18	1,029.63	21	1,028.88	Sept. 08	1,027.27	15	1,028.23	Sept. 21	1,028.37
29	1,024.78	Jan. 02, 1992	1,029.80	June 02	1,028.43	25	1,026.57	Feb. 01	1,027.61		
Sept. 16	1,022.67	24	1,029.88	17	1,027.84	Oct. 08	1,026.30	24	1,027.38		
	Lowest water level 1,022.37		Oct. 16, 1991								
	Highest water level 1,031.07		Mar. 10, 1992								
Site identification: 415726093410703 **Local number: WC–14–6**											
May 23, 1991	1,030.22	Sept. 16, 1991	--	Dec. 18, 1991	1,028.18	May 21, 1992	1,029.53	Sept. 25, 1992	1,027.91	Feb. 01, 1993	1,028.47
June 17	1,029.98	30	--	Jan. 02, 1992	1,030.86	June 02	1,029.13	Oct. 08	1,027.86	24	1,028.49
July 01	1,028.81	Oct. 01	--	24	1,030.84	17	1,028.48	22	1,027.68	Mar. 11	1,030.47
17	1,028.10	16	--	Mar. 10	1,031.75	July 14	1,028.12	Nov. 04	1,028.58	Apr. 18	1,030.91
29	1,027.50	Nov. 07	--	24	1,030.47	Aug. 03	1,030.10	Dec. 03	1,029.33	June 07	1,030.06
Aug. 14	1,026.88	08	--	Apr. 07	1,029.98	12	1,029.63	17	1,030.73	July 20	1,030.50
29	1,026.85	22	--	24	1,032.45	27	--	Jan. 06, 1993	1,029.13	Aug. 17	1,030.73
30	--	Dec. 04	--	May 05	1,030.34	Sept. 08	1,028.10	15	1,028.38	Sept. 21	1,029.97
	Lowest water level 1,026.85		Aug. 29, 1991								
	Highest water level 1,032.45		Apr. 24, 1992								
Site identification: 415726093410701 **Local number: WC–14–11**											
May 07, 1991	1,030.75	Sept. 16, 1991	1,022.06	Jan. 02, 1992	1,030.83	June 17, 1992	1,028.44	Oct. 22, 1992	1,027.68	Apr. 18, 1993	1,030.79
23	1,030.39	30	1,022.20	24	1,030.70	26	1,028.00	Nov. 04	1,028.55	June 07	1,030.02
29	1,030.45	Oct. 01	--	Mar. 10	1,031.68	July 14	1,028.08	Dec. 03	1,029.25	July 20	1,030.39
June 17	1,029.97	16	--	24	1,030.36	Aug. 03	1,030.02	17	1,030.64	Aug. 17	1,030.63
July 01	1,028.81	Nov. 07	--	Apr. 07	1,029.92	12	1,029.56	Jan. 06, 1993	1,029.05	Sept. 21	1,030.11
17	1,028.08	08	--	24	1,032.37	27	1,028.58	15	1,028.68		
29	1,027.52	22	1,023.15	May 05	1,030.25	Sept. 08	1,027.09	Feb. 01	1,028.45		
Aug. 14	1,026.88	Dec. 04	1,025.27	21	1,029.46	25	1,027.91	24	1,028.46		
29	1,025.77	18	1,030.65	June 02	1,029.09	Oct. 08	1,027.87	Mar. 11	1,030.35		
	Lowest water level 1,022.06		Sept. 16, 1991								
	Highest water level 1,032.37		Apr. 24, 1992								

Table 4. Water–level measurements in selected wells in the Walnut Creek Watershed, Boone and Story Counties, Iowa, May 1991–September 1993—Continued

Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level
Site identification: 415726093410702											
Local number: WC–14–16											
May 07, 1991	1,030.56	Sept. 16, 1991	1,021.06	Mar. 10, 1992	1,031.51	Aug. 03, 1992	1,029.94	Jan. 06, 1993	1,029.03	Sept. 21, 1993	1,030.45
23	1,030.05	30	1,019.86	24	1,030.18	12	1,029.47	15	1,028.93		
29	1,031.77	Oct. 16	1,019.52	Apr. 07	1,029.73	Sept. 08	1,028.05	Feb. 01	1,028.31		
June 17	1,029.82	Nov. 07	1,021.41	24	1,032.17	25	1,027.92	24	1,028.42		
July 01	1,028.80	22	1,023.43	May 05	1,030.08	Oct. 08	1,027.95	Mar. 11	1,030.23		
17	1,028.67	Dec. 04	1,025.61	21	1,029.38	22	1,027.65	Apr. 18	1,030.66		
29	1,027.52	18	1,030.50	June 02	1,029.11	Nov. 04	1,028.41	June 07	1,028.99		
Aug. 14	1,026.88	Jan. 02, 1992	1,030.70	17	1,028.51	Dec. 03	1,029.13	July 20	1,030.31		
29	1,025.48	24	1,030.48	July 14	1,028.07	17	1,030.47	Aug. 17	1,030.54		
Lowest water level 1,019.52 Oct. 16, 1991											
Highest water level 1,032.17 Apr. 24, 1992											
Site identification: 415758093393301											
Local number: WC–15–5											
May 06, 1991	999.86	Aug. 14, 1991	--	Nov. 27, 1991	997.73	May 19, 1992	997.14	Dec. 01, 1992	997.40	June 18, 1993	998.63
22	998.65	Sept. 03	--	Dec. 11	998.66	June 04	997.14	22	998.10	July 15	998.98
24	997.76	04	--	16	--	July 06	996.87	Jan. 08, 1993	997.25	Aug. 10	999.26
June 17	998.49	16	--	Jan. 02, 1992	998.40	17	998.75	22	997.11	Sept. 10	998.02
July 09	997.10	Oct. 09	--	27	998.15	Aug. 03	998.76	28	997.21		
10	--	10	--	Mar. 10	998.66	13	998.25	Mar. 17	999.77		
15	--	17	--	23	998.36	Sept. 03	997.11	Apr. 02	998.85		
Aug. 01	--	Nov. 12	--	Apr. 15	997.67	Oct. 01	--	23	998.63		
02	--	13	--	30	998.52	Nov. 13	997.47	May 18	998.54		
Lowest water level 996.87 July 06, 1992											
Highest water level 999.86 May 06, 1991											
Site identification: 415758093393302											
Local number: WC–15–9											
May 06, 1991	998.68	Aug. 14, 1991	995.89	Dec. 11, 1991	998.74	Apr. 30, 1992	998.61	Aug. 13, 1992	998.24	Dec. 10, 1992	997.40
22	998.73	Sept. 03	995.34	16	998.61	May 19	997.64	Sept. 03	996.81	22	998.10
24	998.35	Sept. 16	995.42	Jan. 02, 1992	998.47	June 04	996.87	17	996.68	Jan. 08, 1993	997.10
June 17	998.57	Oct. 09	995.44	27	998.17	15	996.57	Oct. 01	996.63	22	997.06
July 07	996.77	17	995.45	Mar. 10	998.70	July 06	996.22	13	996.65	28	997.22
15	996.56	Nov. 12	997.32	23	998.43	17	998.83	29	996.67	Feb. 24	997.20
Aug. 01	995.92	27	997.70	Apr. 15	997.69	Aug. 03	998.83	Nov. 13	997.44	Mar. 17	998.25

Table 4. Water-level measurements in selected wells in the Walnut Creek Watershed, Boone and Story Counties, Iowa, May 1991–September 1993—Continued

Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level
Site identification: 415758093393302—Continued											
Local number: WC–15–9											
Apr. 02, 1993	998.89	May 18, 1993	998.51	June 03, 1993	998.77	July 15, 1993	999.00	Aug. 10, 1993	999.16	Sept. 10, 1993	998.03
23	998.72										
Lowest water level	995.34	Sept. 03, 1991									
Highest water level	999.16	Aug. 10, 1993									
Site identification: 415758093393303											
Local number: WC–15–16											
May 06, 1991	998.98	Sept. 16, 1991	995.49	Mar. 10, 1992	998.72	Aug. 03, 1992	998.87	Dec. 22, 1992	998.12	June 03, 1993	998.82
22	998.84	Oct. 09	995.44	23	998.49	13	998.26	Jan. 08, 1993	997.43	July 15	999.06
24	997.79	17	995.51	Apr. 15	997.70	Sept. 03	996.80	22	997.05	Aug. 10	999.23
June 17	998.61	Nov. 12	997.38	30	998.64	17	996.69	28	997.17	Sept. 10	998.04
July 09	996.83	27	997.70	May 19	997.04	Oct. 01	996.61	Feb. 24	997.18		
17	996.56	Dec. 11	998.78	June 04	996.87	13	996.64	Mar. 17	998.30		
Aug. 01	996.01	16	998.68	15	996.59	29	996.65	Apr. 02	998.92		
14	996.00	Jan. 02, 1992	998.54	July 06	995.32	Nov. 13	997.43	23	998.76		
Sept. 03	995.43	27	998.16	17	998.04	Dec. 10	999.33	May 18	998.55		
Lowest water level	995.32	July 06, 1992									
Highest water level	999.33	Dec. 10, 1992									
Site identification: 415747093430101											
Local number: WC–16–6											
May 24, 1991	1,051.56	Aug. 30, 1991	--	Dec. 04, 1991	--	May 05, 1992	1,049.62	Sept. 08, 1992	1,047.20	Feb. 01, 1993	1,047.68
June 17	1,049.79	Sept. 16	--	18	1,049.26	21	1,048.52	25	1,047.17	24	1,047.35
July 01	1,048.10	30	--	Jan. 02, 1992	1,049.00	June 02	1,047.98	Oct. 08	1,047.24	Mar. 11	1,049.64
17	--	Oct. 01	--	24	1,049.21	17	1,047.23	22	1,047.20	Apr. 16	1,051.39
28	--	16	--	Mar. 10	1,050.22	25	1,047.23	Dec. 03	1,048.63	June 07	1,049.67
30	--	Nov. 07	--	23	1,049.48	July 30	1,050.36	17	1,049.92	July 20	1,049.99
Aug. 14	--	08	--	Apr. 07	1,049.19	Aug. 12	1,049.85	Jan. 06, 1993	1,048.75	Aug. 17	1,050.12
29	--	22	--	24	1,050.69	27	1,048.25	14	1,048.26	Sept. 22	1,047.79
Lowest water level	1,047.17	Sept. 25, 1992									
Highest water level	1,051.56	May 24, 1991									

Table 4. Water–level measurements in selected wells in the Walnut Creek Watershed, Boone and Story Counties, Iowa, May 1991–September 1993—Continued

Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level
Site identification: 415747093430102											
Local number: WC–16–16											
May 24, 1991	1,049.43	Sept. 30, 1991	1,041.21	Mar. 10, 1992	1,048.72	June 25, 1992	1,046.74	Oct. 22, 1992	1,045.32	Mar. 11, 1993	1,048.37
June 17	1,049.19	Oct. 16	1,041.40	23	1,048.89	July 14	1,046.25	Nov. 04	1,045.71	Apr. 16	1,050.22
July 01	1,048.12	Nov. 07	1,042.86	Apr. 07	1,048.72	30	1,048.21	Dec. 03	1,048.02	June 07	1,049.44
17	1,046.50	22	1,044.17	24	1,049.60	Aug. 12	1,049.51	17	1,048.85	July 20	1,049.81
28	1,044.99	Dec. 04	1,045.10	May 05	1,049.09	27	1,047.96	Jan. 06, 1993	1,048.34	Aug. 17	1,049.48
Aug. 14	1,044.14	18	1,046.86	21	1,048.26	Sept. 08	1,047.28	14	1,047.86	Sept. 22	1,047.96
29	1,042.90	Jan. 02, 1992	1,047.52	June 02	1,047.85	25	1,046.49	Feb. 01	1,047.22		
Sept. 16	1,041.94	24	1,047.89	17	1,047.28	Oct. 08	1,046.11	24	1,046.97		
	Lowest water level 1,041.21	Sept. 30, 1991									
	Highest water level 1,050.22	Apr. 16, 1993									
Site identification: 415806093400001											
Local number: WC–17–4											
May 22, 1991	--	Aug. 02, 1991	--	Oct. 10, 1991	--	Dec. 17, 1991	--	July 17, 1992	1,002.61	July 15, 1993	1,003.18
June 03	1,002.27	14	--	17	--	Jan. 02, 1992	--	Aug. 03	1,002.77	Aug. 10	1,003.89
July 09	1,002.59	Sept. 03	--	Nov. 12	--	27	1,002.22	13	1,002.34		
10	--	04	--	13	--	Mar. 10	1,003.23	Apr. 02, 1993	1,003.53		
15	--	16	--	27	--	23	1,006.72	23	1,002.63		
Aug. 01	--	Oct. 09	--	Dec. 11	--	July 06	1,002.28	June 08	1,002.49		
	Lowest water level 1,002.22	Jan. 27, 1992									
	Highest water level 1,006.72	Mar. 23, 1992									
Site identification: 415806093400002											
Local number: WC–17–6											
May 22, 1991	1,002.49	Sept. 16, 1991	--	Jan. 02, 1992	1,002.03	July 06, 1992	1,000.69	Dec. 10, 1992	1,001.22	May 18, 1993	1,002.33
June 03	1,002.86	Oct. 09	--	27	1,002.13	17	1,002.49	22	1,001.85	June 08	1,002.50
17	1,002.44	10	--	Mar. 10	1,003.16	Aug. 03	1,002.32	Jan. 08, 1993	1,000.93	July 15	1,003.15
July 09	1,001.25	17	--	23	1,002.14	13	1,002.09	22	1,000.97	Aug. 10	1,003.45
15	1,000.99	Nov. 12	999.52	Apr. 15	1,001.86	Sept. 03	1,000.97	28	1,000.94	Sept. 10	1,002.07
Aug. 01	1,000.18	13	--	30	1,002.39	Oct. 01	1,000.02	Feb. 24	1,000.71		
14	999.73	27	1,001.09	May 19	1,001.69	13	999.77	Mar. 17	1,001.71		
Sept. 03	--	Dec. 11	1,001.98	June 04	1,001.45	29	999.55	Apr. 02	1,003.56		
04	--	16	1,002.54	15	1,001.19	Nov. 13	1,001.97	23	1,002.59		
	Lowest water level 999.55	Oct. 29, 1992									
	Highest water level 1,003.56	Apr. 02, 1993									

Table 4. Water–level measurements in selected wells in the Walnut Creek Watershed, Boone and Story Counties, Iowa, May 1991–Sept.tember 1993—Continued

Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level
Site identification: 415806093400003											
Local number: WC–17–9											
May 22, 1991	1,002.50	Sept. 16, 1991	998.56	Jan. 27, 1992	1,002.11	July 06, 1992	1,000.65	Nov. 13, 1992	1,000.74	Apr. 02, 1993	1,003.51
June 03	1,002.82	Oct. 09	998.16	Mar. 10	1,003.15	17	1,002.43	Dec. 10	1,001.17	23	1,002.55
17	1,002.47	17	997.94	23	1,002.13	Aug. 03	1,002.67	22	1,001.81	May 18	1,002.33
July 09	1,001.28	Nov. 12	999.91	Apr. 15	1,001.83	13	1,002.07	Jan. 08, 1993	1,000.88	June 08	1,002.49
15	1,000.99	27	1,001.03	30	1,002.36	Sept. 03	1,000.95	22	1,000.92	July 15	1,003.15
Aug. 01	1,000.15	Dec. 11	1,001.95	May 19	1,001.66	Oct. 01	1,000.00	28	1,000.89	Aug. 10	1,003.69
14	999.61	16	1,002.51	June 04	1,001.42	13	999.74	Feb. 24	1,000.68	Sept. 10	1,002.00
Sept. 03	998.69	Jan. 02, 1992	1,002.01	15	1,001.16	29	999.55	Mar. 17	1,001.67		
Lowest water level	997.94	Oct. 17, 1991									
Highest water level	1,003.69	Aug. 10, 1993									
Site identification: 415806093400004											
Local number: WC–17–14											
May 22, 1991	1,001.68	Sept. 16, 1991	998.53	Jan. 27, 1992	1,001.85	July 06, 1992	1,000.48	Dec. 10, 1992	1,002.99	Apr. 23, 1993	1,002.37
June 03	1,002.73	Oct. 09	998.11	Mar. 10	1,002.95	17	1,002.24	22	1,001.63	May 18	1,002.14
17	1,002.27	17	997.94	23	1,001.88	Aug. 13	1,001.90	Jan. 08, 1993	1,000.73	June 08	1,002.31
July 09	1,001.10	Nov. 12	999.72	Apr. 15	1,001.62	Sept. 03	1,000.79	22	1,000.75	July 15	1,003.15
15	1,000.83	27	1,000.75	30	1,002.15	Oct. 01	999.90	28	1,000.70	Aug. 10	1,003.39
Aug. 01	1,000.04	Dec. 11	1,001.59	May 19	1,001.42	13	999.65	Feb. 24	1,000.50	Sept. 10	1,001.91
14	999.55	16	1,002.24	June 04	1,001.25	29	999.41	Mar. 17	1,001.45		
Sept. 03	998.68	Jan. 02, 1992	1,001.76	15	1,000.98	Nov. 13	1,000.57	Apr. 02	1,003.29		
Lowest water level	997.94	Oct. 17, 1991									
Highest water level	1,003.39	Aug. 10, 1993									
Site identification: 415729093413101											
Local number: WC–18–9											
May 23, 1991	1,030.67	Aug. 14, 1991	1,026.66	Nov. 07, 1991	1,026.88	Mar. 10, 1992	1,030.90	June 02, 1992	1,028.76	Sept. 08, 1992	1,027.49
28	1,032.54	29	1,026.63	22	1,027.60	23	1,029.85	17	1,028.19	25	1,027.14
June 17	1,030.76	Sept. 16	1,025.46	Dec. 04	1,028.22	Apr. 07	1,029.45	25	1,027.87	Oct. 08	1,027.01
July 01	1,028.88	30	1,025.15	18	1,030.53	24	1,031.71	Aug. 03	1,029.84	22	1,026.81
17	1,027.86	Oct. 01	--	Jan. 02, 1992	1,030.29	May 05	1,030.06	12	1,029.30	Nov. 04	1,027.69
28	1,027.22	16	1,024.93	24	1,030.31	21	1,029.18	27	1,028.22	Dec. 03	1,028.63

Table 4. Water-level measurements in selected wells in the Walnut Creek Watershed, Boone and Story Counties, Iowa, May 1991–Sept.tember 1993—Continued

Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level
Site identification: 415729093413101—Continued											
Local number: WC–18–9											
Dec. 17, 1992	1,029.46	Jan. 15, 1993	1,028.20	Feb. 24, 1993	1,027.52	Apr. 18, 1993	1,031.03	July 20, 1993	1,031.42	Sept. 21, 1993	1,032.81
Jan. 06, 1993	1,028.88	Feb. 01	1,027.68	Mar. 11	1,030.18	June 07	1,029.88	Aug. 17	1,031.67		
Lowest water level 1,024.93 Oct. 16, 1991											
Highest water level 1,032.81 Sept. 21, 1993											
Site identification: 415759093394501											
Local number: WC–19–4											
May 22, 1991	999.82	Aug. 01, 1991	--	Oct. 09, 1991	--	Dec. 11, 1991	999.25	Apr. 02, 1993	1,000.04	Sept. 10, 1993	999.39
June 03	999.97	02	--	10	--	16	999.36	23	999.28		
17	999.73	14	--	17	--	Jan. 02, 1992	999.17	May 18	999.28		
July 09	--	Sept. 03	--	Nov. 12	--	27	--	June 08	999.44		
10	--	04	--	13	--	Mar. 10	999.56	July 15	1,000.40		
15	--	16	--	27	--	Apr. 30	999.24	Aug. 10	1,000.69		
Lowest water level 999.17 Jan. 02, 1992											
Highest water level 1,000.69 Aug. 10, 1993											
Site identification: 415759093394502											
Local number: WC–19–6											
May 22, 1991	999.73	Sept. 16, 1991	996.91	Jan. 27, 1992	998.81	July 17, 1992	1,000.20	Dec. 10, 1992	998.73	May 18, 1993	999.38
June 03	1,000.01	Oct. 09	996.78	Mar. 10	999.73	Aug. 03	999.76	22	999.22	June 08	999.53
17	999.70	17	--	23	999.05	13	999.51	Jan. 08, 1993	998.31	July 15	1,000.38
July 09	998.61	Nov. 12	998.28	Apr. 15	998.86	Sept. 03	998.59	22	998.42	Aug. 10	1,000.69
15	998.38	13	--	30	999.35	17	998.45	28	998.51	Sept. 10	999.50
Aug. 01	997.91	27	998.52	May 19	999.84	Oct. 01	998.23	Feb. 24	998.23		
14	997.65	Dec. 11	999.38	June 04	998.74	13	998.07	Mar. 17	998.72		
Sept. 03	997.11	16	999.47	15	998.63	29	997.85	Apr. 02	1,000.04		
04	--	Jan. 02, 1992	999.55	July 06	998.43	Nov. 13	998.56	23	999.39		
Lowest water level 996.78 Oct. 09, 1991											
Highest water level 1,000.69 Aug. 10, 1993											

Table 4. Water-level measurements in selected wells in the Walnut Creek Watershed, Boone and Story Counties, Iowa, May 1991–Sept.tember 1993—Continued

Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level
Site identification: 415759093394503											
Local number: WC-19-9											
May 22, 1991	999.89	Sept. 16, 1991	996.79	Jan. 27, 1992	998.90	July 06, 1992	998.44	Nov. 13, 1992	998.61	Apr. 02, 1993	1,000.08
June 03	999.96	Oct. 09	996.77	Mar. 10	999.81	17	1,000.22	Dec. 10	998.78	23	999.52
17	999.83	17	996.69	23	999.21	Aug. 03	999.85	22	999.32	May 18	999.49
July 09	998.66	Nov. 12	998.30	Apr. 15	998.95	13	999.61	Jan. 08, 1993	998.31	June 08	999.64
15	998.40	27	998.56	30	999.51	Sept. 03	998.63	22	998.45	July 15	1,000.36
Aug. 01	997.91	Dec. 11	999.56	May 19	998.92	Oct. 01	998.26	28	998.50	Aug. 10	1,000.81
14	997.65	16	999.68	June 04	998.80	13	998.08	Feb. 24	998.27	Sept. 10	999.61
Sept. 03	997.06	Jan. 02, 1992	999.46	15	998.68	29	997.86	Mar. 17	998.85		
Lowest water level 996.69 Oct. 17, 1991											
Highest water level 1,000.81 Aug. 10, 1993											
Site identification: 415759093394504											
Local number: WC-19-14											
May 22, 1991	999.98	Sept. 16, 1991	996.81	Jan. 27, 1992	998.91	July 06, 1992	998.45	Nov. 13, 1992	998.63	Apr. 02, 1993	1,000.10
June 03	1,000.24	Oct. 09	996.80	Mar. 10	999.82	17	1,000.24	Dec. 10	998.80	23	999.57
17	999.86	17	996.71	23	999.25	Aug. 03	999.88	22	999.37	May 18	999.58
July 09	998.69	Nov. 12	998.32	Apr. 15	998.96	13	999.66	Jan. 08, 1993	998.35	June 08	999.69
15	997.87	27	998.56	30	999.56	Sept. 03	998.65	22	998.47	July 15	1,000.36
Aug. 01	997.93	Dec. 11	999.60	May 19	998.94	Oct. 01	998.28	28	998.49	Aug. 10	1,000.84
14	997.44	16	999.71	June 04	998.83	13	998.11	Feb. 24	998.39	Sept. 10	999.65
Sept. 03	997.44	Jan. 02, 1992	999.90	15	998.69	29	997.88	Mar. 17	998.87		
Lowest water level 996.71 Oct. 17, 1991											
Highest water level 1,000.84 Aug. 10, 1993											
Site identification: 415728093424401											
Local number: WC-20-9											
May 23, 1991	1,048.64	Aug. 29, 1991	--	Nov. 07, 1991	--	Mar. 10, 1992	1,048.63	June 02, 1992	1,046.48	Aug. 27, 1992	1,045.60
28	1,047.85	30	--	22	1,042.73	23	1,047.60	17	1,045.99	Sept. 08	1,044.72
June 17	1,047.67	Sept. 16	--	Dec. 04	1,044.02	Apr. 07	1,047.17	25	1,045.42	25	1,044.07
July 01	1,046.21	30	--	18	1,048.26	24	1,049.22	July 14	1,045.03	Oct. 08	1,043.79
29	1,044.00	Oct. 01	--	Jan. 02, 1992	1,048.00	May 05	1,047.86	30	1,047.38	22	1,043.52
Aug. 14	1,042.92	16	--	24	1,047.99	21	1,046.86	Aug. 12	1,046.85	29	1,043.65

Table 4. Water–level measurements in selected wells in the Walnut Creek Watershed, Boone and Story Counties, Iowa, May 1991–Sept.tember 1993—Continued

Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level
Site identification: 415728093424401—Continued **Local number: WC–20–9**											
Dec. 03, 1992	1,046.46	Jan. 06, 1993	1,046.70	Feb. 01, 1993	1,045.46	Mar. 11, 1993	1,046.33	June 07, 1993	1,048.30	Aug. 17, 1993	1,048.36
17	1,047.90	15	1,046.35	24	1,044.90	Apr. 16	1,049.35	July 20	1,048.65	Sept. 22	1,046.08
	Lowest water level 1,042.73	Nov. 22, 1991									
	Highest water level 1,049.35	Apr. 16, 1993									
Site identification: 415728093424402 **Local number: WC–20–16**											
May 23, 1991	1,048.54	Aug. 29, 1991	1,041.73	Dec. 18, 1991	1,048.20	May 05, 1992	1,047.80	Jan. 15, 1993	1,046.10	Aug. 17, 1993	1,048 34
28	1,047.80	Sept. 16	1,039.47	Jan. 02, 1992	1,047.84	Oct. 08	1,043.79	Feb. 01	1,045.40	Sept. 21	1,046.05
June 17	1,047.55	30	1,038.32	24	1,047.86	22	1,043.50	24	1,044.88		
July 01	1,046.16	Oct. 16	1,038.28	Mar. 10	1,048.65	Nov. 04	1,043.69	Mar. 11	1,046.28		
17	1,044.96	Nov. 07	1,039.53	23	1,047.55	Dec. 03	1,046.37	Apr. 16	1,049.32		
29	1,043.92	22	1,041.38	Apr. 07	1,047.10	17	1,047.83	June 07	1,048.23		
Aug. 14	1,042.80	Dec. 04	1,043.65	24	1,049.17	Jan. 06, 1993	1,046.70	July 20	1,048.62		
	Lowest water level 1,038.28	Oct. 16, 1991									
	Highest water level 1,049.32	Apr. 16, 1993									
Site identification: 415729093425401 **Local number: WC–21–6**											
May 23, 1991	1,044.89	Sept. 16, 1991	1,040.66	Jan. 24, 1992	1,042.66	July 30, 1992	1,045.38	Dec. 03, 1992	1,042.78	July 20, 1993	1,046.05
28	1,044.22	30	1,040.41	Mar. 10	1,043.65	Aug. 12	1,043.09	Jan. 06, 1993	1,042.90	Aug. 17	1,045.42
June 17	1,045.30	Oct. 16	1,040.73	23	1,042.89	27	1,041.66	15	1,042.31	Sept. 21	1,043.51
July 01	1,043.60	Nov. 07	1,041.96	Apr. 07	1,042.81	Sept. 08	1,041.60	Feb. 01	1,042.13		
17	1,041.72	22	1,042.49	24	1,044.97	25	1,041.29	24	1,042.01		
29	1,041.17	Dec. 04	1,042.61	May 05	1,043.26	Oct. 08	1,041.32	Mar. 11	1,043.94		
Aug. 14	1,041.44	17	1,042.94	June 02	1,042.93	22	1,041.27	Apr. 16	1,044.84		
29	1,040.75	Jan. 02, 1992	1,042.50	July 14	1,041.91	Nov. 04	1,042.83	June 07	1,043.50		
	Lowest water level 1,040.41	Sept. 30, 1991									
	Highest water level 1,046.05	July 20, 1993									

Table 4. Water–level measurements in selected wells in the Walnut Creek Watershed, Boone and Story Counties, Iowa, May 1991–Sept.tember 1993—Continued

Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level
Site identification: 415729093425402											
Local number: WC–21–14											
May 23, 1991	1,044.99	Aug. 29, 1991	1,040.52	Dec. 18, 1991	1,042.95	May 05, 1992	1,043.27	Jan. 15, 1993	1,042.31	Aug. 17, 1993	1,045.52
28	1,044.31	Sept. 16	1,040.73	Jan. 02, 1992	1,042.56	Oct. 08	1,041.36	Feb. 01	1,042.12	Sept. 21	1,043.60
June 17	1,045.41	30	1,040.47	24	1,042.67	22	1,041.28	24	1,042.00		
July 01	1,043.73	Oct. 16	1,040.77	Mar. 10	1,043.71	Nov. 04	1,042.78	Mar. 11	1,044.01		
17	1,042.35	Nov. 07	1,041.88	23	1,042.90	Dec. 03	1,042.80	Apr. 16	1,044.87		
29	1,041.67	22	1,042.43	Apr. 07	1,042.80	17	1,044.04	June 07	1,043.51		
Aug. 14	1,041.52	Dec. 04	1,042.60	24	1,045.01	Jan. 06, 1993	1,042.25	July 20	1,046.07		
	Lowest water level 1,040.47		Sept. 30, 1991								
	Highest water level 1,046.07		July 20, 1993								
Site identification: 415747093424601											
Local number: WC–22–6											
May 29, 1991	1,039.96	Sept. 30, 1991	1,036.78	Mar. 10, 1992	1,041.29	June 25, 1992	1,038.56	Nov. 04, 1992	1,039.81	Apr. 16, 1993	1,041.31
June 17	1,040.90	Oct. 16	1,036.51	23	1,040.25	July 14	1,038.22	Dec. 03	1,039.23	June 07	1,040.35
July 01	1,039.23	Nov. 07	1,037.69	Apr. 07	1,040.05	Aug. 12	1,040.25	17	1,040.93	20	1,042.79
17	1,038.73	22	1,038.68	24	1,042.47	27	1,039.17	Jan. 06, 1993	1,039.46	Aug. 17	1,042.97
29	1,038.31	Dec. 04	1,039.40	May 05	1,040.21	Sept. 08	1,038.79	14	1,039.24	Sept. 21	1,039.94
Aug. 14	1,038.34	18	1,040.54	21	1,039.51	25	1,038.83	Feb. 01	1,039.20		
29	1,037.20	Jan. 02, 1992	1,040.16	June 02	1,039.30	Oct. 08	1,038.78	24	1,039.17		
Sept. 16	1,037.10	24	1,040.00	17	1,038.85	22	1,038.65	Mar. 11	1,041.65		
	Lowest water level 1,036.51		Oct. 16, 1991								
	Highest water level 1,042.97		Aug. 17, 1993								
Site identification: 415747093424602											
Local number: WC–22–14											
May 29, 1991	1,040.08	Sept. 16, 1991	1,037.06	Jan. 02, 1992	1,040.05	May 21, 1992	1,039.58	Aug. 27, 1992	1,039.30	Dec. 17, 1992	1,040.83
June 17	1,041.25	30	1,036.80	24	1,039.74	June 02	1,039.43	Sept. 08	1,038.80	Jan. 06, 1993	1,039.44
July 01	1,039.47	Oct. 16	1,036.64	Mar. 10	1,041.58	17	1,038.98	25	1,038.97	14	1,039.13
17	1,038.90	Nov. 07	1,037.63	23	1,040.28	25	1,038.60	Oct. 08	1,039.04	Feb. 01	1,039.10
29	1,038.36	22	1,038.74	Apr. 07	1,039.95	July 14	1,038.23	22	1,038.64	24	1,039.09
Aug. 14	1,038.45	Dec. 04	1,039.39	24	1,042.37	30	1,041.72	Nov. 04	1,039.53	Mar. 11	1,041.80
29	1,037.78	18	1,040.24	May 05	1,040.16	Aug. 12	1,040.34	Dec. 03	1,039.68	Apr. 16	1,040.97

Table 4. Water–level measurements in selected wells in the Walnut Creek Watershed, Boone and Story Counties, Iowa, May 1991–Sept.tember 1993—Continued

Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level
Site identification: 415747093424602—Continued											
Local number: WC–22–14											
June 07, 1993	1,040.56	July 20, 1993	1,042.95	Aug. 17, 1993	1,042.43	Sept. 22, 1993	1,040.06				
Lowest water level 1,036.64 Oct. 16, 1991											
Highest water level 1,042.95 July 20, 1993											
Site identification: 415728093422701											
Local number: WC–23–9											
May 23, 1991	1,041.23	Sept. 16, 1991	1,038.92	Jan. 24, 1992	1,041.11	June 17, 1992	1,040.91	Oct. 08, 1992	1,040.59	Feb. 24, 1993	1,040.89
28	1,041.65	30	1,038.75	Mar. 10	1,041.32	25	1,040.75	22	1,040.50	Mar. 11	1,044.48
June 17	1,043.49	Oct. 16	1,038.82	23	1,041.05	July 14	1,040.96	Nov. 04	1,041.04	Apr. 16	1,041.96
July 01	1,041.01	Nov. 07	1,040.77	Apr. 07	1,041.14	30	1,044.54	Dec. 03	1,041.01	June 07	1,041.11
17	1,040.64	22	1,040.12	24	1,044.23	Aug. 12	1,041.20	17	1,041.85		
29	1,039.91	Dec. 04	1,041.05	May 05	1,041.07	27	1,040.96	Jan. 06, 1993	1,040.99		
Aug. 14	1,040.19	18	1,041.07	21	1,041.09	Sept. 08	1,040.57	15	1,040.94		
29	1,039.42	Jan. 02, 1992	1,041.05	June 02	1,041.06	25	1,040.52	Feb. 01	1,040.93		
Lowest water level 1,038.75 Sept. 30, 1991											
Highest water level 1,044.54 July 30, 1992											
Site identification: 415728093422702											
Local number: WC–23–16											
May 23, 1991	1,041.58	Sept. 16, 1991	1,038.90	Jan. 02, 1992	1,040.42	May 21, 1992	1,040.83	Aug. 27, 1992	1,040.80	Dec. 17, 1992	1,035.93
June 17	1,043.01	30	1,038.83	24	1,039.60	June 02	1,040.96	Sept. 08	1,037.35	Jan. 06, 1993	1,039.40
July 01	1,041.17	Oct. 16	1,038.15	Mar. 10	1,040.98	17	1,040.47	25	1,039.65	Feb. 01	1,038.41
17	1,040.45	Nov. 07	1,040.06	23	1,037.30	25	1,040.67	Oct. 08	1,035.91	24	1,040.24
29	1,040.15	22	1,038.43	Apr. 07	1,040.35	July 14	1,039.61	22	1,038.58	Mar. 11	1,042.33
Aug. 14	1,039.85	Dec. 04	1,040.06	24	1,040.08	30	1,042.25	Nov. 04	1,036.29	Apr. 16	1,041.97
29	1,039.64	18	1,038.87	May 05	1,040.93	Aug. 12	1,040.19	Dec. 03	1,040.14	June 07	1,040.77
Lowest water level 1,035.91 Oct. 08, 1992											
Highest water level 1,043.01 June 17, 1991											

Table 4. Water-level measurements in selected wells in the Walnut Creek Watershed, Boone and Story Counties, Iowa, May 1991–Sept.tember 1993—Continued

Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level
Site identification: 415740093422601											
Local number: WC-24-9											
June 11, 1991	1,042.96	Sept. 16, 1991	--	Mar. 10, 1992	1,043.40	June 25, 1992	1,041.34	Oct. 22, 1992	1,040.02	Mar. 11, 1993	1,043.32
17	1,043.02	30	--	23	1,043.09	July 14	1,041.11	Nov. 04	1,040.39	Apr. 16	1,045.06
July 01	1,041.59	Oct. 01	--	Apr. 07	1,042.94	30	1,044.93	Dec. 03	1,042.29	June 07	1,043.11
17	1,040.49	Nov. 16	--	24	1,045.01	Aug. 12	1,042.83	17	1,043.97	July 20	1,042.15
29	1,039.43	Dec. 04	--	May 05	1,043.35	27	1,041.59	Jan. 06, 1993	1,041.33	Aug. 17	1,044.00
Aug. 14	1,037.83	18	1,041.90	21	1,042.47	Sept. 08	1,040.80	15	1,041.92		
29	--	Jan. 02, 1992	1,042.05	June 02	1,042.07	24	1,039.53	Feb. 01	1,040.41		
30	--	24	1,043.09	17	1,041.59	Oct. 08	1,040.27	24	1,041.04		
Lowest water level 1,037.83 Aug. 14, 1991											
Highest water level 1,045.06 Apr. 16, 1993											
Site identification: 415740093422602											
Local number: WC-24-16											
June 11, 1991	1,043.19	Sept. 30, 1991	1,032.51	Mar. 10, 1992	1,043.65	June 25, 1992	1,041.35	Nov. 04, 1992	1,040.16	Apr. 16, 1993	1,044.67
17	1,043.19	Oct. 16	1,032.29	23	1,042.96	July 14	1,041.14	Dec. 03	1,042.22	June 07	1,043.70
July 01	1,041.69	Nov. 07	1,033.54	Apr. 07	1,042.92	30	1,043.93	17	1,043.48	July 20	1,045.12
17	1,040.68	22	1,034.73	24	1,044.60	Aug. 12	1,042.82	Jan. 06, 1993	1,042.80	Aug. 17	1,044.04
29	1,039.52	Dec. 04	1,037.22	May 05	1,043.29	27	1,041.55	15	1,042.28		
Aug. 14	1,038.20	18	1,041.37	21	1,042.52	Sept. 08	1,040.82	Feb. 01	1,041.35		
29	1,036.13	Jan. 02, 1992	1,041.84	June 02	1,042.16	Oct. 08	1,040.35	24	1,040.99		
Sept. 16	1,033.56	24	1,042.57	17	1,041.75	22	1,039.95	Mar. 11	1,042.71		
Lowest water level 1,032.29 Oct. 16, 1991											
Highest water level 1,045.12 July 20, 1993											
Site identification: 415739093413101											
Local number: WC-25-7											
May 23, 1991	1,026.36	July 30, 1991	--	Oct. 02, 1991	--	Dec. 18, 1991	1,025.69	May 05, 1992	1,025.61	Aug. 03, 1992	1,027.11
28	1,031.14	Aug. 14	1,025.27	16	--	Jan. 02, 1992	1,025.41	21	1,025.47	12	1,025.82
June 17	1,028.22	29	--	Nov. 07	1,025.29	Mar. 10	1,026.18	June 02	1,025.45	27	1,025.32
July 01	1,025.51	30	--	08	--	23	1,025.44	17	1,025.32	Sept. 02	1,025.11
17	1,025.44	Sept. 16	--	22	1,025.49	Apr. 07	1,025.44	25	1,025.27	25	1,025.01
29	1,025.26	30	--	Dec. 04	1,025.52	24	1,028.83	July 14	1,025.28	Oct. 08	1,025.06

Table 4. Water-level measurements in selected wells in the Walnut Creek Watershed, Boone and Story Counties, Iowa, May 1991–Sept.tember 1993—Continued

Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level
Site identification: 415739093413101—Continued											
Local number: WC–25–7											
Nov. 04, 1992	1,025.73	Dec. 17, 1992	1,026.56	Jan. 15, 1993	1,025.39	Feb. 24, 1993	1,025.34	Apr. 18, 1993	1,026.34	Aug. 17, 1993	1,030.37
Dec. 03	1,025.52	Jan. 06, 1993	1,025.44	Feb. 01	1,025.34	Mar. 11	1,029.54	June 07	1,025.98	Sept. 21	1,030.55
	Lowest water level 1,025.01	Sept. 25, 1992									
	Highest water level 1,031.14	May 28, 1991									
Site identification: 415759093384601											
Local number: WC–26–3											
July 07, 1992	--	Aug. 03, 1992	1,006.11	Dec. 22, 1992	1,005.13	Apr. 02, 1993	1,007.11	May 18, 1993	1,005.31	Aug. 10, 1993	1,005.45
17	1,006.28	13	1,005.41	Mar. 17, 1993	1,004.96	23	1,005.58	July 17	1,006.67		
	Lowest water level 1,004.96	Mar. 17, 1993									
	Highest water level 1,007.11	Apr. 02, 1993									
Site identification: 415759093384602											
Local number: WC–26–6											
May 19, 1992	1,004.09	July 17, 1992	1,003.85	Oct. 01, 1992	1,002.36	Jan. 22, 1993	1,003.20	Apr. 23, 1993	1,005.42		
June 04	1,003.73	Aug. 03	1,006.00	13	1,002.35	28	1,003.13	May 18	1,004.94		
15	1,003.41	13	1,004.66	Dec. 22	1,004.99	Mar. 17	1,003.64	July 15	1,006.69		
July 06	1,002.75	Sept. 03	1,002.83	Jan. 08, 1993	1,003.86	Apr. 02	1,007.11	Aug. 01	1,005.02		
	Lowest water level 1,002.35	Oct. 13, 1992									
	Highest water level 1,007.11	Apr. 02, 1993									
Site identification: 415759093384603											
Local number: WC–26–16											
May 19, 1992	1,004.01	July 17, 1992	1,003.33	Sept. 17, 1992	1,002.55	Jan. 08, 1993	1,003.48	Apr. 02, 1993	1,006.56	Aug. 10, 1993	1,004.39
June 04	1,003.80	Aug. 03	1,006.13	Oct. 01	1,001.74	22	1,003.14	23	1,005.39		
15	1,003.46	13	1,004.60	13	1,002.46	28	1,002.90	May 18	1,004.74		
July 06	1,003.04	Sept. 03	1,003.00	Dec. 22	1,004.73	Mar. 17	1,003.21	July 15	1,007.48		
	Lowest water level 1,001.74	Oct. 01, 1992									
	Highest water level 1,007.48	July 15, 1993									

Table 4. Water-level measurements in selected wells in the Walnut Creek Watershed, Boone and Story Counties, Iowa, May 1991–Sept.tember 1993—Continued

Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level
Site identification: 415646093362201											
Local number: WC-27-15											
May 19, 1992	964.46	Aug. 03, 1992	966.51	Oct. 29, 1992	962.87	Jan. 22, 1993	964.53	Apr. 23, 1993	966.02	Sept. 10, 1993	964.56
June 04	963.74	13	965.45	Nov. 13	964.06	28	964.51	May 18	965.47		
15	962.88	Sept. 03	964.03	Dec. 10	964.68	Feb. 24	964.58	June 08	965.42		
July 06	962.17	Oct. 01	963.79	22	965.57	Mar. 17	964.81	July 15	966.20		
17	966.00	13	963.48	Jan. 08, 1993	964.70	Apr. 02	967.32	Aug. 10	966.02		
Lowest water level 962.17 July 06, 1992											
Highest water level 967.32 Apr. 02, 1993											
Site identification: 415646093362202											
Local number: WC-27-20											
May 19, 1992	963.32	Aug. 03, 1992	965.69	Oct. 13, 1992	962.47	Jan. 08, 1993	964.07	Apr. 02, 1993	965.88	Aug. 10, 1993	964.66
June 04	962.54	13	964.65	29	962.14	22	963.35	23	964.88	Sept. 10	964.37
15	961.87	Sept. 03	963.24	Nov. 13	962.83	28	963.30	May 18	964.69		
July 06	961.07	17	963.03	Dec. 10	963.56	Feb. 24	963.02	June 08	964.48		
17	961.89	Oct. 01	962.80	22	964.40	Mar. 17	963.73	July 15	965.62		
Lowest water level 961.07 July 06, 1992											
Highest water level 965.88 Apr. 02, 1993											
Site identification: 415646093362203											
Local number: WC-27-30											
May 19, 1992	949.64	Aug. 13, 1992	939.82	Oct. 29, 1992	942.07	Jan. 22, 1993	940.08	Apr. 23, 1993	947.28	Sept. 10, 1993	957.52
June 04	948.91	Sept. 03	942.38	Nov. 13	942.72	28	941.10	May 18	950.05		
July 06	944.38	17	940.00	Dec. 10	946.75	Feb. 24	942.07	June 08	951.78		
17	939.79	Oct. 01	942.18	22	939.98	Mar. 17	941.76	July 15	954.71		
Aug. 03	941.88	13	938.84	Jan. 08, 1993	942.73	Apr. 02	944.48	Aug. 10	956.14		
Lowest water level 938.84 Oct. 13, 1992											
Highest water level 957.52 Sept. 10, 1993											

Table 4. Water–level measurements in selected wells in the Walnut Creek Watershed, Boone and Story Counties, Iowa, May 1991–Sept.tember 1993—Continued

Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level
Site identification: 415642093362801											
Local number: WC–28–7											
May 19, 1992	976.34	Aug. 03, 1992	978.32	Oct. 13, 1992	974.03	Jan. 08, 1993	976.62	Apr. 02, 1993	979.59	Aug. 10, 1993	977.91
June 04	976.24	13	977.38	29	973.42	22	976.19	23	978.21	Sept. 10	976.92
15	975.86	Sept. 03	975.90	Nov. 13	975.35	28	976.58	May 18	977.66		
July 06	974.98	17	975.20	Dec. 10	976.82	Feb. 24	975.63	June 08	977.94		
17	977.70	Oct. 01	974.53	22	977.95	Mar. 17	975.86	July 15	978.34		
Lowest water level 973.42 Oct. 29, 1992											
Highest water level 979.59 Apr. 02, 1993											
Site identification: 415642093362802											
Local number: WC–28–11											
May 19, 1992	976.75	Aug. 03, 1992	978.43	Oct. 13, 1992	974.03	Jan. 08, 1993	977.19	Apr. 02, 1993	979.27	Aug. 10, 1993	977.81
June 04	975.86	13	977.53	29	973.38	22	975.21	23	978.24	Sept 10	976.48
15	975.86	Sept. 03	975.81	Nov. 13	975.30	28	976.07	May 18	977.66		
July 06	974.93	17	975.24	Dec. 10	976.81	Feb. 24	975.63	June 08	977.97		
17	976.86	Oct. 01	974.46	22	977.98	Mar. 17	975.86	July 15	978.60		
Lowest water level 973.38 Oct. 29, 1992											
Highest water level 979.27 Apr. 02, 1993											
Site identification: 415642093362803											
Local number: WC–28–18											
May 19, 1992	976.64	Aug. 03, 1992	978.44	Oct. 13, 1992	973.43	Jan. 22, 1993	976.14	Apr. 02, 1993	978.99	Aug. 10, 1993	977.54
June 04	976.14	13	978.46	Nov. 13	975.10	28	975.93	23	978.31	Sept. 10	977.02
15	975.68	Sept. 03	975.91	Dec. 10	976.74	Feb. 24	975.54	May 18	977.75		
July 06	974.71	17	975.31	22	977.88	28	975.54	June 08	977.54		
17	976.90	Oct. 01	974.64	Jan. 08, 1993	976.53	Mar. 17	975.68	July 15	978.50		
Lowest water level 973.43 Oct. 13, 1992											
Highest water level 978.99 Apr. 02, 1993											

Table 4. Water–level measurements in selected wells in the Walnut Creek Watershed, Boone and Story Counties, Iowa, May 1991–Sept.tember 1993—Continued

Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level
Site identification: 415807093395401											
Local number: WC–29–3											
May 19, 1992	--	July 07, 1992	--	Sept. 03, 1992	1,008.88	Dec. 22, 1992	1,010.25	Apr. 23, 1993	1,011.17	Aug. 10, 1993	1,011.09
June 04	1,011.35	17	1,009.24	17	--	Jan. 22, 1993	1,008.87	May 18	1,010.62	Sept. 10	1,008.67
15	--	Aug. 03	1,010.47	Oct. 01	--	28	1,008.80	June 08	1,011.66		
July 06	1,008.92	13	1,009.92	Dec. 11	1,009.25	Apr. 02	1,012.04	July 31	1,010.24		
	Lowest water level 1,008.67		Sept. 10, 1993								
	Highest water level 1,012.04		Apr. 02, 1993								
Site identification: 415807093395402											
Local number: WC–29–9											
May 19, 1992	1,009.85	Aug. 03, 1992	1,010.24	Oct. 13, 1992	1,006.75	Jan. 22, 1993	1,008.87	Apr. 23, 1993	1,011.20	Sept. 10, 1993	1,009.65
June 04	1,009.48	13	1,009.91	Nov. 13	1,008.32	28	1,008.82	May 18	1,010.65		
15	1,009.02	Sept. 03	1,008.21	Dec. 10	1,009.25	Feb. 24	1,009.28	June 08	1,011.70		
July 06	1,008.10	17	1,009.60	22	1,010.25	Mar. 17	1,008.10	July 31	1,010.25		
17	1,009.20	Oct. 01	1,006.95	Jan. 07, 1993	1,009.04	Apr. 02	1,012.05	Aug. 10	1,011.02		
	Lowest water level 1,006.75		Oct. 13, 1992								
	Highest water level 1,012.05		Apr. 02, 1993								
Site identification: 415807093395403											
Local number: WC–29–18											
May 19, 1992	1,009.52	Aug. 03, 1992	1,010.17	Oct. 13, 1992	1,006.60	Jan. 22, 1993	1,008.62	Apr. 23, 1993	1,011.15	Sept. 10, 1993	1,009.70
June 04	1,009.13	13	1,009.76	Nov. 13	1,008.01	28	1,008.53	May 18	1,010.63		
15	1,008.83	Sept. 03	1,008.22	Dec. 10	1,008.92	Feb. 24	1,007.98	June 08	1,011.33		
July 06	1,007.97	17	1,007.47	22	1,009.83	Mar. 17	1,007.73	July 31	1,010.44		
17	1,008.54	Oct. 01	1,006.85	Jan. 07, 1993	1,008.78	Apr. 02	1,010.75	Aug. 10	1,010.77		
	Lowest water level 1,006.60		Oct. 13, 1992								
	Highest water level 1,011.33		June 08, 1993								

Table 4. Water–level measurements in selected wells in the Walnut Creek Watershed, Boone and Story Counties, Iowa, May 1991–Sept.tember 1993—Continued

Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level
Site identification: 415808093394701											
Local number: WC–30–4											
May 19, 1992	1,015.83	July 07, 1992	--	Sept. 03, 1992	--	Dec. 22, 1992	1,015.84	Apr. 02, 1993	1,017.05	Sept. 10, 1993	1,014.48
June 04	1,015.36	17	1,014.37	17	--	Jan. 07, 1993	1,014.96	23	1,017.08		
15	1,014.92	Aug. 03	1,015.78	Oct. 01	--	22	1,014.80	May 18	1,016.61		
July 06	--	13	1,015.28	Dec. 10	1,014.58	28	1,014.66	Aug. 10	1,016.37		
Lowest water level 1,014.37 July 17, 1992											
Highest water level 1,017.08 Apr. 23, 1993											
Site identification: 415808093394702											
Local number: WC–30–8											
May 19, 1992	1,015.28	Aug. 03, 1992	1,016.27	Oct. 13, 1992	1,013.05	Jan. 22, 1993	1,014.81	Apr. 23, 1993	1,017.55	Sept. 10, 1993	1,015.67
June 04	1,015.17	13	1,015.75	Nov. 13	1,013.41	28	1,015.06	May 18	1,017.08		
15	1,015.33	Sept. 03	1,014.39	Dec. 10	1,014.91	Feb. 24	1,014.53	June 08	1,017.66		
July 06	1,014.55	17	1,013.80	22	1,016.26	Mar. 17	1,014.24	July 28	1,016.65		
17	1,014.79	Oct. 01	1,012.28	Jan. 07, 1993	1,015.37	Apr. 02	1,017.43	Aug. 10	1,016.79		
Lowest water level 1,012.28 Oct. 01, 1992											
Highest water level 1,017.66 June 08, 1993											
Site identification: 415808093394703											
Local number: WC–30–15											
May 19, 1992	1,016.64	Aug. 03, 1992	1,016.28	Oct. 13, 1992	1,013.13	Jan. 28, 1993	1,016.04	May 18, 1993	1,017.25		
June 04	1,015.84	13	1,015.74	Nov. 13	1,014.90	Feb. 24	1,014.54	June 08	1,017.62		
15	1,015.38	Sept. 03	1,014.52	Dec. 22	1,016.24	Mar. 17	1,014.27	July 29	1,016.79		
July 06	1,014.60	17	1,013.85	Jan. 07, 1993	1,015.42	Apr. 02	1,015.49	Aug. 10	1,015.89		
17	1,014.72	Oct. 01	1,013.32	22	1,015.25	23	1,017.71	Sept. 10	1,015.78		
Lowest water level 1,013.13 Oct. 13, 1992											
Highest water level 1,017.71 Apr. 23, 1993											

Table 4. Water-level measurements in selected wells in the Walnut Creek Watershed, Boone and Story Counties, Iowa, May 1991–Sept.tember 1993—Continued

Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level
Site identification: 415808093393301											
Local number: WC–31–6											
June 04, 1992	1,012.88	Aug. 03, 1992	1,014.80	Oct. 01, 1992	1,010.97	Jan. 07, 1993	1,012.67	Mar. 17, 1993	1,012.87	Aug. 10, 1993	1,013.94
15	1,012.22	13	1,014.20	Nov. 13	1,012.64	22	1,012.23	Apr. 02	1,015.46	Sept. 10	1,013.06
July 06	1,011.08	Sept. 03	1,011.96	Dec. 10	1,013.46	28	1,012.07	23	1,014.93		
17	1,012.39	17	1,011.32	22	1,014.35	Feb. 24	1,011.65	July 29	1,013.89		
Lowest water level 1,010.97 Oct. 01, 1992											
Highest water level 1,015.46 Apr. 02, 1993											
Site identification: 415808093393302											
Local number: WC–31–13											
June 04, 1992	1,012.97	Aug. 03, 1992	1,014.72	Oct. 01, 1992	1,011.05	Dec. 22, 1992	1,014.06	Feb. 24, 1993	1,011.57	July 29, 1993	1,013.83
15	1,012.37	13	1,014.12	13	1,010.82	Jan. 07, 1993	1,012.64	Mar. 17	1,012.49	Aug. 10	1,014.06
July 06	1,011.36	Sept. 03	1,014.22	Nov. 13	1,012.35	22	1,012.21	Apr. 02	1,015.18	Sept. 10	1,013.12
17	1,012.21	17	1,011.49	Dec. 01	1,013.24	28	1,012.07	23	1,014.97		
Lowest water level 1,010.82 Oct. 13, 1992											
Highest water level 1,015.18 Apr. 02, 1993											
Site identification: 415801,093395501											
Local number: WC–32–4											
May 19, 1992	--	July 06, 1992	--	Aug. 13, 1992	--	Oct. 01, 1992	--	June 08, 1993	1,002.50	Sept. 10, 1993	1,002.54
June 04	--	17	1,002.42	Sept. 03	--	Apr. 23, 1993	1,002.50	July 15	1,002.67		
15	--	Aug. 03	1,002.59	17	--	May 18	1,002.52	Aug. 10	1,002.51		
Lowest water level 1,002.42 July 17, 1992											
Highest water level 1,002.67 July 15, 1993											

Table 4. Water–level measurements in selected wells in the Walnut Creek Watershed, Boone and Story Counties, Iowa, May 1991–Sept.tember 1993—Continued

Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level
Site identification: 415801093395502 **Local number: WC–32–10**											
May 19, 1992	1,000.15	Aug. 03, 1992	1,001.62	Oct. 13, 1992	998.71	Jan. 08, 1993	1,000.06	Apr. 02, 1993	1,002.36	Aug. 10, 1993	1,002.05
June 04	999.93	13	1,000.87	29	998.98	22	999.83	23	1,001.09	Sept. 10	1,000.84
15	999.77	Sept. 03	1,000.64	Nov. 13	1,000.06	28	999.81	May 18	1,000.99		
July 06	999.58	17	999.40	Dec. 10	1,000.23	Feb. 24	999.71	June 08	1,001.05		
17	1,001.79	Oct. 01	999.16	22	1,000.91	Mar. 17	1,000.61	July 15	1,002.46		
	Lowest water level 998.71		Oct. 13, 1992								
	Highest water level 1,002.46		July 15, 1993								
Site identification: 415801093395503 **Local number: WC–32–16**											
May 19, 1992	1,000.29	Aug. 03, 1992	1,001.81	Oct. 13, 1992	998.92	Jan. 08, 1993	1,000.08	Apr. 02, 1993	1,002.40	Sept. 10, 1993	1,000.86
June 04	999.94	13	999.96	29	998.96	22	999.83	23	1,001.11		
15	999.84	Sept. 03	999.76	Nov. 13	1,000.04	28	1,000.10	May 18	1,000.98		
July 06	999.61	17	999.31	Dec. 10	1,000.23	Feb. 24	999.72	June 08	1,001.06		
17	1,001.81	Oct. 01	999.11	22	1,000.91	Mar. 17	1,000.61	July 15	1,002.49		
	Lowest water level 998.92		Oct. 13, 1992								
	Highest water level 1,002.49		July 15, 1993								
Site identification: 415755093400101 **Local number: WC–33–6**											
May 19, 1992	1,002.65	Aug. 03, 1992	1,004.27	Nov. 13, 1992	1,002.83	Jan. 28, 1993	1,002.49	May 18, 1993	1,003.21		
June 04	1,002.32	13	1,003.36	Dec. 10	1,003.12	Feb. 24	1,002.37	June 08	1,003.52		
15	1,001.93	Sept. 03	1,001.80	22	1,003.97	Mar. 17	1,004.72	July 15	1,004.94		
July 06	1,001.49	17	1,001.45	Jan. 08, 1993	1,002.72	Apr. 02	1,005.42	Aug. 10	1,005.15		
17	1,005.04	Oct. 01	1,004.44	22	1,002.36	23	1,003.72	Sept. 10	1,002.50		
	Lowest water level 1,001.45		Sept. 17, 1992								
	Highest water level 1,005.42		Apr. 02, 1993								

Table 4. Water–level measurements in selected wells in the Walnut Creek Watershed, Boone and Story Counties, Iowa, May 1991–Sept.tember 1993—Continued

Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level
Site identification: 415755093400102											
Local number: WC–33–16											
May 19, 1992	1,002.67	Aug. 03, 1992	1,004.47	Oct. 13, 1992	1,000.88	Jan. 08, 1993	1,002.72	Apr. 02, 1993	1,005.22	Aug. 10, 1993	1,003.62
June 04	1,002.39	13	1,003.53	29	1,000.93	22	1,002.38	23	1,003.79	Sept. 10	1,002.77
15	1,002.02	Sept. 03	1,002.08	Nov. 13	1,002.71	28	1,002.40	May 18	1,003.45		
July 06	1,001.41	17	1,001.61	Dec. 10	1,003.09	Feb. 24	1,002.26	June 08	1,003.62		
17	1,003.41	Oct. 01	1,001.27	22	1,003.82	Mar. 18	1,004.24	July 15	1,005.20		
	Lowest water level 1,000.88		Oct. 13, 1992								
	Highest water level 1,005.22		Apr. 02, 1993								
Site identification: 415756093393901											
Local number: WC–34–5											
May 19, 1992	998.90	Aug. 03, 1992	999.33	Oct. 01, 1992	998.85	Dec. 10, 1992	998.87	Apr. 23, 1993	999.32	Sept. 10, 1993	998.89
June 04	--	13	998.89	13	998.85	22	999.07	May 18	998.99		
15	--	Sept. 03	998.87	20	998.85	Jan. 08, 1993	998.87	June 08	999.08		
July 17	--	17	998.85	Nov. 13	998.88	Apr. 02	1,000.22	July 15	999.98		
	Lowest water level 998.85		Sept. 17, 1992	Oct. 01, 1992	Oct. 13, 1992	Oct. 20, 1992					
	Highest water level 1,000.22		Apr. 02, 1993								
Site identification: 415756093393902											
Local number: WC–34–16											
May 19, 1992	998.06	Aug. 03, 1992	998.83	Oct. 13, 1992	996.55	Jan. 08, 1993	997.94	Apr. 02, 1993	999.69	Aug. 10, 1993	998.61
June 04	997.77	13	998.73	29	996.23	22	997.46	23	999.32	Sept. 10	998.24
15	997.54	Sept. 03	997.54	Nov. 13	997.44	28	997.35	May 18	999.00		
July 06	997.03	17	997.14	Dec. 10	998.27	Feb. 24	997.01	June 08	998.99		
17	997.71	Oct. 01	996.69	22	998.87	Mar. 17	997.81	July 15	1,000.41		
	Lowest water level 996.23		Oct. 29, 1992								
	Highest water level 1,000.41		July 15, 1993								

Table 4. Water-level measurements in selected wells in the Walnut Creek Watershed, Boone and Story Counties, Iowa, May 1991–Sept.tember 1993—Continued

Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level
Site identification: 415756093393903											
Local number: WC–34–30											
May 19, 1992	998.22	Aug. 03, 1992	999.77	Oct. 13, 1992	996.49	Jan. 08, 1993	998.25	Apr. 02, 1993	999.49	Aug. 10, 1993	998.71
June 04	998.19	13	998.94	29	996.71	22	997.83	23	999.43	Sept. 10	998.61
15	997.92	Sept. 03	997.84	Nov. 13	997.72	28	997.69	May 18	999.11		
July 06	997.38	17	997.47	Dec. 10	998.50	Feb. 24	997.21	June 08	999.09		
17	997.83	Oct. 01	997.10	22	998.50	Mar. 17	997.77	July 15	1,000.28		
Lowest water level 996.49 Oct. 13, 1992											
Highest water level 1,000.28 July 15, 1993											
Site identification: 415754093393901											
Local number: WC–35–3											
May 19, 1992	--	July 06, 1992	--	Aug. 13, 1992	--	Oct. 01, 1992	--	June 08, 1993	1,000.78		
June 04	--	17	1,001.33	Sept. 03	--	Apr. 02, 1993	1,001.87	July 15	1,001.66		
14	--	Aug. 03	1,001.14	17	--	23	1,001.03	Aug. 10	1,001.81		
Lowest water level 1,000.78 June 08, 1993											
Highest water level 1,001.87 Apr. 02, 1993											
Site identification: 415754093393902											
Local number: WC–35–6											
May 19, 1992	1,000.05	Aug. 03, 1992	1,001.07	Oct. 13, 1992	998.75	Jan. 08, 1993	999.54	Apr. 02, 1993	1,001.84	Aug. 10, 1993	1,001.84
June 04	999.81	13	1,000.59	29	998.62	22	999.55	23	1,001.02	Sept. 10	1,000.30
15	999.48	Sept. 03	999.44	Nov. 13	999.60	28	999.66	May 18	1,000.54		
July 06	999.05	17	999.14	Dec. 10	999.92	Feb. 24	999.41	June 08	1,000.73		
17	1,001.35	Oct. 01	998.89	22	1,000.47	Mar. 17	1,000.09	July 15	1,001.64		
Lowest water level 998.62 Oct. 29, 1992											
Highest water level 1,001.84 Apr. 02, 1993 Aug. 10, 1993											

Table 4. Water–level measurements in selected wells in the Walnut Creek Watershed, Boone and Story Counties, Iowa, May 1991–Sept.tember 1993—Continued

Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level
Site identification: 415754093393903 **Local number: WC–35–17**											
May 19, 1992	1,000.17	Aug. 03, 1992	1,001.39	Oct. 13, 1992	998.93	Jan. 22, 1993	999.20	Apr. 23, 1993	1,001.28	Sept. 10, 1993	1,000.51
June 04	1,000.02	13	1,000.84	Nov. 13	999.70	28	999.66	May 18	1,000.77		
15	998.68	Sept. 03	998.69	Dec. 10	999.72	Feb. 24	999.37	June 08	1,000.97		
July 06	999.20	17	999.33	22	1,000.31	Mar. 17	1,000.08	July 15	1,002.05		
17	1,001.12	Oct. 01	999.08	Jan. 08, 1993	999.44	Apr. 02	1,001.91	Aug. 10	1,001.21		
Lowest water level 998.68 June 15, 1992											
Highest water level 1,002.05 July 15, 1993											
Site identification: 415847093421601 **Local number: WC–36–8**											
Dec. 04, 1992	1,036.69	Jan. 14, 1993	1,036.80	Mar. 09, 1993	1,037.75	June 21, 1993	1,039.69	Sept. 10, 1993	1,038.85		
17	1,037.47	26	1,036.47	Apr. 06	1,039.60	July 16	1,040.64				
30	1,037.41	Feb. 24	1,036.20	30	1,039.99	Aug. 10	1,039.05				
Lowest water level 1,036.47 Jan. 26, 1993											
Highest water level 1,040.64 July 16, 1993											
Site identification: 415847093421602 **Local number: WC–36–13**											
Oct. 09, 1992	1,035.21	Dec. 04, 1992	1,036.66	Jan. 14, 1993	1,036.78	Mar. 09, 1993	1,037.57	June 21, 1993	1,039.72	Sept. 09, 1993	1,038.92
20	1,034.77	17	1,037.43	26	1,036.36	Apr. 06	1,039.55	July 16	1,040.66		
Nov. 04	1,034.82	30	1,037.39	Feb. 24	1,036.19	30	1,040.00	Aug. 10	1,038.77		
Lowest water level 1,034.77 Oct. 20, 1992											
Highest water level 1,040.66 July 16, 1993											
Site identification: 415847093421603 **Local number: WC–36–24**											
Oct. 09, 1992	1,035.23	Dec. 04, 1992	1,036.69	Jan. 14, 1993	1,036.94	Mar. 09, 1993	1,037.63	June 21, 1993	1,039.75	Sept. 09, 1993	1,038.98
20	1,034.89	17	1,037.44	26	1,036.63	Apr. 06	1,039.59	July 16	1,040.80		
Nov. 04	1,034.85	30	1,037.57	Feb. 24	1,036.35	30	1,040.08	Aug. 10	1,038.81		
Lowest water level 1,034.85 Nov. 04, 1992											
Highest water level 1,040.80 July 16, 1993											

Table 4. Water–level measurements in selected wells in the Walnut Creek Watershed, Boone and Story Counties, Iowa, May 1991–Sept.tember 1993—Continued

Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level
Site identification: 415913093421001											
Local number: WC–37–3											
Oct. 09, 1992	1,027.47	Dec. 30, 1992	1,027.62	Mar. 09, 1993	1,029.98	June 21, 1993	1,028.13	Sept. 09, 1993	1,027.71		
20	1,027.44	Jan. 14, 1993	1,027.61	Apr. 06	1,028.31	July 16	1,028.44				
Dec. 17	1,027.58	26	1,027.66	30	1,027.71	Aug. 10	1,029.44				
	Lowest water level 1,027.44	Oct. 20, 1992									
	Highest water level 1,029.98	Mar. 09, 1993									
Site identification: 415913093421002											
Local number: WC–37–6											
Oct. 09, 1992	1,025.55	Dec. 04, 1992	1,026.95	Jan. 14, 1993	1,026.43	Mar. 09, 1993	1,029.96	June 21, 1993	1,027.54	Sept. 09, 1993	1,026.96
21	1,025.41	17	1,028.44	26	1,026.45	Apr. 06	1,027.62	July 16	1,028.37		
Nov. 04	1,026.95	30	1,027.01	Feb. 24	1,026.17	30	1,027.18	Aug. 10	1,029.34		
	Lowest water level 1,025.41	Oct. 21, 1992									
	Highest water level 1,029.96	Mar. 09, 1993									
Site identification: 415913093421003											
Local number: WC–37–17											
Oct. 08, 1992	1,025.47	Dec. 04, 1992	1,026.95	Jan. 14, 1993	1,026.35	Mar. 09, 1993	1,029.84	June 21, 1993	1,027.51	Sept. 09, 1993	1,026.92
20	1,025.34	17	1,028.76	26	1,026.37	Apr. 06	1,027.54	July 16	1,028.51		
Nov. 04	1,026.97	30	1,026.93	Feb. 24	1,026.12	30	1,027.16	Aug. 10	1,029.25		
	Lowest water level 1,025.34	Oct. 20, 1992									
	Highest water level 1,029.84	Mar. 09, 1993									
Site identification: 415933093421001											
Local number: WC–38–3											
Dec. 17, 1992	1,026.08	Mar. 09, 1993	1,026.38	Apr. 30, 1993	1,025.53	July 16, 1993	1,027.13				
30	1,025.09	Apr. 06	1,025.92	June 21	1,025.93	Aug. 10	1,025.43				
	Lowest water level 1,025.09	Dec. 30, 1992									
	Highest water level 1,027.13	July 16, 1993									

Table 4. Water–level measurements in selected wells in the Walnut Creek Watershed, Boone and Story Counties, Iowa, May 1991–Sept.tember 1993—Continued

Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level	Date	Water level
Site identification: 415933093421002											
Local number: WC–38–6											
Oct. 08, 1992	1,022.70	Dec. 04, 1992	1,024.94	Jan. 14, 1993	1,024.25	Mar. 09, 1993	1,026.39	June 21, 1993	1,026.10	Sept. 09, 1993	1,025.07
27	1,022.55	17	1,026.18	26	1,023.99	Apr. 06	1,026.25	July 16	1,027.21		
Nov. 04	1,024.49	30	1,025.16	Feb. 24	1,023.64	30	1,025.61	Aug. 10	1,025.51		
	Lowest water level 1,022.55	Oct. 27, 1992									
	Highest water level 1,027.21	July 16, 1993									
Site identification: 415933093421003											
Local number: WC–38–17											
June 01, 1992	1,022.97	July 27, 1992	1,025.35	Oct. 08, 1992	1,022.72	Dec. 17, 1992	1,026.26	Feb. 24, 1993	1,023.66	June 21, 1993	1,026.26
17	1,024.14	Aug. 12	1,025.59	20	1,022.63	30	1,025.29	Mar.. 09	1,026.48	July 16	1,027.26
29	1,023.68	Sept. 01	1,023.59	Nov. 04	1,024.01	Jan. 14, 1993	1,024.32	Apr. 06	1,026.42	Aug. 10	1,025.31
July 14	1,023.32	23	1,022.67	Dec. 04	1,025.00	26	1,024.15	30	1,025.80		
	Lowest water level 1,022.63	Oct. 20, 1992									
	Highest water level 1,027.26	July 16, 1993									

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