

**Ground-Water Data for the Alluvial,  
Buried Channel, Basal Pleistocene and  
Dakota Aquifer in West-Central Iowa**

Prepared by  
United States Department of the Interior  
Geological Survey

In cooperation with  
the Iowa Geological Survey

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By  
Pamela K.B. Hunt and Donna L. Runkle

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United States Geological Survey

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### SELECTED FACTORS FOR CONVERTING INCH-POUND UNITS TO THE INTERNATIONAL SYSTEM

The following factors may be used to convert the inch-pound units used herein to the International System of Units (SI)

| <u>Multiply inch-pound unit</u> | <u>By</u> | <u>To obtain SI unit</u> |
|---------------------------------|-----------|--------------------------|
| foot                            | 0.3048    | meter                    |
| inch                            | 25.4      | millimeter               |
| gallon                          | 3.785     | liter                    |

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## INTRODUCTION

### Scope and Purpose

The purpose of the investigation was to determine the availability, quantity and quality of ground water from three principal aquifers in West-Central Iowa, the alluvial, buried channel, Basal Pleistocene and the Dakota aquifers. Specific objectives were to: (1) determine the location; extent and the nature of these aquifers; (2) evaluate the occurrence and movement of ground water, including the sources of recharge and discharge; (3) estimate the quantities of water stored in the aquifers; (4) estimate the potential yields of wells tapping the aquifers; (5) estimate the water use; and (6) describe the chemical quality of the ground water. This report is the compilation of the data collected during the investigation and has the purpose of providing a reference for an interpretive report describing ground-water resources and a bedrock topography map of the study area.

### Acknowledgments

The data collection for this report was made possible with the cooperation of residents of west-central Iowa, municipal water superintendents and county engineers.

### Location-Numbering System

The location-numbering system used in this report is based on the system of land survey used by the Bureau

of Land Management and the and the Iowa District of the U.S. Geological Survey. The first number indicates the township north of a base line, the second number indicates the range west of the fifth principal meridian, and the third number indicates the section in which the well is located. The letters A, B, C and D designate the northeast, north-west, southwest and southeast quarters of a section or quarters of any smaller square area section. The from left to right. The first letter designates the 160 acre quarter, the second designates the 40 acre quarter, the third designates the 10 acre quarter, and the fourth designates the 2½ acre quarter. For example, in figure 2, well 70-29-34 CCB is in the NW ¼ of the SW ¼ of the SW ¼ of section 34, in township 70 north and range 29 west.

### Explanations of Tables and Methods of Data Collection

The data in this report, which were collected between 1981 and 1984, are listed in tables 2, 3 and 4. The data consists of the following: (1) lithologic driller's logs and geophysical logs of 241 test holes and wells (table 2); (2) water-level measurements in 87 observation wells (table 3); (3) chemical analyses of 118 ground-water samples (table 4). The sites of collection are mapped on figure 1. The data may be used in evaluating hydrologic and geologic conditions in West-Central Iowa. Plate 1 can be used with tables 2, 3 and 4 to locate a potential construction site of a new well. By comparing water-levels, water quality and lithologies of nearby wells and test holes penetrating the different aquifers, an assessment can be made regarding some local fac-

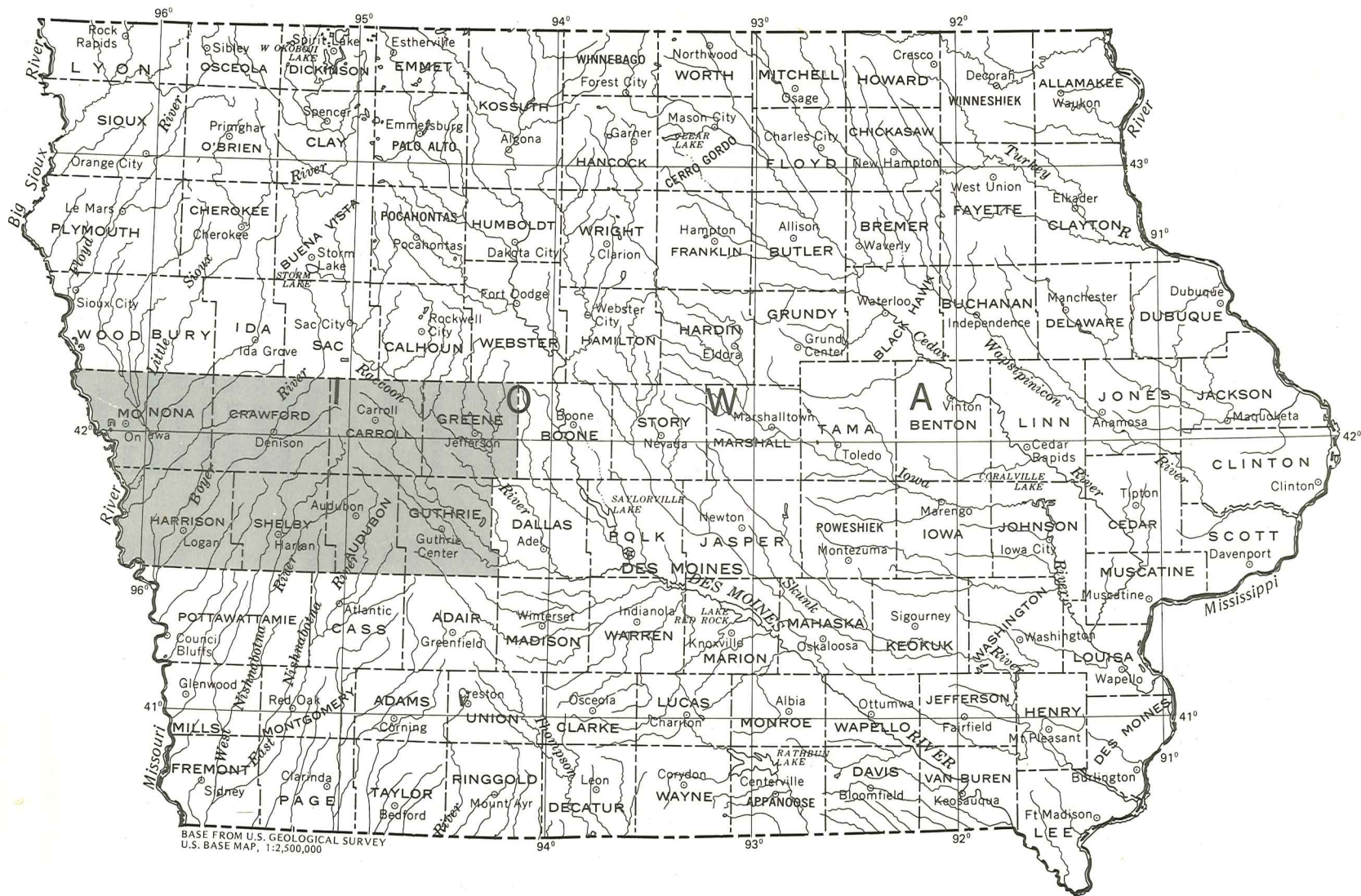


Figure 1. Location of study area (shaded).

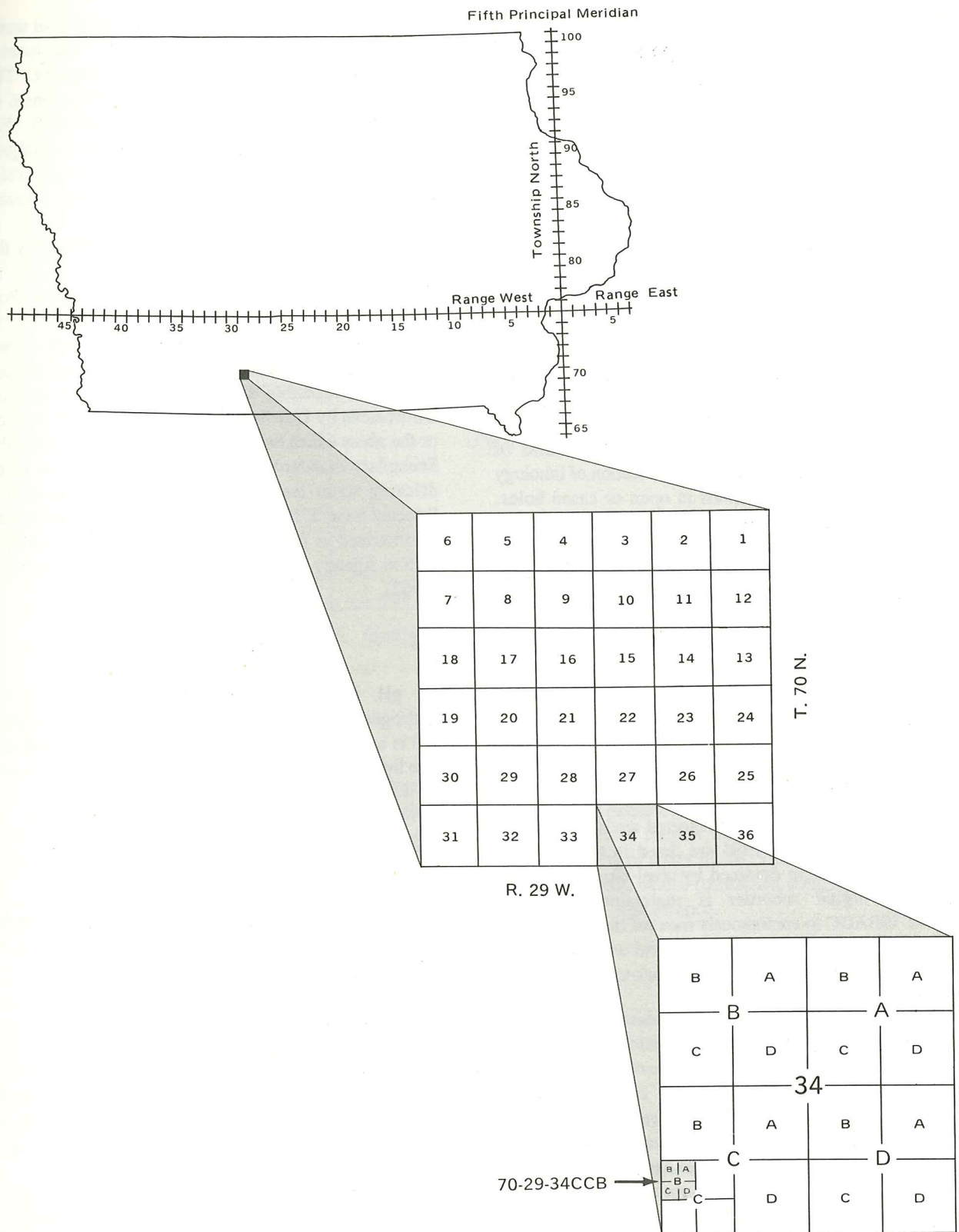


Figure 2. Federal system of land subdivision in Iowa



tors needed to plan a production well. However, the data should be used only as a guide to conditions at different sites and with caution because of the discontinuous nature of the aquifers and varying water quality in some aquifers.

### Records of Wells and Test Holes

Table 2 lists the lithologic and borehole geophysical logs of the observation wells and test holes. The lithologic descriptions are from the driller's log provided by Darwin Evans of the Iowa Geological Survey Staff. The geologic interpretation was assisted by Greg Ludwigson and Mike Bounk of the Iowa Geologic Survey Staff. The geophysical logs represented are natural-gamma and spontaneous potential logs. Natural-gamma logs are records of the amount of gamma radiation that is naturally emitted by all rocks. The chief uses of natural-gamma logs are for the identification of lithology and stratigraphic correlations in open or cased holes. Spontaneous potential logs are records of the natural potentials developed between the borehole fluid and the surrounding rock material. The spontaneous potential is used chiefly for geologic correlation, and separating non-porous and porous rocks in sand-clay, shale-sandstone and shale carbonate sequences. Selected test holes were constructed with 2-inch PVC (plastic) and 2 and 5-inch steel casing with slots perforated at the appropriate depths.

### Water Levels in Selected Wells

Monthly water-levels in selected wells from May, 1981 through March, 1984 are listed in table 3. The measurements were obtained by steel tape or electric line. A digital recorder is maintained on well 79-42-19BADC to continuously monitor the water level. Measurements will continue in several wells as part of the state well observation-well network to monitor fluctuations of water levels.

### Water Quality

Selected dissolved chemical constituents and observed physical properties of water samples are reported in table 4. In most cases water samples from the observation wells were airlifted and then a Geofilter<sup>1/</sup>/squeeze pump or suction pump were used to prevent further aeration of the water sample. The wells were pumped until the water cleared and specific conductance

<sup>1/</sup> Use of brand names in this report is for identification purposes only and does not constitute endorsement by the U.S. Geological Survey.

and pH stabilized. Water samples from municipal water supplies were collected from raw water taps located before the distribution system and treatment. The chemical analyses were analyzed by the personnel of the University Hygienic Laboratory and U.S. Environmental Protection Agency. Methods of analyses were generally those described by Brown and others (1970) or U.S. Environmental Protection Agency (1974a).

Drinking water standards were established by the National Academy of Sciences-Natural Academy of Engineering (1972) at the request of Environmental Protection Agency and are applicable to public water supplies. The primary and secondary standards are shown in table 1. Primary standards pertain to constituents and regulations affecting the health of consumers and are enforceable by U.S. Environmental Protection Agency or the states which have accepted the primary standards. Secondary standards refer to the esthetic qualities of drinking water intended as a guideline for the states. Selected mineral constituents and physical properties are summarized as follows from U.S. Environmental Protection Agency (1976) and U.S. Public Health Service (1962).

### pH

pH is a mathematical expression indicating hydrogen ion activity. pH of 7.0 is neutral, pH less than 7.0 is acidic, pH greater than 7.0 is basic or alkaline. The hydrogen ion concentrations affect the corrosiveness of water.

### Temperature

Temperature is an important factor in evaluating the usefulness of water. Water temperature is evaluated for industrial coolants, the influence upon concentrations of dissolved gases and mineral matter.

### Specific Conductance

Specific conductance is a measure of the ability of water to conduct an electric current. By multiplying specific conductance by a conversion factor of 0.55 to 0.75 an estimation for dissolved solids can be approximated.

### Dissolved Solids

The concentration of dissolved solids is determined from the weight of the dry residue after evaporation from a known quantity of water. Dissolved solid concentrations of 1000-3000 mg/l is considered slightly saline and 3000-10,000 mg/l is moderately saline.

| SYSTEM        | SERIES           | FORMATION, MEMBER, OR DEPOSIT |
|---------------|------------------|-------------------------------|
| QUATERNARY    | HOLOCENE         | ALLUVIUM                      |
|               | PLEISTOCENE      | GLACIAL DRIFT                 |
| CRETACEOUS    |                  | DAKOTA                        |
| PENNSYLVANIAN | UNDIFFERENTIATED |                               |
| MISSISSIPPIAN |                  |                               |

Figure 3. Geologic units used in this report

### Alkalinity

Alkalinity is defined as the capacity of a solution to neutralize an acid. In moderate concentrations (200-500mg/l), alkalinity has little effect on most uses of water.

### Hardness

Calcium and magnesium are the primary causes of hardness. Hardness is a measure of the soap consuming properties of water. As hardness increases, a greater amount of soap is required to produce a lather. Water hardness can contribute to the formation of scale deposits. As a general reference, the U.S. Geological Survey uses the following classification of water hardness.

Calcium and magnesium  
hardness as CaCO<sub>3</sub>  
(milligrams per liter)

0-60  
61-120  
121-180  
more than 180

### Hardness description

soft  
moderately soft  
hard  
very hard

### Iron

Iron is dissolved from many rocks and soils. The element can cause a reddish-brown staining on plumbing fixtures and fabrics washed in the water and can cause clogging of water mains. The iron criteria in table 1 is of aesthetic nature (tastes and staining) rather than a toxicological significance.

### Silica

Silica is dissolved from practically all rocks. It is of concern because it contributes to the formation of scale in pipes, water heaters and boilers.

### Sodium-Adsorption Ration (SAR)

The sodium-adsorption ration (SAR) is a measure of the relative concentrations of the ions calcium, magnesium and sodium. SAR is expressed by the equation:

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

**Table 1. Drinking Water Standards  
for Community Water Systems**

| Constituents             | Maximum contaminant<br>levels in community<br>water supplies <sup>1</sup> |                          |
|--------------------------|---|--------------------------|
|                          | Primary<br>Regulations  | Secondary<br>Regulations |
| pH                       |   | 6.5—8.5                  |
| Dissolved<br>solids      |   | 500 mg/l <sup>2</sup>    |
| Sodium and<br>Potassium  | Not Applicable  |                          |
| Calcium and<br>Magnesium | Not Applicable  |                          |
| Iron                     |   | 300 ug/l                 |
| Manganese                |   | 50 ug/l                  |
| Nitrate as N             | 10 mg/l <sup>3</sup>  |                          |
| Fluoride                 | 1.4-2.4<br>depending<br>on climate  |                          |
| Chloride                 |   | 250 mg/l                 |
| Sulfate                  |   | 250 mg/l                 |
| Arsenic                  | 50 ug/l   |                          |
| Barium                   | 1000 ug/l   |                          |
| Cadmium                  | 10 ug/l   |                          |
| Chromium                 | 50 ug/l   |                          |
| Copper                   |   | 1000 ug/l                |

<sup>1</sup> National Interim Primary Drinking Regulations (Federal Register, Vol. 48, No. 248 and Vol. 41, No. 133), Proposed Secondary Drinking Regulations (Federal Register Vol. 42 No. 62) and National Revised Primary Drinking Water Regulations: Advance Notice of Proposed Rulemaking (Federal Register Vol. 48 No.194).

**Table 1. Drinking Water Standards  
for Community Water Systems—Continued**

| Constituents  | Maximum contaminant levels in community water supplies <sup>1</sup> |                       |
|---|---|-----------------------|
|   | Primary Regulations   | Secondary Regulations |
| Lead  | 50 ug/l   |                       |
| Mercury   | 2 ug/l  |                       |
| Selenium  | 10 ug/l   |                       |
| Silver  | 50 ug/l   |                       |
| Zinc  |   | 5000 ug/l             |
| Aluminum  | Not Applicable  |                       |
| Radium<br>(radium-226 and radium-228 combined)                              | 5 pCi/l <sup>4</sup>  |                       |
| Gross Alpha activity (including radium 226 but excluding radon and uranium) | 15 pCi/l  |                       |
| Gross Beta as CS137   | 200 pCi/L <sup>5</sup>  |                       |

<sup>2</sup> ug/L—micrograms per liter.

<sup>3</sup> mg/L—milligrams per liter.

<sup>4</sup> pCi/l—picocuries per liter.

<sup>5</sup> Annual average concentrations yielding 4 millirems per year for a two liter daily intake. Value calculated from the Maximum Permissible Concentrations listed in NBS Handbook 69.

Sodium-adsorption ratio was introduced by the U.S. Salinity Staff (1954), and was divided into 16 classes, depending on the SAR and specific conductance. The classifications indicate the usefulness of water for irrigation of different crops for different soils.

### Potassium and Sodium

Potassium and sodium are dissolved from igneous and sedimentary rocks. Generally, potassium exists in much lower concentrations than sodium. More highly mineralized waters containing a high percentage of sodium salts may be unsatisfactory for irrigation. Low sodium diets are prescribed for certain types of ailments.

### Calcium and Magnesium

Limestone, dolomite and gypsum are the principal rocks containing calcium and magnesium. Large concentrations cause water hardness and forms scale. Large concentrations of magnesium cause a laxative effect.

### Manganese

Manganese is found in association with salts and iron compounds. The presence of manganese may cause a dark-brown or black stain on laundered fabrics or porcelain fixtures. Small concentrations may be objectionable due to taste.

### Nitrate

The occurrence of large nitrate concentrations in shallow ground water has been attributed to leaching in feedlots or to fertilizer from fields where nitrogen compounds have been applied. Large nitrate content is undesirable in drinking water because of its bitter taste and is reported to cause methemoglobinemia in infants.

### Fluoride

Fluoride in the ground water is probably derived from solution of fluorite, apatite and hornblende minerals. Optimum concentrations of fluoride are effective in reducing dental carries, especially in the adolescents. Excess concentration may cause mottling of children's teeth.

### Chloride

Chloride is dissolved from most rocks. Chloride when dissolved from certain chemicals produces a salty taste to water. Under some conditions, it may increase the corrosiveness of water.

### Sulfate

Sulfate combined with calcium can form scale. Large concentrations of sulfate have a laxative effect.

### Radionuclides

Radionuclides in drinking water are suspected of increasing the risk of various forms of cancer. Radioactivity is monitored through a screening process. When gross alpha activity exceeds 5 picocuries per liter (pCi/l), an equivalent sample is analyzed for radium-226; if the concentration of radium-226 exceeds 3 pCi/l, an equivalent sample is analyzed for radium-228. The combined radium-226 and radium-228 should not exceed 5 pCi/l. The gross alpha activity (including radium-226, but excluding radon and uranium) should not exceed 15 pCi/l. Maximum contaminant levels for gross beta are defined in terms of the annual dose rate (millirem per year) from continuous ingestion. The dose rate is calculated on the basis of 2 liter daily intake. The concentrations of man-made radionuclides (beta) causing 4 millirem per year have been calculated to picocuries/liter. Gross beta as Cesium 137 (Cs 137) should not exceed 200 pCi/l.

### References

- Brown, Eugene, Skougstad, M.W., and Fishman, M.J., 1970, Methods for collection and analysis of water samples for dissolved minerals and gases: Techniques of Water-Resources Investigations of the U.S. Geological Survey, book 5, chapter A1, 160 p.
- National Academy of Sciences-National Academy of Engineering, 1972 (1973), Water quality criteria 1972: U.S. Environmental Protection Agency, Ecological Research Series, Report EPA R3-073-033, March 1973, 594 p.
- U.S. Environmental Protection Agency, 1974a, Manual of Methods for Chemical Analysis of Water and Wastes, EPA-625-15-003, Methods Development and Quality Assurance Research Laboratory, National Environmental Research Center, Cincinnati, Ohio, 298 p.
- 1976, Quality criteria for water: Washington, U.S. Government Printing Office, 256 p.
- U.S. Public Health Service, 1962, Public Health Service drinking water standards, 1962: U.S. Public Health Service Publication 956, 61 p.
- U.S. Salinity Laboratory Staff, 1954, Diagnosis and improvement of saline and alkali soils: U.S. Department of Agriculture, Agriculture Handbook no. 60, 160 p.

## Table 2. Logs of wells and test holes.

Depths are shown in feet below land surface

Electric logs are uncalibrated

Natural gamma logs are uncalibrated

Potential given in millivolts (mV)

In the description of materials, depth intervals which represent less than 1 foot in thickness\* are demonstrated below.

260-265 Shale, silty, gray

\*265-265 Limestone, hard, dark

265-272 Shale, light blue-gray

Casing records for test holes completed as observation wells are located at the end of the description of materials.

Table 2. Logs of wells and test holes--Continued.

LOCATION: 078-30-06AACA

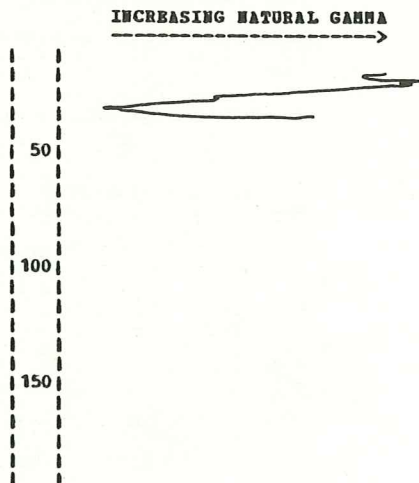
NC-86

STATION ID: 413547-0942024-01

ALTITUDE: 980 FEET (MGVD 1929)

DEPTH: 23 FEET

DATE COMPLETED: July 16, 1982



| DEPTH (FEET) | DESCRIPTION OF MATERIALS  |
|--------------|---|
| 0-5          | QUATERNARY<br>Clay, silty, brown                                  |
| 5-8          | Clay, silty, sandy, dark gray                                     |
| 8-12         | Clay, silty, sandy, soft, brown; sand, occasional layer           |
| 12-14        | Clay, silty, sandy, blue-gray; sand layers                        |
| 14-18        | Sand, fine to coarse, tan   |
| 18-21        | Sand and gravel, fine to medium, gray, yellow-brown (mostly sand) |
| 21-23        | PENNSYLVANIAN<br>Shale, light blue-gray                           |

Casing record: set 2 inch pipe to 22 feet, slotted from 17 to 22 feet, gravel packed

LOCATION: 078-30-05BDDA

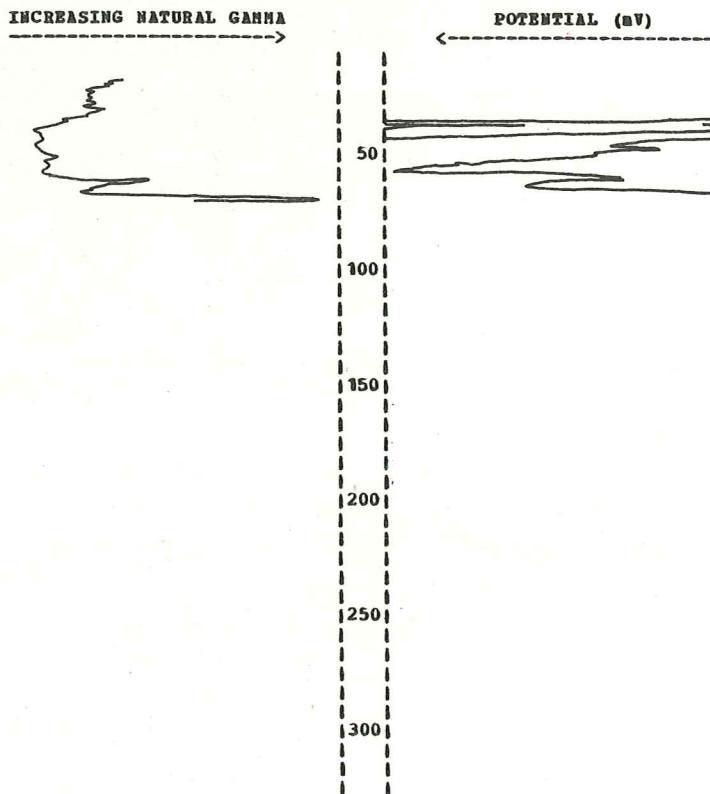
NC-88

STATION ID: 413551-0941958-01

ALTITUDE: 1030 FEET (MGVD 1929)

DEPTH: 61 FEET

DATE COMPLETED: July 19, 1982



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                                       |
|--------------|--|
| 0-3          | QUATERNARY<br>Road bed   |
| 3-5          | Clay, silty, dark brown  |
| 5-10         | Clay, silty, yellow-brown                                      |
| 10-22        | Clay, silty, soft, yellow-brown, yellow-gray; iron concretions |
| 22-27        | Clay, sandy, soft, brown                                       |
| 27-30        | Sand and gravel, fine, brown                                   |
| 30-35        | Sand and gravel, fine to coarse, yellow-brown                  |
| 35-37        | Clay, sandy, yellow-tan; gravel mixed                          |
| 37-39        | Sand, fine to coarse, brown                                    |
| 39-44        | Clay, sandy, gravelly, gray-brown                              |
| 44-46        | Sand, fine to coarse, oxidized, brown                          |
| 46-49        | Sand and gravel, fine to coarse, oxidized, brown               |
| 49-50        | PENNSYLVANIAN<br>Shale, yellow-gray                            |
| 50-53        | Shale, light blue-gray grading to gray-green                   |
| 53-54        | Limestone, gray  |
| 54-56        | Shale, light gray-green  |
| 56-58        | Shale, dark gray, gray-green                                   |
| 58-59        | Limestone, shaly, light colored                                |
| 59-61        | Shale, dark gray-green   |

Table 2. Logs of wells and test holes--Continued.

LOCATION: 077-39-05BAAB

WC-223

STATION ID: 413020-0952128-01

ALTITUDE: 1155 FEET (NGVD 1929)

DEPTH: 281 FEET

DATE COMPLETED: July 5, 1983

INCREASING NATURAL GAMMA



POTENTIAL (mV)



| DEPTH (FEET) | DESCRIPTION OF MATERIALS   |
|--------------|--|
|              | QUATERNARY   |
| 0-2          | Top soil   |
| 2-6          | Clay, silty, dark gray   |
| 6-13         | Clay, silty, gray to yellow-gray   |
| 13-15        | Clay, silty, yellow-brown  |
| 15-20        | Clay, silty, oxidized streaks, gray, yellow, brown                           |
| 20-24        | Clay, silty, grading to very sandy at base, blue-gray                        |
| 24-26        | Sand, fine to coarse, gray   |
| 26-30        | Sand and gravel, fine to medium, yellow-brown                                |
| 30-30        | Till, yellow-gray  |
| 30-72        | Till, blue-gray  |
| 72-73        | Sand and gravel, fine to coarse, gray  |
| 73 -170      | Till, sandy, gravelly, blue-gray; sand and gravel, occasional layer; boulder |
| 170-180      | As above; clay, silty; till is lighter than above                            |
| 180-220      | Clay, silty, gray, light blue-gray   |
| 220-240      | Clay, silty grading to sandy, gray   |
|              | PENNSYLVANIAN  |
| 240-245      | Limestone, light tan, light gray   |
| 245-248      | Shale, tan, gray; limestone, thin streaks                                    |
| 248-249      | Shale, black; coal   |
| 249-256      | Sandstone, fine, very silty, gray-green                                      |
| 256-266      | Shale, very silty layers, gray   |
| 266-270      | Shale, gray; siltstone; sandstone; limestone, thin layers                    |
| 270-274      | Shale, gray, dark gray, gray-green; siltstone, streaks                       |
| 274-275      | Shale, black; coal   |
| 275-276      | Limestone, hard, cherty; shale, gray-green                                   |
| 276-281      | Limestone, some shaly, light colored   |

LOCATION: 078-30-05BBCB

WC-87

STATION ID: 413550-0942012-01

ALTITUDE: 990 FEET (NGVD 1929)

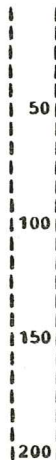
DEPTH: 41 FEET

DATE COMPLETED: July 19, 1982

INCREASING NATURAL GAMMA



POTENTIAL (mV)



| DEPTH (FEET) | DESCRIPTION OF MATERIALS   |
|--------------|--|
|              | QUATERNARY   |
| 0-5          | Road bed   |
| 5-10         | Clay, silty, dark  |
| 10-15        | Clay, silty, sandy, blue-gray grading to gray-brown                        |
| 15-17        | Sand, fine to coarse; clay, silty, gray                                    |
| 17-21        | Sand and gravel, fine to coarse, tan, yellow-brown                         |
|              | PENNSYLVANIAN  |
| 21-23        | Limestone, gray, yellow-brown  |
| 23-26        | Shale, gray-green, gray  |
| 26-28        | Shale, dark gray, gray-green   |
| 28-32        | Shale, gray-green, reddish brown   |
| 32-41        | Shale, silty, sandy, light gray-green; siltstone, occasional layer; pyrite |



Table 2. Logs of wells and test holes--Continued.

LOCATION: 078-30-06AACC

WC-89

STATION ID: 413544-0942029-01

ALTITUDE: 1000 FEET (NGVD 1929)

DEPTH: 41 FEET

DATE COMPLETED: July 19, 1982

| DEPTH (FEET)  | DESCRIPTION OF MATERIALS                                    |
|---------------|---|
| QUATERNARY    |   |
| 0-14          | Fill; road bed  |
| 14-15         | Clay, very dark, gray-brown                                 |
| 15-17         | Clay, tan   |
| 17-19         | Clay, sandy, oxidized, gray, brown                          |
| 19-21         | As above, gravelly, sandy                                   |
| PENNSYLVANIAN |   |
| 21-22         | Shale, yellow-gray  |
| 22-23         | Shale, gray, maroon   |
| 23-25         | Shale, maroon   |
| 25-35         | Shale, silty, light gray-green; siltstone, occasional layer |
| 35-41         | Shale, gray-brown reen                                      |

LOCATION: 078-30-24CAAB

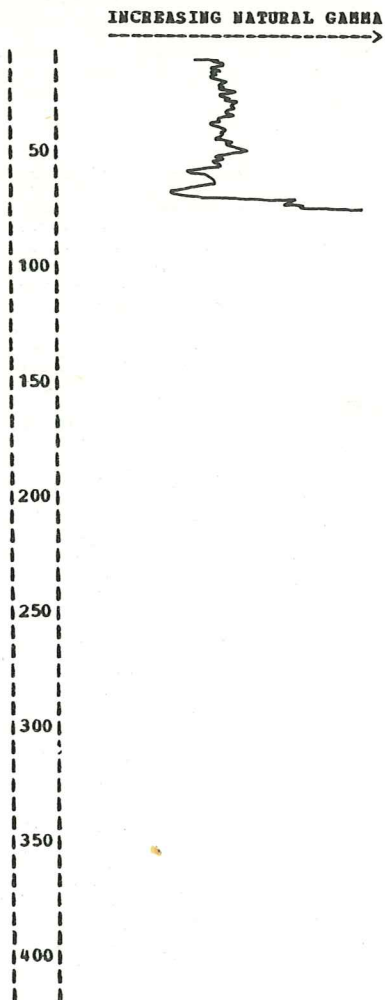
WC-238

STATION ID: 413223-0941508-01

ALTITUDE: 1020 FEET (NGVD 1929)

DEPTH: 72 FEET

DATE COMPLETED: August 12, 1983



| DEPTH (FEET)     | DESCRIPTION OF MATERIALS                                       |
|------------------|--|
| QUATERNARY       |  |
| 0-22             | Till, yellow-brown   |
| 22-23            | Boulder; limestone   |
| 23-25            | Till, very sandy, brown, tan                                   |
| 25-27            | Till, yellow-tan   |
| 27-30            | Clay; till, yellow-brown, yellow-gray; shale, reworked         |
| 30-45            | Clay, gray, yellow-brown, yellow-gray; till                    |
| 45-46            | Clay, gray, gray-green   |
| 46-47            | Clay or shale reworked, gray-green                             |
| 47-48            | Clay or shale reworked, yellow-brown                           |
| 48-49            | Clay or shale reworked, dark gray                              |
| 49-50            | Clay or shale reworked, light blue-gray                        |
| 50-52            | Clay or shale reworked, gray, blue-gray                        |
| 52-55            | Clay or shale reworked, gray, yellow-gray; limestone fragments |
| 55-58            | Clay or shale reworked, dark gray                              |
| 58-59            | Limestone, gray; clay or shale at base                         |
| 59-61            | Clay, dark gray  |
| CRETACEOUS       |  |
| DAKOTA FORMATION |  |
| 61-65            | Sand or sandstone, fine to coarse, reworked, tan               |
| PENNSYLVANIAN    |  |
| 65-69            | Shale, silty, light blue-gray                                  |
| 69-72            | Shale, gray, yellow-gray, reddish-brown                        |

Casing record: set 2 inch pipe to 72 feet, slotted from 60 to 68 feet, gravel packed

Table 2. Logs of wells and test holes--Continued.

LOCATION: 078-30-25CDAD

WC-237

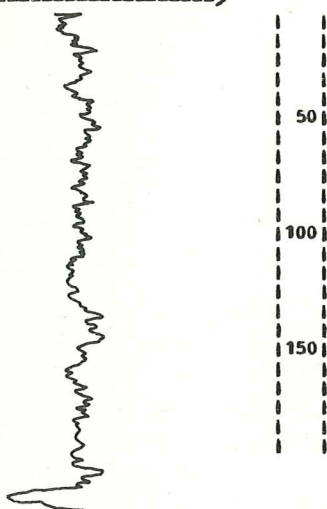
STATION ID: 413109-0941505-01

ALTITUDE: 1120 FEET (NGVD 1929)

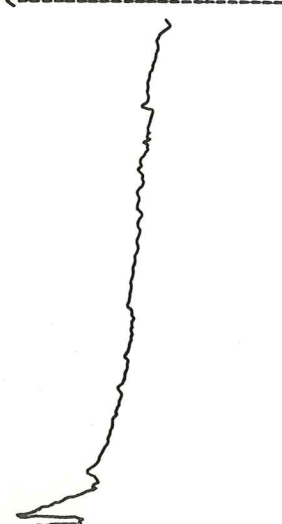
DEPTH: 221 FEET

DATE COMPLETED: August 11, 1983

INCREASING NATURAL GAMMA →



← POTENTIAL (mV)



| DEPTH (FEET)         | DESCRIPTION OF MATERIALS  |
|----------------------|---|
| <b>QUATERNARY</b>    |   |
| 0-6                  | Fill; top soil  |
| 6-15                 | Till, yellow-brown  |
| 15-20                | Clay; till, gray, yellow-gray                                     |
| 20-41                | Till, yellow-brown, yellow-gray                                   |
| 41-42                | Boulder   |
| 42-51                | Till, yellow-brown, yellow-gray, blue-gray streaks; boulders      |
| 51-150               | Till, blue-gray   |
| 150-191              | Till, as above; reworked shale                                    |
| 191-210              | Clay, silty, gray   |
| 210-212              | Sand and gravel; clay   |
| 212-217              | Sand and gravel, fine to medium; clay, mixed; limestone fragments |
| <b>PENNSYLVANIAN</b> |   |
| 217-221              | Shale, gray-green   |

LOCATION: 078-31-36BABA

WC-241

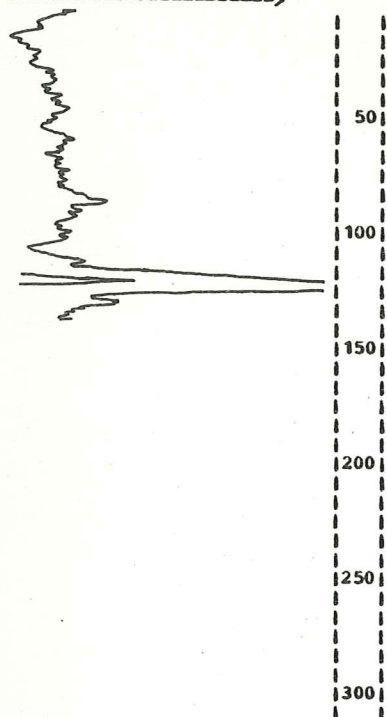
STATION ID: 413104-0942206-01

ALTITUDE: 1235 FEET (NGVD 1929)

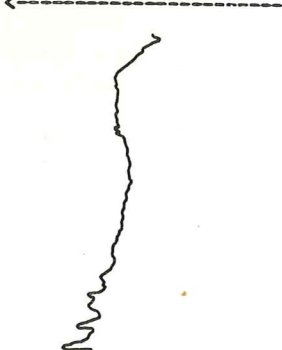
DEPTH: 140 FEET

DATE COMPLETED: August 18, 1983

INCREASING NATURAL GAMMA →



← POTENTIAL (mV)



| DEPTH (FEET)         | DESCRIPTION OF MATERIALS                              |
|----------------------|---|
| <b>QUATERNARY</b>    |   |
| 0-3                  | Clay, yellow-gray                                     |
| 3-6                  | Clay, yellow-brown                                    |
| 6-12                 | Clay, yellow-gray                                     |
| 12-15                | Till, sandy, yellow-brown                             |
| 15-17                | Clay or till, sandy, tan, yellow                      |
| 17-20                | Clay, sandy, brown, tan; sand, fine to coarse, layers |
| 20-37                | Till, yellow-tan                                      |
| 37-47                | Till, yellow-brown, yellow-gray                       |
| 47-50                | Till, blue-gray                                       |
| 50-54                | Till, yellow-brown                                    |
| 54-60                | Till, olive   |
| 60-85                | Till, yellow-brown, yellow-gray                       |
| 85-87                | Till, yellow-brown, blue-gray                         |
| 87-107               | Till, blue-gray                                       |
| 107-110              | Sand and gravel, fine to coarse, gray-tan             |
| 110-115              | Till, blue-gray                                       |
| 115-118              | Boulder, limestone                                    |
| 118-123              | Till, blue-gray                                       |
| <b>PENNSYLVANIAN</b> |   |
| 123-124              | Shale, gray-green                                     |
| 124-125              | Shale, black, dark gray                               |
| 125-130              | Limestone or siltstone, very sandy                    |
| 130-137              | Shale, gray-green                                     |
| 137-139              | Limestone, brown, tan                                 |
| 139-140              | Shale, gray; limestone; tan                           |

Table 2. Logs of wells and test holes--Continued.

LOCATION: 078-32-21AAAA

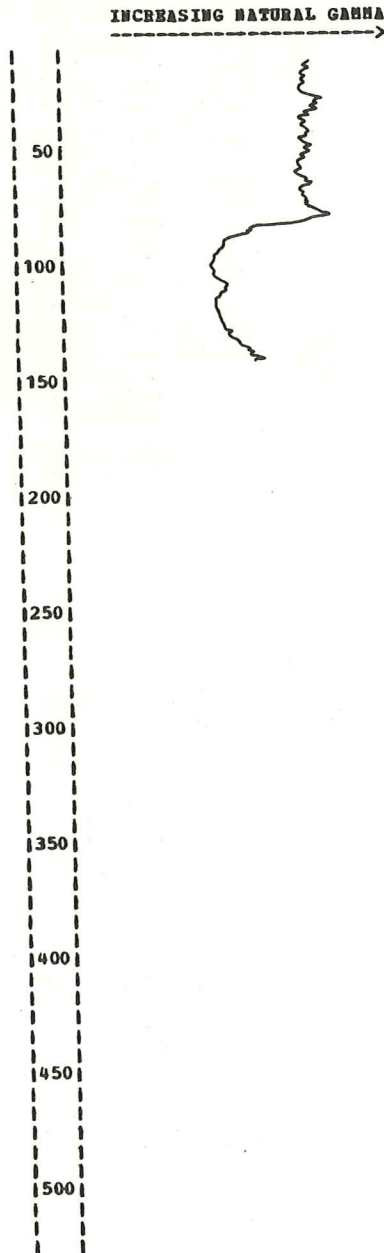
HC-239

STATION ID: 413248-0943143-01

ALTITUDE: 1250 FEET (NGVD 1929)

DEPTH: 161 FEET

DATE COMPLETED: August 16, 1983



| DEPTH (FEET)            | DESCRIPTION OF MATERIALS                                 |
|-------------------------|--|
| <b>QUATERNARY</b>       |  |
| 0-4                     | Clay, sandy, yellow-brown                                |
| 4-6                     | Sand and gravel, fine, brown, yellow-brown               |
| 6-11                    | Till, sandy, yellow-tan, yellow-brown                    |
| 11-14                   | Till, yellow-gray grading to blue-gray                   |
| 14-17                   | Till, blue-gray  |
| 17-19                   | Sand and gravel, fine to coarse, gray                    |
| 19-22                   | Till, sandy, gravelly, blue-gray                         |
| 22-28                   | Clay, gray to blue-gray                                  |
| 28-30                   | Till, light blue-gray                                    |
| 30-34                   | Till, olive  |
| 34-50                   | Till, yellow-brown                                       |
| 50-57                   | Till, yellow-gray  |
| 57-61                   | Till, blue-gray  |
| 61-69                   | Till, light blue-gray, yellow-brown                      |
| 69-70                   | Sand and gravel, fine to coarse, tan                     |
| 70-76                   | Till, blue-gray  |
| 76-78                   | Till, yellow-brown                                       |
| 78-79                   | Till, very sandy, gray, yellow-brown                     |
| <b>CRETACEOUS</b>       |  |
| <b>DAKOTA FORMATION</b> |  |
| 79-90                   | Sandstone, fine to coarse, tan                           |
| 90-105                  | As above, yellow-brown                                   |
| 105-106                 | Shale, yellow-gray                                       |
| 106-133                 | Sandstone, fine to coarse, tan, yellow-brown             |
| 133-135                 | Gravel, shaly; limestone chips                           |
| 135-137                 | Sandstone, fine to medium, tan                           |
| 137-140                 | Shale, sandy, light yellow-gray; sandstone layers        |
| 140-147                 | Shale, silty, light-gray; sandstone, fine to medium      |
| 147-150                 | Shale, silty, yellow-brown, light gray; sandstone layers |
| 150-156                 | Shale, silty, gray                                       |
| 156-158                 | Gravel; chert  |
| <b>PENNSYLVANIAN</b>    |  |
| 158-161                 | Shale, gray to gray-green; siltstone                     |

Casing record: set 2 inch pipe to 135 feet, slotted from 125 to 135 feet, gravel packed

Table 2. Logs of wells and test holes--Continued.

LOCATION: 078-33-03DDDD

WC-240

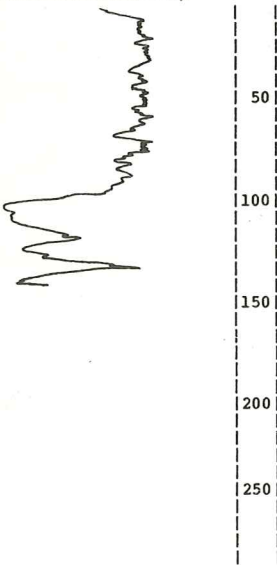
STATION ID: 413501-0943727-01

ALTITUDE: 1340 FEET (NGVD 1929)

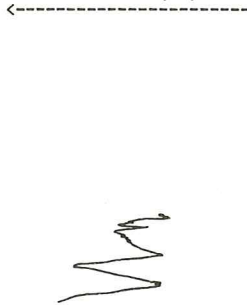
DEPTH: 141 FEET

DATE COMPLETED: August 17, 1983

INCREASING NATURAL GAMMA



POTENTIAL (mV)



DEPTH (FEET)

DESCRIPTION OF MATERIALS

QUATERNARY  
 0-3 Top soil  
 3-13 Clay or till, sandy, yellow-brown  
 13-37 Till, sandy, blue-gray  
 37-40 Till, olive  
 40-68 Till, blue-gray  
 68-70 Clay or peat, silty, brown; wood; organics  
 70-71 As above, very dark brown  
 71-80 Clay, gray to blue-gray  
 80-84 Till, light blue-gray  
 84-90 Till, olive; boulder at 88 to 89 feet  
 90-101 Till, yellow-brown

CRETACEOUS  
 DAKOTA FORMATION  
 101-115 Sandstone, fine to coarse, yellow-brown  
 115-118 Sandstone, very coarse, tan  
 118-121 Shale, sandy, silty, yellow-gray; gravel  
 121-130 Sandstone, fine to medium, tan  
 130-133 Shale, very sandy, gray-green; gravel  
 133-135 Shale, silty, yellow-gray  
 135-141 Sandstone, very coarse (gravel)

LOCATION: 078-36-35ACBC

WC-68

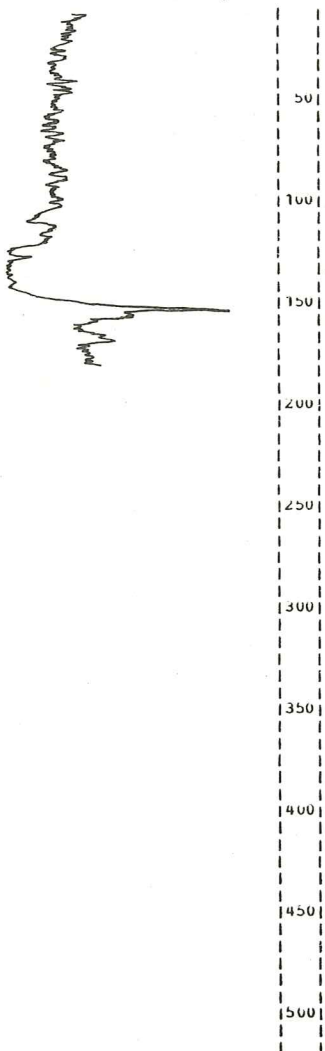
STATION ID: 413050-0945720-01

ALTITUDE: 1240 FEET (NGVD 1929)

DEPTH: 181 FEET

DATE COMPLETED: June 21, 1982

INCREASING NATURAL GAMMA



POTENTIAL (mV)



DEPTH (FEET)

DESCRIPTION OF MATERIALS

QUATERNARY  
 0-4 Road bed; top soil  
 4-8 Clay, gray  
 8-12 Clay, silty, yellow-gray  
 12-17 Clay, silty, sandy, yellow-brown, yellow-tan  
 17-18 Clay, sandy, very gravelly  
 18-26 Till, sandy, soft, yellow-brown  
 26-30 Till, yellow-brown  
 30-36 Till, yellow-gray  
 36-38 Till, yellow-brown  
 38-40 Till, olive grading to blue-gray  
 40-53 Till, blue-gray  
 53-56 Sand and gravel; till, mixed, gray  
 56-103 Till, blue-gray  
 103-111 Sand and gravel, fine to coarse, gray; till, mixed  
 111-115 Till, gravelly, blue-gray  
 115-117 Till, olive

CRETACEOUS  
 DAKOTA FORMATION  
 117-118 Shale, silty, oxidized, brown grading to light gray  
 118-125 Sandstone, medium to coarse, oxidized, yellow-brown  
 125-146 Sandstone, fine to coarse, oxidized, light tan, grading to yellow-brown  
 146-149 Sand and gravel, iron cemented; shale, oxidized, mixed, light gray to brown  
 149-150 Shale, silty, yellow, gray

PENNSYLVANIAN  
 150-152 Shale, blue-gray; lignite streak  
 152-157 Shale, blue-gray to light blue-gray  
 157-166 Shale, silty, gray-green; limestone trace  
 166-167 Shale, silty, gray-brown  
 167-175 Shale, silty, gray-green, light blue-gray  
 175-181 Shale, yellow, gray-brown

Table 2. Logs of wells and test holes--Continued.

LOCATION: 078-36-35ADCC

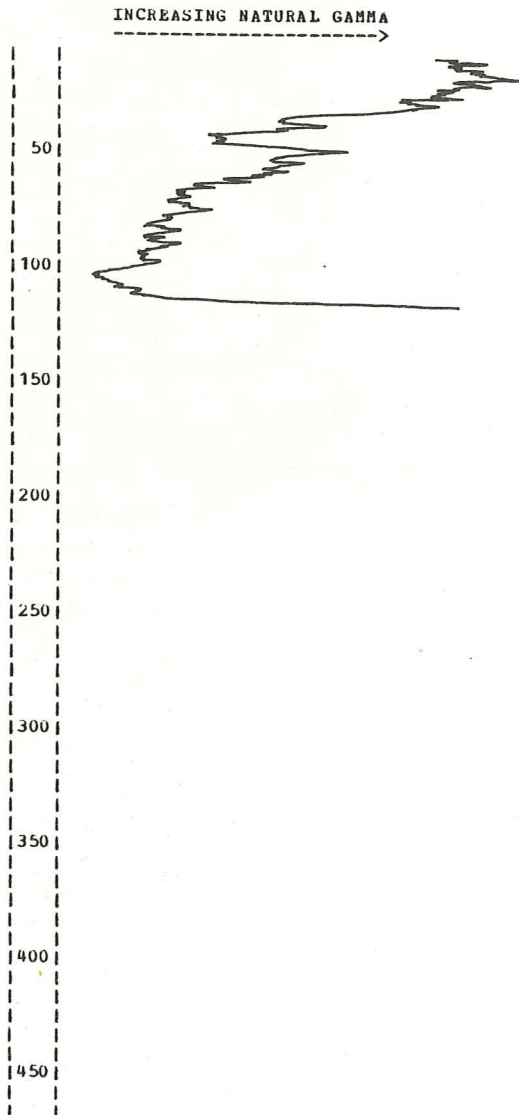
WC-69

STATION ID: 413044-0945656-01

ALTITUDE: 1230 FEET (NGVD 1929)

DEPTH: 115 FEET

DATE COMPLETED: June 22, 1982



| DEPTH (FEET) | DESCRIPTION OF MATERIALS  |
|--------------|---|
| 0-10         | QUATERNARY<br>Clay, silty, yellow-brown; loess                                |
| 10-16        | Clay, silty, soft, yellow-gray, gray; loess                                   |
| 16-17        | Clay, yellow-brown  |
| 17-27        | Clay, hard, gray-brown; few sand grains                                       |
| 27-31        | As above, yellow-gray   |
| 31-35        | Clay, very sandy, yellow-brown; sand layers                                   |
| 35-40        | Sand, fine to coarse, gray-tan; clay layers                                   |
| 40-44        | Sand and gravel, fine, gray-tan   |
| 44-45        | Clay, yellow-gray   |
| 45-47        | Sand, gray-tan, fine to coarse  |
| 47-52        | Sand and gravel, fine to medium, gray-tan                                     |
| 52-58        | Sand and gravel, fine to coarse, iron cemented, oxidized, brown, yellow-brown |
|              | CRETACEOUS  |
|              | DAKOTA FORMATION  |
| 58-58        | Shale, sandy, light gray  |
| 58-61        | Sandstone, fine to coarse   |
| 61-70        | Sandstone, medium to very coarse, tan   |
| 70-75        | Sandstone, very coarse; shale trace, light gray                               |
| 75-105       | Sandstone, medium to very coarse, yellow-brown, tan                           |
| 105-107      | Shale, sandy, light gray, yellow; sandstone, very coarse, mixed               |
| 107-110      | Sandstone, fine to coarse, hard, iron cemented, oxidized, brown               |
| 110-111      | Shale, sandy, oxidized, brown, yellow-brown                                   |
| 111-115      | Shale, silty, gray  |

Casing record: set 2 inch pipe to 115 feet, slotted from 94 to 101 feet, gravel packed

LOCATION: 078-36-36ACCD

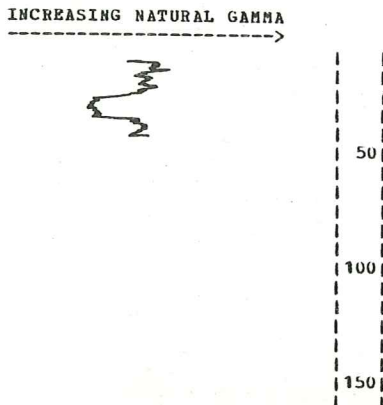
WC-72

STATION ID: 413043-0945605-01

ALTITUDE: 1190 FEET (NGVD 1929)

DEPTH: 41 FEET

DATE COMPLETED: June 23, 1982



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                              |
|--------------|---|
| 0-6          | QUATERNARY<br>Road bed; top soil                      |
| 6-10         | Clay, dark gray grading to gray                       |
| 10-15        | Clay, yellow-gray                                     |
| 15-18        | Clay, silty, soft, yellow-gray, yellow-brown          |
| 18-21        | Clay, silty, soft, yellow-gray grading to blue-gray   |
| 21-25        | Sand, fine to coarse, gravel, fine, gray; clay layers |
| 25-30        | Sand and gravel, fine to coarse, gray                 |
| 30-32        | Gravel; boulders; till, blue-gray                     |
| 32-41        | Till, blue-gray                                       |

Table 2. Logs of wells and test holes--Continued.

LOCATION: 078-36-36ADBB

WC-73

STATION ID: 413054-0945553-01

ALTITUDE: 1200 FEET (NGVD 1929)

DEPTH: 161 FEET

DATE COMPLETED: June 24, 1982

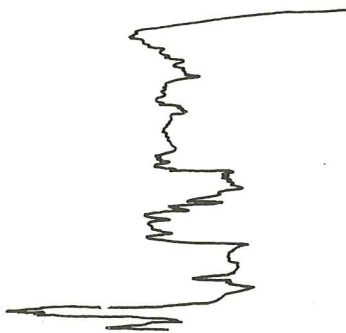
INCREASING NATURAL GAMMA



POTENTIAL (mV)



POTENTIAL (mV)



DEPTH (FEET) DESCRIPTION OF MATERIALS

| DEPTH (FEET) | DESCRIPTION OF MATERIALS   |
|--------------|--|
| 0-4          | QUATERNARY<br>Road bed; top soil   |
| 4-8          | Clay, dark-gray to gray  |
| 8-13         | Clay, yellow-gray  |
| 13-16        | Clay, silty, soft, yellow-brown  |
| 16-22        | Sand, fine to coarse (fine gravel); clay layers                                    |
| 22-31        | Sand, fine to coarse, gray; gravel; clay mixed                                     |
| 31-38        | Sand and gravel, fine to medium, tan, yellow-brown                                 |
| 38-41        | Sand and gravel, fine to coarse, oxidized, brown, yellow-brown                     |
| 41-47        | Sand and gravel, fine to medium, mostly quartz, some cemented, tan, yellow-brown   |
|              | CRETACEOUS   |
|              | DAKOTA FORMATION   |
| 47-50        | Sandstone, medium to coarse, brown   |
| 50-52        | Shale, silty, sandy, gravelly, oxidized, light gray, yellow-brown                  |
| 52-60        | Sandstone, fine to medium, tan, yellow-brown                                       |
| 60-70        | Sandstone, fine to coarse, oxidized, brown, yellow-brown; shale, occasional streak |
| 70-72        | Sandstone, iron cemented; shale, gray, yellow, red trace                           |
| 72-80        | Sandstone, fine to medium, tan; shale streak trace                                 |
| 80-92        | Sandstone, iron cemented, very oxidized, brown-orange; shale streaks               |
| 92-98        | Shale, silty, gray, yellow-gray, oxidized layers of brown, yellow-brown            |
| 98-105       | Shale, silty, blue-gray; lignite at 99 feet  |
| 105-106      | Shale, silty, oxidized   |
| 106-107      | Sandstone, fine, yellow-brown  |
| 107-110      | Shale, silty, sandy, gray, yellow-brown  |
| 110-111      | Conglomerate, hard, iron cemented  |
| 111-123      | Sandstone, fine to medium, yellow-brown; shale, occasional streak                  |
| 123-128      | Shale, gray-tan, yellow-brown  |
|              | PENNSYLVANIAN  |
| 128-139      | Shale, silty, blue-gray; pyrite  |
| 139-140      | Shale, blue-gray; coal   |
| 140-144      | Shale, silty, gray-brown; coal at 143; pyrite                                      |
| 144-147      | Shale, blue-gray   |
| 147-151      | Shale, light blue-gray   |
| 151-152      | Dolomite, brown  |
| 152-156      | Limestone, light colored; dolomite   |
| 156-161      | Shale, gray-green; limestone near base, sandy                                      |

Table 2. Logs of wells and test holes--Continued.

LOCATION: 078-36-36CABA

WC-70

STATION ID: 413043-0945621-01

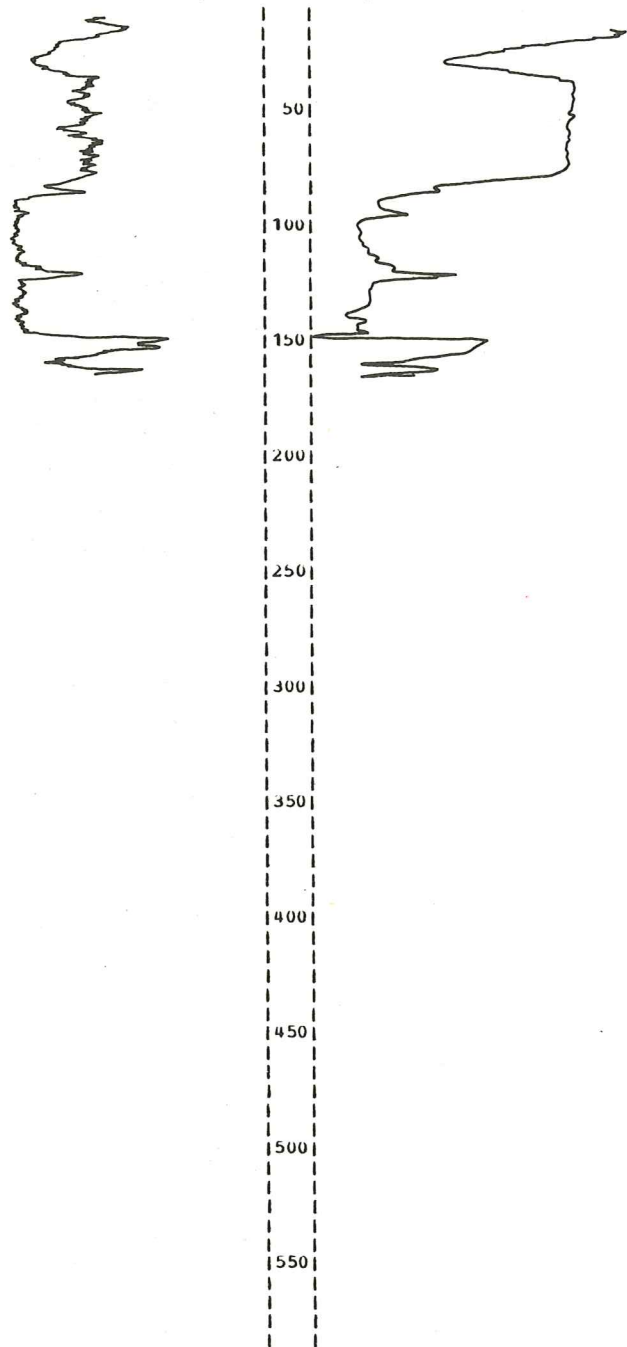
ALTITUDE: 1190 FEET (NGVD 1929)

DEPTH: 161 FEET

DATE COMPLETED: June 22, 1982

INCREASING NATURAL GAMMA  
----->

POTENTIAL (mV)  
-----<



| DEPTH (FEET)            | DESCRIPTION OF MATERIALS  |
|-------------------------|---|
| <b>QUATERNARY</b>       |   |
| 0-4                     | Road bed; top soil  |
| 4-12                    | Clay, silty, dark gray to gray  |
| 12-14                   | Clay, silty, yellow-gray  |
| 14-16                   | Clay, silty, blue-gray  |
| 16-17                   | Clay, silty, sandy, brown, gray; wood                                   |
| 17-21                   | Sand, fine to medium, gray; clay  |
| 21-26                   | Sand and gravel, fine, gray   |
| 26-28                   | Sand and gravel, fine to coarse, gray; clay trace                       |
| 28-31                   | Sand and gravel, fine to coarse, yellow-gray; clay mixed                |
| 31-50                   | Till, blue-gray   |
| 50-60                   | Till, sandy layers, blue-gray   |
| 60-75                   | Clay or till, silty, dark gray; sand grains                             |
| <b>CRETACEOUS</b>       |   |
| <b>DAKOTA FORMATION</b> |   |
| 75-77                   | Sandstone, fine to medium, gray-tan                                     |
| 77-80                   | Sandstone, fine to coarse, iron cemented, oxidized layers, yellow-brown |
| 80-84                   | Sandstone, medium to very coarse, oxidized, brown, yellow-brown         |
| 84-90                   | Sandstone, fine to medium, tan  |
| 90-91                   | Shale, light yellow-gray  |
| 91-115                  | Sandstone, fine to medium, coarse, tan                                  |
| 115-118                 | Shale, very sandy, gravelly, oxidized, yellow-brown, reddish-brown      |
| 118-130                 | Sandstone, fine to medium, very oxidized, yellow-brown, brown; shale    |
| 130-135                 | As above, grading to medium to very coarse                              |
| 135-140                 | Sandstone, medium to coarse, yellow-tan                                 |
| 140-144                 | Sandstone, very coarse (pea gravel), yellow-brown                       |
| <b>PENNSYLVANIAN</b>    |   |
| 144-148                 | Shale, blue-gray  |
| 148-153                 | Shale, silty, gray  |
| 153-155                 | Dolomite, sandy; limestone, light colored                               |
| 155-157                 | Limestone, dolomitic, gray-green, light blue-gray                       |
| 157-159                 | Shale, light blue-gray  |
| 159-161                 | Limestone, very sandy, shaly, light gray                                |

Table 2. Logs of wells and test holes--Continued.

LOCATION: 078-36-36DABB

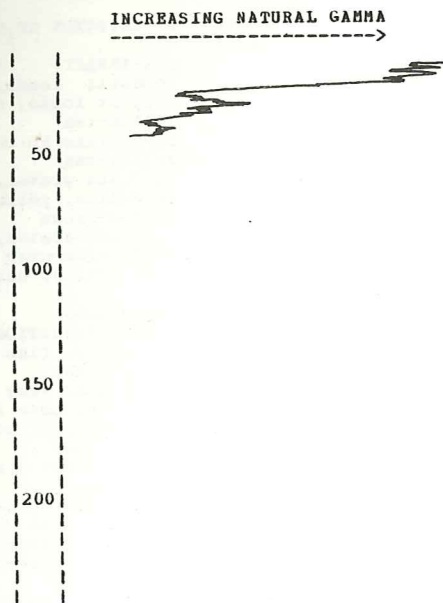
MC-71

STATION ID: 413041-0945554-01

ALTITUDE: 1195 FEET (NGVD 1929)

DEPTH: 41 FEET

DATE COMPLETED: June 23, 1982



| DEPTH (FEET)     | DESCRIPTION OF MATERIALS   |
|------------------|--|
| QUATERNARY       |  |
| 0-5              | Top soil; clay, dark gray  |
| 5-14             | Clay, yellow-gray  |
| 14-16            | Clay, silty, sandy, soft, gray, yellow-brown   |
| 16-20            | Sand, fine to coarse, gray-tan; gravel, fine   |
| 20-29            | Sand and gravel, fine to coarse, gray  |
| 29-37            | Sand and gravel, fine to very coarse, oxidized, brown, yellow-brown; clay at base, blue-gray |
| 37-39            | Sand and gravel, fine, some cementation  |
| CRETACEOUS       |  |
| DAKOTA FORMATION |  |
| 39-41            | Sandstone, hard, well cemented, oxidized, brown  |

Casing record: set 2 inch pipe to 39 feet slotted from 32 to 39 feet, gravel packed



Table 2. Logs of wells and test holes--Continued.

LOCATION: 078-37-17DDDD

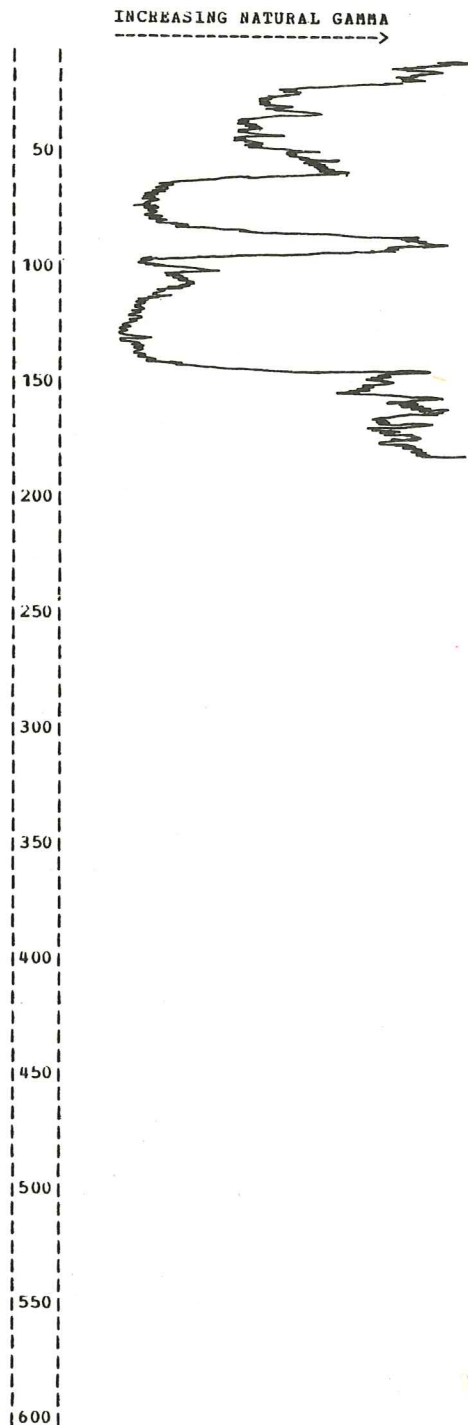
WC-16

STATION ID: 413255-0950704-01

ALTITUDE: 1208 FEET (NGVD 1929)

DEPTH: 181 FEET

DATE COMPLETED: July 29, 1981



| DEPTH (FEET)            | DESCRIPTION OF MATERIALS  |
|-------------------------|---|
| <b>QUATERNARY</b>       |   |
| 0-5                     | Topsoil; loess, brown   |
| 5-13                    | Clay or loess, silty, yellow-tan  |
| 13-27                   | Sand, fine to coarse, yellow-tan  |
| 27-40                   | Sand and gravel, fine to medium, yellow-tan, yellow-brown                   |
| 40-42                   | Sand and gravel, coarse   |
| 42-50                   | Till, blue-gray   |
| 50-55                   | Clay, silty, blue-gray  |
| <b>CRETACEOUS</b>       |   |
| <b>DAKOTA FORMATION</b> |   |
| 55-76                   | Sandstone, fine to coarse, tan  |
| 76-78                   | Sandstone, very coarse, oxidized, some iron cementation; gravel, fine; clay |
| 78-87                   | Shale, light gray, gray   |
| 87-88                   | Sandstone, conglomerate, hard, iron cemented                                |
| 88-94                   | Sandstone, fine to coarse, yellow-brown; shale trace                        |
| 94-95                   | Sandstone, coarse, hard, iron cementation (possible conglomerate)           |
| 95-99                   | Sandstone, fine to coarse, some oxidized, yellow-brown                      |
| 99-100                  | Sandstone, coarse, iron cemented (possible conglomerate)                    |
| 100-104                 | Sandstone, fine to very coarse, iron cemented; shale, red, green, brown     |
| 104-110                 | Sandstone, fine to medium, tan  |
| 110-130                 | Sandstone, fine to coarse, tan to yellow-brown                              |
| 130-140                 | Sandstone, oxidized, brown  |
| <b>PENNSYLVANIAN</b>    |   |
| 140-141                 | Shale, silty, oxidized streaks, gray-green                                  |
| 141-146                 | Shale, silty, oxidized, brown, yellow-brown; siltstone streaks              |
| 146-158                 | Shale, silty, sandy, gray-green; siltstone streaks                          |
| 158-170                 | Shale, reddish brown  |
| 170-175                 | Shale, varying colors of reddish brown, yellow-brown                        |
| 175-177                 | Shale, yellow-gray, gray-green  |
| 177-179                 | Limestone, gray   |
| 179-181                 | Shale, dark gray, gray-green  |

Casing record: set 2 inch pipe to 181 feet, slotted from 121 to 139 feet, gravel packed

Table 2. Logs of wells and test holes--Continued.

LOCATION: 078-39-03CDDD

WC-201

STATION ID: 413443-0951905-01

ALTITUDE: 1175 FEET (NGVD 1929)

DEPTH: 61 FEET

DATE COMPLETED: June 7, 1983

INCREASING NATURAL GAMMA



POTENTIAL (mV)



| DEPTH (FEET) | DESCRIPTION OF MATERIALS  |
|--------------|---|
| 0-5          | QUATERNARY Road bed; top soil   |
| 5-10         | Clay, silty, yellow-gray, dark gray; fill   |
| 10-12        | Clay, silty, gray   |
| 12-14        | Clay, silty, yellow-gray  |
| 14-18        | Clay, silty, sandy at base, yellow-brown  |
| 18-20        | Sand, fine to coarse, brown   |
| 20-24        | Clay, silty, gray, brown; sand layers; gravel, fine                               |
| 24-30        | Sand and gravel, fine to medium, gray   |
| 30-38        | Sand and gravel, fine to medium, some coarse, oxidized, tan grading to brown      |
| 38-45        | Sand and gravel, fine to medium, some coarse, yellow-brown, tan; boulders at base |
| 45-61        | Till, blue-gray   |

LOCATION: 078-39-04CDDD

WC-202

STATION ID: 413443-0951957-01

ALTITUDE: 1194 FEET (NGVD 1929)

DEPTH: 61 FEET

DATE COMPLETED: June 8, 1983

INCREASING NATURAL GAMMA



POTENTIAL (mV)



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                     |
|--------------|--|
| 0-5          | QUATERNARY Road bed; top soil                |
| 5-10         | Clay, silty, yellow-brown; loess             |
| 10-17        | Loess, yellow-brown, yellow-tan              |
| 17-21        | Loess, gray grading to yellow-gray           |
| 21-24        | Clay, silty, yellow-brown; loess             |
| 24-28        | Clay, silty, gray-brown; loess               |
| 28-32        | Clay or loess, silty, gray-green             |
| 32-34        | Clay, silty, gray                            |
| 34-38        | Clay, silty, some sandy at base, yellow-gray |
| 38-40        | Clay, sandy, light blue-gray                 |
| 40-41        | Sand, fine to medium, gray                   |
| 41-44        | Sand, fine to coarse, gray-tan; clay layers  |
| 44-46        | Sand and gravel, fine, tan                   |
| 46-48        | Sand and gravel, fine to coarse, gray        |
| 48-53        | Till, blue-gray                              |
| 53-55        | Till, sandy, gravelly                        |
| 55-56        | Sand, fine to coarse, gray; wood             |
| 56-61        | Till, blue-gray                              |

Table 2. Logs of wells and test holes--Continued.

LOCATION: 078-39-08AABA

WC-203

STATION ID: 413442-0952057-01

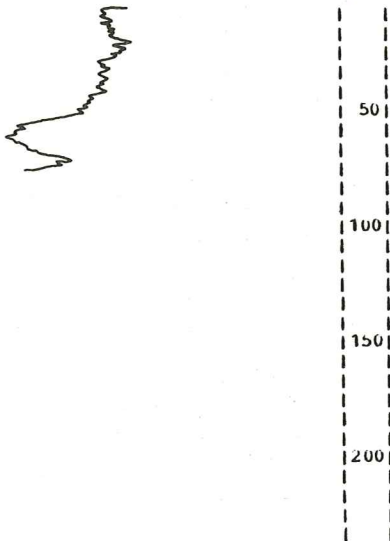
ALTITUDE: 1260 FEET (NGVD 1929)

DEPTH: 101 FEET

DATE COMPLETED: June 9, 1983

INCREASING NATURAL GAMMA →

← POTENTIAL (mV)



| DEPTH (FEET) | DESCRIPTION OF MATERIALS  |
|--------------|---|
| 0-5          | QUATERNARY Road bed   |
| 5-10         | Loess, yellow-brown, brown  |
| 10-24        | Loess, yellow-brown, yellow-gray  |
| 24-29        | Clay, silty, tough, brown   |
| 29-45        | As above, yellow-brown grading to yellow-tan  |
| 45-51        | Clay, tough, gray; sand grains  |
| 51-55        | Clay, tough, light gray, yellow-gray  |
| 55-60        | Sand grading to sand and gravel, fine to coarse   |
| 60-69        | Sand and gravel, fine to coarse, cemented at base, oxidized layers, yellow-brown, brown |
| 69-72        | Till, brown, olive, yellow-brown; boulder   |
| 72-75        | Till, blue-gray   |
| 75-80        | Sand, fine to coarse, gray  |
| 80-101       | Till, very sandy, gravelly, blue-gray   |

LOCATION: 078-39-10BBBA

WC-200

STATION ID: 413442-0951931-01

ALTITUDE: 1168 FEET (NGVD 1929)

DEPTH: 46 FEET

DATE COMPLETED: June 7, 1983

INCREASING NATURAL GAMMA →



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                           |
|--------------|--|
| 0-12         | QUATERNARY Road bed                                |
| 12-18        | Clay, silty, dark gray; possible fill              |
| 18-20        | Wood; possible fill                                |
| 20-22        | Clay, silty, dark blue-gray                        |
| 22-23        | Clay, sandy, silty, yellow-gray                    |
| 23-25        | Sand, fine to coarse                               |
| 25-33        | Sand and gravel, fine to medium, olive, gray-tan   |
| 33-35        | Clay, sandy, silty, gray; sand layers, very fine   |
| 35-41        | Sand, fine to coarse, gray                         |
| 41-44        | Sand and gravel, fine to medium, some coarse, gray |
| 44-46        | Till, blue-gray                                    |

Casing record: set 2 inch pipe to 44 feet, slotted from 40 to 44 feet, gravel packed

Table 2. Logs of wells and test holes--Continued.

LOCATION: 078-39-11CCBC

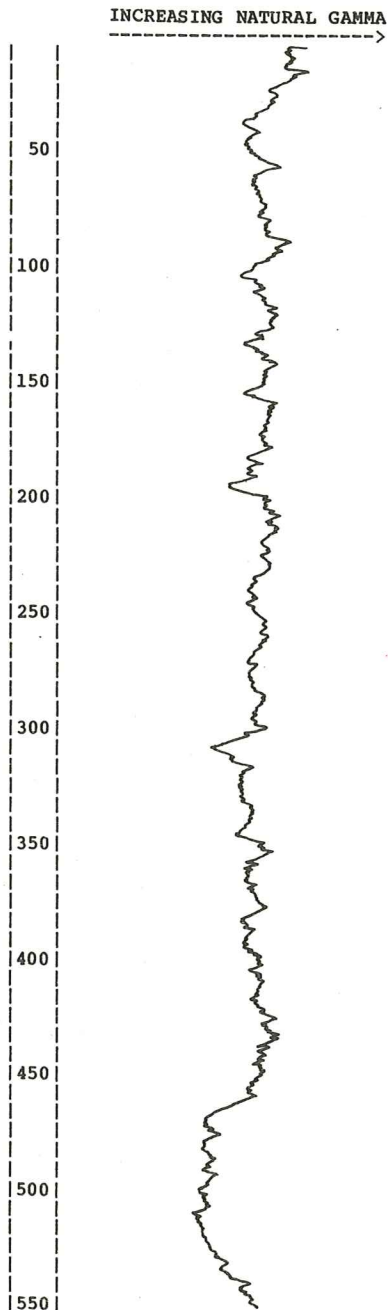
WC-227

STATION ID: 413359-0951827-01

ALTITUDE: 1310 FEET (NGVD 1929)

DEPTH: 541 FEET

DATE COMPLETED: July 18, 1983



| DEPTH (FEET) | DESCRIPTION OF MATERIALS   |
|--------------|--|
|              | QUATERNARY   |
| 0-16         | Loess, yellow-brown  |
| 16-18        | Loess, yellow-gray   |
| 18-20        | Clay, silty, gray  |
| 20-29        | Clay, silty, yellow-gray   |
| 29-35        | Clay, yellow-gray; sand grains                                   |
| 35-60        | Till, yellow-brown   |
| 60-103       | Till, yellow-tan   |
| 103-105      | Sand and gravel, fine to coarse, yellow-brown                    |
| 105-120      | Till, olive, grading to blue-gray at base                        |
| 120-130      | Till, blue-gray  |
| 130-134      | Sand and gravel  |
| 134-138      | Sand, fine to coarse, gray; clay or till layers; wood            |
| 138-141      | As above, tan  |
| 141-154      | Till, sandy, blue-gray   |
| 154-158      | Sand and gravel, fine, gray-tan                                  |
| 158-191      | Till, sandy, gravelly, blue-gray                                 |
| 191-199      | Sand and gravel, fine to coarse, gray-tan; wood; shale, reworked |
| 199-221      | Till, sandy, gravelly, blue-gray; shale, reworked                |
| 221-240      | As above   |
| 240-401      | Till, very sandy, gravelly, blue-gray; sand and gravel layers    |
| 401-430      | As above, sand, occasional layer, cemented                       |
| 430-450      | Till; sand, cemented, fine to coarse                             |
| 450-532      | Sand and gravel, fine, coarser at base, cemented                 |
| 532-537      | As above; clay or shale, mixed                                   |
|              | PENNSYLVANIAN  |
| 537-541      | Shale, hard, dark gray, brown                                    |

Casing record: set 2 inch pipe to 541 feet, slotted from 520 to 535 feet, gravel packed

Table 2. Logs of wells and test holes--Continued.

LOCATION: 078-39-13BCCC

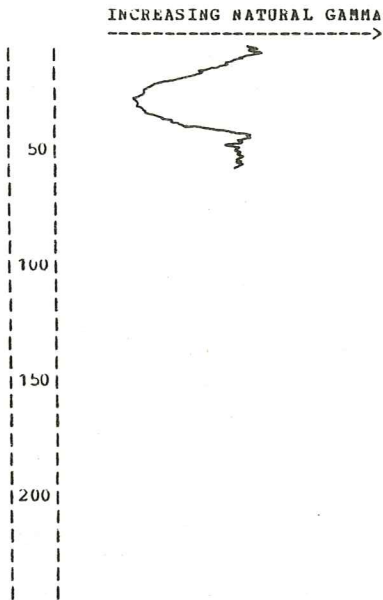
WC-204

STATION ID: 413325-0951718-01

ALTITUDE: 1180 FEET (NGVD 1929)

DEPTH: 37 FEET

DATE COMPLETED: June 9, 1983



| DEPTH (FEET) | DESCRIPTION OF MATERIALS  |
|--------------|---|
| 0-5          | QUATERNARY<br>Fill; top soil  |
| 5-10         | Clay, silty, brown<br>grading to yellow-brown                           |
| 10-13        | Clay, silty,<br>yellow-brown  |
| 13-16        | Clay, silty, gray   |
| 16-18        | Clay, silty, gray,<br>yellow-gray                                       |
| 18-21        | Sand, oxidized at base,<br>yellow-gray,<br>yellow-brown                 |
| 21-24        | Sand, fine to coarse;<br>clay, blue-gray                                |
| 24-30        | Sand and gravel, fine,<br>tan; clay layers,<br>blue-gray                |
| 30-35        | Sand and gravel, fine<br>to coarse,<br>yellow-brown; boulder<br>at base |
| 35-36        | As above, blue-gray;<br>boulders  |
| 36-37        | Till, blue-gray   |

Casing record: set 2 inch pipe to 36 feet, slotted from 32 to 36 feet, gravel packed

LOCATION: 078-39-13BDCC

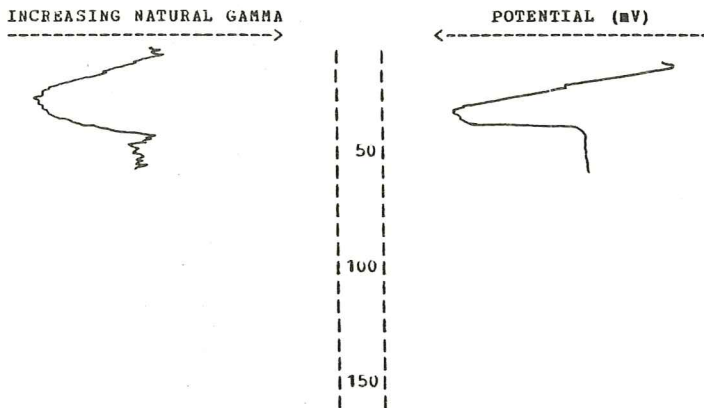
WC-205

STATION ID: 413324-0951657-01

ALTITUDE: 1170 FEET (NGVD 1929)

DEPTH: 61 FEET

DATE COMPLETED: June 9, 1983



| DEPTH (FEET) | DESCRIPTION OF MATERIALS  |
|--------------|---|
| 0-10         | QUATERNARY<br>Road bed; fill  |
| 10-17        | Clay, silty, dark gray,<br>brown  |
| 17-20        | Clay, silty, gray;<br>sand layers, oxidized<br>streaks                          |
| 20-23        | Sand, fine to coarse,<br>gray; clay, silty,<br>gray; wood                       |
| 23-25        | Sand and gravel, fine,<br>gray  |
| 25-38        | Sand and gravel, fine<br>to medium, some coarse,<br>yellow-tan,<br>yellow-brown |
| 38-42        | Sand and gravel, fine<br>to coarse, yellow-gray                                 |
| 42-61        | Till, blue-gray   |

Table 2. Logs of wells and test holes--Continued.

LOCATION: 078-39-13DBBA

WC-206

STATION ID: 413321-0951638-01

ALTITUDE: 1179 FEET (NGVD 1929)

DEPTH: 41 FEET

DATE COMPLETED: June 10, 1983

INCREASING NATURAL GAMMA →

← POTENTIAL (mV)



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                                   |
|--------------|--|
| 0-7          | QUATERNARY Road bed; top soil                              |
| 7-16         | Clay, silty, dark gray, brown                              |
| 16-20        | Clay, silty, yellow-gray, yellow-brown                     |
| 20-23        | Clay, sandy, silty, gray, yellow-gray; sand layers         |
| 23-26        | Sand, fine to coarse, yellow-brown                         |
| 26-33        | Sand and gravel, fine, some medium, olive                  |
| 33-38        | Sand and gravel, fine to medium, some coarse at base, gray |
| 38-41        | Till, blue-gray  |

LOCATION: 078-39-13DBDA

WC-207

STATION ID: 413315-0951627-01

ALTITUDE: 1182 FEET (NGVD 1929)

DEPTH: 41 FEET

DATE COMPLETED: June 10, 1983

INCREASING NATURAL GAMMA →

← POTENTIAL (mV)



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                       |
|--------------|--|
| 0-7          | QUATERNARY Road bed; top soil                  |
| 7-9          | Clay, silty, very dark gray                    |
| 9-16         | Clay, silty, gray-brown                        |
| 16-24        | Clay, silty, yellow-gray, yellow-brown         |
| 24-28        | Clay, silty, yellow-gray grading to gray-green |
| 28-35        | Clay, silty, gray-green                        |
| 35-37        | Clay or till, very sandy, gravelly             |
| 37-41        | Till, blue-gray                                |

LOCATION: 078-39-32DDAA

WC-197

STATION ID: 413031-0952049-01

ALTITUDE: 1144 FEET (NGVD 1929)

DEPTH: 27 FEET

DATE COMPLETED: June 6, 1983

INCREASING NATURAL GAMMA →



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                                |
|--------------|---|
| 0-5          | QUATERNARY Road bed; top soil                           |
| 5-8          | Clay, silty, gray, yellow-gray                          |
| 8-12         | Clay, sandy, silty, yellow-brown, yellow-gray           |
| 12-14        | Sand, fine to coarse; clay, yellow-gray                 |
| 14-17        | Sand and gravel, fine, tan, brown at base               |
| 17-18        | Clay, sandy, silty, blue-gray; sand streaks             |
| 18-24        | Sand and gravel, fine to coarse, gray; boulders at base |
| 24-27        | Till, blue-gray   |

Casing record: set 2 inch pipe to 24 feet, slotted from 21 to 24 feet, gravel packed

Table 2. Logs of wells and test holes--Continued.

LOCATION: 078-39-32DDBB

WC-224

STATION ID: 413034-0952103-01

ALTITUDE: 1150 FEET (NGVD 1929)

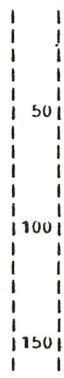
DEPTH: 41 FEET

DATE COMPLETED: July 6, 1983

INCREASING NATURAL GAMMA →



POTENTIAL (mV) ←



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                      |
|--------------|---|
| 0-5          | QUATERNARY Road bed; top soil                 |
| 5-9          | Clay, silty, brown; sand layers               |
| 9-11         | Clay, silty, sandy, gray; sand layers         |
| 11-13        | Clay, silty, sandy, yellow-brown; sand layers |
| 13-16        | Sand, fine to coarse, yellow-brown            |
| 16-22        | Sand and gravel, fine, tan, brown             |
| 22-25        | Sand and gravel, fine to medium, gray         |
| 25-31        | Till, blue-gray                               |
| 31-38        | Sand and gravel, fine to medium, gray;        |
| 38-41        | Till, blue-gray                               |

LOCATION: 078-39-33AABA

WC-199

STATION ID: 413113-0951947-01

ALTITUDE: 1270 FEET (NGVD 1929)

DEPTH: 108 FEET

DATE COMPLETED: June 6, 1983

INCREASING NATURAL GAMMA →



POTENTIAL (mV) ←



| DEPTH (FEET) | DESCRIPTION OF MATERIALS  |
|--------------|---|
| 0-3          | QUATERNARY Road bed; top soil   |
| 3-8          | Loess, silty, yellow-brown, yellow-gray                                       |
| 8-14         | Loess, gray   |
| 14-20        | Loess, yellow-gray, yellow-brown  |
| 20-25        | Clay, silty, brown  |
| 25-28        | Clay, silty, brown grading to yellow-brown; till                              |
| 28-32        | Till, yellow-brown  |
| 32-35        | Till, yellow-gray   |
| 35-50        | Till, very gravelly at 41-46 feet, lime concretions, yellow-brown, gray layer |
| 50-53        | Till, yellow-gray   |
| 53-56        | Till, gray  |
| 56-58        | Till, yellow-brown, yellow-gray   |
| 58-60        | Till, blue-gray   |
| 60-63        | Till, yellow-brown, gray grading to olive                                     |
| 63-75        | Till, blue-gray; boulders, occasional   |
| 75-77        | Gravel; till, gravelly  |
| 77-79        | Till, gravelly, olive   |
| 79-82        | Till, blue-gray, olive; gravel layers   |
| 82-85        | Sand and gravel, fine to medium, olive; till, mixed at base                   |
| 85-90        | Sand, well cemented, olive; till, mixed                                       |
| 90-97        | Till, sandy, blue-gray  |
| 97-102       | Sand and gravel, fine, gray-tan   |
| 102-108      | Till, very sandy, gravelly, blue-gray; sand, occasional layer                 |

Table 2. Logs of wells and test holes--Continued.

LOCATION: 078-39-33CADC

WC-198

STATION ID: 413035-0952018-01

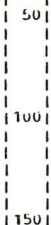
ALTITUDE: 1146 FEET (NGVD 1929)

DEPTH: 41 FEET

DATE COMPLETED: June 6, 1983

INCREASING NATURAL GAMMA  
----->

POTENTIAL (mV)  
-----<



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                                      |
|--------------|---|
| 0-6          | QUATERNARY<br>Road bed; top soil                              |
| 6-9          | Clay, dark gray grading to gray                               |
| 9-11         | Clay, silty, gray to yellow-gray                              |
| 11-12        | Clay, silty, yellow-brown                                     |
| 12-15        | Sand and gravel, fine, tan grading to yellow-brown            |
| 15-20        | Sand and gravel, fine to medium, some coarse, yellow-brown    |
| 20-29        | Sand and gravel, fine to coarse, yellow-tan, boulders at base |
| 29-41        | Till, blue-gray   |

LOCATION: 078-41-31DDDD

WC-27

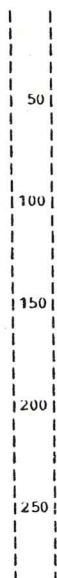
STATION ID: 413024-0953539-01

ALTITUDE: 1158 FEET (NGVD 1929)

DEPTH: 129 FEET

DATE COMPLETED: December 21, 1981

INCREASING NATURAL GAMMA  
----->



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                      |
|--------------|---|
| 0-10         | QUATERNARY<br>Loess, brown                    |
| 10-20        | Loess, yellow-brown; shall fossils            |
| 20-27        | Loess, silty, very soft                       |
| 27-35        | Clay, yellow-brown                            |
| 35-37        | Clay, gray                                    |
| 37-52        | Clay, yellow-brown, gray                      |
| 52-55        | Sand and gravel, fine, gray                   |
| 55-59        | Sand and gravel, coarse, yellow-brown         |
| 59-63        | Clay, gray                                    |
| 63-80        | Till, blue-gray                               |
| 80-82        | Till, gray                                    |
| 82-95        | Till, blue-gray                               |
| 95-103       | Clay, dark gray                               |
| 103-112      | Clay or till, blue-gray                       |
| 112-118      | Sand, fine to coarse, gray-green, dark specks |
|              | PENNSYLVANIAN                                 |
| 118-122      | Shale, reddish-brown, gray, gray-green        |
| 122-123      | Shale, yellow-brown                           |
| 123-125      | Limestone, silty, gray                        |
| 125-129      | Shale, silty, gray, gray-green; limestone     |

Casing record: set 2 inch pipe to 129 feet, slotted from 109 to 119 feet, gravel packed

LOCATION: 078-42-07CCCC

WC-26

STATION ID: 413352-0954335-01

ALTITUDE: 1255 FEET (NGVD 1929)

DEPTH: 228 FEET

DATE COMPLETED: December 11, 1981

| DEPTH (FEET) | DESCRIPTION OF MATERIALS   |
|--------------|--|
|              | QUATERNARY   |
| 0-20         | Loess, brown, yellow-brown                                       |
| 20-40        | Till, yellow-brown   |
| 40-50        | Till, yellow-gray, yellow-brown; line fragments                  |
| 50-58        | Till, yellow-brown   |
| 58-63        | Clay, gray (gumbo-type)  |
| 63-65        | Clay or till, yellow-gray  |
| 65-75        | Clay or till, dark gray  |
| 75-85        | Till, olive  |
| 85-90        | Clay or gumbo, dark gray   |
| 90-95        | Till, light blue-gray; clay, gray                                |
| 95-101       | Clay or till, dark gray  |
| 101-110      | Till, olive  |
| 110-116      | Clay or till, silty, dark gray                                   |
| 116-130      | Till, blue-gray  |
| 130-135      | Clay or till, gray; sand grains                                  |
| 135-160      | Clay, salmon color; sand grains mixed                            |
| 160-165      | As above, lighter color  |
| 165-180      | Clay, silty, sandy, light salmon                                 |
| 180-200      | Clay, silty, light gray-green; limestone conglomerates           |
| 200-216      | Clay, light gray-green; sand layers, fine to medium, dark specks |
|              | PENNSYLVANIAN  |
| 216-218      | Limestone, shaly, oxidized, yellow-brown                         |
| 218-224      | Limestone, silty, shaly, gray to gray-green                      |
| 224-226      | Shale, gray  |
| 226-228      | Limestone, shaly   |



Table 2. Logs of wells and test holes--Continued.

LOCATION: 078-43-05ACDD

WC-33

STATION ID: 413523-0954831-01

ALTITUDE: 1080 FEET (NGVD 1929)

DEPTH: 179 FEET

DATE COMPLETED: May 11, 1982

| DEPTH (FEET) | DESCRIPTION OF MATERIALS  |
|--------------|---|
|              | QUATERNARY  |
| 0-10         | Loess or clay, silty, yellow-brown                                      |
| 10-25        | Loess or clay, silty, yellow-brown, gray; snails                        |
| 25-26        | Clay, gray-brown  |
| 26-28        | Clay, brown   |
| 28-31        | Till, yellow-gray   |
| 31-38        | Till, gray; clay mostly, lime concretions                               |
| 38-40        | Clay or till, lime concretions, yellow-tan                              |
| 40-47        | Clay, silty, grading very sandy at bottom, lime concretions, gray-green |
| 47-55        | Sand, fine, mixed with dark minerals, brown-tan                         |
| 55-70        | Sand, fine to coarse, brown-tan   |
| 70-74        | Clay, yellow-tan; sand, fine to medium, tan-brown                       |
|              | CRETACEOUS  |
|              | DAKOTA FORMATION  |
| 74-75        | Sand and gravel or conglomerate, very hard, iron cemented               |
| 75-77        | Shale, silty, yellow-brown, gray  |
| 77-91        | Shale, very silty, blue-gray; lignite streak at 83 feet                 |
| 91-92        | Dolomite, silty, gray-brown   |
| 92-97        | Shale, very silty, blue-gray  |
| 97-99        | Dolomite, sandy, brown to gray-brown siderite                           |
| 99-101       | Shale, sandy, silty, blue-gray; coal trace; sandstone streaks, hard     |
| 101-106      | Shale, silty, sandy, blue-gray  |
| 106-110      | Sandstone, well cemented, hard; shale, silty, sandy, blue-gray; pyrite  |
| 110-121      | Shale, silty, blue-gray; sandstone, occasional thin layer               |
| 121-127      | Shale, silty, very sandy, blue-gray, gray; sandstone, occasional streak |
| 127-133      | Shale, silty, blue-gray   |
| 133-134      | Sandstone, iron cemented, hard (conglomerate)                           |
| 134-140      | Sandstone, fine to medium, yellow-brown, tan                            |
| 140-150      | Sandstone, fine to coarse, iron cemented layer, yellow-brown            |
| 150-154      | As above, very oxidized   |
| 154-156      | Shale, very sandy, silty, oxidized zones, gray                          |
| 156-169      | Sandstone, fine to coarse, yellow-brown                                 |
| 169-175      | Sandstone, fine to coarse, iron cemented, hard, orange                  |

Table 2. Logs of wells and test holes--Continued.

WC-33 Continued

DEPTH DESCRIPTION OF MATERIALS  
(FEET)

PENNSYLVANIAN  
175-177 Shale, slightly sandy,  
light blue-gray  
177-177 Shale, slightly silty,  
light gray  
177-179 Shale, slightly silty,  
darker blue-gray

Casing record: set 2 inch pipe  
to 179 feet, slotted from 168  
to 175 feet, gravel packed

LOCATION: 078-43-05BCDD

WC-32

STATION ID: 413524-0954906-01

ALTITUDE: 1010 FEET (NCV 1929)

DEPTH: 51 FEET

DATE COMPLETED: May 10, 1982

INCREASING NATURAL GAMMA →



DEPTH DESCRIPTION OF MATERIALS  
(FEET)

QUATERNARY  
0-5 Clay, silty, brown  
5-10 Clay, silty, dark-gray  
10-14 Clay, silty, blue-gray  
14-18 Clay, silty,  
yellow-gray  
18-20 Clay, silty, gray-green  
20-27 Clay, silty,  
yellow-brown,  
yellow-gray  
27-29 Clay, silty,  
yellow-brown, blue-gray  
29-32 Clay, silty, blue-gray  
32-45 Sand and gravel, fine  
to medium, tan  
45-51 Sand and gravel, fine  
to coarse, gray

Casing record: set 2 inch pipe  
to 51 feet, slotted from 48 to  
51 feet, gravel packed

LOCATION: 078-43-05DBBA

WC-30

STATION ID: 413523-0954839-01

ALTITUDE: 1030 FEET (NGVD 1929)

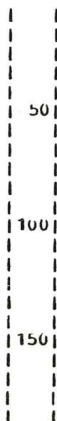
DEPTH: 116 FEET

DATE COMPLETED: May 5, 1982

INCREASING NATURAL GAMMA →



POTENTIAL (mV) ←



DEPTH DESCRIPTION OF MATERIALS  
(FEET)

QUATERNARY  
0-10 Fill; road bed  
10-14 Clay, silty, brown  
14-48 Clay, silty,  
yellow-brown  
48-51 Clay, silty, blue-gray  
51-54 Sand and gravel, fine  
to coarse, oxidized,  
yellow-brown  
54-68 Sand and gravel, fine  
to coarse, yellow-tan  
  
CRETACEOUS  
DAKOTA FORMATION  
68-75 Shale, silty, gray  
75-76 Dolomite, brown  
76-91 Shale, silty, gray  
91-96 Sandstone, fine to  
coarse, yellow-brown  
96-116 Sandstone conglomerate,  
oxidized at bottom,  
yellow-brown

Table 2. Logs of wells and test holes--Continued.

LOCATION: 078-43-06BCAC

WC-51

STATION ID: 413532-0955021-01

ALTITUDE: 1085 FEET (NGVD 1929)

DEPTH: 135 FEET

DATE COMPLETED: June 3, 1982

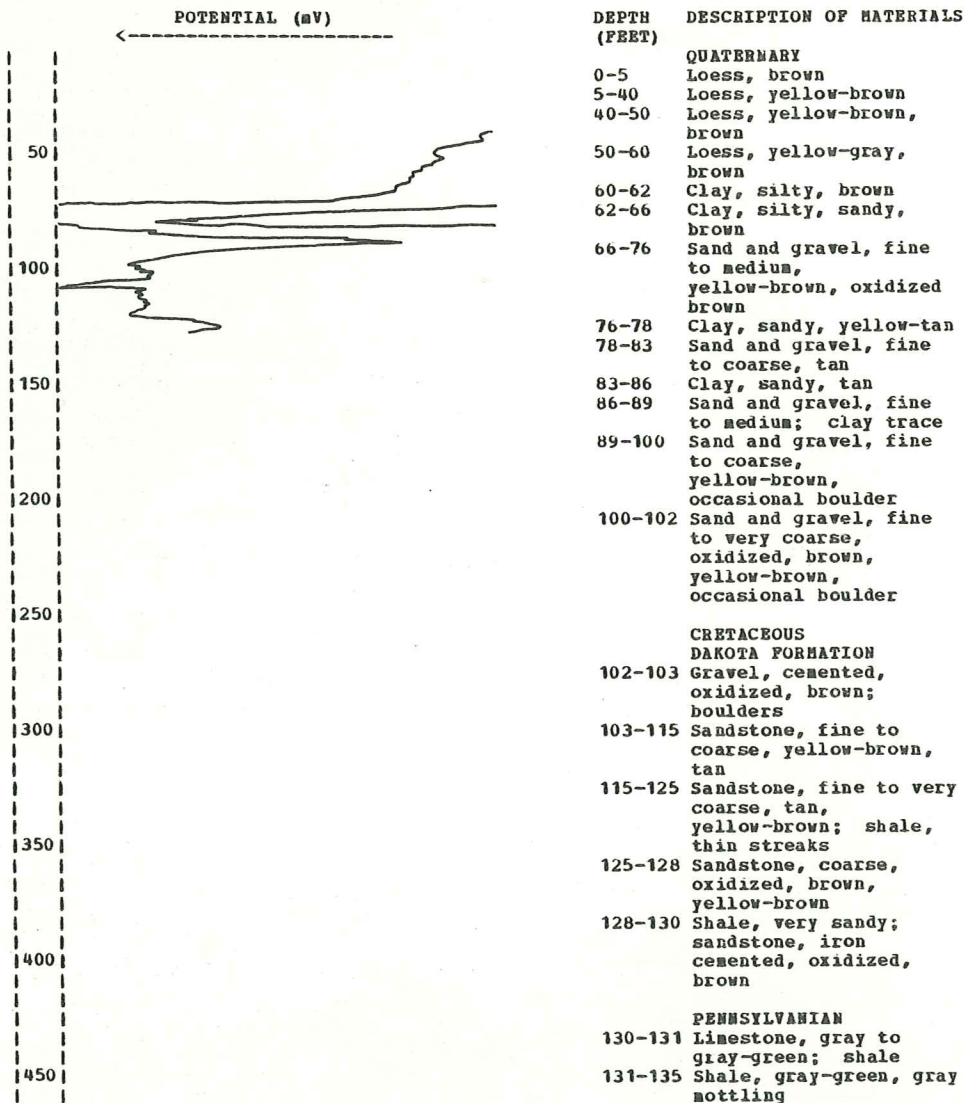


Table 2. Logs of wells and test holes--Continued.

LOCATION: 078-43-06BCDD

WC-29

STATION ID: 413526-0955015-01

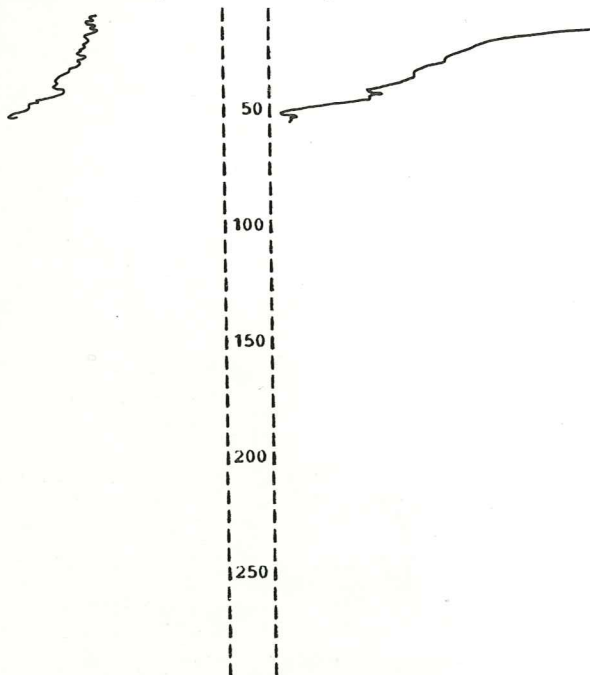
ALTITUDE: 1015 FEET (NGVD 1929)

DEPTH: 61 FEET

DATE COMPLETED: May 5, 1982

INCREASING NATURAL GAMMA

POTENTIAL (mV)



| DEPTH (FEET)     | DESCRIPTION OF MATERIALS  |
|------------------|---|
| QUATERNARY       |   |
| 0-5              | Top soil; clay, dark  |
| 5-10             | Clay, dark gray   |
| 10-12            | Clay, silty, blue-gray  |
| 12-16            | Clay, silty, gray   |
| 16-20            | Clay, silty, yellow-gray  |
| 20-25            | Clay, silty, yellow-brown   |
| 25-27            | Clay, silty, grading to blue-gray                                 |
| 27-33            | Clay, silty, blue-gray  |
| 33-37            | Clay, silty, sandy, blue-gray yellow-brown; fine sand layers      |
| 37-44            | Sand and gravel, fine, yellow-brown; clay mixed                   |
| 44-47            | Sand and gravel, fine to coarse, oxidized, yellow-brown; boulders |
| CRETACEOUS       |   |
| DAKOTA FORMATION |   |
| 47-50            | Sandstone, fine to coarse, tan                                    |
| 50-52            | Sandstone, fine to coarse, yellow-brown                           |
| 52-55            | Sandstone, fine to medium, oxidized                               |
| PENNSYLVANIAN    |   |
| 55-59            | Limestone, gray, tan  |
| 59-61            | Limestone, shaly, silty, gray-green                               |

LOCATION: 078-43-06DABA

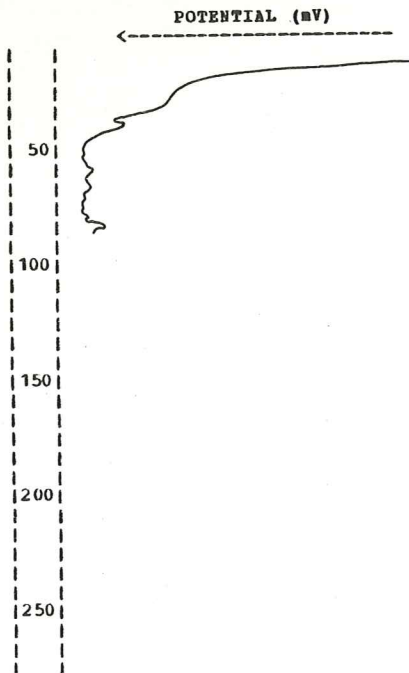
WC-31

STATION ID: 413523-0954932-01

ALTITUDE: 1015 FEET (NGVD 1929)

DEPTH: 91 FEET

DATE COMPLETED: May 10, 1982



| DEPTH (FEET)     | DESCRIPTION OF MATERIALS  |
|------------------|---|
| QUATERNARY       |   |
| 0-5              | Road bed  |
| 5-10             | Clay, silty, dark gray  |
| 10-17            | Clay, silty, dark blue-gray                                     |
| 17-28            | Clay, silty, sandy, gray-green                                  |
| 28-32            | Sand and gravel, fine to medium, yellow-brown                   |
| 32-56            | Sand and gravel, fine to very coarse, gray; occasional boulders |
| CRETACEOUS       |   |
| DAKOTA FORMATION |   |
| 56-73            | Sandstone, fine to coarse, oxidized, yellow-brown               |
| 73-75            | Conglomerate, hard iron concretion                              |
| 75-78            | Sandstone, fine to medium, tan                                  |
| 78-81            | Shale, silty, gray-tan  |
| 81-82            | Conglomerate, iron concretion                                   |
| 82-86            | Sandstone, fine to medium, tan                                  |
| PENNSYLVANIAN    |   |
| 86-89            | Shale, silty, gray-green  |
| 89-91            | Siltstone, gray-green; shale; limestone                         |

Table 2. Logs of wells and test holes--Continued.

LOCATION: 078-43-06DBAB

NC-28

STATION ID: 413523-0954945-01

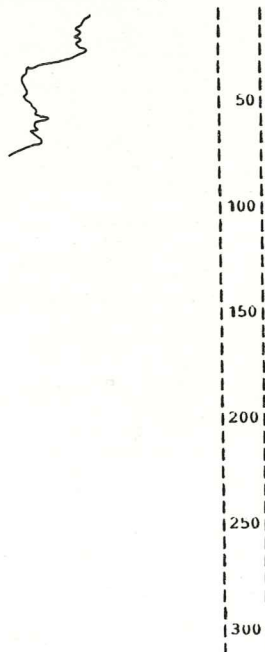
ALTITUDE: 1015 FEET (NGVD 1929)

DEPTH: 94 FEET

DATE COMPLETED: May 4, 1982

INCREASING NATURAL GAMMA

POTENTIAL (mV)



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                                |
|--------------|---|
| 0-5          | QUATERNARY<br>Road bed                                  |
| 5-7          | Clay, silty, blue-gray                                  |
| 7-9          | Clay, silty, yellow-brown                               |
| 9-15         | Clay, silty, dark gray                                  |
| 15-18        | Clay, silty, yellow-gray                                |
| 18-26        | Clay, silty, blue-gray                                  |
| 26-28        | Clay, silty, gray-green                                 |
| 28-31        | Sand, fine to coarse, gray                              |
| 31-35        | Sand and gravel, fine to medium, gray                   |
| 35-38        | Sand and gravel, fine to medium, yellow-gray            |
| 38-51        | Sand and gravel, fine to medium, gray                   |
| 51-67        | Sand and gravel, oxidized, fine to coarse, yellow-brown |
|              | CRETACEOUS  |
|              | DAKOTA FORMATION  |
| 67-80        | Sandstone, oxidized, tan, reddish-brown, yellow-brown   |
| 80-82        | Sandstone, brown; shale                                 |
| 82-86        | Shale, sandy, silty, reddish-brown, gray                |
|              | PENNSYLVANIAN   |
| 86-91        | Shale, silty, gray-green                                |
| 91-92        | Shale, reddish-brown                                    |
| 92-94        | Limestone, gray, brown                                  |

LOCATION: 079-30-15CDCA

NC-113

STATION ID: 413845-0941951-01

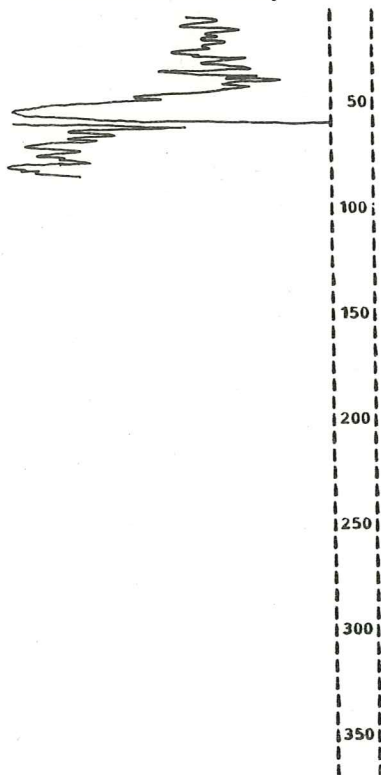
ALTITUDE: 1070 FEET (NGVD 1929)

DEPTH: 81 FEET

DATE COMPLETED: August 19, 1983

INCREASING NATURAL GAMMA

POTENTIAL (mV)



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                                     |
|--------------|--|
| 0-3          | QUATERNARY<br>Road bed                                       |
| 3-10         | Till, yellow-gray, yellow-brown                              |
| 10-19        | Till, yellow-gray  |
| 19-25        | Clay, yellow-gray, gray, black trace at top; few sand grains |
| 25-26        | Limestone boulder, oxidized, brown                           |
| 26-28        | Till, gray, yellow-gray                                      |
| 28-30        | Till, very sandy, gravelly, yellow-brown, gray               |
| 30-33        | Clay, black, very dark gray; gumbo                           |
| 33-38        | Clay, dark gray to gray                                      |
| 38-43        | Clay or till, gray, yellow-gray; sand grains                 |
| 43-47        | Clay or till, hard, yellow-brown, yellow-gray; sand          |
| 47-50        | Clay, very sandy, gray-tan                                   |
|              | CRETACEOUS   |
|              | DAKOTA FORMATION   |
| 50-57        | Sandstone, coarse (gravel), tan to yellow-brown              |
|              | PENNSYLVANIAN  |
| 57-57        | Shale, yellow, gray-green                                    |
| 57-58        | Coal, shale, black   |
| 58-59        | Shale, very dark gray  |
| 59-67        | Shale, silty, gray   |
| 67-71        | Shale, gray, gray-green; limestone layer at 68 and 70 feet   |
| 71-81        | Shale, blue-gray, gray, black trace at top; few sand grains  |

Table 2. Logs of wells and test holes--Continued.

LOCATION: 079-30-15DCBA

NC-111

STATION ID: 413854-094 1933-01

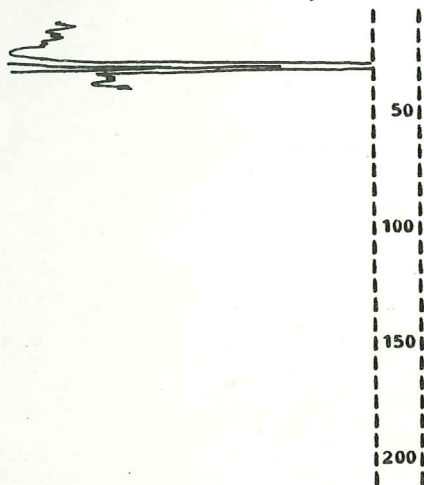
ALTITUDE: 990 FEET (NGVD 1929)

DEPTH: 41 FEET

DATE COMPLETED: August 18, 1982

INCREASING NATURAL GAMMA →

← POTENTIAL (mV)



| DEPTH (FEET)  | DESCRIPTION OF MATERIALS                   |
|---------------|--|
| QUATERNARY    |  |
| 0-8           | Road bed                                   |
| 8-10          | Clay, silty, very dark brown               |
| 10-17         | Clay, silty, sandy, dark brown             |
| 17-21         | Sand and gravel, fine, tan, yellow-brown   |
| 21-24         | Sand and gravel, fine to coarse; boulder   |
| PENNSYLVANIAN |  |
| 24-25         | Shale, gray                                |
| 25-26         | Limestone, brown                           |
| 26-27         | Shale, black                               |
| 27-30         | Shale, gray-green, yellow-gray             |
| 30-36         | Shale, silty, gray-green; siltstone layers |
| 36-39         | Shale, gray-green, reddish brown           |
| 39-41         | Shale, reddish brown, trace yellow-brown   |

LOCATION: 079-30-15DCBB

NC-110

STATION ID: 413852-094 1937-01

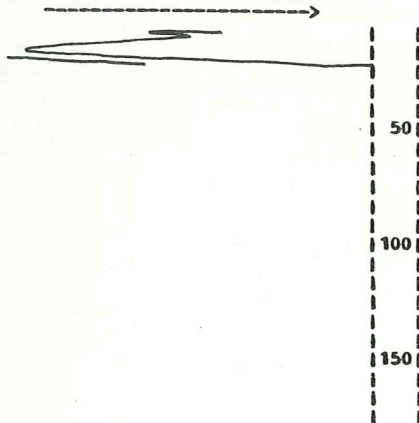
ALTITUDE: 990 FEET (NGVD 1929)

DEPTH: 21 FEET

DATE COMPLETED: August 18, 1982

INCREASING NATURAL GAMMA →

← POTENTIAL (mV)



| DEPTH (FEET)  | DESCRIPTION OF MATERIALS                            |
|---------------|---|
| QUATERNARY    |   |
| 0-6           | Road bed  |
| 6-8           | Clay, dark gray-brown                               |
| 8-10          | Clay, yellow-gray to yellow-brown                   |
| 10-12         | Clay, sandy, gravelly, oxidized, gray brown         |
| 12-14         | Clay, very sandy, gravelly, gray-brown; sand layers |
| PENNSYLVANIAN |   |
| 14-17         | Limestone, tan, brown                               |
| 17-17         | Shale, gray-green, brown                            |
| 17-18         | Shale, gray-green                                   |
| 18-19         | Limestone, gray, brown                              |
| 19-19         | Shale, dark gray                                    |
| 19-20         | Limestone, dark gray, blue-gray                     |
| 20-21         | Shale, dark gray-green                              |

Table 2. Logs of wells and test holes--Continued.

LOCATION: 079-30-15DDAA

WC-112

STATION ID: 413853-0941908-01

ALTITUDE: 1060 FEET (NGVD 1929)

DEPTH: 41 FEET

DATE COMPLETED: August 19, 1982

INCREASING NATURAL GAMMA →



← POTENTIAL (mV)



| DEPTH (FEET) | DESCRIPTION OF MATERIALS   |
|--------------|--|
| 0-5          | QUATERNARY<br>Road bed; top soil   |
| 5-7          | Till, sandy, brown   |
| 7-11         | Till, light yellow-brown (possibly reworked)   |
| 11-15        | Till, light brown (possibly reworked)  |
| 15-29        | Sand and gravel, fine to coarse, tan yellow-brown  |
| 29-30        | Sand and gravel, fine to very coarse, oxidized, brown; boulders                            |
|              | CRETACEOUS   |
|              | DAKOTA FORMATION   |
| 30-33        | Shale, silty, gray-green, yellow-brown   |
| 33-35        | Shale, silty, gray-green   |
| 35-39        | Shale, silty, oxidized zone at 37 feet, yellow-brown, yellow-gray; sandstone layers, silty |
|              | PENNSYLVANIAN  |
| 39-40        | Limestone, blue-gray   |
| 40-41        | Shale, gray-green, yellow-gray   |

LOCATION: 079-30-22BAAC

WC-109

STATION ID: 413837-0941946-01

ALTITUDE: 1140 FEET (NGVD 1929)

DEPTH: 152 FEET

DATE COMPLETED: August 19, 1982

INCREASING NATURAL GAMMA →



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                            |
|--------------|---|
| 0-7          | QUATERNARY<br>Clay, silty, yellow-brown, yellow-tan |
| 7-13         | Clay, silty, yellow-tan                             |
| 13-22        | Clay or gumbo, gray; sand trace                     |
| 22-35        | Till, yellow-brown                                  |
| 35-36        | Sand, fine to coarse, yellow-brown                  |
| 36-39        | Till, yellow-brown                                  |
| 39-45        | Till, yellow-brown, some gray                       |
| 45-60        | Till, yellow-brown; boulder at 56 feet              |
| 60-65        | Till, yellow-brown, gray                            |
| 65-67        | Till, blue-gray                                     |
| 67-71        | Till, yellow-brown, some gray                       |
| 71-98        | Till, gravelly at top, blue-gray to gray            |
| 98-105       | Sand and gravel, fine to medium                     |
| 105-120      | Till, blue-gray; shale, reworked                    |
| 120-123      | Clay, silty, black, very dark gray                  |
| 123-131      | Clay, gray; few sand grains                         |
| 131-134      | Clay, sandy, gray                                   |
| 134-137      | Clay, sandy, gray-green                             |
|              | CRETACEOUS  |
|              | DAKOTA FORMATION                                    |
| 137-149      | Sandstone, very coarse (gravel), yellow-brown       |
|              | PENNSYLVANIAN                                       |
| 149-151      | Shale, dark gray; coal; lignite                     |
| 151-152      | Shale, silty, gray                                  |

Casing record: set 2 inch pipe to 150 feet, slotted from 140 to 150 feet, gravel packed

Table 2. Logs of wells and test holes--Continued.

LOCATION: 079-31-14CBCC

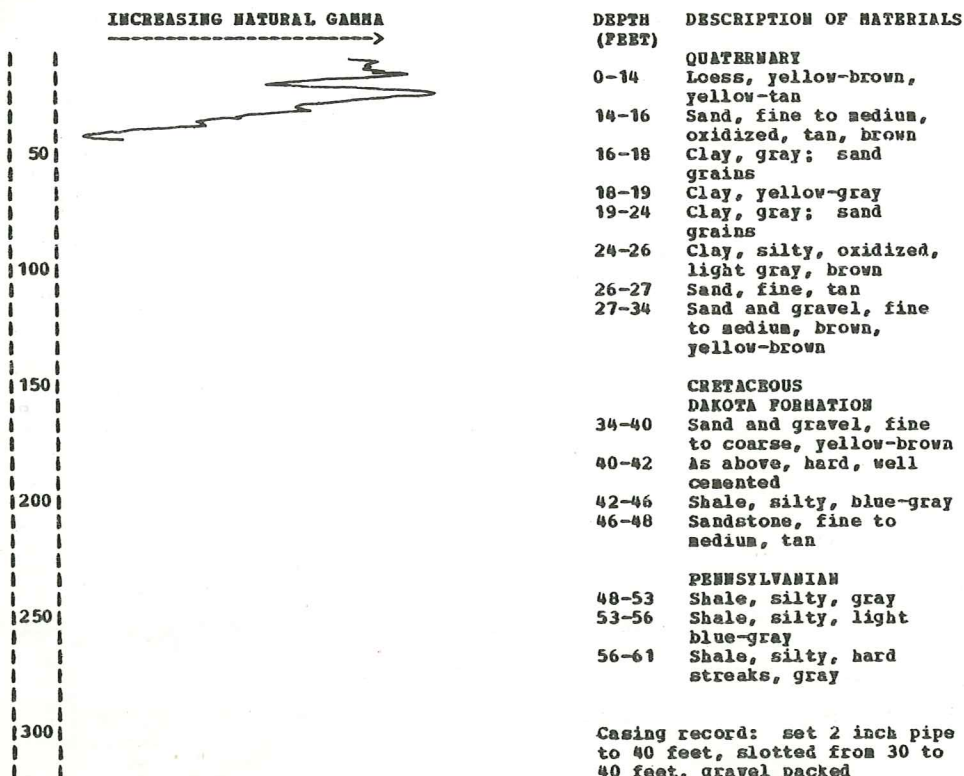
NC-82

STATION ID: 414156-0942605-01

ALTITUDE: 1090 FEET (NGVD 1929)

DEPTH: 61 FEET

DATE COMPLETED: July 14, 1982



LOCATION: 079-31-22ADAD

NC-83

STATION ID: 413825-0942606-01

ALTITUDE: 1035 FEET (NGVD 1929)

DEPTH: 56 FEET

DATE COMPLETED: July 15, 1982

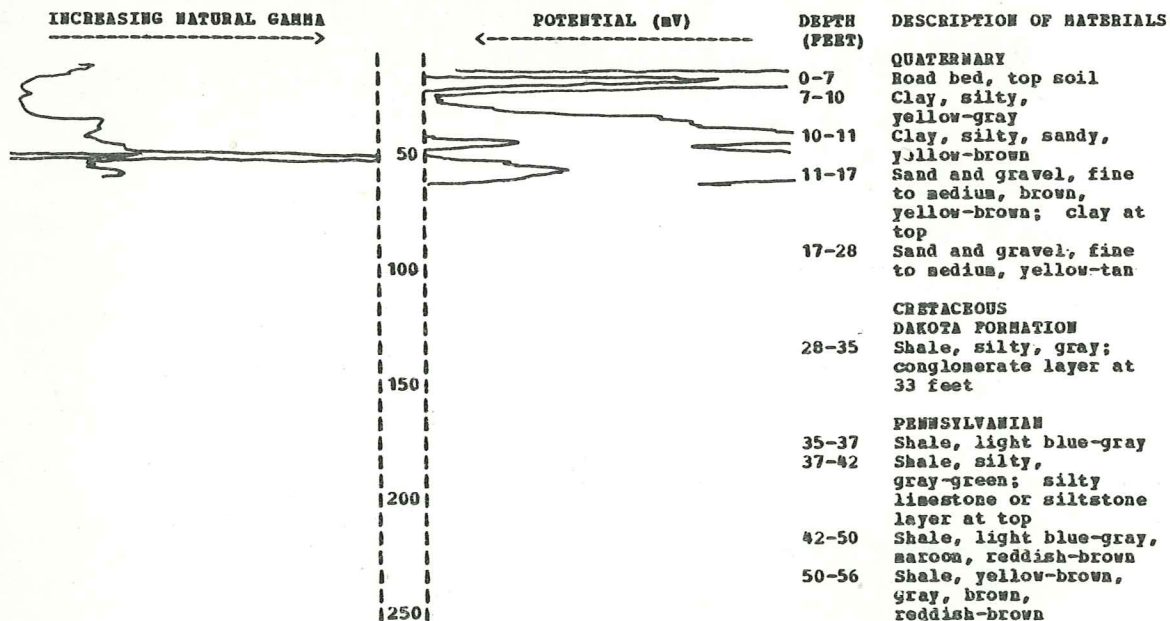




Table 2. Logs of wells and test holes--Continued.

LOCATION: 079-31-22DAAA

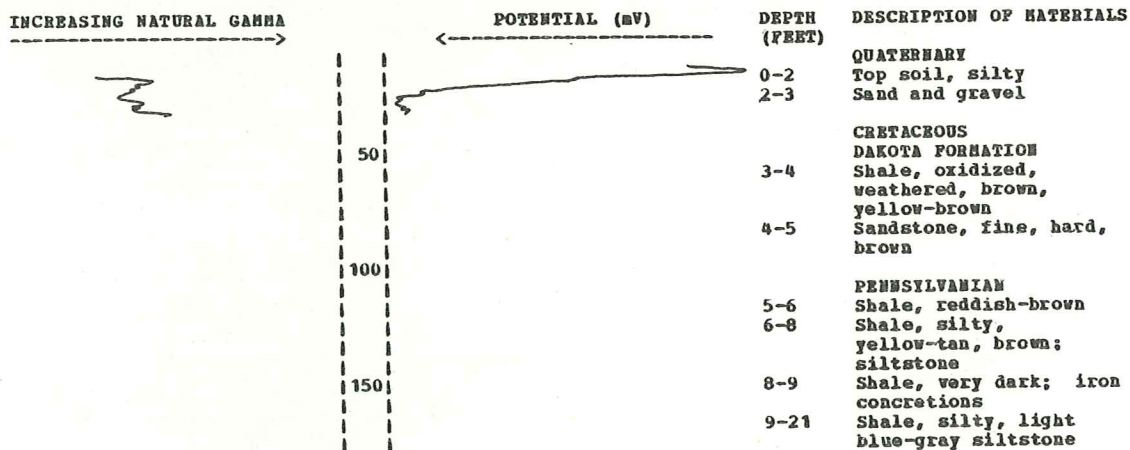
HC-84

STATION ID: 413816-0942606-01

ALTITUDE: 1046 FEET (NGVD 1929)

DEPTH: 21 FEET

DATE COMPLETED: July 15, 1982



LOCATION: 079-31-23BBBB

HC-85

STATION ID: 414110-0942605-01

ALTITUDE: 1037 FEET (NGVD 1929)

DEPTH: 30 FEET

DATE COMPLETED: July 15, 1982

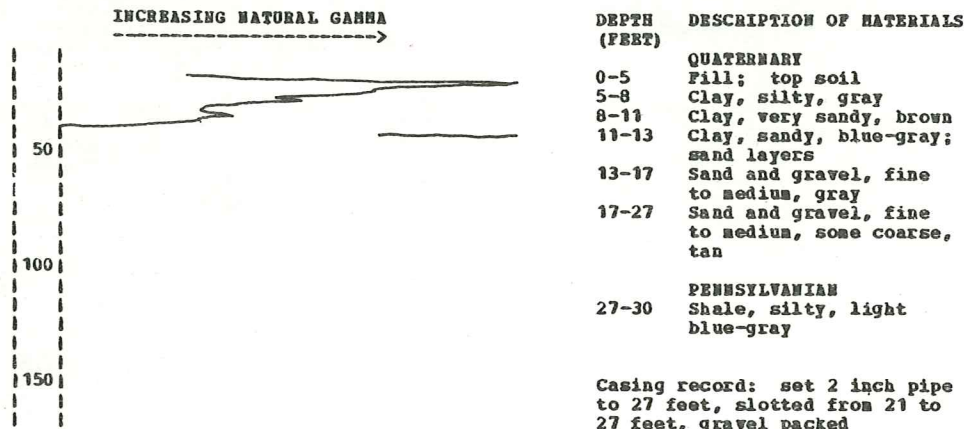


Table 2. Logs of wells and test holes--Continued.

LOCATION: 079-35-10CABB

WC-17

STATION ID: 413958-0945445-01

ALTITUDE: 1280 FEET (NGVD 1929)

DEPTH: 221 FEET

DATE COMPLETED: August 14, 1981

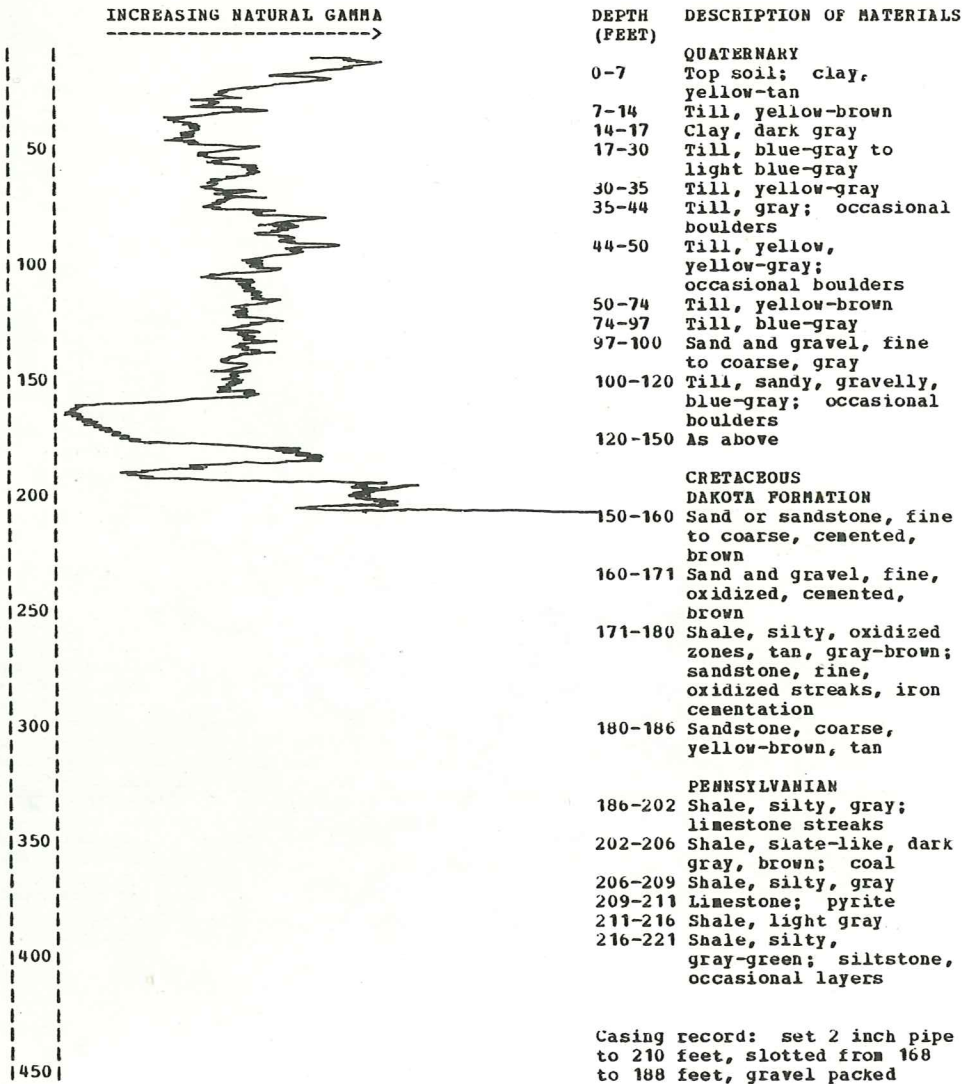


Table 2. Logs of wells and test holes--Continued.

LOCATION: 079-35-15DCCD

WC-76

STATION ID: 413842-0945425-01

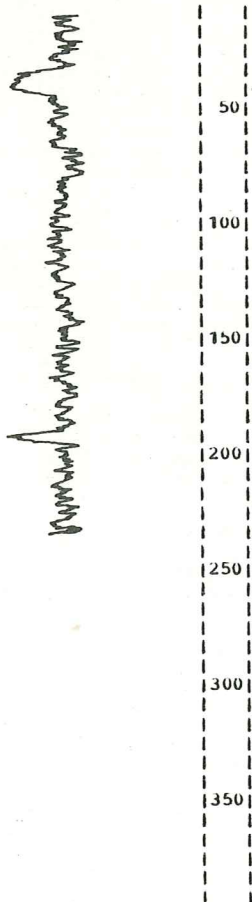
ALTITUDE: 1260 FEET (NGVD 1929)

DEPTH: 276 FEET

DATE COMPLETED: June 29, 1982

INCREASING NATURAL GAMMA →

POTENTIAL (mV) ←



DEPTH (FEET) DESCRIPTION OF MATERIALS

QUATERNARY  
 0-6 Road bed; top soil  
 6-12 Clay, silty, brown to light brown  
 12-16 Clay, silty, soft, yellow-gray  
 16-21 Clay, silty, some sandy, yellow-gray  
 21-24 Clay, silty, sandy, soft, yellow-brown  
 24-26 Clay, silty, sandy, soft, gray  
 26-30 Clay, silty, very sandy, soft, blue-gray  
 30-38 Sand, fine grading to sand and gravel, fine to medium, gray  
 38-38 Clay; gravel  
 38-41 Sand and gravel, fine to medium, gray  
 41-50 Till, yellow-brown, yellow-gray  
 50-60 Till, yellow-brown, gray trace  
 60-70 Till, sandy, yellow-gray grading to blue-gray  
 70-101 Till, blue-gray  
 101-103 Sand and gravel, fine to coarse, gray  
 103-116 Till, blue-gray; occasional boulders  
 116-120 Till, very silty, sandy, blue-gray; sand, layer at 119 feet  
 120-150 Till, blue-gray; occasional boulders  
 150-187 As above, gravelly  
 187-192 Sand and gravel, fine to coarse, gray-tan; pyrite  
 192-247 Till, very sandy, gravelly at base, blue-gray  
 247-276 Sand or sandstone, fine to coarse, cemented, brown, tan

LOCATION: 079-35-15DCDD

WC-75

STATION ID: 413843-0945417-01

ALTITUDE: 1245 FEET (NGVD 1929)

DEPTH: 32 FEET

DATE COMPLETED: June 25, 1982

INCREASING NATURAL GAMMA →



DEPTH (FEET) DESCRIPTION OF MATERIALS

QUATERNARY  
 0-4 Top soil; clay, silty, dark  
 4-12 Clay, gray  
 12-14 Clay, silty, sandy, soft, yellow-gray  
 14-15 Clay, silty, sandy, soft, yellow-brown  
 15-16 Clay, silty, sandy, blue-gray  
 16-17 Sand, fine to coarse, gray; wood; clay  
 17-19 Sand and gravel, yellow-brown  
 19-21 Sand and gravel, fine to coarse, gray; clay trace  
 21-27 Sand and gravel, fine to coarse, gray-tan  
 27-30 Sand and gravel, fine to coarse, oxidized, brown  
 30-32 Till, yellow-gray

Casing record: set 2 inch pipe to 30 feet slotted from 25 to 30 feet, gravel packed

Table 2. Logs of wells and test holes--Continued.

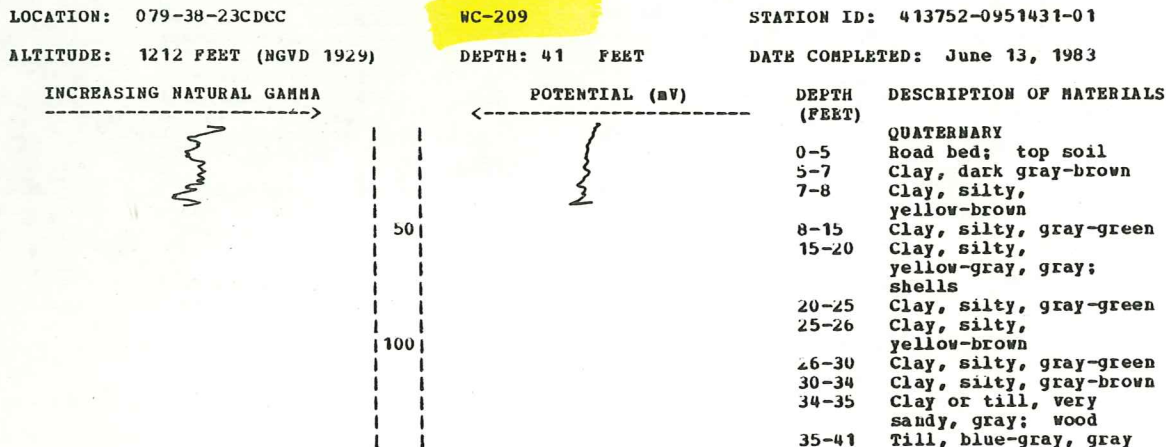
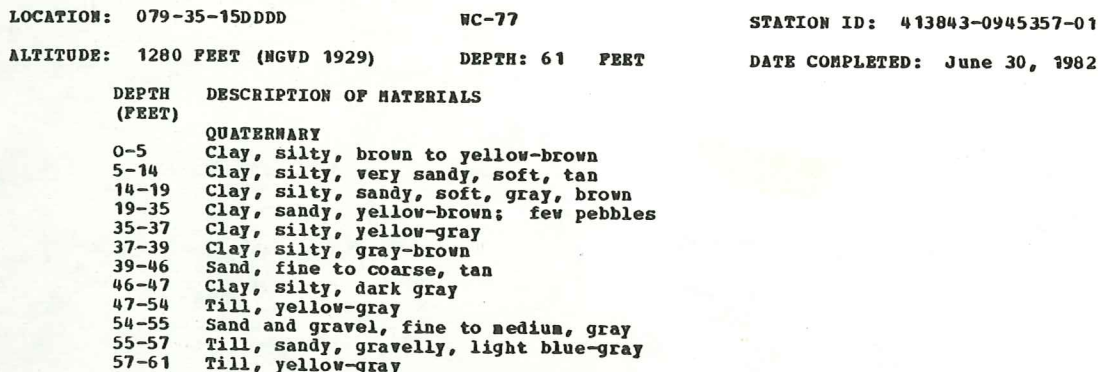
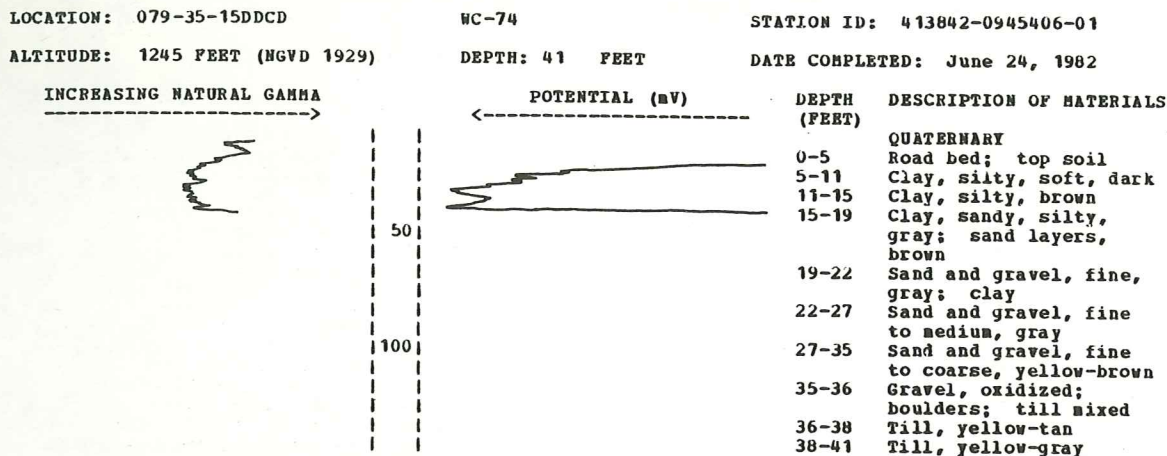


Table 2. Logs of wells and test holes--Continued.

LOCATION: 079-38-23CDDC

WC-210

STATION ID: 413752-0951423-01

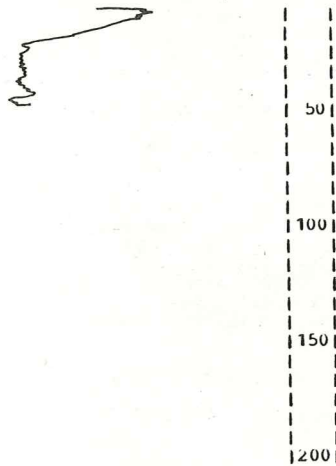
ALTITUDE: 1205 FEET (NGVD 1929)

DEPTH: 61 FEET

DATE COMPLETED: June 13, 1983

INCREASING NATURAL GAMMA →

← POTENTIAL (mV)



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                                       |
|--------------|--|
| 0-5          | QUATERNARY Road bed; top soil                                  |
| 5-8          | Clay, silty, very dark gray-brown                              |
| 8-10         | Clay, silty, yellow-gray                                       |
| 10-16        | Clay, silty, yellow-brown                                      |
| 16-19        | Clay, silty, oxidized, yellow-gray, brown; sand                |
| 19-21        | Sand and gravel, fine, oxidized, gray, brown                   |
| 21-24        | Sand and gravel, fine; wood; clay, silty                       |
| 24-30        | Sand and gravel, fine to medium, gray, tan                     |
| 30-40        | Sand and gravel, fine to coarse, olive, yellow-brown           |
| 40-47        | Sand and gravel (mostly sand), fine, some coarse at base, gray |
| 47-61        | Till, blue-gray  |

LOCATION: 079-38-23DCCC

WC-208

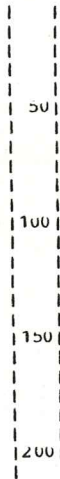
STATION ID: 413752-0951414-01

ALTITUDE: 1202 FEET (NGVD 1929)

DEPTH: 41 FEET

DATE COMPLETED: June 13, 1983

INCREASING NATURAL GAMMA →



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                                |
|--------------|---|
| 0-10         | QUATERNARY Road bed; fill                               |
| 10-13        | Clay, silty, brown                                      |
| 13-15        | Sand, fine to coarse, brown; clay layers                |
| 15-17        | Clay, sandy, silty, yellow-brown; sand layers           |
| 17-19        | Sand, fine to coarse; clay layers, tan, yellow-brown    |
| 19-21        | As above, brown   |
| 21-24        | Sand and gravel, fine, gray; clay layers                |
| 24-30        | Sand and gravel, fine to medium, some coarse, gray, tan |
| 30-40        | As above, coarse at base, yellow-tan, tan               |
| 40-41        | Till, blue-gray   |

Casing record: set 2 inch pipe to 39 feet, slotted from 34 to 39 feet, gravel packed

Table 2. Logs of wells and test holes--Continued.

LOCATION: 079-38-23DDDD

WC-211

STATION ID: 413752-0951341-01

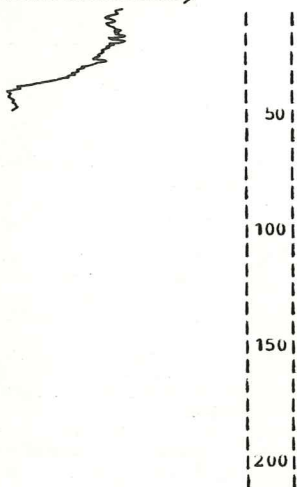
ALTITUDE: 1210 FEET (NGVD 1929)

DEPTH: 60 FEET

DATE COMPLETED: June 14, 1983

INCREASING NATURAL GAMMA →

POTENTIAL (mV) ←



| DEPTH (FEET) | DESCRIPTION OF MATERIALS  |
|--------------|---|
| 0-5          | QUATERNARY<br>Road bed; top soil  |
| 5-8          | Clay, silty, dark brown   |
| 8-15         | Clay, silty, gray-brown<br>grading to yellow-brown                      |
| 15-20        | Clay, silty,<br>yellow-gray,<br>yellow-brown                            |
| 20-26        | Clay, silty, olive<br>grading to gray-green                             |
| 26-29        | Clay, silty, dark<br>blue-gray  |
| 29-31        | Clay, silty, gray   |
| 31-34        | Clay, silty,<br>yellow-gray   |
| 34-35        | Clay, silty, brown  |
| 35-38        | Clay, sandy, silty,<br>gray   |
| 38-40        | Sand, fine to coarse,<br>gray; gravel; clay                             |
| 40-49        | Sand and gravel, fine<br>to medium, coarse at<br>base; boulders at base |
| 49-60        | Till, blue-gray;<br>boulder at 59 feet                                  |

LOCATION: 079-38-25BABB

WC-213

STATION ID: 413751-0951322-01

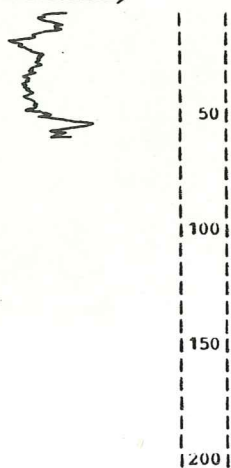
ALTITUDE: 1260 FEET (NGVD 1929)

DEPTH: 61 FEET

DATE COMPLETED: June 14, 1983

INCREASING NATURAL GAMMA →

POTENTIAL (mV) ←



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                                |
|--------------|---|
| 0-5          | QUATERNARY<br>Road bed                                  |
| 5-8          | Clay, silty,<br>yellow-gray, brown;<br>loess            |
| 8-10         | Clay or till, sandy,<br>gravelly, yellow-brown          |
| 10-18        | Clay, silty, gray                                       |
| 18-19        | Clay or till, sandy,<br>gravelly, gray,<br>yellow-brown |
| 19-21        | Clay or till, sandy,<br>gravelly, yellow-brown          |
| 21-25        | Till, yellow-tan,<br>yellow-brown, gray                 |
| 25-45        | Till, yellow-brown,<br>gray mottling                    |
| 45-47        | Till, yellow-gray                                       |
| 47-49        | Till, blue-gray   |
| 49-54        | Till, yellow-gray,<br>olive, gray                       |
| 54-57        | Till, blue-gray   |
| 57-58        | Till, olive   |
| 58-61        | Till, blue-gray   |

Table 2. Logs of wells and test holes--Continued.

LOCATION: 079-38-26ABAA

WC-212

STATION ID: 413750-0951358-01

ALTITUDE: 1200 FEET (NGVD 1929)

DEPTH: 61 FEET

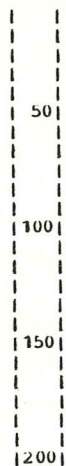
DATE COMPLETED: June 14, 1983

INCREASING NATURAL GAMMA

POTENTIAL (mV)

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| DEPTH (FEET) | DESCRIPTION OF MATERIALS                      |
|--------------|---|
| 0-6          | QUATERNARY<br>Road bed; top soil              |
| 6-8          | Clay, dark gray grading to gray               |
| 8-12         | Clay, silty, yellow-gray                      |
| 12-17        | Clay, silty, yellow-brown                     |
| 17-18        | Clay, silty, oxidized, brown                  |
| 18-22        | Clay, sandy, silty, gray-green; wood at base  |
| 22-28        | Sand and gravel, fine to coarse; clay layers  |
| 28-32        | Clay, silty, gray-green                       |
| 32-36        | Sand, fine to coarse; clay, sandy             |
| 36-40        | Sand and gravel, fine to coarse, gray         |
| 40-44        | Sand, fine to coarse, gray                    |
| 44-61        | Till, blue-gray; sand layer at 60 feet, fine, |

LOCATION: 079-39-36CAAA

WC-21

STATION ID: 413632-0952006-01

ALTITUDE: 1200 FEET (NGVD 1929)

DEPTH: 321 FEET

DATE COMPLETED: September 9, 1981

| DEPTH (FEET) | DESCRIPTION OF MATERIALS                              |
|--------------|---|
|              | QUATERNARY  |
| 0-10         | Clay, silty, tan, yellow-brown                        |
| 10-32        | Clay, silty, sandy, soft, blue-gray                   |
| 32-40        | Sand and gravel, fine to medium                       |
| 40-42        | Sand and gravel; boulder; clay                        |
| 42-50        | Clay, silty, sandy, gray                              |
| 50-130       | Till, blue-gray                                       |
| 130-134      | Till or clay, very sandy                              |
| 134-140      | Sand, fine to medium, gray                            |
| 140-141      | Till, gray  |
| 141-143      | Sand and gravel, fine, yellow-gray                    |
| 143-147      | Till, sandy, gravelly, blue-gray                      |
| 147-155      | Sand and gravel, fine, gray                           |
| 155-180      | Till, sandy, gravelly, blue-gray                      |
| 180-220      | Till, sandy, gravelly, blue-gray; boulder at 217 feet |
| 220-250      | Till, blue-gray; reworked shales                      |
| 250-267      | Clay or till, silty, sandy, light blue-gray           |
| 267-272      | Sand, fine to medium, cemented                        |
| 272-281      | Sand, very fine to medium, silty; clay                |
| 281-284      | Clay, silty, sandy, gray-green                        |
| 284-292      | Clay, very sandy, silty, soft as above                |
| 292-301      | Clay, silty, sandy, tough, gray to gray-green         |
| 301-305      | Sand and gravel, fine, well cemented                  |
| 305-307      | Clay, silty, sandy, hard, gray to gray-green          |
| 307-310      | Sand and gravel, fine, well cemented                  |
|              | PENNSYLVANIAN   |
| 310-312      | Siltstone or limestone, silty, gray-green             |
| 312-320      | Shale, silty, gray-green                              |
| 320-321      | Shale, reddish brown                                  |

Table 2. Logs of wells and test holes--Continued.

LOCATION: 079-40-09DBCA

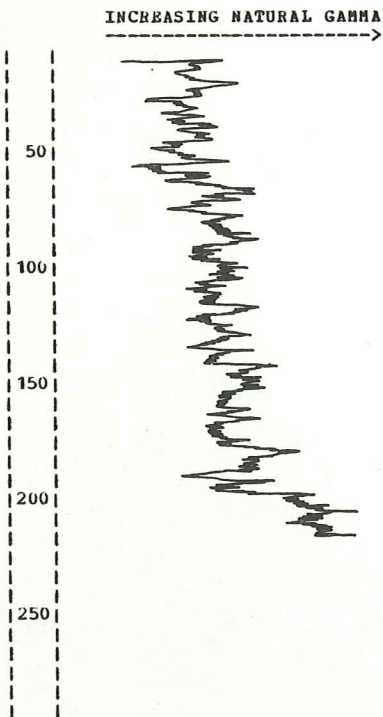
WC-15

STATION ID: 413953-0953026-01

ELEVATION: 1205 FEET (NGVD 1929)

DEPTH: 210 FEET

DATE COMPLETED: July 21, 1981



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                    |
|--------------|---|
|              | QUATERNARY                                  |
| 0-14         | Clay, silty, brown, yellow-tan              |
| 14-17        | Clay, silty, soft, yellow-tan               |
| 17-20        | Clay, silty, soft, gray-green               |
| 20-26        | Clay, silty, soft, blue-gray                |
| 26-34        | Clay, silty, soft, gray                     |
| 34-40        | Clay, silty, sandy, gray, blue-gray; wood   |
| 40-45        | Sand and gravel; boulders; clay mixed, gray |
| 45-60        | Till, blue-gray                             |
| 60-127       | Till, blue-gray; occasional boulders        |
| 127-129      | Sand and gravel, fine to coarse, gray       |
| 129-166      | Till, gravelly, sandy, blue-gray            |
| 166-180      | Clay or till, silty, gray-brown             |
| 180-182      | Sand and gravel, fine to coarse; boulders   |
|              | PENNSYLVANIAN                               |
| 182-210      | Shale, yellow grading to reddish brown      |

Casing record: set 2 inch pipe to 200 feet, slotted from 160 to 175 feet, gravel packed



Table 2. Logs of wells and test holes--Continued.

LOCATION: 079-42-19AADB

WC-22

STATION ID: 413838-0954620-01

ALTITUDE: 1045 FEET (NGVD 1929)

DEPTH: 628 FEET

DATE COMPLETED: October 30, 1981

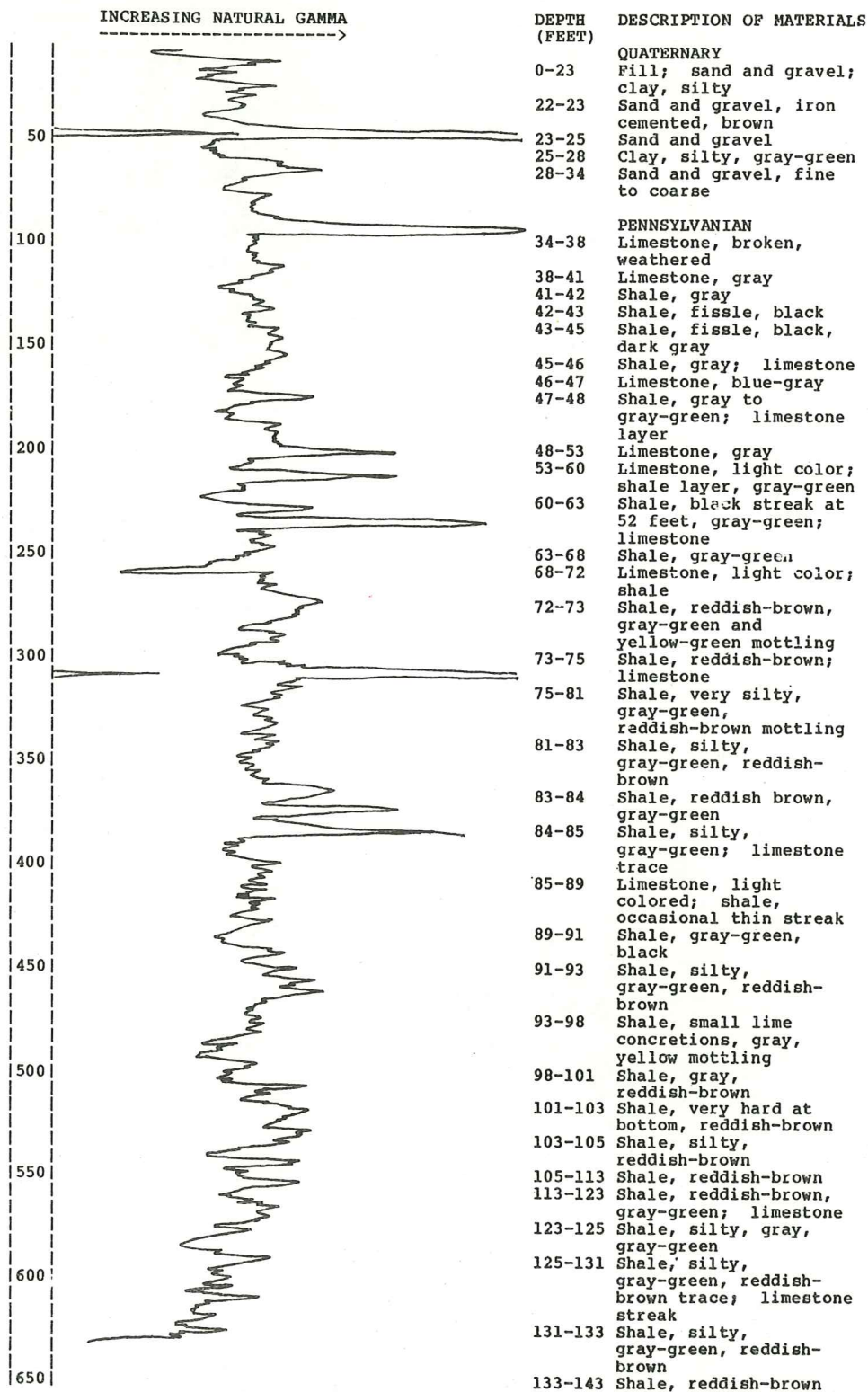


Table 2. Logs of wells and test holes--Continued.

| WC-22           |  | Continued       |   |   |   |
|-----------------|--|-----------------|---|---|---|
| DEPTH<br>(FEET) | DESCRIPTION OF MATERIALS                                       | DEPTH<br>(FEET) | DESCRIPTION OF MATERIALS  | DEPTH<br>(FEET)   | DESCRIPTION OF MATERIALS  |
| 143-151         | Shale, reddish-brown, yellow streaks                           | 303-305         | Shale, black; limestone   | 493-496   | sandstone<br>Sandstone, mostly fine to medium; shale, dark gray |
| 151-153         | Shale, blue-gray   | 305-310         | Shale, yellow-gray, crumbly   | 496-502   | Sandstone, fine grading to coarse                               |
| 153-153         | Shale, blue-gray   | 310-313         | Shale, reddish-brown  | 502-504   | Shale, dark gray  |
| 153-154         | Shale, reddish-brown, yellow                                   | 313-315         | Shale, reddish-brown, yellow-brown, some gray-green                       | 504-506   | Shale, dolomitic, gray-tan                                      |
| 154-155         | Shale, gray to dark gray                                       | 315-323         | Siltstone, gray-green; limestone, some shaly                              | 506-507   | Shale, gray   |
| 155-155         | Shale, dark gray to black                                      | 323-326         | Siltstone; sand   | 507-508   | Coal; pyrite  |
| 155-160         | Shale, gray; limestone at bottom                               | 326-333         | Shale, gray, reddish-brown  | 508-510   | Shale, silty, dark gray   |
| 160-162         | Shale, reddish-brown; limestone                                | 333-356         | Shale, gray, yellow, brown, reddish-brown                                 | 510-512   | Sandstone, fine; shale, silty, dark                             |
| 162-163         | Shale, reddish-brown to gray                                   | 356-359         | Shale, gray, yellow-brown   | 512-515   | Shale, dark gray  |
| 163-164         | Shale, reddish-brown   | 359-365         | Shale, black, dark gray   | 515-516   | Shale, gray-tan to dark gray                                    |
| 164-166         | Shale, gray; limestone   | 365-365         | Shale, dark gray  | 516-526   | Shale, black; pyrite  |
| 166-169         | Limestone, light colored                                       | 365-366         | Limestone, dark   | 526-526   | As above  |
| 169-170         | Shale, gray-tan; limestone                                     | 366-369         | Shale, dark gray, black   | 526-530   | Shale, sandy, silty, gray-tan                                   |
| 170-172         | Shale, blue-gray to dark-gray                                  | 369-369         | Coal  | 530-531   | Sandstone, very fine  |
| 172-172         | Shale, black; coal   | 369-373         | Shale, gray-green; limestone  | 531-534   | Shale, tan, gray  |
| 172-173         | Sandstone, fine, silty, gray                                   | 373-383         | Shale, gray-green, gray to dark gray, yellow; limestone layer at 378 feet | 534-535   | Sandstone, fine; shale, dark gray                               |
| 173-182         | Sandstone, very fine to medium, silty, gray                    | 383-385         | Shale, gray-green, yellow; limestone at bottom                            | 535-538   | Sandstone, medium   |
| 182-183         | Shale, sandy, silty, gray                                      | 385-389         | Shale, gray-green, maroon, yellow   | 538-541   | Shale, black  |
| 183-193         | Shale, gray; sandstone, thin layers; siltstone, thin layers    | 389-392         | Shale, gray, maroon   | 541-543   | Coal; pyrite  |
| 193-195         | Limestone, shaly at top  | 392-393         | Limestone   | 543-545   | Shale; gray-brown; pyrite                                       |
| 195-202         | Shale, gray to dark gray; siltstone, occasional layer          | 393-401         | Limestone, yellow-gray, some reddish-brown                                | 545-547   | Shale, gray-brown   |
| 202-203         | Limestone, shaly at top  | 401-405         | Shale, crumbly, gray  | 547-549   | Coal; pyrite  |
| 203-209         | Limestone; shale, green-gray                                   | 405-411         | Siltstone, gray-green; limestone at top                                   | 549-553   | Shale, dark gray  |
| 209-211         | Shale, dark gray; limestone                                    | 411-416         | Cored -no drillers description recorded                                   | 553-555   | Shale, silty, dark gray; sandstone, thin layers                 |
| 211-213         | Shale, gray; limestone   | 416-419         | Shale, gray; pyrite   | 555-560   | Shale, sandy, silty, dark gray; sandstone layers; pyrite        |
| 213-217         | Shale, gray, reddish-brown                                     | 419-420         | Coal  | 560-563   | Shale, very dark gray   |
| 217-221         | Limestone, light colored                                       | 420-426         | Shale, sandy at bottom, gray-green, olive; pyrite                         | 563-568   | Shale, dark gray  |
| 221-223         | Shale, silty, gray-green; siltstone                            | 426-436         | Siltstone, shaly, gray-green; limestone                                   | 568-573   | Sandstone; dolomite, sandy, shaly, silty, brown                 |
| 223-224         | Shale, gray-green  | 436-442         | Siltstone, shaly, gray, gray-green; shale, dark gray                      | 573-578   | Sandstone, very fine, shaly; siltstone; dolomite                |
| 224-226         | Shale, dark-gray   | 442-446         | Dolomite, sandy, shaly, gray-tan; shale at bottom, sandy, black           | 578-581   | Dolomite, sandy; conglomerate                                   |
| 226-229         | Limestone, gray; shale   | 446-448         | Shale, sandy, black; conglomerate layer; pyrite                           | MISSISSIPPIAN   |   |
| 229-232         | Shale, black, dark-gray  | 448-451         | Limestone, sandy, gray; siltstone streak; pyrite                          | 581-583   | Dolomite layers; shale layers; chert at bottom                  |
| 232-233         | Coal   | 451-454         | Shale, gray grading to dark gray  | 583-593   | Dolomite, brown; shale  |
| 233-243         | Shale, gray-green; limestone; pyrite                           | 454-455         | Dolomite, sandy, brown; shale   | 593-603   | As above  |
| 243-253         | Shale, sandy, silty, reddish-brown, gray-green                 | 455-456         | Limestone, some shaly   | 603-613   | Dolomite, vuggy, brown, light gray; shale layers; quartzite     |
| 253-263         | Shale, silty, reddish-brown, yellow, brown, gray-brown         | 456-458         | Shale, dark gray  | 613-623   | As above  |
| 263-267         | Shale, gray-brown, yellow, some reddish-brown                  | 458-460         | Shale, hard, tan-gray   | 623-628   | Dolomite, brown, gray; shale layers                             |
| 267-273         | Shale, dark blue-gray  | 460-461         | Limestone   |   |   |
| 273-279         | Shale, dark gray; limestone layer at bottom                    | 461-466         | Shale, silty; siltstone, sandy, shaly                                     | Casing record: set 2 inch pipe to 628 feet, slotted from 588 to 628 feet, gravel packed |   |
| 279-281         | Shale, gray-green  | 466-476         | Sandstone, very fine, silty, some shaly                                   |   |   |
| 281-283         | Shale, reddish-brown; limestone, silty                         | 476-479         | Sandstone, very fine, silty, shaly  |   |   |
| 283-287         | Shale, reddish-brown, some gray                                | 479-486         | Sandstone, fine grading to medium   |   |   |
| 287-293         | Shale, gray to dark gray                                       | 486-492         | Sandstone, fine to medium   |   |   |
| 293-303         | Shale, oxidized streaks at bottom, dark gray; limestone layers | 492-493         | Shale, dark gray;   |   |   |

Table 2. Logs of wells and test holes--Continued.

LOCATION: 079-42-19BADC

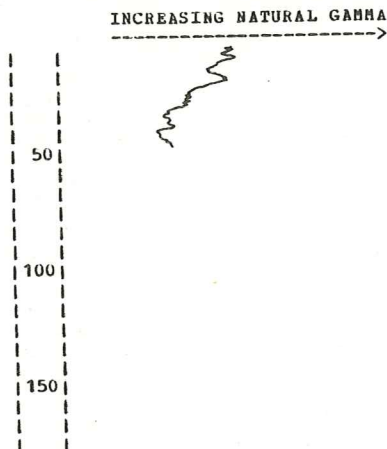
WC-196

STATION ID: 413836-0954655-02

ALTITUDE: 1030 FEET (NGVD 1929)

DEPTH: 49 FEET

DATE COMPLETED: June 2, 1983



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                            |
|--------------|---|
| QUATERNARY   |   |
| 0-5          | Top soil; clay, silty, dark                         |
| 5-9          | Clay, silty, gray                                   |
| 9-16         | Clay, silty, some oxidized, brown, yellow-gray      |
| 16-23        | Clay, silty, blue-gray                              |
| 23-31        | Sand, fine to coarse; gravel, fine; clay, blue-gray |
| 31-40        | Sand and gravel, fine to medium, gray               |
| 40-49        | Sand and gravel, fine to very coarse, yellow-brown  |

Casing record: set 5 inch pipe to 49 feet, slotted from 31 to 49 feet, gravel packed

LOCATION: 079-42-19BADC

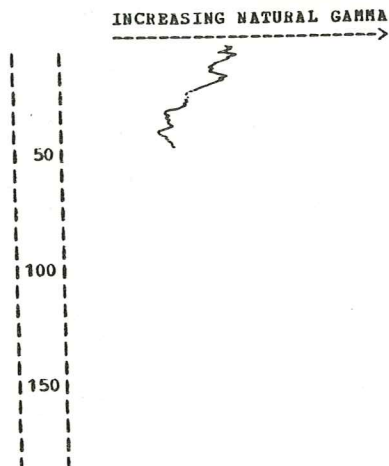
WC-195

STATION ID: 413836-0954655-01

ALTITUDE: 1030 FEET (NGVD 1929)

DEPTH: 55 FEET

DATE COMPLETED: June 2, 1983



| DEPTH (FEET)  | DESCRIPTION OF MATERIALS                            |
|---------------|---|
| QUATERNARY    |   |
| 0-5           | Top soil; clay, silty, dark                         |
| 5-9           | Clay, silty, gray                                   |
| 9-16          | Clay, silty, some oxidized, brown, yellow-gray      |
| 16-23         | Clay, silty, blue-gray                              |
| 23-31         | Sand, fine to coarse; gravel, fine; clay, blue-gray |
| 31-40         | Sand and gravel, fine to medium, gray               |
| 40-50         | Sand and gravel, fine to very coarse, yellow-brown  |
| 50-53         | As above, very coarse; boulders                     |
| PENNSYLVANIAN |   |
| 53-55         | Limestone, light colored                            |

Table 2. Logs of wells and test holes--Continued.

LOCATION: 080-31-06AAAD

NC-114

STATION ID: 414631-0942935-01

ALTITUDE: 1150 FEET (MGVD 1929)

DEPTH: 100 FEET

DATE COMPLETED: August 20, 1982

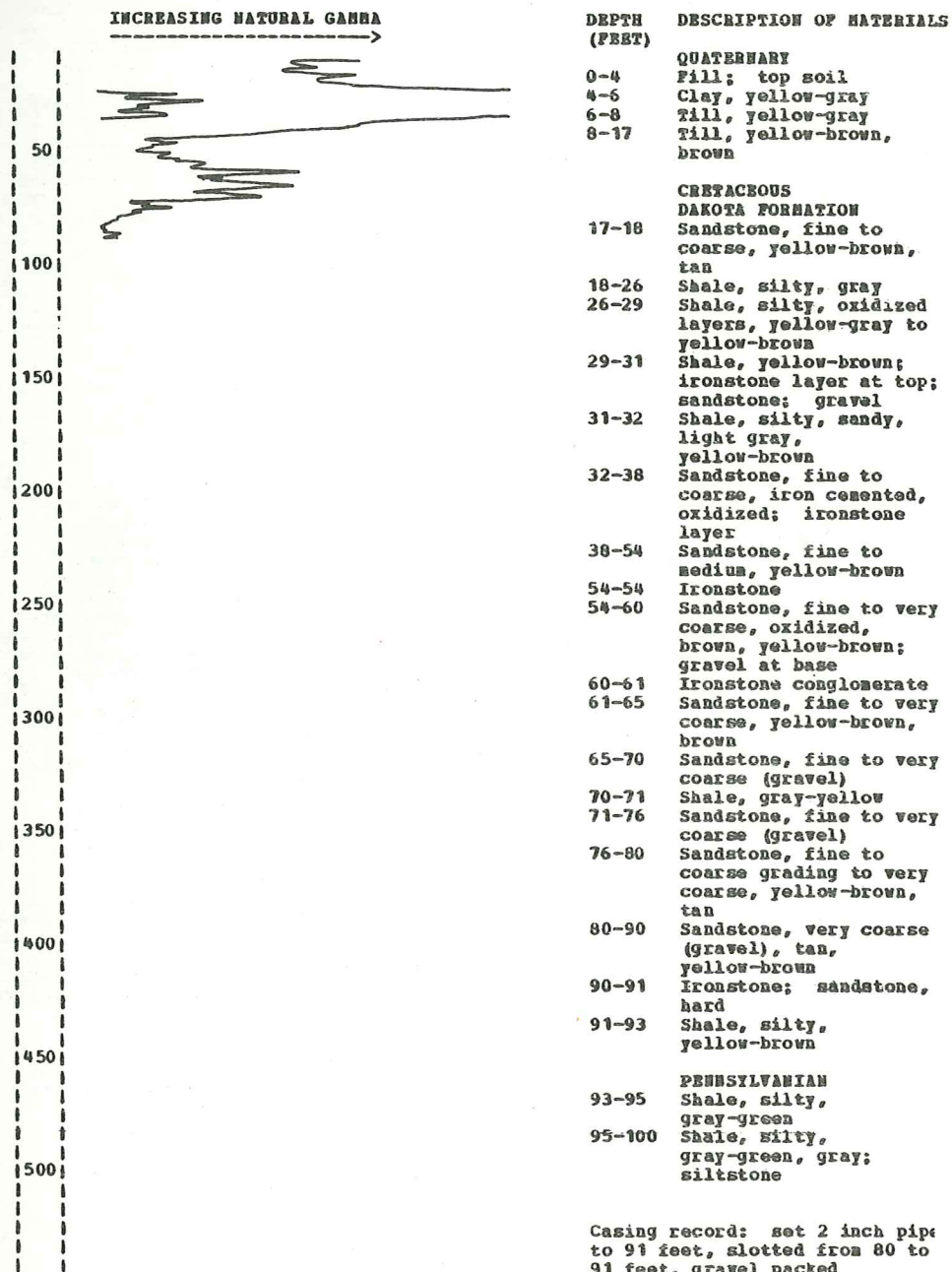


Table 2. Logs of wells and test holes--Continued.

LOCATION: 080-33-12ACCC

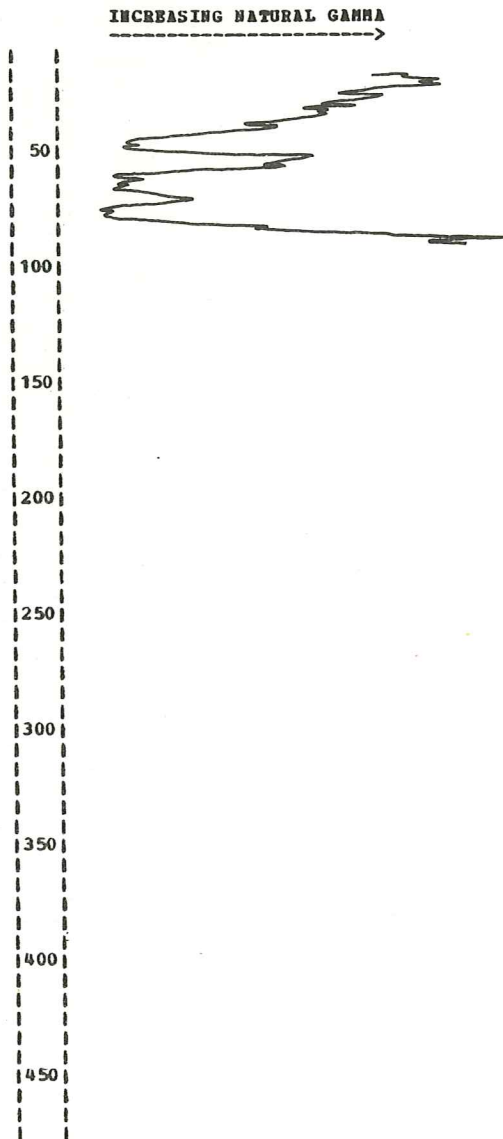
WC-90

STATION ID: 414514-0943816-01

ALTITUDE: 1170 FEET (NGVD 1929)

DEPTH: 81 FEET

DATE COMPLETED: July 21, 1982



| DEPTH (FEET)                | DESCRIPTION OF MATERIALS   |
|-----------------------------|--|
| QUATERNARY                  |  |
| 0-3                         | road bed   |
| 3-9                         | Clay, dark brown   |
| 9-12                        | Clay, silty, yellow-brown, brown   |
| 12-15                       | Clay, silty, soft, gray  |
| 15-17                       | Clay, sandy, yellow-brown  |
| 17-21                       | Clay, silty, yellow-gray, brown; sand trace  |
| 21-24                       | Clay, silty, soft, blue-gray   |
| 24-27                       | Sand, fine to coarse, gray; clay   |
| CRETACEOUS DAKOTA FORMATION |  |
| 27-30                       | Sandstone, fine to coarse, very oxidized, brown  |
| 30-38                       | Sandstone, fine to coarse, yellow-brown  |
| 38-40                       | Sand and gravel, fine to coarse, well cemented, oxidized, yellow-brown, brown; ironstone layers; shell layers                |
| 40-50                       | Sandstone, fine to very coarse (gravel), brown to yellow-brown; ironstone layers, oxidized, brown, yellow-brown; shale trace |
| 50-60                       | Sandstone, fine to very coarse, (gravel), yellow-brown; shale trace  |
| 60-69                       | Sandstone, fine to coarse, iron cementation trace, yellow-tan; shale trace   |
| 69-71                       | Shale, silty, sandy, yellow-brown, gray  |
| 71-78                       | Shale, reddish-brown, yellow-tan   |
| 78-81                       | Shale, reddish-brown, light blue-gray, yellow  |

Casing record: set 2 inch pipe to 81 feet, slotted from 60 to 66 feet, gravel packed

LOCATION: 080-33-12CAAA

WC-91

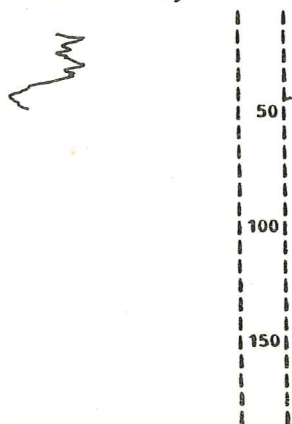
STATION ID: 414509-0943817-01

ALTITUDE: 1171 FEET (NGVD 1929)

DEPTH: 41 FEET

DATE COMPLETED: July 22, 1982

INCREASING NATURAL GAMMA  
----->



| DEPTH (FEET)                | DESCRIPTION OF MATERIALS  |
|-----------------------------|---|
| QUATERNARY                  |   |
| 0-5                         | Road bed; top soil  |
| 5-7                         | Clay, silty, very dark  |
| 7-12                        | Clay, silty, gray   |
| 12-15                       | Clay, silty, sandy, yellow-gray   |
| 15-18                       | Clay, silty, sandy, gray-green  |
| 18-26                       | Clay, silty, blue-gray  |
| 26-30                       | Sand and gravel, fine to medium, tan, yellow-brown                      |
| CRETACEOUS DAKOTA FORMATION |   |
| 30-35                       | Sandstone or sand and gravel, fine, oxidized, brown,                    |
| 35-41                       | Sandstone, very coarse, oxidized, brown, yellow-brown; ironstone layers |

Table 2. Logs of wells and test holes--Continued.

LOCATION: 080-33-12CDAD

WC-92

STATION ID: 414454-0943817-01

ALTITUDE: 1230 FEET (NGVD 1929)

DEPTH: 138 FEET

DATE COMPLETED: July 22, 1982

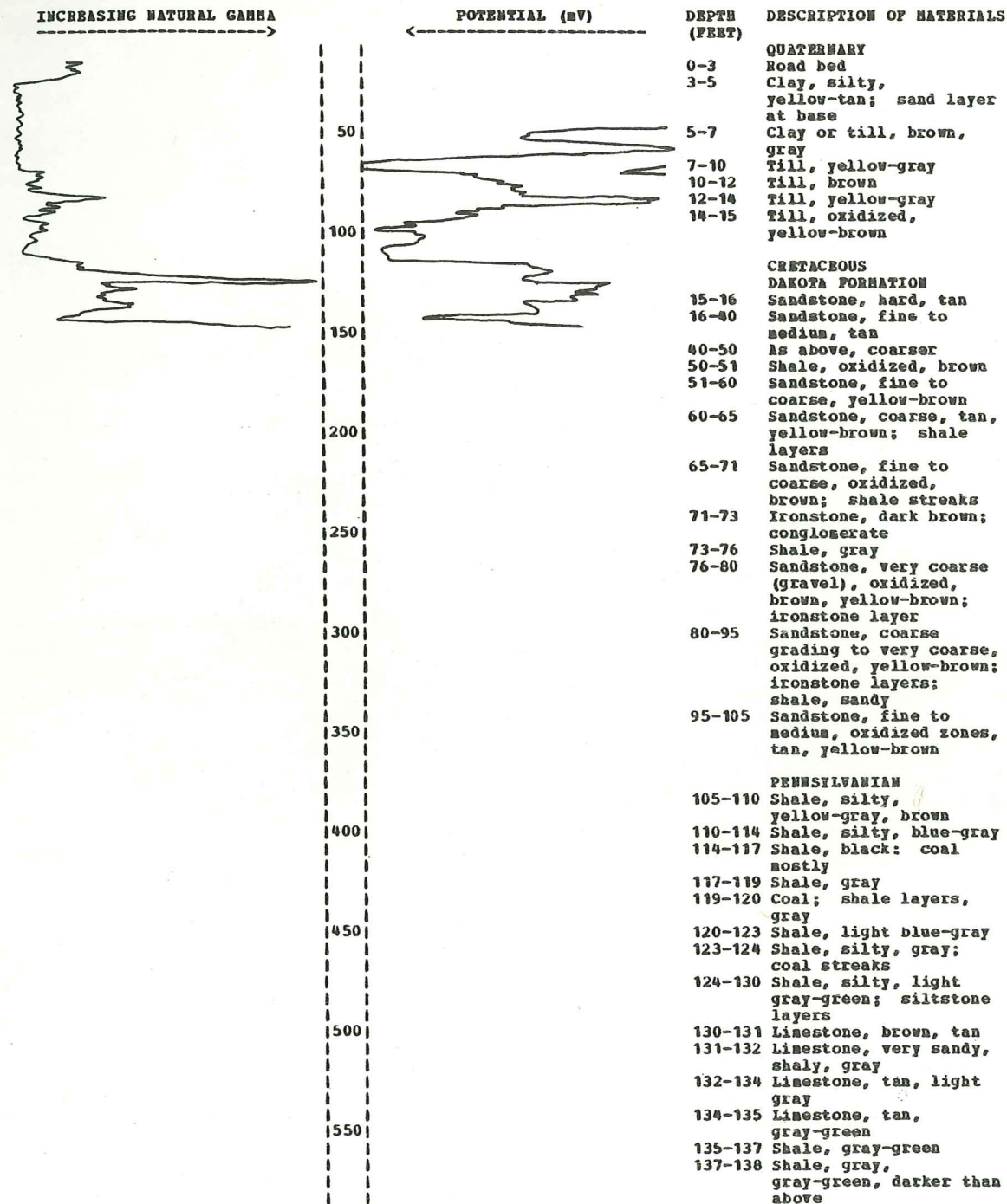


Table 2. Logs of wells and test holes--Continued.

LOCATION: 080-34-06BBBC                      WC-78                      STATION ID: 414630-0945136-01  
 ALTITUDE: 1325 FEET (NGVD 1929)              DEPTH: 41 FEET                      DATE COMPLETED: June 30, 1982

| DEPTH (FEET) | DESCRIPTION OF MATERIALS  |
|--------------|---|
|              | QUATERNARY  |
| 0-3          | Road bed; top soil  |
| 3-7          | Clay, yellow-tan; sand grains                                     |
| 7-12         | Clay, sandy, yellow-tan   |
| 12-15        | Clay, silty, very sandy, yellow-gray; sand layers, fine to coarse |
| 15-17        | Clay, silty, yellow-brown, yellow-gray                            |
| 17-19        | Clay, very sandy, soft, gray                                      |
| 19-21        | Sand and gravel, fine, yellow-brown, tan                          |
| 21-22        | Sand and gravel, fine to very coarse, oxidized, brown; boulders   |
| 22-23        | Till, oxidized, blue-gray to yellow-brown                         |
| 23-28        | Till, blue-gray   |
| 28-31        | Till, olive   |
| 31-41        | Till, olive, blue-gray  |

LOCATION: 080-34-06CCBC                      WC-81                      STATION ID: 414552-0945136-01  
 ALTITUDE: 1340 FEET (NGVD 1929)              DEPTH: 41 FEET                      DATE COMPLETED: July 13, 1982

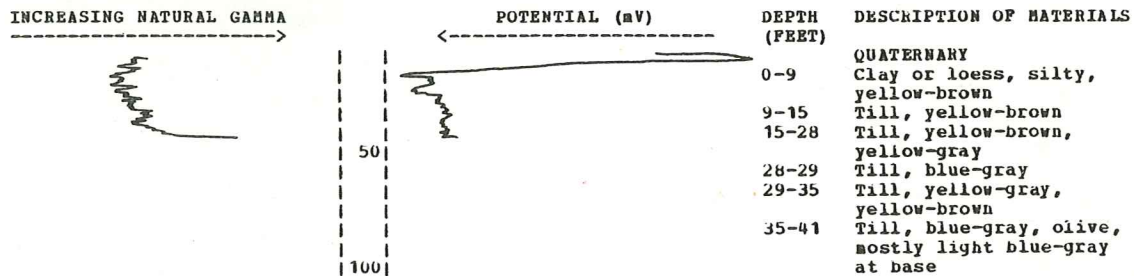


Table 2. Logs of wells and test holes--Continued.

LOCATION: 080-35-01ADAD

WC-79

STATION ID: 414617-0945136-01

ALTITUDE: 1290 FEET (NGVD 1929)

DEPTH: 218 FEET

DATE COMPLETED: July 12, 1982

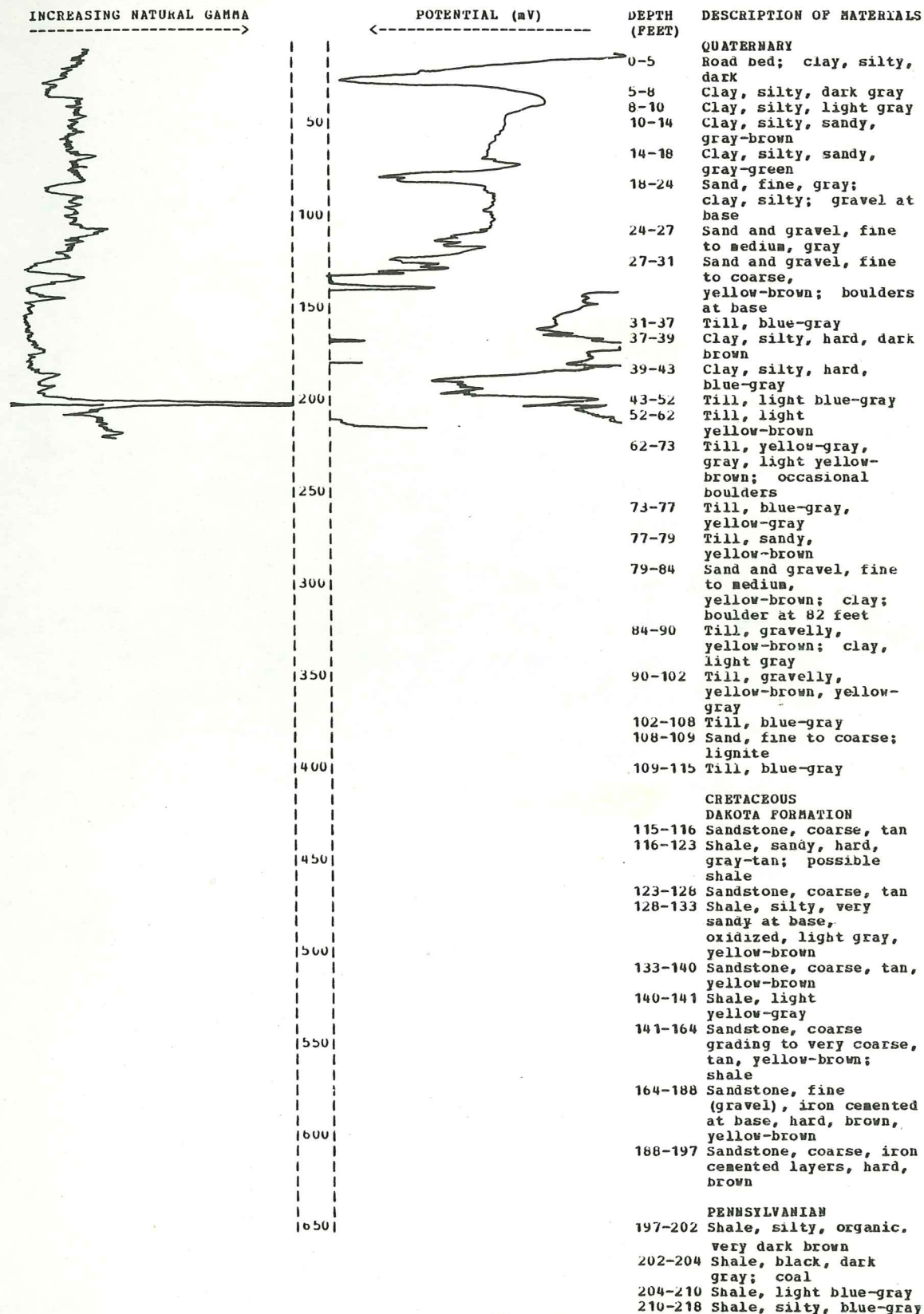




Table 2. Logs of wells and test holes--Continued.

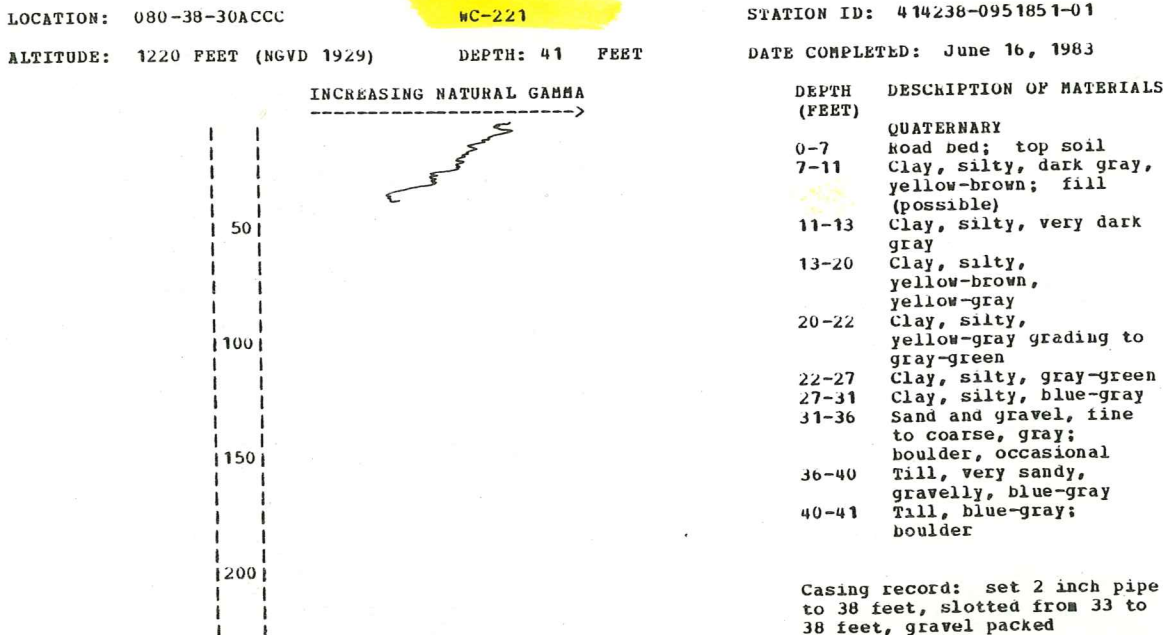
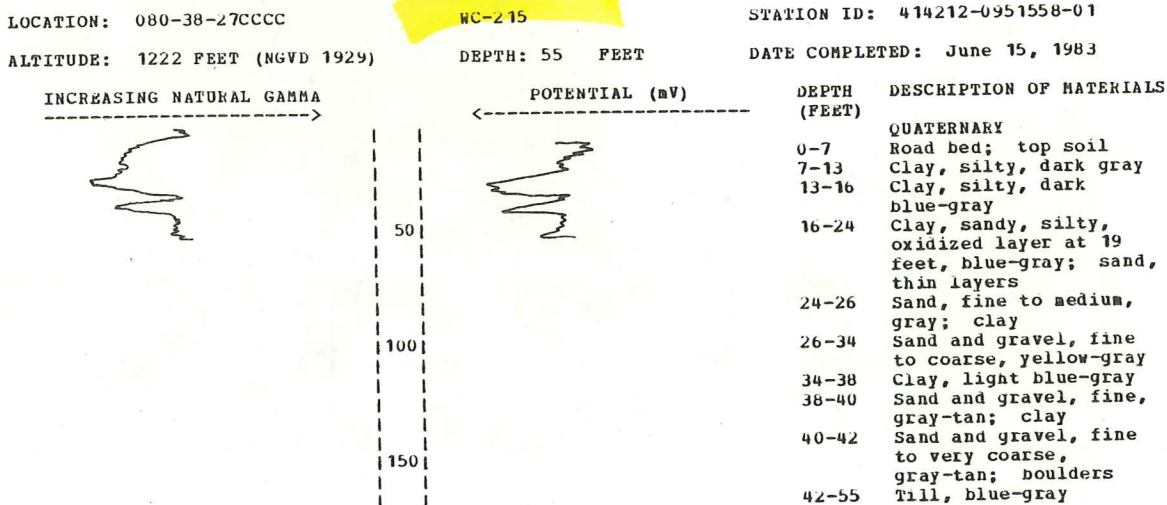
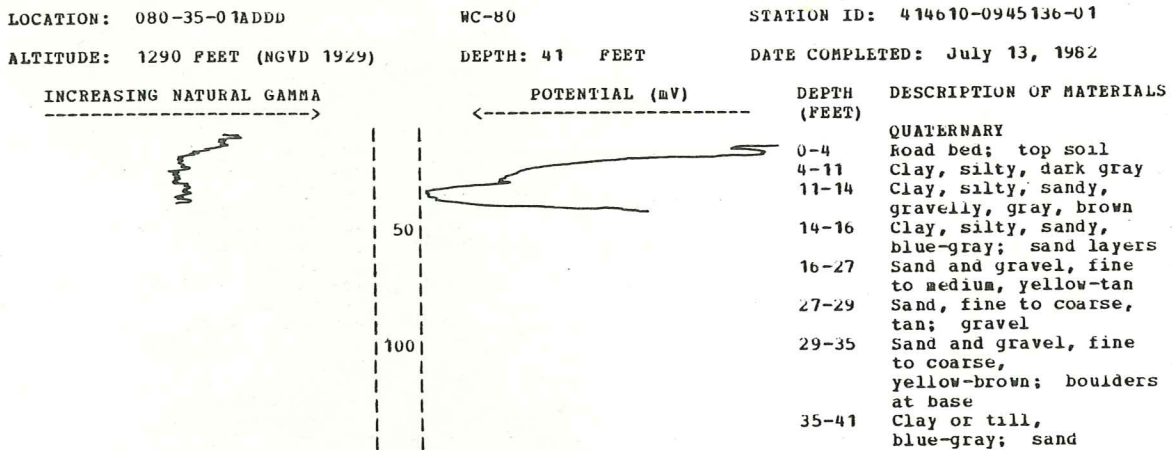


Table 2. Logs of wells and test holes--Continued.

LOCATION: 080-38-30ACDC

WC-219

STATION ID: 414238-0951841-01

ALTITUDE: 1212 FEET (NGVD 1929)

DEPTH: 50 FEET

DATE COMPLETED: June 16, 1983

INCREASING NATURAL GAMMA →



POTENTIAL (mV) ←



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                                  |
|--------------|---|
| 0-7          | QUATERNARY<br>Road bed; top soil                          |
| 7-9          | Clay, silty, dark gray-brown                              |
| 9-10         | Clay, silty, yellow-gray                                  |
| 10-14        | Clay, silty, yellow-brown                                 |
| 14-17        | Clay, silty, oxidized, yellow-brown, brown                |
| 17-19        | Clay, sandy, silty, yellow-brown, yellow-gray; sand layer |
| 19-20        | Wood; sand; clay  |
| 20-22        | Sand, fine to coarse, tan; gravel, fine                   |
| 22-25        | Sand and gravel, fine; clay, silty; wood                  |
| 25-31        | Sand and gravel, fine, gray, tan                          |
| 31-35        | Wood; organics, silty, some sandy                         |
| 35-40        | Sand and gravel, fine to coarse, tan, yellow-brown        |
| 40-43        | Sand and gravel, fine to very coarse, olive; boulders     |
| 43-50        | Till, blue-gray   |

LOCATION: 080-38-30ADDD

WC-218

STATION ID: 414238-0951820-01

ALTITUDE: 1238 FEET (NGVD 1929)

DEPTH: 41 FEET

DATE COMPLETED: June 16, 1983

INCREASING NATURAL GAMMA →



POTENTIAL (mV) ←



| DEPTH (FEET) | DESCRIPTION OF MATERIALS         |
|--------------|----------------------------------|
| 0-4          | QUATERNARY<br>Road bed; top soil |
| 4-7          | Clay, silty, very dark gray      |
| 7-11         | Clay, silty, gray-brown          |
| 11-14        | Clay, silty, yellow-gray         |
| 14-24        | Clay, silty, gray-green          |
| 24-27        | Clay, tough, light gray-green    |
| 27-29        | Clay, sandy, gravelly; gravel    |
| 29-30        | Till, olive                      |
| 30-32        | Till, very gravelly, olive       |
| 32-35        | Till, gray, yellow-gray          |
| 35-36        | Till, gravelly, olive            |
| 36-41        | Till, blue-gray                  |

LOCATION: 080-38-30BDDC

WC-220

STATION ID: 414238-0951900-01

ALTITUDE: 1223 FEET (NGVD 1929)

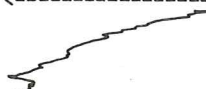
DEPTH: 41 FEET

DATE COMPLETED: June 16, 1983

INCREASING NATURAL GAMMA →



POTENTIAL (mV) ←



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                      |
|--------------|---|
| 0-3          | QUATERNARY<br>Fill; top soil                  |
| 3-6          | Clay, gray                                    |
| 6-9          | Clay, yellow-gray                             |
| 9-15         | Clay, silty, oxidized, yellow-brown, brown    |
| 15-18        | Clay, silty, gray, green; shells              |
| 18-25        | Clay, silty, gray; wood; organics             |
| 25-33        | Clay, silty, gray, gray-green; wood; organics |
| 33-34        | Clay, sandy, silty, gravelly, gray            |
| 34-41        | Till, blue-gray                               |

Table 2. Logs of wells and test holes--Continued.

LOCATION: 080-38-33AABB

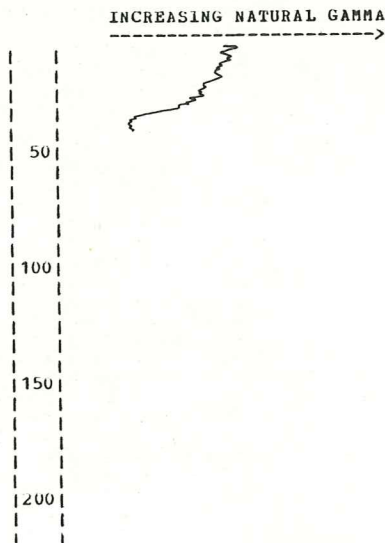
WC-216

STATION ID: 414211-0951617-01

ALTITUDE: 1225 FEET (NGVD 1929)

DEPTH: 43 FEET

DATE COMPLETED: June 15, 1983



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                             |
|--------------|--|
| 0-2          | QUATERNARY<br>Top soil                               |
| 2-4          | Clay, silty, yellow-brown, brown                     |
| 4-7          | Clay, silty, yellow-brown                            |
| 7-20         | Clay, silty, yellow-brown, yellow-gray               |
| 20-25        | Clay, silty, gray                                    |
| 25-28        | Clay, silty, gray-green                              |
| 28-30        | Clay, silty, gray                                    |
| 30-32        | Clay, blue-gray                                      |
| 32-36        | Sand, very fine to medium; clay, silty, gray         |
| 36-41        | Sand and gravel, fine to coarse, yellow-brown, brown |
| 41-43        | Till, blue-gray, brown at top                        |

Casing record: set 2 inch pipe to 41 feet, slotted from 36 to 41 feet, gravel packed

LOCATION: 080-38-33ABAB

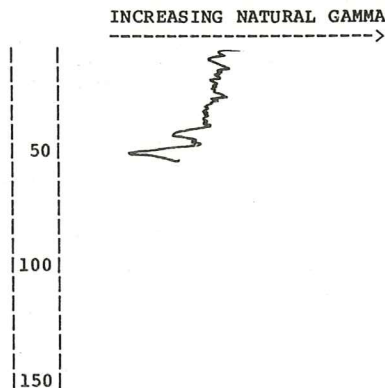
WC-217

STATION ID: 414212-0951625-01

ALTITUDE: 1250 FEET (NGVD 1929)

DEPTH: 61 FEET

DATE COMPLETED: June 15, 1983



| DEPTH (FEET) | DESCRIPTION OF MATERIALS   |
|--------------|--|
| 0-3          | QUATERNARY<br>Road bed; top soil   |
| 3-14         | Clay, silty, yellow-brown; loess   |
| 14-16        | Clay, silty, brown; loess  |
| 16-19        | As above, tough  |
| 19-30        | Clay, tough, gray-tan  |
| 30-40        | Clay, silty, yellow-gray   |
| 40-47        | Clay, very silty, sandy, yellow-gray   |
| 47-49        | Clay, silty, gray  |
| 49-55        | Sand and gravel, fine to medium, coarse at base, oxidized at base, gray-tan, brown at base |
| 55-61        | Till, blue-gray, brown at top  |

LOCATION: 080-38-34BAAB

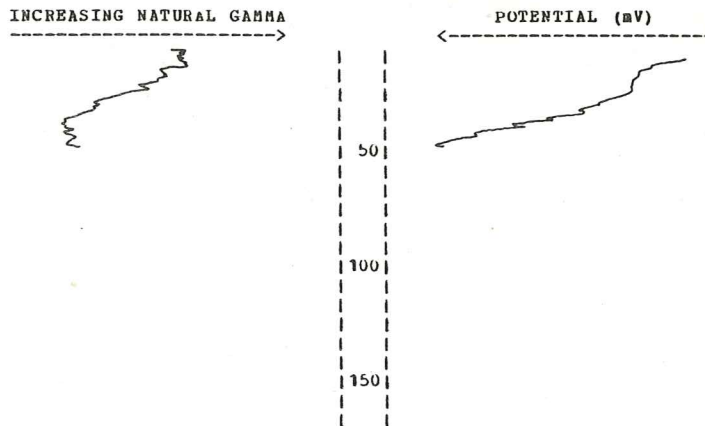
WC-214

STATION ID: 414212-0951534-01

ALTITUDE: 1227 FEET (NGVD 1929)

DEPTH: 61 FEET

DATE COMPLETED: June 15, 1983



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                         |
|--------------|--|
| 0-6          | QUATERNARY<br>Road bed; top soil                 |
| 6-8          | Clay, silty, brown                               |
| 8-15         | Clay, silty, yellow-brown                        |
| 15-25        | Clay, silty, yellow-brown, yellow-gray           |
| 25-28        | Clay, silty, gray                                |
| 28-30        | Clay, silty, sandy, gray-green; sand layers      |
| 30-36        | Sand, very fine to medium, gray-tan; clay layers |
| 36-40        | Sand and gravel, fine, gray-tan                  |
| 40-52        | Sand and gravel, fine to coarse, gray-tan        |
| 52-61        | Till, blue-gray                                  |

Table 2. Logs of wells and test holes--Continued.

LOCATION: 080-39-06AADC

WC-10

STATION ID: 414624-0952523-01

ALTITUDE: 1305 FEET (NGVD 1929)

DEPTH: 370 FEET

DATE COMPLETED: June 10, 1981

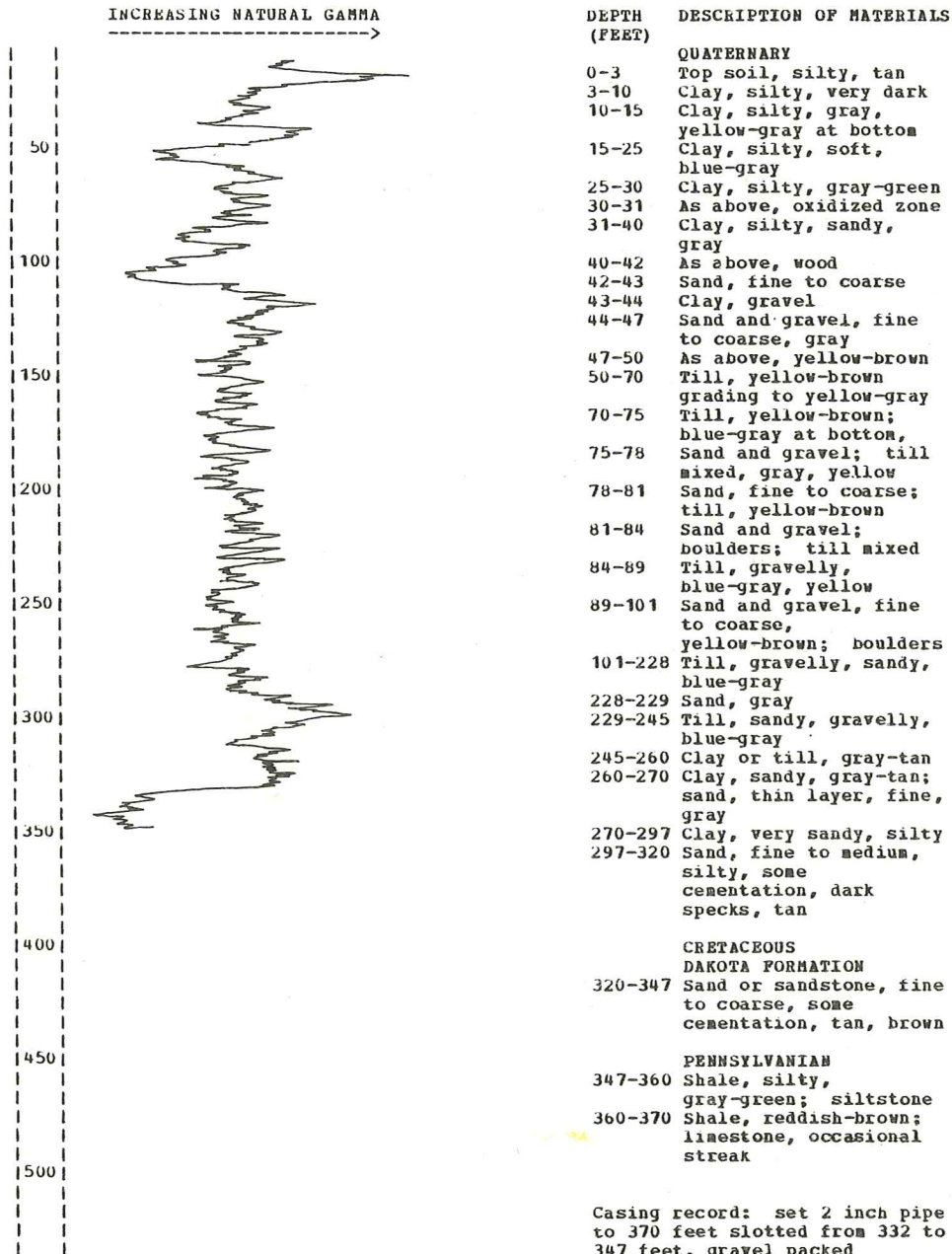


Table 2. Logs of wells and test holes--Continued.

LOCATION: 080-41-19AAAA NC-25 STATION ID: 414357-0953916-01  
 ALTITUDE: 1275 FEET (NGVD 1929) DEPTH: 280 FEET DATE COMPLETED: December 7, 1981

| DEPTH<br>(FEET) | DESCRIPTION OF MATERIALS   |
|-----------------|--|
|                 | QUATERNARY   |
| 0-48            | Loess, yellow-brown, tan   |
| 48-51           | Clay, brown  |
| 51-54           | Till, brown  |
| 54-60           | Till, yellow-brown   |
| 60-65           | Till, very sandy, yellow-brown   |
| 65-68           | Sand and gravel, fine to coarse, yellow-brown  |
| 68-75           | Till, yellow-brown, gray; sand streaks at bottom                                     |
| 75-80           | Till, blue-gray, yellow-gray   |
| 80-81           | Till, light blue-gray  |
| 81-82           | Sand and gravel, fine  |
| 82-110          | Till, blue-gray; sand, thin layers   |
| 110-111         | Limestone boulder  |
| 111-122         | Till, blue-gray  |
| 122-130         | Clay, gray-tan   |
| 130-145         | Clay or till, yellow-tan; few sand specks mixed                                      |
| 145-190         | Clay, salmon color   |
| 190-201         | Clay, very sandy, salmon color, colored with dark specks                             |
|                 | CRETACEOUS   |
|                 | DAKOTA FORMATION   |
| 201-206         | Sand, fine to coarse, cemented, oxidized, brown, orange                              |
|                 | PENNSYLVANIAN  |
| 206-230         | Shale, reddish brown, yellow-brown, light gray                                       |
| 230-245         | Shale, silty, sandy, light gray, red trace   |
| 245-260         | Shale, silty, brown, reddish-brown   |
| 260-265         | Shale, silty, reddish-brown; limestone; siltstone, gray-green                        |
| 265-280         | Shale, silty, gray-green; limestone; siltstone; possible sandstone streaks at bottom |

Casing record: set 2 inch pipe to 215 feet, slotted from 125 to 145 feet, gravel packed

Table 2. Logs of wells and test holes--Continued.

LOCATION: 080-42-08ACCC

WC-3

STATION ID: 414517-0954534-U1

ALTITUDE: 1220 FEET (NGVD 1929)

DEPTH: 336 FEET

DATE COMPLETED: April 23, 1981

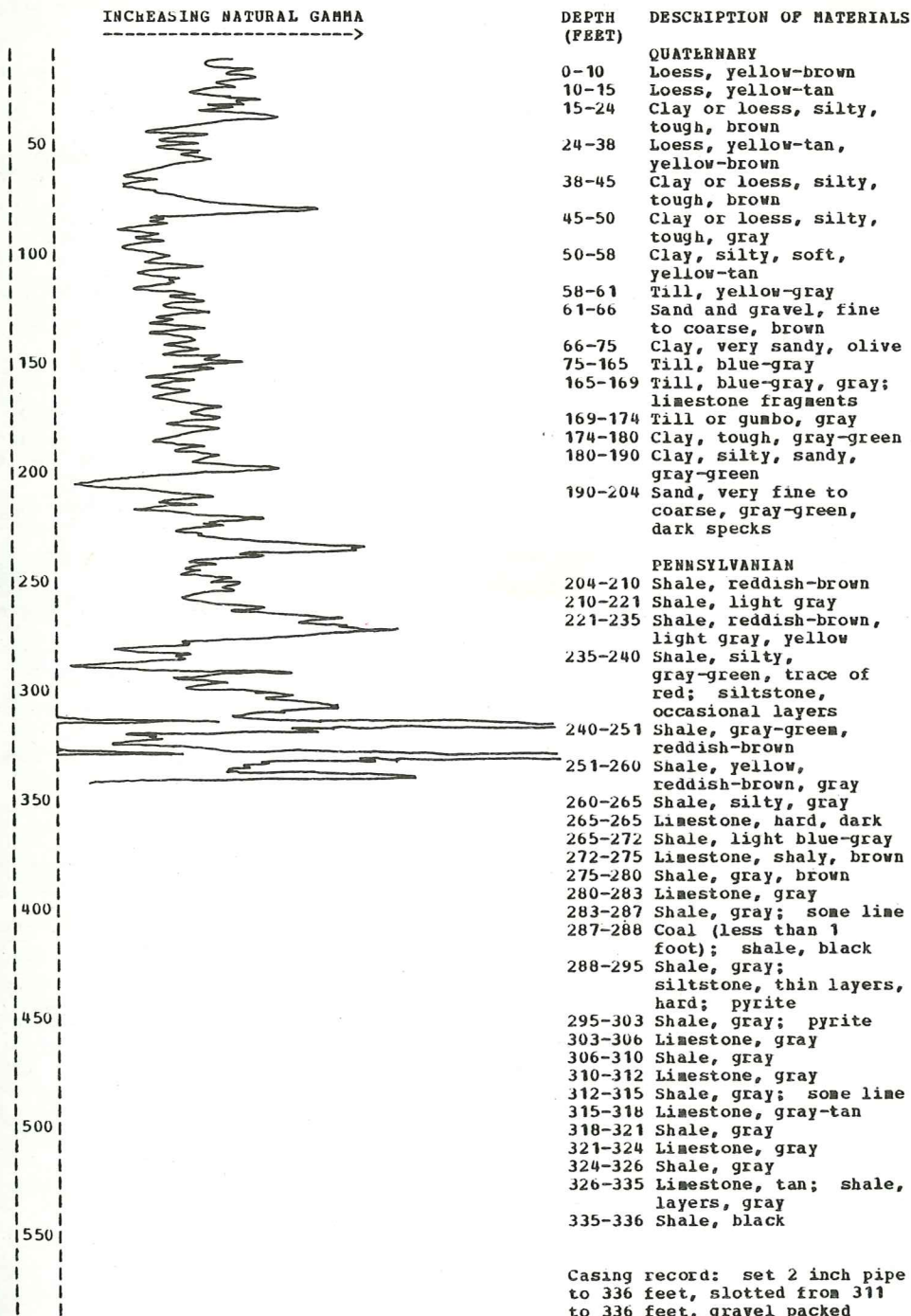


Table 2. Logs of wells and test holes--Continued.

LOCATION: 080-42-27CCBA

WC-35

STATION ID: 414226-0954350-01

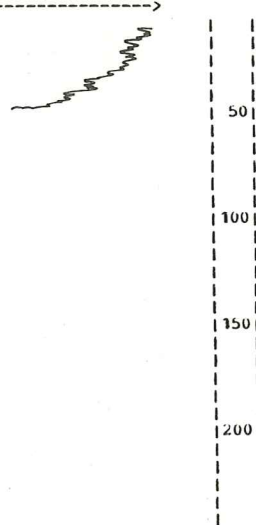
ALTITUDE: 1050 FEET (NGVD 1929)

DEPTH: 60 FEET

DATE COMPLETED: May 12, 1982

INCREASING NATURAL GAMMA

POTENTIAL (mV)



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                       |
|--------------|--|
| 0-5          | QUATERNARY<br>Sample gap                       |
| 5-7          | Clay, silty, dark brown                        |
| 7-10         | Clay, silty, brown                             |
| 10-15        | Clay, silty, soft, gray-brown                  |
| 15-20        | Clay, silty, soft, oxidized brown zones, gray  |
| 20-30        | Clay, silty, very soft, blue-gray; snails      |
| 30-37        | Sand and gravel, fine to coarse, gray          |
| 37-40        | Sand and gravel, fine to coarse, tan           |
| 40-45        | Sand and gravel, fine to medium, tan           |
| 45-46        | PENNSYLVANIAN<br>Shale, reddish-gray; boulders |
| 46-48        | Shale, silty, gray                             |
| 48-49        | Shale, gray-green                              |
| 49-53        | Shale, reddish-brown, gray                     |
| 53-57        | Shale, gray, gray-green trace, yellow-gray     |
| 57-60        | Shale, yellow, reddish-brown, gray             |

LOCATION: 080-42-27CCBA

WC-192

STATION ID: 414226-0954350-02

ALTITUDE: 1050 FEET (NGVD 1929)

DEPTH: 41 FEET

DATE COMPLETED: May 12, 1983

INCREASING NATURAL GAMMA



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                      |
|--------------|---|
| 0-5          | QUATERNARY<br>Sample gap                      |
| 5-7          | Clay, silty, dark brown                       |
| 7-10         | Clay, silty, brown                            |
| 10-15        | Clay, silty, soft, gray-brown                 |
| 15-20        | Clay, silty, soft, oxidized brown zones, gray |
| 20-30        | Clay, silty, very soft, blue-gray; snails     |
| 30-37        | Sand and gravel, fine to coarse, gray         |
| 37-40        | Sand and gravel, fine to coarse, tan          |
| 40-41        | Sand and gravel, fine to medium, tan          |

Casing record: set 2 inch pipe to 40 feet, slotted from 35 to 40 feet, gravel packed

LOCATION: 080-42-28DBCD

WC-37

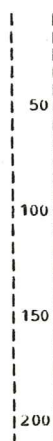
STATION ID: 414228-0954423-01

ALTITUDE: 1060 FEET (NGVD 1929)

DEPTH: 53 FEET

DATE COMPLETED: May 18, 1982

INCREASING NATURAL GAMMA



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                           |
|--------------|--|
| 0-6          | QUATERNARY<br>Top soil, silty, dark; fill          |
| 6-10         | Clay, silty, brown                                 |
| 10-30        | Clay, silty, yellow-brown                          |
| 30-34        | Clay, silty, soft, yellow-gray                     |
| 34-36        | Clay, silty, soft, blue-gray                       |
| 36-42        | Sand and gravel, fine, yellow-brown                |
| 42-51        | Sand and gravel, fine to coarse, yellow-brown, tan |
| 51-52        | PENNSYLVANIAN<br>Shale, gray, maroon               |
| 52-53        | Shale, silty, gray-green                           |

Casing record: set 2 inch pipe to 52 feet, slotted from 46 to 52 feet, gravel packed

Table 2. Logs of wells and test holes--Continued.

LOCATION: 080-42-33AAAA  
 ALTITUDE: 1100 FEET (NGVD 1929)

WC-194  
 DEPTH: 81 FEET

STATION ID: 414213-0954355-01  
 DATE COMPLETED: June 1, 1963

INCREASING NATURAL GAMMA →



POTENTIAL (mV) ←



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                                      |
|--------------|---|
| 0-4          | QUATERNARY<br>Top soil; clay, silty, very dark                |
| 4-6          | Loess, yellow-brown, yellow-tan                               |
| 6-9          | Clay, silty, brown; loess, hard                               |
| 9-21         | Clay, silty, yellow-tan; loess, soft                          |
| 21-30        | Clay, silty, brown; loess, hard                               |
| 30-47        | As above, grading to yellow-tan, softer                       |
| 47-55        | Loess, iron concretions, brown, yellow-tan, yellow-brown      |
| 55-62        | Clay, silty, yellow-gray, brown; loess                        |
| 62-65        | Clay, gray; sand grains                                       |
| 65-69        | Clay or till, sandy, yellow-gray; sand layers, fine to coarse |
| 69-76        | Sand, fine to coarse, gray-tan, dark grains                   |
| 76-77        | Sand and gravel, fine, yellow-brown                           |
| 77-78        | PENNSYLVANIAN<br>Limestone, shaly, yellow-brown, gray-green   |
| 78-79        | Shale, gray-green   |
| 79-81        | Shale, reddish-brown, yellow-brown                            |

LOCATION: 080-42-34ABBB  
 ALTITUDE: 1045 FEET (NGVD 1929)

WC-34  
 DEPTH: 43 FEET

STATION ID: 414213-0954316-01  
 DATE COMPLETED: May 12, 1962

INCREASING NATURAL GAMMA →



POTENTIAL (mV) ←



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                                    |
|--------------|---|
| 0-6          | QUATERNARY<br>Clay, dark; road bed                          |
| 6-9          | Clay, silty, dark gray                                      |
| 9-16         | Clay, silty, dark gray-green                                |
| 16-20        | Clay, silty, sandy, soft, gray-green                        |
| 20-23        | Clay, silty, blue-gray                                      |
| 23-24        | Clay, silty, sandy, very soft, gray; wood                   |
| 24-26        | Sand, fine to coarse, gray-tan                              |
| 26-37        | Sand and gravel, fine to coarse, yellow-brown               |
| 37-39        | Sand and gravel; boulders                                   |
| 39-41        | PENNSYLVANIAN<br>Shale, silty, gray-green; limestone, silty |
| 41-43        | Limestone, light-colored                                    |



Table 2. Logs of wells and test holes--Continued.

LOCATION: 080-42-34ABBB

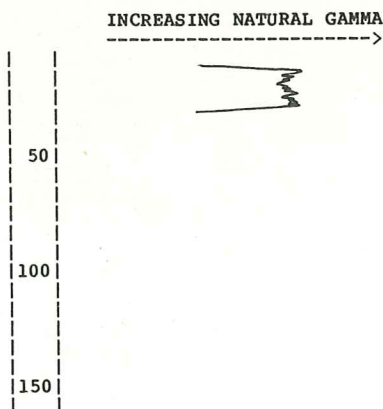
WC-191

STATION ID: 414213-0954316-02

ALTITUDE: 1045 FEET (NGVD 1929)

DEPTH: 37 FEET

DATE COMPLETED: May 12, 1983



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                      |
|--------------|---|
| 0-6          | QUATERNARY<br>Clay, dark; road bed            |
| 6-9          | Clay, silty, dark gray                        |
| 9-16         | Clay, silty, dark gray-green                  |
| 16-20        | Clay, silty, sandy, soft, gray-green          |
| 20-23        | Clay, silty, blue-gray                        |
| 23-24        | Clay, silty, sandy, very soft, gray; wood     |
| 24-26        | Sand, fine to coarse, gray-tan                |
| 26-37        | Sand and gravel, fine to coarse, yellow-brown |

Casing record: set 2 inch pipe to 37 feet, slotted from 32 to 37 feet, gravel packed

LOCATION: 080-42-34DCCB

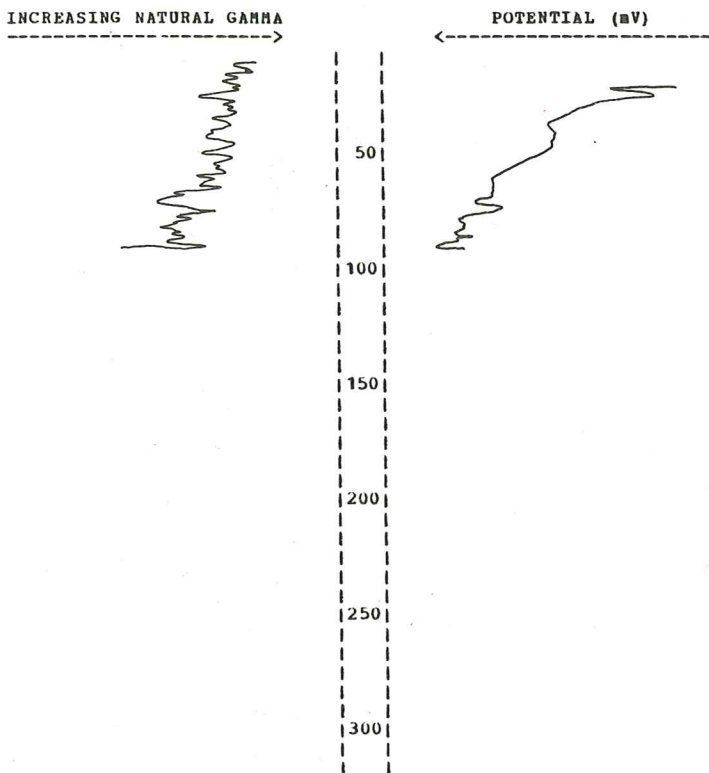
WC-36

STATION ID: 414128-0954320-01

ALTITUDE: 1095 FEET (NGVD 1929)

DEPTH: 91 FEET

DATE COMPLETED: May 17, 1982



| DEPTH (FEET) | DESCRIPTION OF MATERIALS  |
|--------------|---|
| 0-5          | QUATERNARY<br>Road bed  |
| 5-9          | Clay, silty, very dark  |
| 9-30         | Clay or loess, silty, soft, yellow-brown, brown                                       |
| 30-38        | Clay, silty, yellow-brown, blue-gray  |
| 38-47        | Clay or loess, silty, gray  |
| 47-60        | Clay, silty, soft, blue-gray  |
| 60-64        | Clay, silty, hard, dark brown   |
| 64-69        | Sand and gravel, fine, gray   |
| 69-71        | Clay, gray-green; sand layers   |
| 71-74        | Sand and gravel, fine to coarse, oxidized, yellow-brown                               |
| 74-75        | Boulders  |
| 75-85        | Sand and gravel, fine to very coarse, yellow-tan; boulders; clay layers, yellow-brown |
| 85-87        | Sand and gravel, fine to very coarse, oxidized, yellow-brown; clay                    |
| 87-88        | Clay, yellow-brown; limestone, weathered  |
| 88-90        | PENNSYLVANIAN<br>Shale, light yellow-tan; limestone                                   |
| 90-91        | Limestone, gray, tan  |

Table 2. Logs of wells and test holes--Continued.

LOCATION: 080-42-35BDC

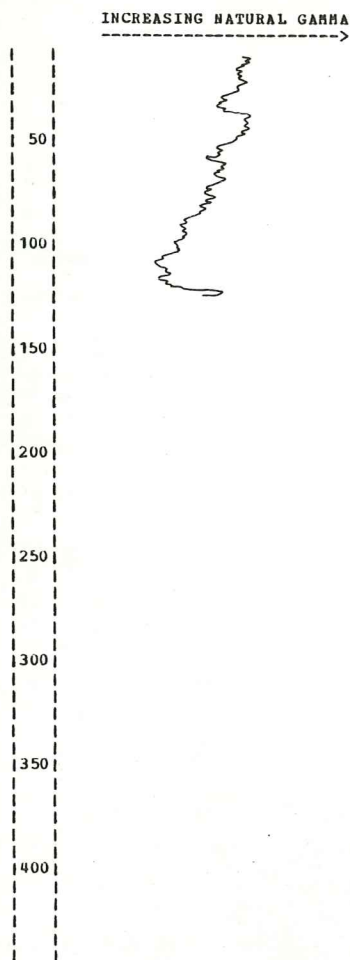
WC-193

STATION ID: 414149-0954224-01

ALTITUDE: 1140 FEET (NGVD 1929)

DEPTH: 120 FEET

DATE COMPLETED: May 31, 1983



| DEPTH (FEET) | DESCRIPTION OF MATERIALS  |
|--------------|---|
| 0-5          | QUATERNARY<br>Top soil; fill  |
| 5-10         | Loess, brown, tan; snails   |
| 10-20        | Loess, iron concretions, yellow-tan, yellow-gray                                  |
| 20-25        | Loess, yellow-tan   |
| 25-27        | Loess, oxidized, brown  |
| 27-35        | Loess, yellow-gray  |
| 35-40        | Clay or loess, silty, gray-brown to gray  |
| 40-43        | Clay, silty, tough, gray-brown  |
| 43-46        | Clay, silty, yellow-tan   |
| 46-49        | Clay, silty, yellow-brown, yellow-tan   |
| 49-54        | Till, yellow-brown; gravel layer at 52 feet                                       |
| 54-57        | Till, harder than above, yellow brown   |
| 57-70        | Till or clay, gray; sand grains   |
| 70-75        | Clay, gray; sand grains   |
| 75-85        | As above, gray grading to tan; lime nodules                                       |
| 85-90        | Clay, silty, sandy at base, softer than above, tan; lime nodules, more than above |
| 90-97        | Sand, fine to coarse, tan, dark grains  |
| 97-100       | Sand layers, very fine to medium; clay, sandy                                     |
| 100-112      | As above, very fine grading to fine to coarse; clay layers                        |
|              | PENNSYLVANIAN   |
| 112-114      | Clay or shale, sandy, oxidized, brown; sand at base                               |
| 114-120      | Shale, sandy, silty, oxidized, yellow-brown, yellow-gray                          |

Casing record: set 2 inch pipe to 118 feet, slotted from 103 to 105 feet, gravel packed

LOCATION: 080-42-35CEAC

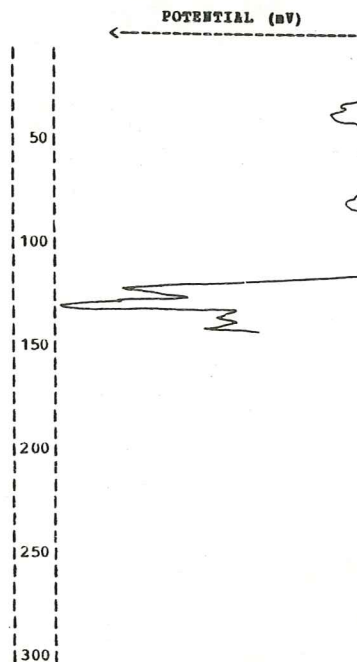
WC-50

STATION ID: 414141-0954234-01

ALTITUDE: 1165 FEET (NGVD 1929)

DEPTH: 140 FEET

DATE COMPLETED: June 2, 1982



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                            |
|--------------|---|
| 0-25         | QUATERNARY<br>Loess, brown, yellow-brown            |
| 25-50        | Loess, very soft, light yellow-brown                |
| 50-54        | Loess, very soft, yellow-brown                      |
| 54-69        | Clay, silty, brown                                  |
| 69-84        | Clay or loess, silty, soft, yellow-tan              |
| 84-95        | Clay or till, silty, sandy, yellow-tan; few pebbles |
| 95-100       | Clay, silty, soft, gray-brown                       |
| 100-108      | Clay, silty, gray-green; shell fragments            |
| 108-110      | Sand, very fine, tan grading to brown               |
| 110-113      | Sand, fine to coarse, tan, brown                    |
| 113-126      | Sand and gravel, fine to very coarse, yellow-brown  |
|              | CRETACEOUS  |
|              | DAKOTA FORMATION                                    |
| 126-133      | Shale, silty, oxidized, yellow-brown                |
| 133-137      | Shale, silty, gray; dolomite at base, brown         |
| 137-138      | Shale, silty, gray                                  |
|              | PENNSYLVANIAN                                       |
| 138-140      | Limestone, brown, tan                               |

Table 2. Logs of wells and test holes--Continued.

LOCATION: 080-44-04BBDA

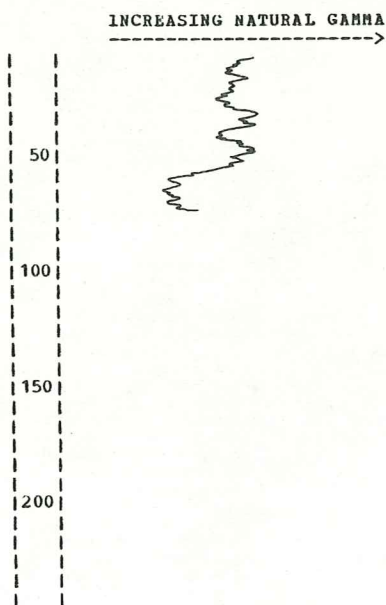
WC-184

STATION ID: 414627-0955841-01

ALTITUDE: 1039 FEET (NGVD 1929)

DEPTH: 75 FEET

DATE COMPLETED: May 24, 1983



| DEPTH (FEET) | DESCRIPTION OF MATERIALS   |
|--------------|--|
| 0-6          | QUATERNARY<br>Road bed; top soil   |
| 6-17         | Clay, silty, dark gray   |
| 17-20        | Clay, silty, gray-green  |
| 20-30        | Clay, silty, gray;<br>snail shells   |
| 30-33        | Clay, silty,<br>yellow-gray  |
| 33-38        | Clay, blue-gray; snail<br>shells   |
| 38-54        | Clay, silty,<br>gray-green, yellow-gray  |
| 54-60        | Sand and gravel (mostly<br>sand), fine to medium;<br>clay, occasional layer,<br>gray |
| 60-72        | Sand and gravel, fine<br>to coarse, gray,<br>yellow-gray at base                     |
|              | CRETACEOUS<br>DAKOTA FORMATION   |
| 72-75        | Shale, silty,<br>gray-brown  |

Casing record: set 2 inch pipe  
to 73 feet, slotted from 63 to  
71 feet, gravel packed

LOCATION: 080-44-04BBDA

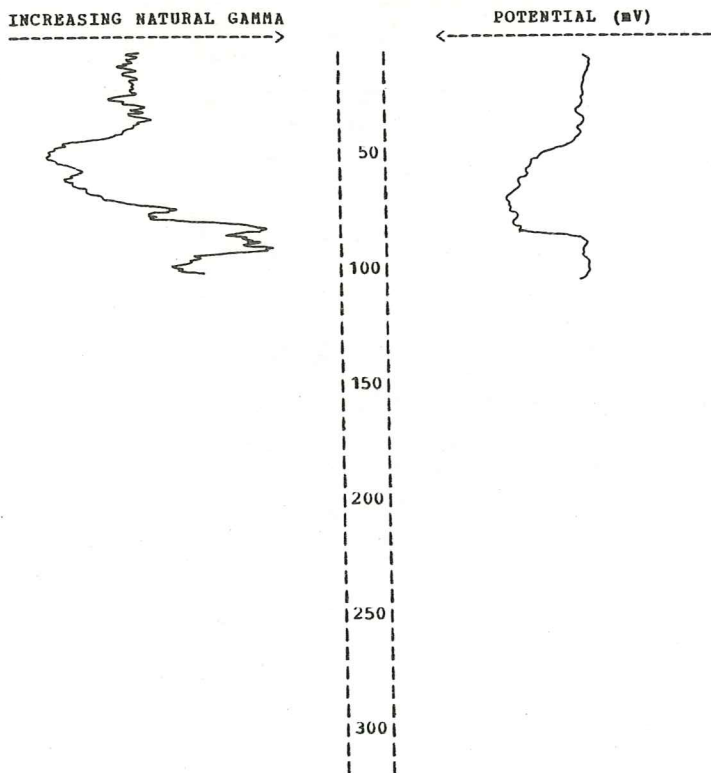
WC-185

STATION ID: 414622-0955831-01

ALTITUDE: 1037 FEET (NGVD 1929)

DEPTH: 101 FEET

DATE COMPLETED: May 24, 1983



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                         |
|--------------|--|
| 0-1          | QUATERNARY<br>Top soil                           |
| 1-10         | Clay, silty, brown                               |
| 10-13        | Clay, silty, gray-brown                          |
| 13-32        | Clay, silty, blue-gray;<br>snails; wood at base  |
| 32-42        | Clay, silty,<br>gray-green, yellow-<br>gray      |
| 42-47        | Sand and gravel, fine,<br>yellow-brown           |
| 47-60        | Sand and gravel, fine<br>to coarse, gray at base |
| 60-70        | As above, gray                                   |
|              | CRETACEOUS<br>DAKOTA FORMATION                   |
| 70-77        | Shale, silty, some<br>sandy, gray-brown, tan     |
| 77-83        | Shale, silty, hard,<br>gray                      |
|              | PENNSYLVANIAN                                    |
| 83-88        | Shale, silty,<br>reddish-brown, gray-<br>brown   |
| 88-91        | Shale, silty, gray,<br>yellow-brown              |
| 91-93        | Shale, reddish-brown,<br>gray, yellow            |
| 93-95        | Shale, reddish-brown,<br>gray-green              |
| 95-97        | Shale, gray-green                                |
| 97-98        | Shale, reddish-brown                             |
| 98-100       | Shale, reddish-brown,<br>gray-green              |
| 100-101      | Limestone, shaly,<br>gray-tan                    |

Table 2. Logs of wells and test holes--Continued.

LOCATION: 080-44-09ABBB

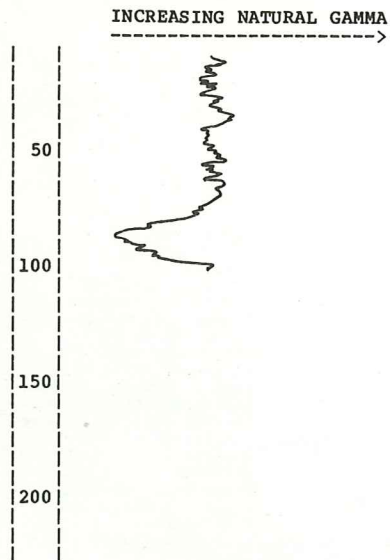
WC-183

STATION ID: 414538-0955819-01

ALTITUDE: 1070 FEET (NGVD 1929)

DEPTH: 96 FEET

DATE COMPLETED: May 23, 1983



| DEPTH (FEET) | DESCRIPTION OF MATERIALS   |
|--------------|--|
| 0-13         | QUATERNARY<br>Clay, silty, yellow-tan, yellow-gray; loess            |
| 13-30        | Loess, yellow-brown grading to gray                                  |
| 30-40        | Loess, oxidized, yellow-gray, brown streaks                          |
| 40-50        | Clay, silty, gray; shells; loess                                     |
| 50-55        | Clay, silty, brown; loess  |
| 55-60        | Clay, silty, gray; loess   |
| 60-70        | Clay, silty, oxidized layers, gray, brown                            |
| 70-76        | Clay, silty, gray  |
| 76-93        | Sand, fine, grading to sand and gravel (mostly sand), fine to medium |
| 93-96        | Till, blue-gray  |

Casing record: set 2 inch pipe to 96 feet, slotted from 89 to 95 feet, gravel packed

Table 2. Logs of wells and test holes--Continued.

LOCATION: 081-31-22CCCC

WC-105

STATION ID: 414821-0942713-01

ALTITUDE: 1190 FEET (NGVD 1929)

DEPTH: 153 FEET

DATE COMPLETED: August 11, 1982

| DEPTH (FEET) | DESCRIPTION OF MATERIALS  |
|--------------|---|
|              | QUATERNARY  |
| 0-2          | Top soil  |
| 2-5          | Till, yellow-tan  |
| 5-15         | Till, light yellow-brown, gray  |
| 15-17        | Sand and gravel, fine to coarse; till   |
| 17-19        | Till, olive   |
| 19-23        | Clay, silty, blue-gray grading to olive   |
| 23-27        | Clay, silty, blue-gray  |
| 27-29        | Clay or till, hard, blue-gray   |
| 29-31        | Till, hard, light yellow-brown  |
| 31-33        | Till, dark yellow-brown   |
| 33-34        | Boulder, weathered  |
| 34-34        | Till or clay, dark brown, yellow-brown  |
|              | CRETACEOUS  |
|              | DAKOTA FORMATION  |
| 34-35        | Sandstone, fine to coarse, yellow-brown; shale                                      |
| 35-36        | Sandstone, iron cemented, oxidized, brown; gravel                                   |
| 36-38        | Sandstone, fine to very coarse, oxidized, brown                                     |
| 38-41        | Sandstone, very coarse (gravel), tan, yellow-brown                                  |
| 41-45        | Sandstone, fine to coarse, brown, yellow-brown; gravel at base; shale, thin streaks |
| 45-50        | Sandstone, fine to coarse, tan, yellow-brown; shale trace                           |
| 50-57        | Sandstone, fine to very coarse (gravel at base), yellow-brown; shale, thin layer    |
| 57-58        | Shale, very sandy, light gray   |
| 58-61        | Sandstone, fine to coarse, brown, yellow-brown                                      |
| 61-61        | Conglomerate, ironstone   |
| 61-62        | Shale, silty, yellow-brown  |
| 62-64        | Sandstone, fine to coarse, brown, yellow-brown                                      |
| 64-65        | Conglomerate, ironstone; sandstone, iron cemented                                   |
| 65-80        | Sandstone, fine to coarse, oxidized, brown, yellow-brown                            |
| 80-85        | As above, iron cemented   |
| 85-88        | Shale, green-brown; sandstone layer; ironstone streak at top                        |
| 88-90        | Sandstone, creviced, brown  |
| 90-105       | Sandstone, fine to coarse, yellow-brown   |
| 105-110      | Sandstone, oxidized, brown, yellow-brown; shale layer                               |
| 110-115      | Sandstone, fine to coarse, iron cemented, oxidized, brown                           |
| 115-120      | Sandstone, fine to coarse, hard, iron cemented, oxidized, brown; shale layer        |
| 120-128      | Sandstone, fine to coarse (gravel), yellow-brown to brown; shale at base            |
| 128-137      | Sandstone, fine to coarse, yellow-brown, tan; shale trace                           |
| 137-145      | Sandstone, fine to very coarse (gravel), iron cemented; shale                       |
| 145-149      | Sandstone, very coarse (gravel), tan, yellow-brown                                  |
|              | PENNSYLVANIAN   |
| 149-153      | Shale, silty, blue-gray, light gray   |

INCREASING NATURAL GAMMA  
----->



Casing record: set 2 inch pipe to 153 feet, slotted from 143 to 153 feet, gravel packed

Table 2. Logs of wells and test holes--Continued.

LOCATION: 081-31-28AAAA      WC-153      STATION ID: 414820-0942718-01  
 ALTITUDE: 1193 FEET (NGVD 1929)      DEPTH: 170 FEET      DATE COMPLETED: October 12, 1982

| DEPTH (FEET)     | DESCRIPTION OF MATERIALS          |
|------------------|-----------------------------------|
| QUATERNARY       |                                   |
| 0-5              | Top soil; clay, gray              |
| 5-9              | Till, yellow-gray to yellow-brown |
| 9-13             | Till, yellow-brown                |
| 13-43            | Till, blue-gray                   |
| CRETACEOUS       |                                   |
| DAKOTA FORMATION |                                   |
| 43-46            | Sandstone                         |
| 46-62            | Cored - no drillers description   |
| 62-82            | Sandstone; gravel                 |
| 82-170           | Cored - no drillers description   |

WC-153 is located near WC-105. For a detailed description of cored intervals see WC-105. Cored material from 0 to 170 feet.

LOCATION: 081-31-32BCCB      WC-108      STATION ID: 414707-0942933-01  
 ALTITUDE: 1177 FEET (NGVD 1929)      DEPTH: 141 FEET      DATE COMPLETED: August 16, 1983

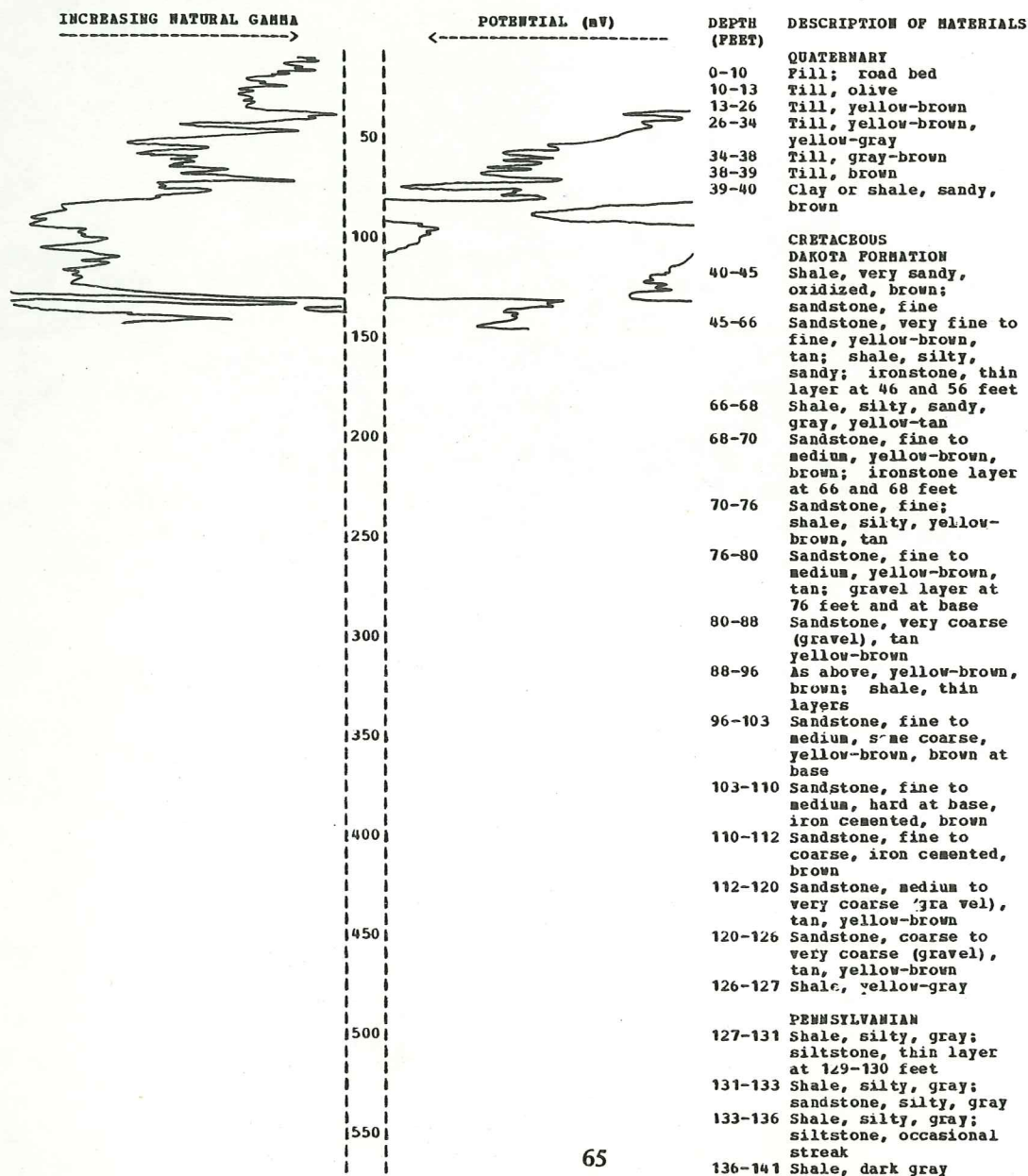
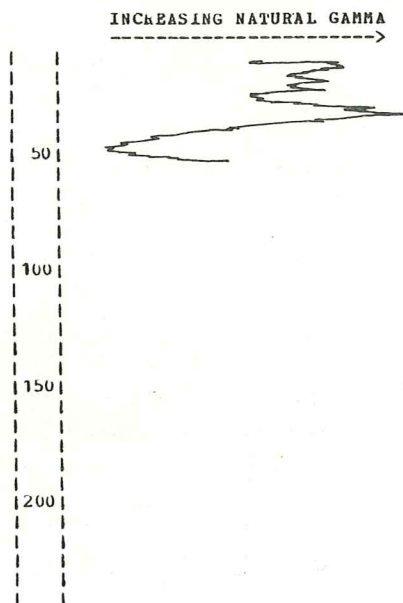


Table 2. Logs of wells and test holes--Continued.

LOCATION: 081-31-32CBCC WC-106  
 ALTITUDE: 1090 FEET (NGVD 1929) DEPTH: 52 FEET

STATION ID: 414652-0942933-01  
 DATE COMPLETED: August 12, 1982

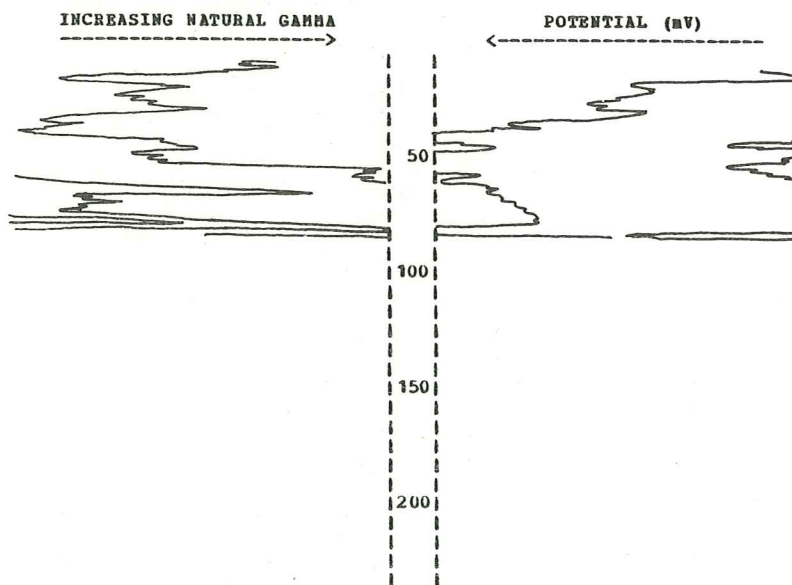


| DEPTH (FEET) | DESCRIPTION OF MATERIALS                                   |
|--------------|--|
| 0-3          | QUATERNARY<br>Sand and gravel                              |
| 3-20         | Clay or reworked till, sandy, gravelly, yellow-tan         |
| 20-24        | Sand and gravel, fine, tan                                 |
| 24-26        | Sand and gravel, fine to coarse, yellow-brown; clay mixed  |
| 26-29        | Clay, silty, soft, yellow-tan                              |
| 29-36        | Clay, silty, soft, blue-gray                               |
| 36-40        | Sand, fine to coarse, brown, tan                           |
| 40-49        | Sand, fine to coarse, tan                                  |
| 49-52        | PENNSYLVANIAN<br>Shale, silty, gray-green; siltstone trace |

Casing record: set 2 inch pipe to 51 feet, slotted from 40 to 51 feet, gravel packed

LOCATION: 081-31-32CCCB WC-107  
 ALTITUDE: 1075 FEET (NGVD 1929) DEPTH: 81 FEET

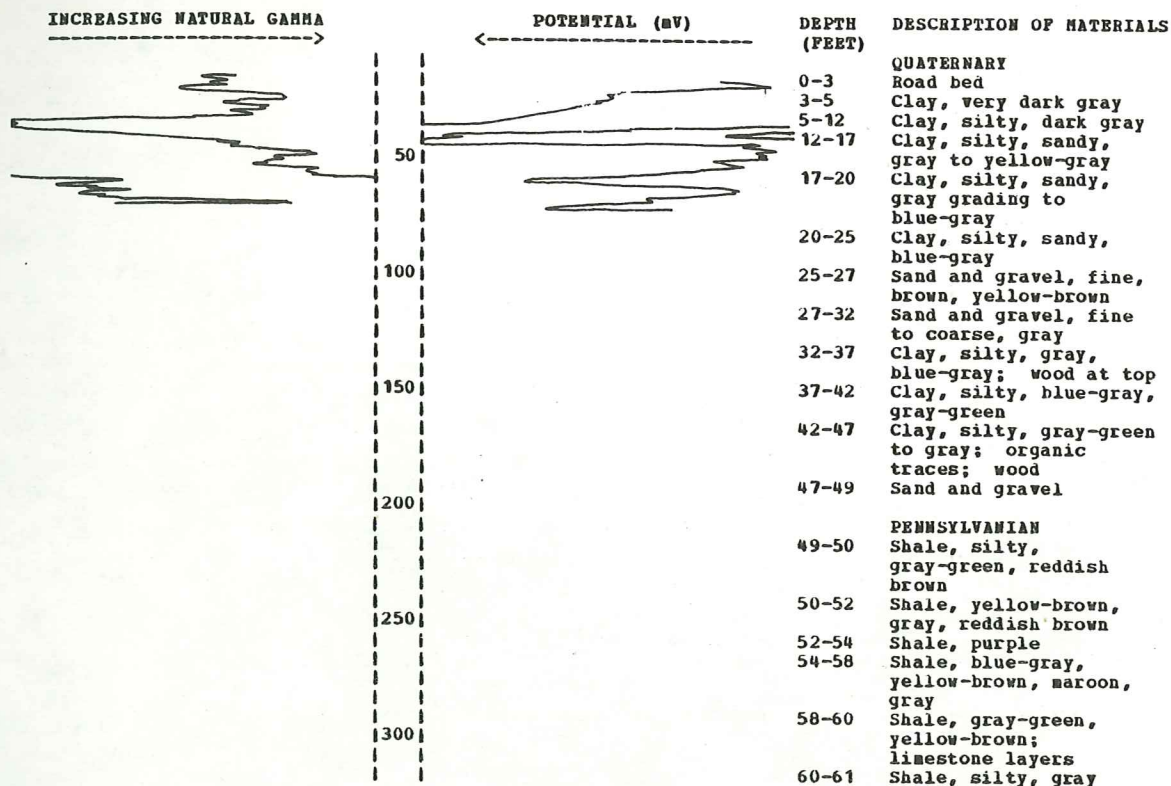
STATION ID: 414642-0942933-01  
 DATE COMPLETED: August 13, 1982



| DEPTH (FEET) | DESCRIPTION OF MATERIALS  |
|--------------|---|
| 0-15         | QUATERNARY<br>Fill; road bed  |
| 15-25        | Clay, sandy, very dark gray   |
| 25-29        | Clay, silty, dark gray  |
| 29-31        | Clay, silty, sandy, brown   |
| 31-34        | Sand and gravel, fine to medium, oxidized, brown                      |
| 34-40        | Sand and gravel, fine to coarse, tan, yellow-brown                    |
| 40-49        | Sand, fine to coarse, yellow-brown                                    |
| 49-52        | PENNSYLVANIAN<br>Siltstone, shaly, sandy, gray-green, light blue-gray |
| 52-60        | Shale, silty, light blue-gray   |
| 60-76        | Shale, dark gray  |
| 76-78        | Shale, hard like slate, very dark                                     |
| 78-79        | Shale, fissile, black; coal   |
| 79-81        | Shale, gray   |

Table 2. Logs of wells and test holes--Continued.

LOCATION: 081-32-20CDDC WC-100 STATION ID: 414820-0943607-01  
 ALTITUDE: 1110 FEET (NGVD 1929) DEPTH: 61 FEET DATE COMPLETED: July 29, 1982



LOCATION: 081-32-21CBBC WC-102 STATION ID: 414839-0943523-01  
 ALTITUDE: 1195 FEET (NGVD 1929) DEPTH: 56 FEET DATE COMPLETED: August 9, 1982

| DEPTH (FEET) | DESCRIPTION OF MATERIALS   |
|--------------|--|
| 0-3          | QUATERNARY<br>Road bed   |
| 3-13         | Clay or loess, silty, yellow-brown                                       |
| 13-15        | Clay or till, sandy, brown to yellow-brown                               |
| 15-17        | Clay or till, sandy, oxidized, brown to reddish-brown                    |
|              | CRETACEOUS   |
|              | DAKOTA FORMATION   |
| 17-18        | Shale, very sandy, hard, gray; gravel                                    |
| 18-18        | Ironstone, brown   |
| 18-23        | Sandstone, fine to medium, iron, cemented, oxidized, brown; shale, sandy |
| 23-23        | Conglomerate, ironstone  |
| 23-27        | Sandstone, fine to coarse, iron cemented, oxidized, brown                |
| 27-30        | As above; gravel; shale  |
| 30-35        | Sandstone, fine to coarse, creviced, oxidized, brown                     |
| 35-40        | Sandstone, fine to coarse, yellow-brown                                  |
| 40-43        | Sandstone, coarse (gravel), shaly, yellow-tan                            |
| 43-43        | Conglomerate, ironstone  |
| 43-48        | Sandstone, fine to coarse, iron cemented                                 |
| 48-50        | Shale, yellow-brown  |
| 50-53        | Shale, reddish-brown, yellow-brown                                       |
| 53-56        | Shale, silty, gray   |



Table 2. Logs of wells and test holes--Continued.

LOCATION: 081-32-21CCCC WC-101 STATION ID: 414821-0943523-01  
 ALTITUDE: 1145 FEET (NGVD 1929) DEPTH: 81 FEET DATE COMPLETED: August 9, 1982

| DEPTH (FEET)  | DESCRIPTION OF MATERIALS   |
|---------------|--|
| QUATERNARY    |  |
| 0-3           | Road bed   |
| 3-5           | Clay, sandy, dark brown  |
| 5-35          | Sand and gravel, fine to medium, some coarse, mostly sand, yellow-tan; lignite trace |
| 35-48         | Sand and gravel, iron cemented, oxidized, yellow-brown, brown                        |
| 48-54         | Clay, silty, sandy, gray; wood; lignite; sand layers                                 |
| 54-60         | Clay, silty, gray, blue-gray; wood; lignite trace                                    |
| 60-63         | Clay, silty, gray, yellow-gray   |
| PENNSYLVANIAN |  |
| 63-68         | Shale, silty, gray, yellow-gray; limestone layer at 64 feet                          |
| 68-74         | Shale, silty, gray to blue-gray  |
| 74-75         | Shale, light gray  |
| 75-76         | Limestone, gray, gray-green  |
| 76-78         | Limestone, shaly, yellow-brown, gray-brown   |
| 78-81         | Shale, gray-green, yellow-brown  |

LOCATION: 081-32-29ABAA WC-154 STATION ID: 414819-0943542-02  
 ALTITUDE: 1153 FEET (NGVD 1929) DEPTH: 51 FEET DATE COMPLETED: October 13, 1982

| DEPTH (FEET)     | DESCRIPTION OF MATERIALS  |
|------------------|---|
| QUATERNARY       |   |
| 0-5              | Road bed; top soil  |
| 5-15             | Clay, silty, soft, yellow-brown, brown  |
| 15-26            | Sand and gravel   |
| 26-28            | Clay, silty, soft, yellow-brown, tan  |
| 28-30            | Clay, silty, soft, blue-gray  |
| 30-32            | Clay or shale, sandy, yellow-brown  |
| CRETACEOUS       |   |
| DAKOTA FORMATION |   |
| 32-37            | Sandstone at top, fine to coarse (gravel), oxidized, brown; shale at base, sandy, reddish-brown |
| PENNSYLVANIAN    |   |
| 37-39            | Shale, silty, yellow-brown, yellow-gray   |
| 39-46            | Shale, silty, blue-gray   |
| 46-47            | As above  |
| 47-48            | Shale, black; coal  |
| 48-51            | Shale, silty, gray  |

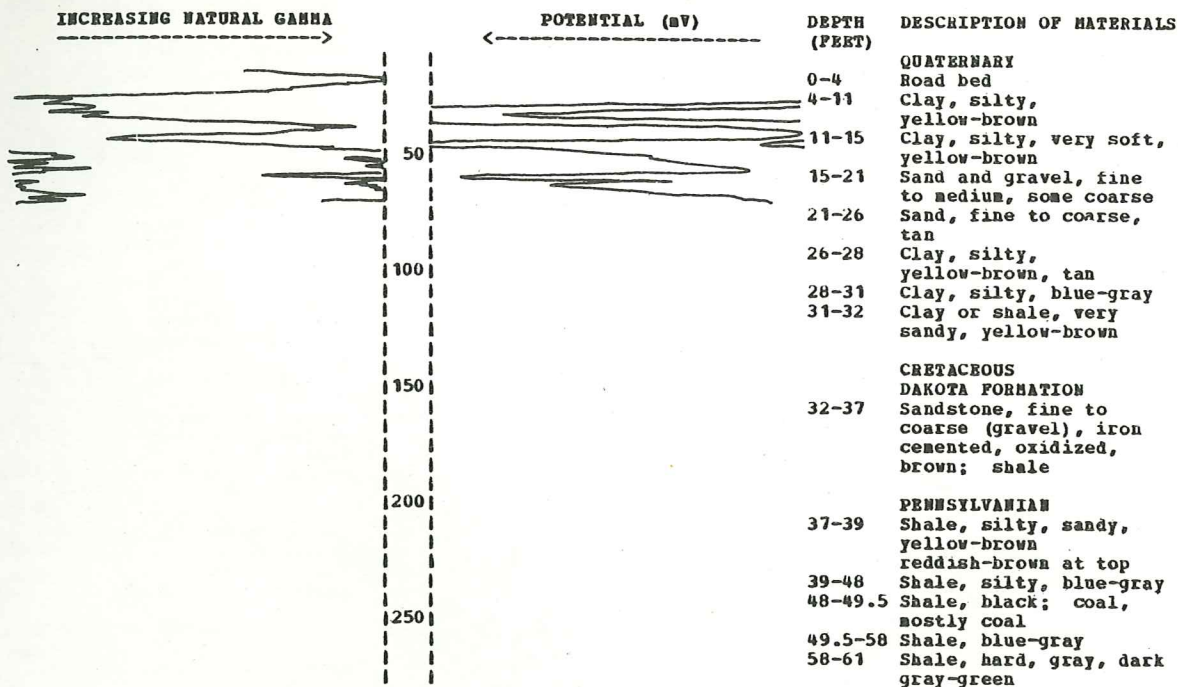
WC-154 is located near WC-104. For a detailed description of cored intervals, 46 to 51 feet, see WC-104.

Table 2. Logs of wells and test holes--Continued.

LOCATION: 081-32-29ABAA  
 ALTITUDE: 1153 FEET (NGVD 1929)

WC-104  
 DEPTH: 61 FEET

STATION ID: 414820-0943541-01  
 DATE COMPLETED: August 10, 1982



LOCATION: 081-32-29BABA  
 ALTITUDE: 1115 FEET (NGVD 1929)

WC-99  
 DEPTH: 21 FEET

STATION ID: 414817-0943612-01  
 DATE COMPLETED: July 29, 1982

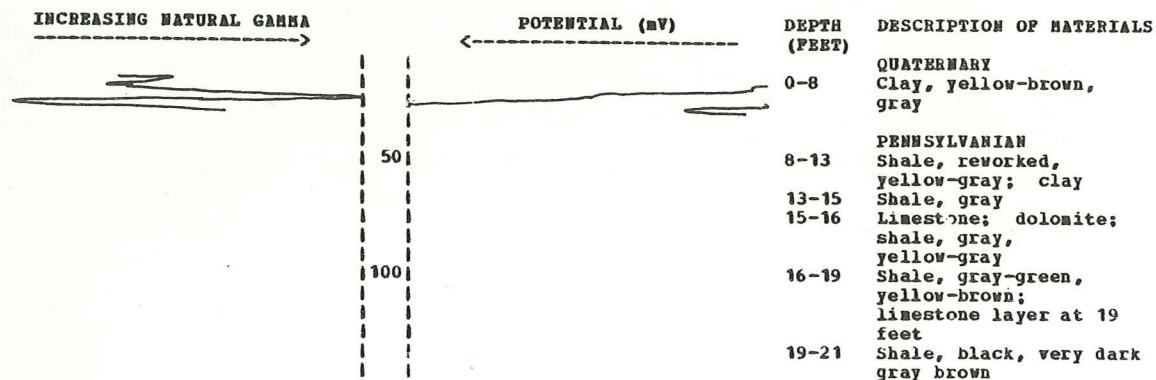


Table 2. Logs of wells and test holes--Continued.

LOCATION: 081-32-29CBBC

WC-103

STATION ID: 414748-0943632-U1

ALTITUDE: 1230 FEET (MGVD 1929)

DEPTH: 141 FEET

DATE COMPLETED: August 10, 1982

| INCREASING NATURAL GAMMA<br>←-----→ | POTENTIAL (mV)<br>-----> | DEPTH<br>(FEET) | DESCRIPTION OF MATERIALS   |
|-------------------------------------|--------------------------|-----------------|--|
|                                     |                          | 0-4             | QUATERNARY<br>Road bed   |
|                                     |                          | 4-8             | Clay, silty, tan   |
|                                     |                          | 8-9             | Clay, silty, brown   |
|                                     |                          | 9-11            | Clay, sandy, brown   |
|                                     |                          |                 | CRETACEOUS   |
|                                     |                          |                 | DAKOTA FORMATION   |
|                                     |                          | 11-15           | Sandstone, fine to medium, some coarse, well cemented, brown   |
|                                     |                          | 15-20           | Sandstone, well cemented, light brown, tan   |
|                                     |                          | 20-30           | Sandstone, fine to medium, yellow-brown, tan   |
|                                     |                          | 30-40           | As above, fine to coarse   |
|                                     |                          | 40-43           | Sandstone, very coarse, yellow-brown, tan; shale   |
|                                     |                          | 43-48           | Sandstone, fine to coarse, tan   |
|                                     |                          | 48-52           | Sandstone, fine to very coarse, brown, yellow-brown  |
|                                     |                          | 52-53           | Shale, light gray  |
|                                     |                          | 53-56           | Sandstone, coarse, brown   |
|                                     |                          | 56-60           | Sandstone, very coarse (gravel), oxidized, brown; ironstone, thin layers                               |
|                                     |                          | 60-63           | Sandstone, very coarse, iron cemented; conglomerate, ironstone   |
|                                     |                          | 63-65           | Sandstone, fine to very coarse, brown, yellow-brown; shale, ironstone concretion layers, reddish brown |
|                                     |                          | 65-66           | Conglomerate, ironstone, hard  |
|                                     |                          | 66-72           | Sandstone, fine to very coarse, shaly, iron cemented, oxidized, brown, yellow-brown                    |
|                                     |                          |                 | PENNSYLVANIAN  |
|                                     |                          | 72-72           | Shale, yellow-brown  |
|                                     |                          | 72-75           | Shale, maroon  |
|                                     |                          | 75-78           | Shale, light yellow-gray, maroon   |
|                                     |                          | 78-101          | Shale, gray, maroon, light gray, reddish-brown   |
|                                     |                          | 101-108         | Shale, sandy, light gray   |
|                                     |                          | 108-110         | Shale, sandy, reddish-brown  |
|                                     |                          | 110-113         | Shale, sandy, reddish-brown, light gray  |
|                                     |                          | 113-115         | Shale, sandy, light gray   |
|                                     |                          | 115-119         | Shale, very sandy, light gray-green; sandstone, fine layers, darker at base                            |
|                                     |                          | 119-129         | Shale, dark gray-green grading to gray-green   |
|                                     |                          | 129-131         | Limestone, dolomitic, gray-green, brown; shale at base   |
|                                     |                          | 131-134         | Shale, gray-green, yellow-brown  |
|                                     |                          | 134-135         | Limestone, brown   |
|                                     |                          | 135-136         | Shale, black   |
|                                     |                          | 136-138         | Shale, gray, reddish-brown   |
|                                     |                          | 138-139         | Shale, reddish-brown   |
|                                     |                          | 139-141         | Shale, reddish-brown, green-gray   |

Table 2. Logs of wells and test holes--Continued.

LOCATION: 081-33-23DAAA

WC-97

STATION ID: 474844-0943851-01

ALTITUDE: 1210 FEET (NGVD 1929)

DEPTH: 161 FEET

DATE COMPLETED: July 28, 1982

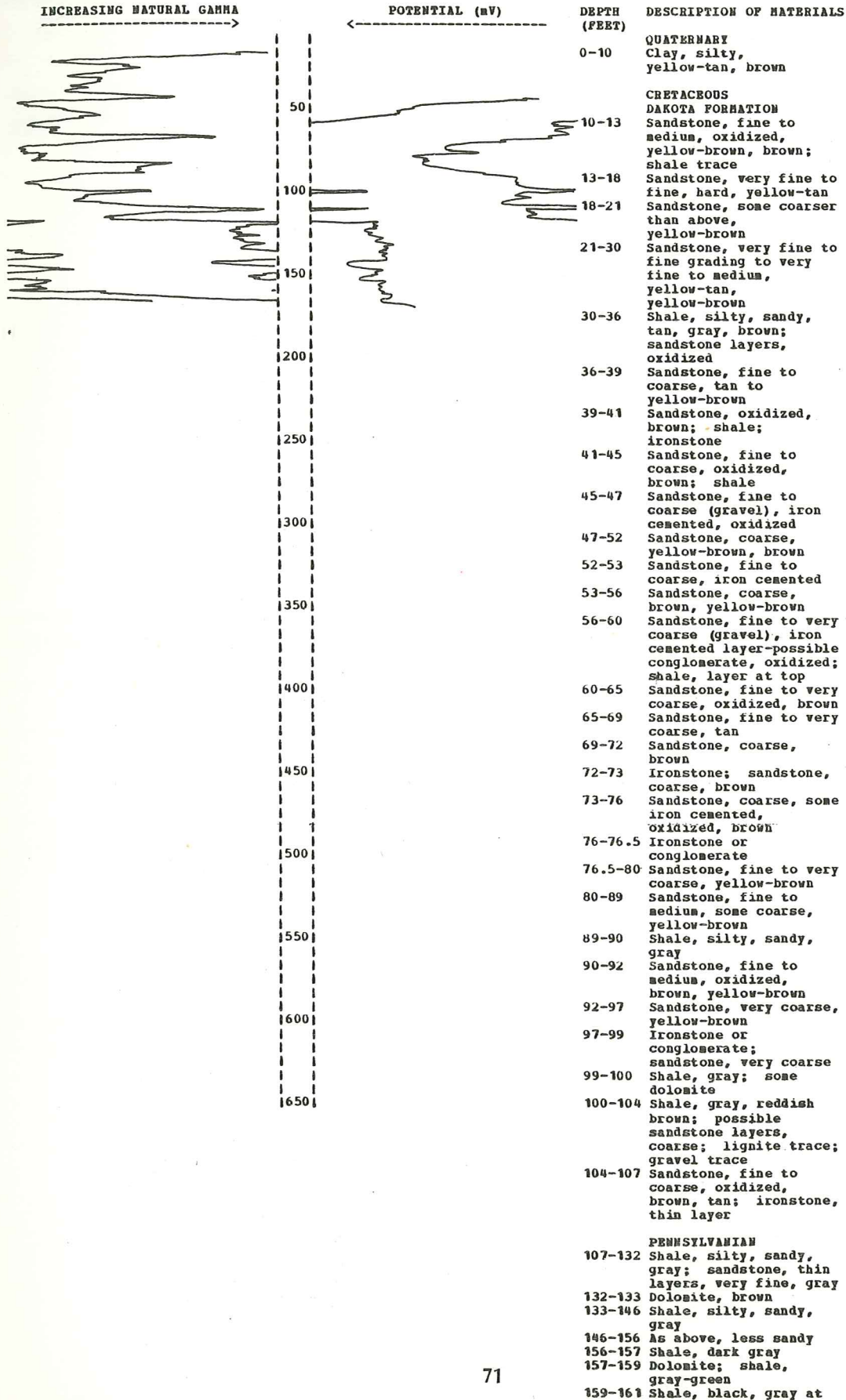


Table 2. Logs of wells and test holes--Continued.

LOCATION: 081-33-24BBCB

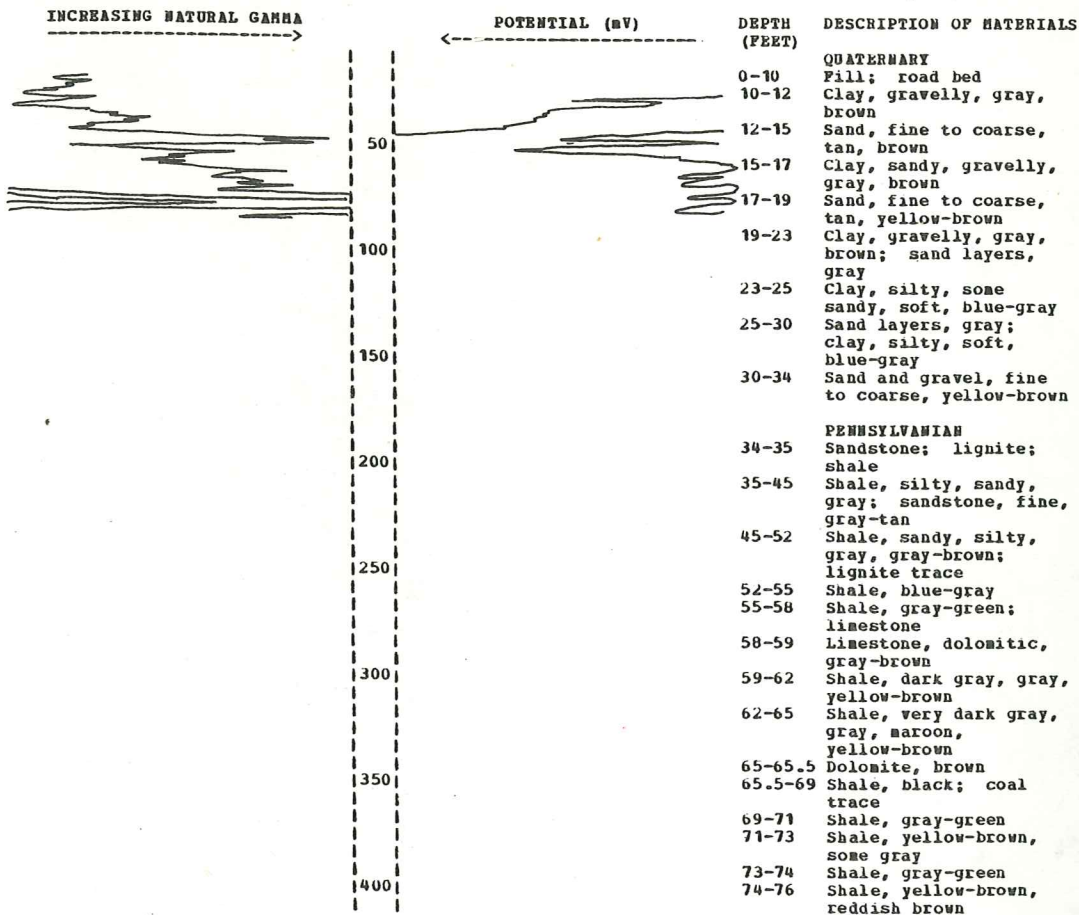
WC-98

STATION ID: 414902-0943848-01

ALTITUDE: 1120 FEET (NGVD 1929)

DEPTH: 76 FEET

DATE COMPLETED: July 28, 1982



LOCATION: 081-33-26CCDD

WC-96

STATION ID: 414728-0943943-01

ALTITUDE: 1160 FEET (NGVD 1929)

DEPTH: 61 FEET

DATE COMPLETED: July 27, 1982

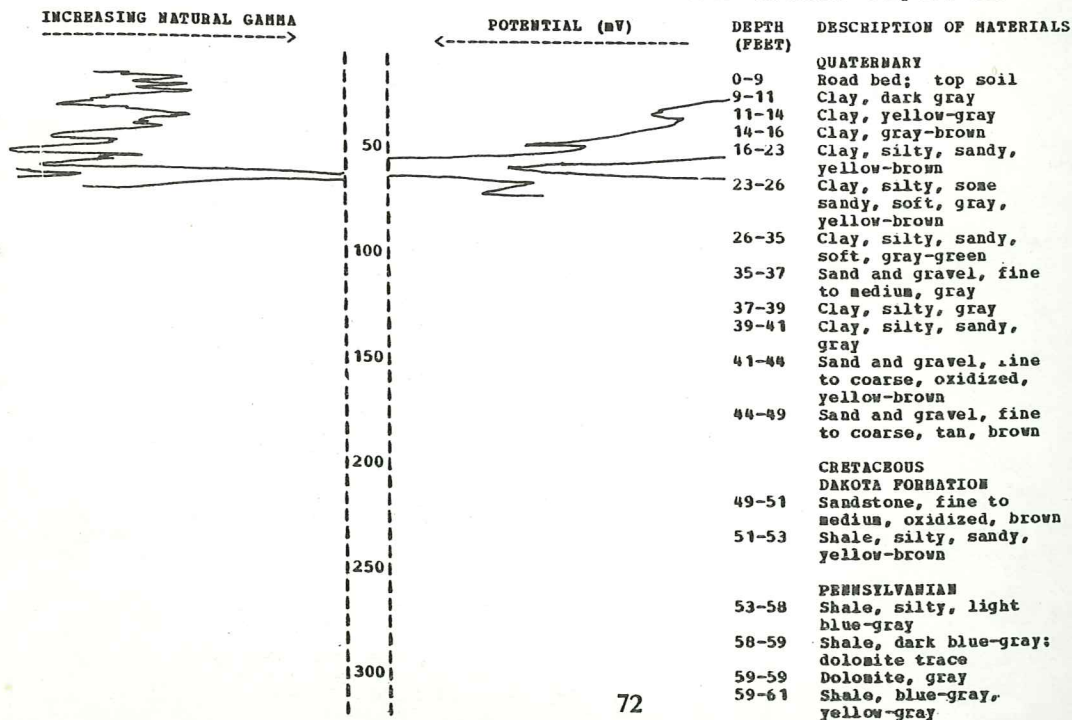


Table 2. Logs of wells and test holes--Continued.

LOCATION: 081-33-26DCDC

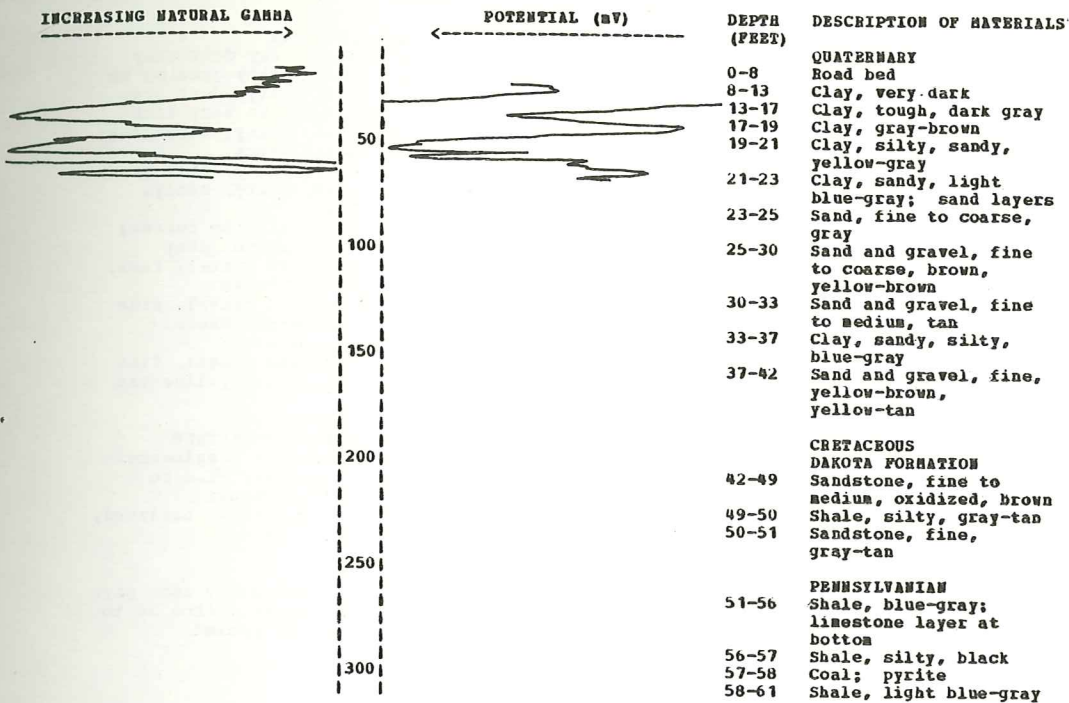
WC-95

STATION ID: 414725-0943913-01

ALTITUDE: 1150 FEET (NGVD 1929)

DEPTH: 61 FEET

DATE COMPLETED: July 27, 1982



LOCATION: 081-33-26DDDD

WC-93

STATION ID: 414728-0943853-01

ALTITUDE: 1205 FEET (NGVD 1929)

DEPTH: 80 FEET

DATE COMPLETED: July 23, 1982

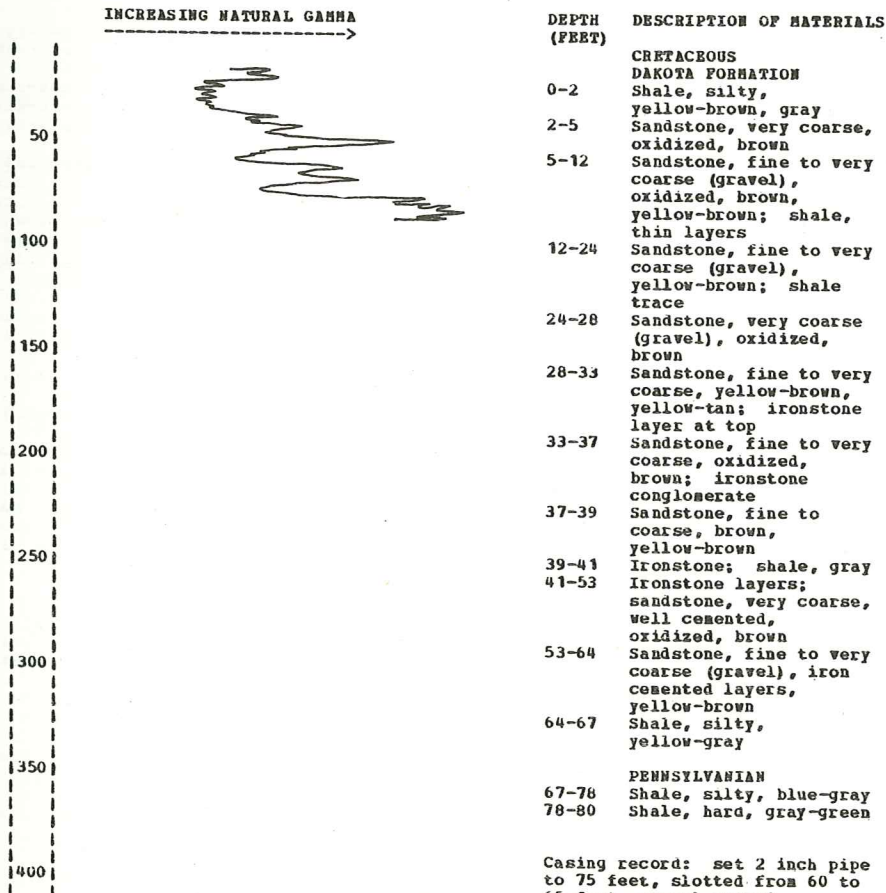


Table 2. Logs of wells and test holes--Continued.

LOCATION: 081-33-35ABBC

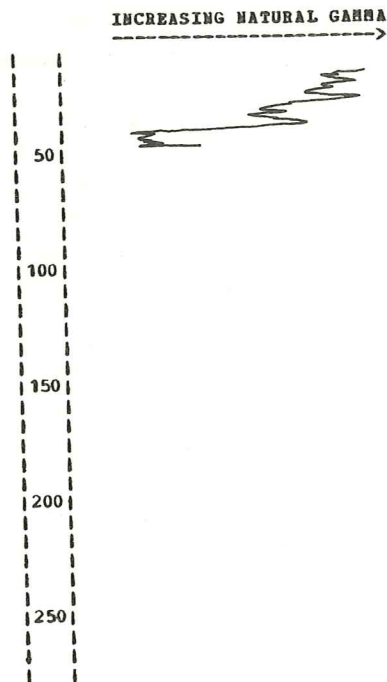
WC-94

STATION ID: 414728-0943924-01

ALTITUDE: 1150 FEET (NGVD 1929)

DEPTH: 41 FEET

DATE COMPLETED: July 26, 1982



| DEPTH (FEET)     | DESCRIPTION OF MATERIALS  |
|------------------|---|
| QUATERNARY       |   |
| 0-8              | Road bed  |
| 8-15             | Clay, very dark gray  |
| 15-22            | Clay, silty grading to very silty, dark gray grading to very dark |
| 22-24            | Clay, silty, blue-gray; sand layers                               |
| 24-25            | Clay, sandy, gray-green   |
| 25-27            | Clay, silty, sandy, gray  |
| 27-28            | Sand, fine to coarse; clay layers, gray                           |
| 28-30            | Sand and gravel, fine, yellow-brown                               |
| 30-35            | Sand and gravel, fine to coarse, brown, yellow-brown              |
| 35-38            | Sand and gravel, fine to coarse, yellow-tan                       |
| CRETACEOUS       |   |
| DAKOTA FORMATION |   |
| 38-39            | Ironstone conglomerate  |
| 39-41            | Sandstone, fine to coarse, brown                                  |
| 41-41            | Shale, sandy, oxidized, gray, brown                               |

Casing record: set 2 inch pipe to 35 feet, slotted from 26 to 35 feet, gravel packed

LOCATION: 081-36-12CBCA

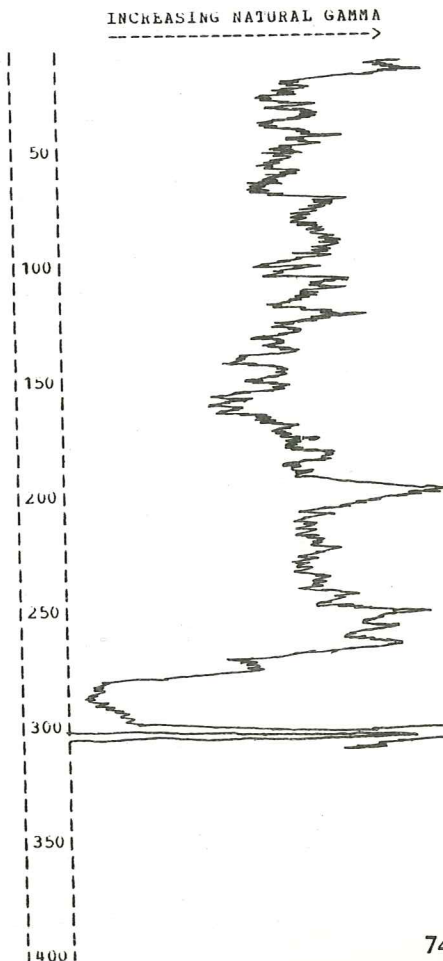
WC-18

STATION ID: 415023-0945938-01

ALTITUDE: 1393 FEET (NGVD 1929)

DEPTH: 315 FEET

DATE COMPLETED: August 18, 1981



| DEPTH (FEET)     | DESCRIPTION OF MATERIALS  |
|------------------|---|
| QUATERNARY       |   |
| 0-5              | Topsoil; clay, tan  |
| 5-10             | Clay, tan, brown  |
| 10-13            | Till, gray  |
| 13-30            | Till, yellow-brown  |
| 30-54            | Till, yellow-gray   |
| 54-61            | Till, yellow-gray, blue-gray  |
| 61-85            | Till, blue-gray   |
| 85-88            | Clay, silty, blue-gray  |
| 88-90            | Peat, silty, organic, oxidized, brown                               |
| 90-121           | Till, blue-gray   |
| 121-161          | Till, tough, light yellow-brown; occasional boulders                |
| 161-179          | Till, yellow-brown  |
| 179-180          | Sand and gravel, fine to coarse                                     |
| 180-190          | Till, gravelly, yellow-brown  |
| 190-222          | Till, blue-gray; boulder at 115 feet                                |
| 222-227          | Sand, fine to coarse  |
| 227-240          | Clay or till, silty, sandy, hard, gray                              |
| 240-265          | Clay, silty, sandy, gray, gray-green; sand layers, dark sand grains |
| CRETACEOUS       |   |
| DAKOTA FORMATION |   |
| 265-295          | Sandstone, coarse, tan; shale, occasional streak                    |
| PENNSYLVANIAN    |   |
| 295-297          | Shale, gray-green   |
| 297-300          | Shale, dark gray, black; coal, thin layers                          |
| 300-304          | Shale, dark gray grading to gray-green                              |
| 304-315          | Shale, light gray, gray-green; limestone layers                     |

Table 2. Logs of wells and test holes--Continued.

LOCATION: 081-38-21ADAD

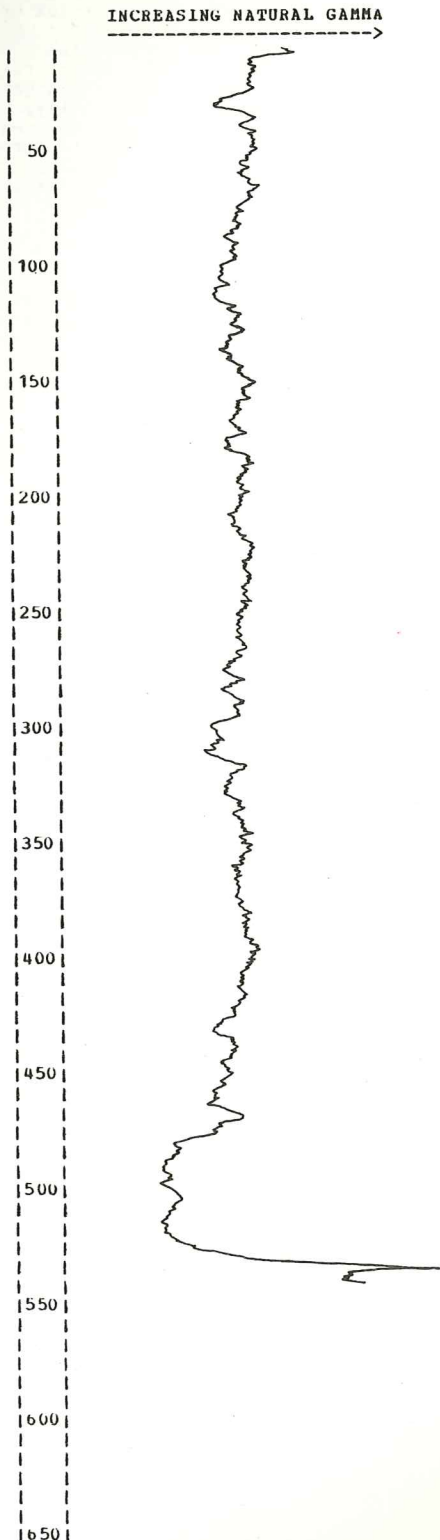
WC-222

STATION ID: 414856-0951601-01

ALTITUDE: 1370 FEET (NGVD 1929)

DEPTH: 535 FEET

DATE COMPLETED: June 28, 1983



| DEPTH (FEET) | DESCRIPTION OF MATERIALS   |
|--------------|--|
|              | QUATERNARY   |
| 0-5          | Top soil; fill   |
| 5-10         | Clay, silty, dark brown, gray  |
| 10-20        | Loess, yellow-tan, yellow-brown  |
| 20-28        | Clay, silty, oxidized layer, brown, yellow-gray                            |
| 28-29        | Clay, silty, sandy, yellow-brown   |
| 29-33        | Sand and gravel, fine to coarse, yellow-brown                              |
| 33-34        | Till, olive  |
| 34-60        | Till, blue-gray  |
| 60-61        | Sand and gravel, fine, gray  |
| 61-68        | Till, blue-gray  |
| 68-70        | Sand and gravel, fine, gray  |
| 70-86        | Till, some sandy and gravelly, blue-gray; gravel, layer at bottom          |
| 86-91        | Clay, silty, brown; wood   |
| 91-96        | Clay, silty, sandy, light blue-gray; till (possible)                       |
| 96-98        | Till, light blue-gray, yellow-gray   |
| 98-100       | Till, olive grading to yellow-brown  |
| 100-110      | Till, yellow-brown   |
| 110-112      | Sand and gravel, fine to medium, yellow-brown                              |
| 112-141      | Till, sandy, gravelly, yellow-brown  |
| 141-145      | Till, sandy, gravelly, yellow-gray grading to blue-gray                    |
| 145-174      | Till, sandy, gravelly, blue-gray; boulder, occasional                      |
| 174-177      | Sand and gravel, fine to medium; till, mixed                               |
| 177-201      | Till, sandy, gravelly, blue-gray; boulder, occasional                      |
| 201-390      | Till, sandy, gravelly, blue-gray; gravel, occasional layer; boulder        |
| 390-426      | Till, sandy, gravelly, blue-gray; sand layers, cemented                    |
| 426-432      | Sand, fine to coarse, cemented, tan, brown                                 |
| 432-461      | Till, gravelly, sandy, blue-gray; sand at base                             |
| 461-464      | Sand, cemented; till, mixed  |
| 464-475      | Till, sandy, gravelly, blue-gray; sand, occasional layer, cemented         |
| 475-530      | Sand, fine to coarse, grading to very coarse at bottom, cemented, gray-tan |
|              | PENNSYLVANIAN  |
| 530-532      | Shale, black; coal   |
| 532-535      | Shale, silty, gray-tan, gray   |

Casing record: set 2 inch pipe

to 535 feet, slotted from 525 to 535 feet, gravel packed



Table 2. Logs of wells and test holes--Continued.

LOCATION: 081-41-03ACCC

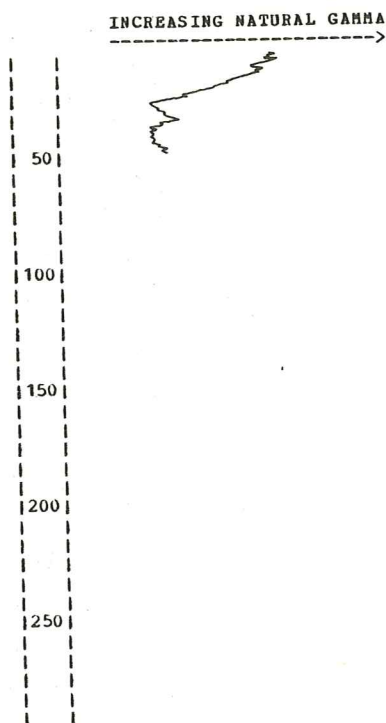
WC-189

ALTITUDE: 1095 FEET (NGVD 1929)

DEPTH: 61 FEET

STATION ID: 415124-0953615-01

DATE COMPLETED: May 26, 1983



| DEPTH (FEET)     | DESCRIPTION OF MATERIAL  |
|------------------|--|
| QUATERNARY       |  |
| 0-5              | Top soil; fill   |
| 5-9              | Clay, dark gray  |
| 9-12             | Clay, silty, gray  |
| 12-15            | Clay, yellow-gray  |
| 15-16            | Clay, gray-brown   |
| 16-20            | Clay, silty, yellow-brown, yellow-gray                                   |
| 20-23            | Clay, sandy, silty, gray-green; wood                                     |
| 23-25            | Sand and gravel, fine, gray; clay; wood                                  |
| 25-30            | Sand and gravel, fine to medium, gray; wood                              |
| 30-46            | Sand and gravel, fine to coarse, cemented at bottom 2 feet, yellow-brown |
| CRETACEOUS       |  |
| DAKOTA FORMATION |  |
| 46-50            | Sand or sandstone, fine to coarse, brown, tan;                           |
| PENNSYLVANIAN    |  |
| 50-61            | Shale, sandy, reddish-brown, gray; sandstone, hard layers; lignite       |

Casing record: set 2 inch pipe to 46 feet, slotted from 40 to 46 feet, gravel packed

LOCATION: 081-41-03CDBB

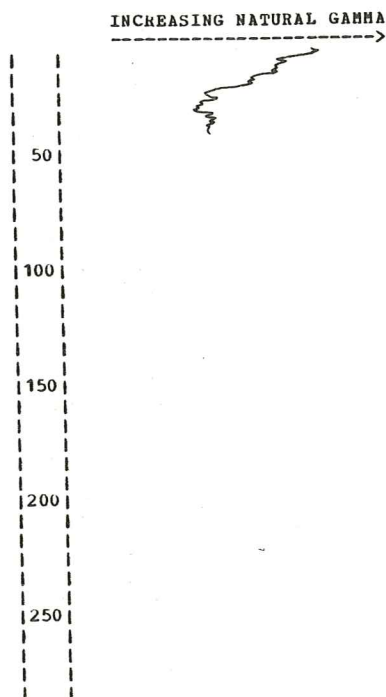
WC-190

ALTITUDE: 1090 FEET (NGVD 1929)

DEPTH: 50 FEET

STATION ID: 415109-0953632-01

DATE COMPLETED: May 26, 1983



| DEPTH (FEET)     | DESCRIPTION OF MATERIAL  |
|------------------|--|
| QUATERNARY       |  |
| 0-4              | Top soil   |
| 4-8              | Clay, dark gray to gray  |
| 8-12             | Clay, yellow-gray grading to gray-brown  |
| 12-17            | Clay, silty, blue-gray   |
| 17-21            | Clay, silty, gray-green  |
| 21-24            | Sand, fine, grading to sand and gravel, fine, gray; wood   |
| 24-26            | Sand and gravel, fine to coarse, gray  |
| 26-30            | Sand and gravel, fine to coarse, brown, yellow-brown   |
| 30-40            | Sand and gravel, yellow-tan, yellow-brown  |
| CRETACEOUS       |  |
| DAKOTA FORMATION |  |
| 40-43            | Sand and gravel or sandstone, fine to medium, cemented, oxidized, brown, yellow-brown; clay or shale |
| 43-50            | Sandstone, tan, yellow-brown   |

Casing record: set 2 inch pipe to 40 feet, slotted from 35 to 40 feet, gravel packed

Table 2. Logs of wells and test holes--Continued.

LOCATION: 081-41-17ABAA

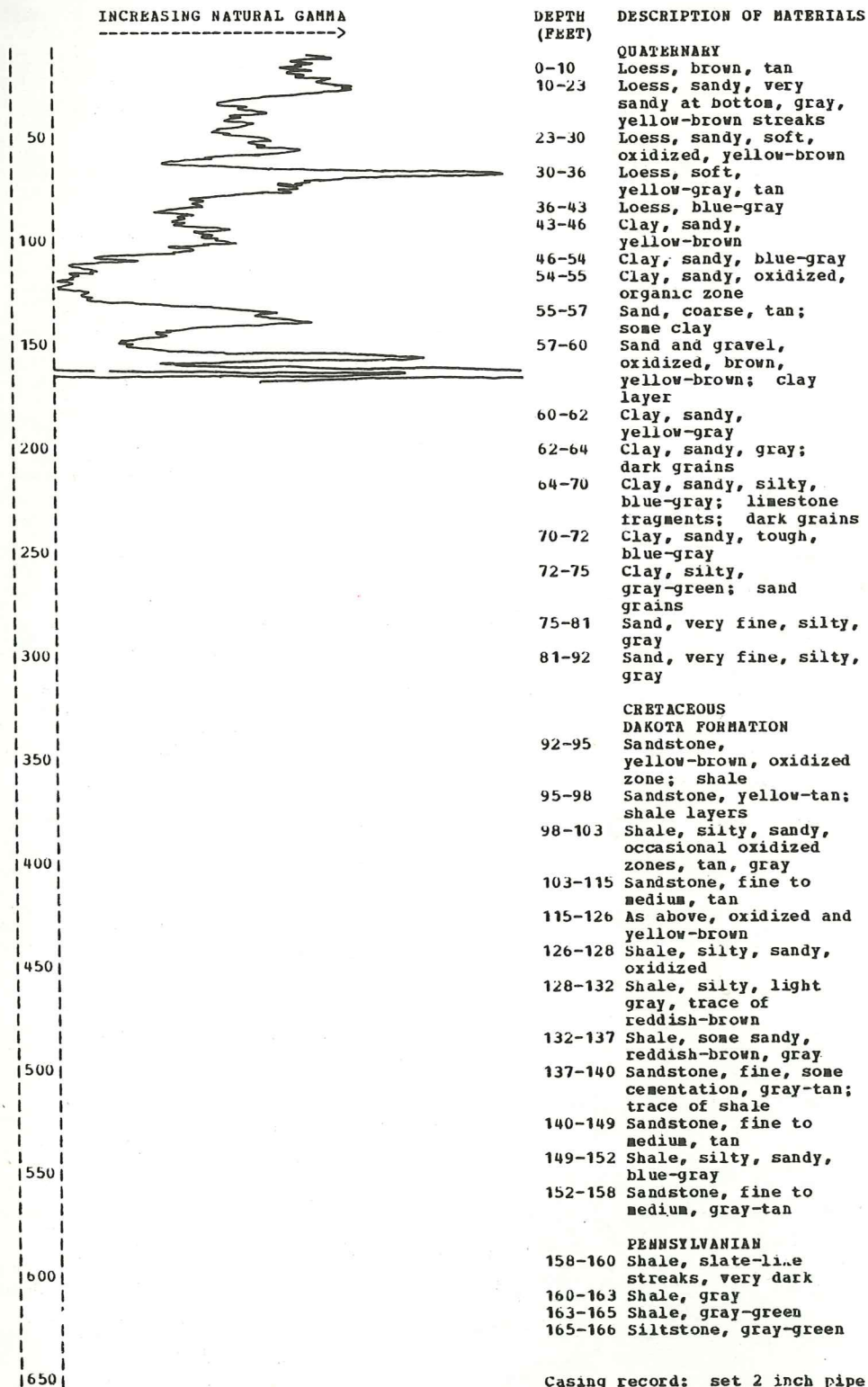
WC-11

STATION ID: 415003-0953823-01

ALTITUDE: 1135 FEET (NGVD 1929)

DEPTH: 166 FEET

DATE COMPLETED: June 17, 1981



Casing record: set 2 inch pipe to 166 feet, slotted from 149 to 166 feet, gravel packed

Table 2. Logs of wells and test holes--Continued.

LOCATION: 081-41-31ADCC

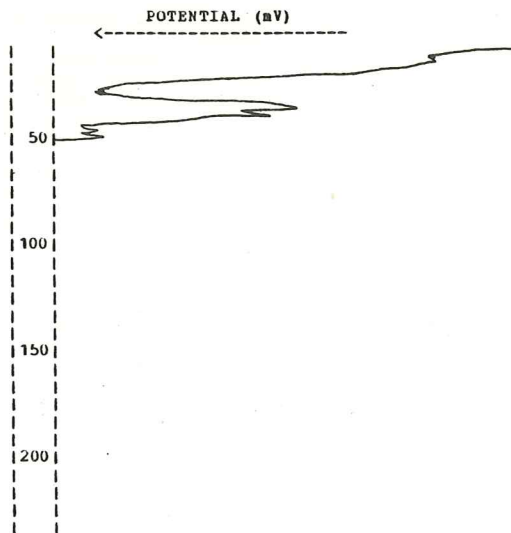
WC-40

STATION ID: 414702-0953928-01

ALTITUDE: 1065 FEET (NGVD 1929)

DEPTH: 61 FEET

DATE COMPLETED: May 21, 1982



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                      |
|--------------|---|
| 0-5          | QUATERNARY<br>Top soil; road bed              |
| 5-12         | Clay, silty, very dark gray                   |
| 12-14        | Clay, silty, gray                             |
| 14-15        | Clay, silty, soft, yellow-gray,               |
| 15-18        | Clay, silty, sandy, soft, yellow-brown        |
| 18-21        | Sand and gravel, fine to coarse, tan          |
| 21-25        | Sand and gravel, fine to coarse, yellow-brown |
| 25-31        | Sand and gravel, very coarse, yellow-brown    |
| 31-35        | Clay, silty, gray-brown; gravel               |
| 35-38        | Sand and gravel, coarse, gray; clay trace     |
|              | CRETACEOUS                                    |
|              | DAKOTA FORMATION                              |
| 38-50        | Sandstone, fine to medium, tan                |
| 50-58        | Sandstone, fine to coarse, yellow-brown       |
| 58-61        | Shale, reddish-brown                          |

LOCATION: 081-41-31BCDD

WC-43

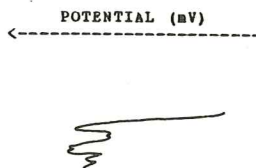
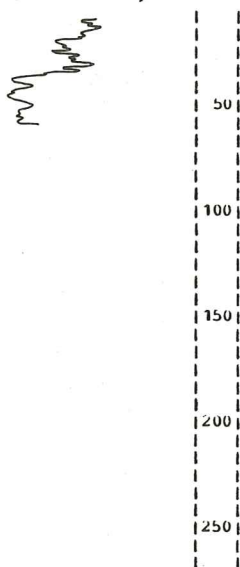
STATION ID: 414705-0954007-01

ALTITUDE: 1075 FEET (NGVD 1929)

DEPTH: 81 FEET

DATE COMPLETED: May 25, 1982

INCREASING NATURAL GAMMA



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                            |
|--------------|---|
| 0-5          | QUATERNARY<br>Road bed                              |
| 5-11         | Clay, silty, dark brown                             |
| 11-16        | Clay, silty, dark brown grading to yellow-brown     |
| 16-25        | Clay, silty, soft, brown,                           |
| 25-30        | Clay, very soft, yellow-brown,                      |
| 30-36        | Clay, silty, sandy, very sandy at base, yellow-gray |
| 36-45        | Sand and gravel, fine to very coarse, yellow-brown  |
| 45-47        | As above with clay layers                           |
| 47-60        | Sand and gravel, fine to medium, yellow-brown       |
| 60-72        | Sand and gravel, fine, yellow-brown                 |
|              | CRETACEOUS  |
|              | DAKOTA FORMATION                                    |
| 72-76        | Sandstone, fine to coarse                           |
|              | PENNSYLVANIAN                                       |
| 76-78        | Shale, silty, light gray                            |
| 78-81        | Shale, silty, gray-green; siltstone                 |

LOCATION: 081-41-31BDDD

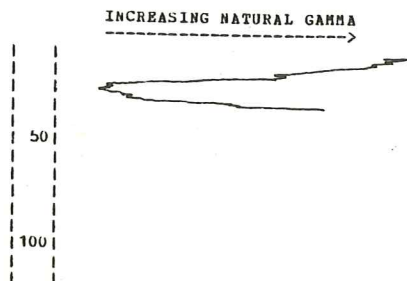
WC-53

STATION ID: 414702-0953951-01

ALTITUDE: 1065 FEET (NGVD 1929)

DEPTH: 30 FEET

DATE COMPLETED: June 4, 1982



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                       |
|--------------|--|
| 0-5          | QUATERNARY<br>Top soil; clay, silty, very dark |
| 5-9          | Clay, silty, gray                              |
| 9-16         | Clay, silty, soft, yellow-brown, yellow-gray   |
| 16-30        | Sand and gravel, fine to medium, yellow-brown  |

Table 2. Logs of wells and test holes--Continued.

LOCATION: 081-41-32BCCC

WC-42

STATION ID: 4 14702-0953913-01

ALTITUDE: 1065 FEET (NGVD 1929)

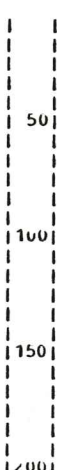
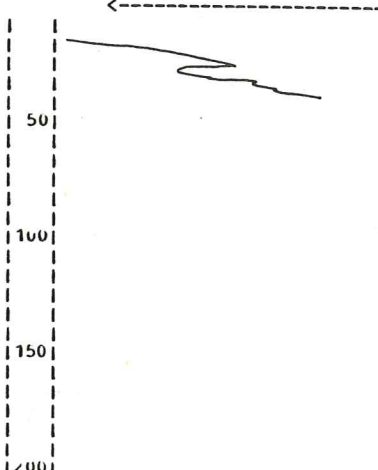
DEPTH: 41 FEET

DATE COMPLETED: May 24, 1982

INCREASING NATURAL GAMMA



POTENTIAL (mV)



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                            |
|--------------|---|
| 0-5          | QUATERNARY<br>Road bed; top soil                    |
| 5-12         | Clay, silty, gray-brown                             |
| 12-18        | Clay, very silty, soft, gray-brown                  |
| 18-23        | Clay, silty, sandy, blue-gray; wood                 |
| 23-26        | Sand and gravel, fine to coarse, yellow-brown       |
| 26-29        | Sand and gravel, fine to coarse, tan                |
| 29-30        | Gravel; clay, yellow-tan                            |
| 30-34        | Sand and gravel, fine to coarse, yellow-brown; clay |
|              | CRETACEOUS  |
|              | DAKOTA FORMATION                                    |
| 34-36        | Sandstone, iron cemented, brown; shale              |
| 36-39        | Sandstone, tan                                      |
| 39-41        | Shale, silty, yellow, gray-brown                    |

LOCATION: 081-41-32BDCC

WC-38

STATION ID: 4 14702-0953856-01

ALTITUDE: 1065 FEET (NGVD 1929)

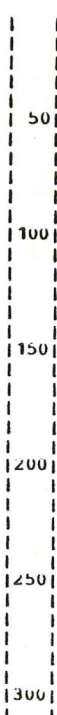
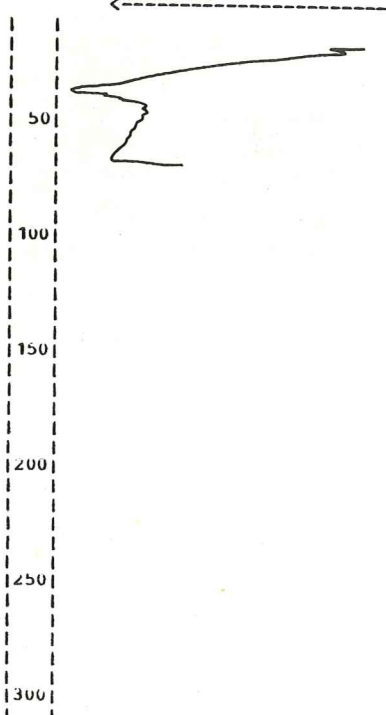
DEPTH: 72 FEET

DATE COMPLETED: May 18, 1982

INCREASING NATURAL GAMMA



POTENTIAL (mV)



| DEPTH (FEET) | DESCRIPTION OF MATERIALS  |
|--------------|---|
| 0-5          | QUATERNARY<br>Road bed; top soil, dark                                |
| 5-10         | Clay, gray-tan  |
| 10-14        | Clay, silty, soft, oxidized zones, gray-tan; wood                     |
| 14-17        | Clay, silty, soft, gray   |
| 17-19        | Clay, silty, soft, blue-gray  |
| 19-20        | Clay, silty, blue-gray; sand and gravel layers                        |
| 20-25        | Sand and gravel, fine to coarse, blue-gray; clay, silty; wood at base |
| 25-29        | Sand and gravel, fine to coarse, gray                                 |
| 29-33        | Sand and gravel, yellow-brown   |
| 33-36        | Sand and gravel, fine to medium, yellow-tan, some cementation         |
|              | CRETACEOUS  |
|              | DAKOTA FORMATION  |
| 36-55        | Sandstone, fine to medium, tan  |
| 55-60        | Sandstone, fine to medium, yellow-brown                               |
|              | PENNSYLVANIAN   |
| 60-62        | Shale, oxidized, yellow-brown   |
| 62-69        | Shale, gray-green   |
| 69-72        | Shale, gray-green, reddish brown                                      |

Table 2. Logs of wells and test holes--Continued.

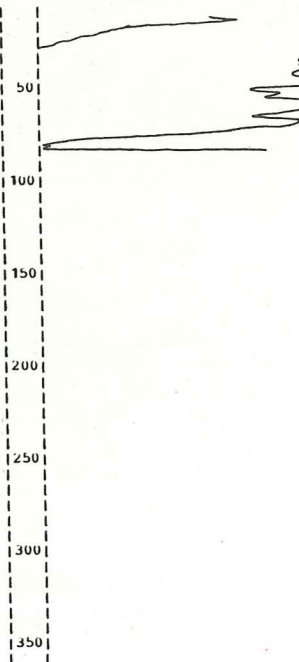
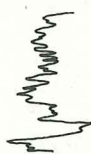
LOCATION: 081-41-32DBAB  
 ALTITUDE: 1085 FEET (NGVD 1929)

WC-41  
 DEPTH: 81 FEET

STATION ID: 414700-0953829-01  
 DATE COMPLETED: May 24, 1982

INCREASING NATURAL GAMMA  
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POTENTIAL (mV)  
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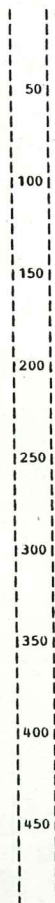
| DEPTH (FEET) | DESCRIPTION OF MATERIALS  |
|--------------|---|
| 0-5          | QUATERNARY<br>Road bed  |
| 5-9          | Clay, silty, brown  |
| 9-13         | Clay, silty, soft, yellow-brown,  |
| 13-20        | Clay, silty, soft, gray-green,  |
| 20-40        | Clay, silty, soft, blue-gray  |
| 40-41        | Sand, fine to coarse, gray; gravel, fine                                |
| 41-44        | Clay, gray-tan; sand grains   |
| 44-46        | Clay, gray-green; sand  |
| 46-48        | Sand and gravel, fine, gray-green                                       |
| 48-50        | Clay, silty, yellow-brown   |
| 50-52        | Clay, silty, sandy, gray-green  |
| 52-55        | PENNSYLVANIAN<br>Shale, reddish-brown, light gray                       |
| 55-60        | As above  |
| 60-63        | Shale, silty, sandy, yellow-brown, reddish-brown                        |
| 63-65        | Shale, silty, light blue-gray, gray, yellow, reddish-brown              |
| 65-67        | Shale, silty, yellow-gray   |
| 67-69        | Shale, silty, sandy, blue-gray  |
| 69-73        | Shale, silty, sandy, reddish-brown, gray                                |
| 73-79        | Shale, sandy, reddish-gray, gray-tan; limestone fragments, yellow-brown |
| 79-81        | Shale, green, gray-green  |

LOCATION: 081-41-33CAA  
 ALTITUDE: 1182 FEET (NGVD 1929)

WC-52  
 DEPTH: 169 FEET

STATION ID: 414700-0953730-01  
 DATE COMPLETED: June 3, 1982

INCREASING NATURAL GAMMA  
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| DEPTH (FEET) | DESCRIPTION OF MATERIALS  |
|--------------|---|
| 0-30         | QUATERNARY<br>Loess, yellow-brown, brown                                |
| 30-40        | Loess, yellow-gray, brown   |
| 40-47        | Clay, silty, tan; loess   |
| 47-54        | Clay, silty, hard, gray-brown   |
| 54-58        | Clay, silty, yellow-tan   |
| 58-61        | Clay, silty, sandy, yellow-tan  |
| 61-64        | Clay, silty, hard, gray-brown   |
| 64-67        | Clay, silty, sandy, yellow-tan  |
| 67-78        | Clay, silty, yellow-tan   |
| 78-81        | Clay, silty, sandy, very soft, yellow-tan                               |
| 81-95        | As above, softer  |
| 95-102       | Clay, silty, gray-tan   |
| 102-107      | Clay, silty, yellow-tan   |
| 107-109      | Clay, silty, yellow-gray, brown   |
| 109-115      | Sand and gravel, fine, tan, yellow-brown                                |
| 115-123      | Sand and gravel, fine to coarse, possibly cemented, brown, yellow-brown |
| 123-126      | CRETACEOUS<br>DAKOTA FORMATION<br>Sandstone, fine to medium, tan        |
| 126-128      | Sandstone, fine to coarse, oxidized, yellow-brown                       |
| 128-145      | Sandstone, fine to medium, coarser near bottom, tan                     |
| 145-157      | Sandstone, fine to very coarse, tan; shale, thin layers, yellow-gray    |
| 157-158      | Shale, yellow-brown, yellow-gray  |
| 158-161      | Sandstone, fine to coarse, tan  |
| 161-162      | Shale, yellow-gray  |
| 162-165      | Shale, reddish-brown  |
| 165-167      | Shale, brown  |
| 167-169      | Shale, gray, reddish-brown  |

Casing record: set 2 inch pipe to 155 feet, slotted from 145 to 154 feet, gravel packed

Table 2. Logs of wells and test holes--Continued.

LOCATION: 081-41-33DDCD

WC-39

STATION ID: 414635-0953707-01

ALTITUDE: 1185 FEET (NGVD 1929)

DEPTH: 181 FEET

DATE COMPLETED: May 19, 1982

INCREASING NATURAL GAMMA

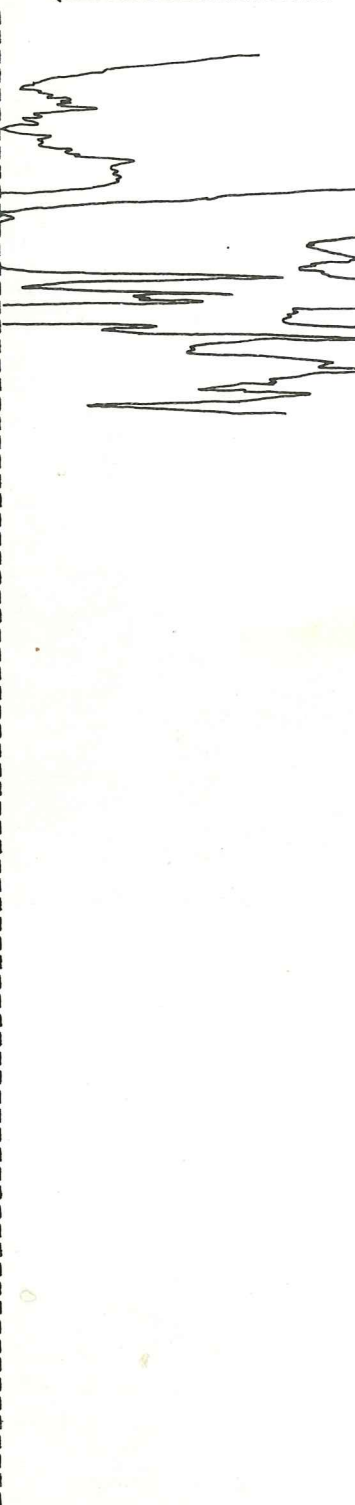
POTENTIAL (mV)

DEPTH  
(FEET)

DESCRIPTION OF MATERIALS

----->

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| DEPTH (FEET) | DESCRIPTION OF MATERIALS   |
|--------------|--|
| 0-2          | QUATERNARY<br>Road bed   |
| 2-41         | Loess, yellow-brown  |
| 41-44        | Loess, yellow-gray   |
| 44-47        | Clay, silty and sandy  |
| 47-51        | Till, silty, sandy, brown, yellow-brown  |
| 51-58        | Till, silty, yellow-brown  |
| 58-69        | Clay or till, silty, sandy, yellow-tan   |
| 69-77        | Clay, gray   |
| 77-80        | Clay, gray-green   |
| 80-86        | As above grading very  |
| 86-88        | Clay, silty, sandy, gray-tan   |
| 88-95        | Sand, silty, very fine, brown-tan,   |
| 95-100       | Sand, silty, very fine, gray-brown   |
| 100-110      | Sand, very fine to fine, brown, gray-brown   |
| 110-122      | Sand, very fine to coarse, yellow-brown; gravel trace                                    |
|              | CRETACEOUS   |
|              | DAKOTA FORMATION   |
| 122-123      | Shale, oxidized, yellow-brown  |
| 123-125      | Conglomerate, brown to yellow-brown; shale trace   |
| 125-126      | Shale, gravelly, sandy, oxidized   |
| 126-129      | Sandstone, fine to very coarse, tan  |
| 129-132      | Shale, silty, yellow-gray to gray  |
| 132-133      | Sandstone, oxidized, shaly, yellow-brown   |
| 133-143      | Sandstone, fine to medium, tan   |
| 143-145      | Shale, oxidized, yellow-brown, brown, reddish-brown                                      |
| 145-146      | As above, layered; sand, very coarse, iron cemented; possible conglomerate, rust colored |
| 146-148      | Shale, yellow-brown, reddish brown, brown; sandstone, very coarse, iron cemented         |
|              | PENNSYLVANIAN  |
| 148-149      | Shale, silty, light gray to gray   |
| 149-150      | Shale, sandy, maroon-brown   |
| 150-151      | Shale, sandy, gray, maroon   |
| 151-152      | Shale, sandy, brown  |
| 152-154      | Shale, sandy, maroon   |
| 154-155      | Shale, sandy, gray, maroon   |
| 155-158      | Shale, very sandy, light blue-gray; sandstone, some fine, very thin layer                |
| 158-161      | Shale, blue-gray, yellow-brown trace   |
| 161-167      | Shale, blue-gray grading to gray, maroon trace   |
| 167-170      | Shale, yellow-brown, gray mixed  |
| 170-172      | Shale, gray; sandstone trace, fine layers  |
| 172-178      | Shale, blue-gray   |
| 178-181      | Shale, very silty, gray-green; dolomite, occasional streak; pyrite                       |

Table 2. Logs of wells and test holes--Continued.

LOCATION: 081-44-01ABAB

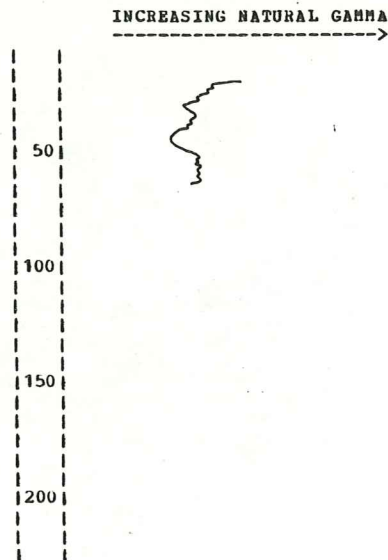
WC-177

STATION ID: 4 15 148-0955450-01

ALTITUDE: 1065 FEET (NGVD 1929)

DEPTH: 61 FEET

DATE COMPLETED: May 18, 1983



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                      |
|--------------|---|
| QUATERNARY   |   |
| 0-10         | Road bed; fill                                |
| 10-15        | Clay, silty, gray                             |
| 15-20        | Clay, silty, blue-gray                        |
| 20-26        | Clay, silty, gray-green                       |
| 26-31        | Clay, silty, gray-green, yellow-brown; shells |
| 31-35        | Clay, silty, gray-green                       |
| 35-40        | Clay, silty, gray-green, gray; shells         |
| 40-42        | Wood  |
| 42-43        | Clay, silty, gray                             |
| 43-47        | Sand and gravel, fine, gray                   |
| 47-51        | Sand and gravel, fine to coarse, gray         |
| 51-52        | Clay, gray                                    |
| 52-57        | Sand and gravel, fine to coarse; clay, gray   |
| 57-61        | Till; blue-gray                               |

Casing record: set 2 inch pipe to 58 feet, slotted from 53 to 58 feet, gravel packed

LOCATION: 081-44-01BBAA

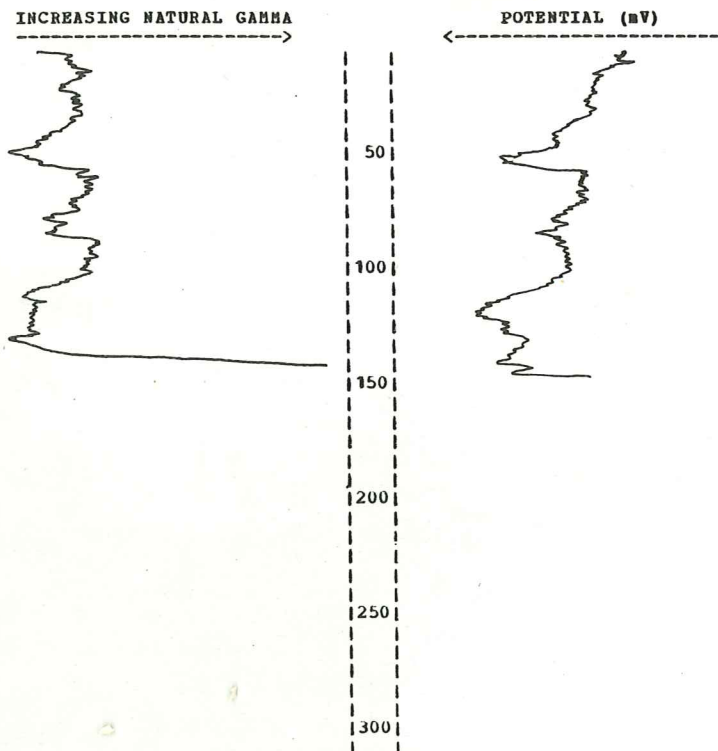
WC-179

STATION ID: 4 15 148-0955515-01

ALTITUDE: 1075 FEET (NGVD 1929)

DEPTH: 148 FEET

DATE COMPLETED: May 19, 1983



| DEPTH (FEET)  | DESCRIPTION OF MATERIALS  |
|---------------|---|
| QUATERNARY    |   |
| 0-5           | Road bed; top soil  |
| 5-14          | Clay, silty, yellow-brown, yellow-gray                            |
| 14-20         | Clay, silty, yellow-gray, gray                                    |
| 20-27         | Clay, gray grading to gray green                                  |
| 27-34         | Clay, yellow-gray to yellow-brown                                 |
| 34-37         | Clay, blue-gray, gray; shells                                     |
| 37-40         | Clay, silty, sandy, oxidized, brown, yellow-brown                 |
| 40-45         | Clay, silty, sandy, yellow-gray; shells                           |
| 45-48         | Clay, silty, blue-gray; shells                                    |
| 48-56         | Sand and gravel, fine to coarse, boulders                         |
| 56-57         | Till, yellow-brown  |
| 57-75         | Till, blue-gray   |
| 75-85         | Till, sandy, gravelly, blue-gray; sand and gravel layers          |
| 85-109        | Till, sandy, gravelly, blue-gray                                  |
| 109-142       | Sand and gravel, fine to coarse, gray-green; boulders, occasional |
| PENNSYLVANIAN |   |
| 142-146       | Shale (slate-like), black; coal                                   |
| 146-148       | Shale, gray   |

Table 2. Logs of wells and test holes--Continued.

LOCATION: 081-44-9BDDC WC-24 STATION ID: 415046-0955847-01  
 ALTITUDE: 1160 FEET (NGVD 1929) DEPTH: 228 FEET DATE COMPLETED: November 11, 1981

| DEPTH (FEET)  | DESCRIPTION OF MATERIALS   |
|---------------|--|
| QUATERNARY    |  |
| 0-5           | Road bed   |
| 5-15          | Loess, brown   |
| 15-25         | Loess, yellow-brown  |
| 25-68         | Loess, silty, sandy, soft, yellow-brown                                  |
| 68-69         | Boulder, red granite   |
| 69-77         | Till or clay, silty, yellow-tan  |
| 77-80         | Till, very gravelly, oxidized, brown                                     |
| 80-84         | As above, with gravel layers   |
| 84-88         | Sand and gravel, fine to coarse, cemented, oxidized, brown               |
| 88-93         | Till, yellow-tan   |
| 93-100        | Clay, silty, yellow-tan  |
| 100-107       | Clay, silty, sandy, dark specks, yellow-gray                             |
| 107-110       | Sand, fine grading to a sand and gravel, gray                            |
| 110-120       | Sand and gravel, fine to coarse, cemented, oxidized, brown, yellow-brown |
| 120-130       | Sand and gravel, cemented, oxidized, yellow-brown                        |
| 130-134       | Till, yellow to blue-gray  |
| 134-140       | Till, blue-gray  |
| 140-150       | Till, blue-gray; sand layers, fine to medium; occasional boulders        |
| 150-155       | As above, gray-green   |
| 155-200       | Till, very sandy, blue-gray; sand layers                                 |
| 200-210       | Till, very sandy, blue-gray  |
| PENNSYLVANIAN |  |
| 210-213       | Shale, light gray  |
| 218-221       | Shale, gray; limestone, argillaceous; lots of fossils                    |
| 221-224       | Shale, black; coal, thin layer at 224 feet                               |
| 224-228       | Shale, gray  |

LOCATION: 081-44-18AADA WC-23 STATION ID: 414955-0960006-01  
 ALTITUDE: 1075 FEET (NGVD 1929) DEPTH: 209 FEET DATE COMPLETED: November 5, 1981

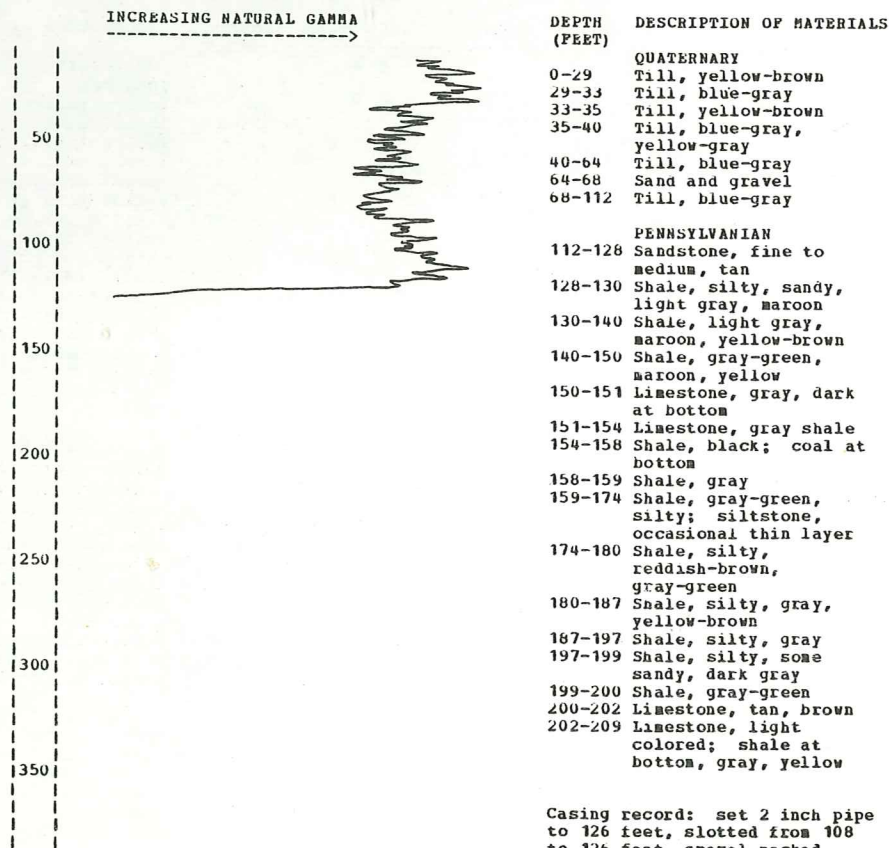




Table 2. Logs of wells and test holes--Continued.

LOCATION: 081-44-32DDDD

WC-187

STATION ID: 414638-0955859-01

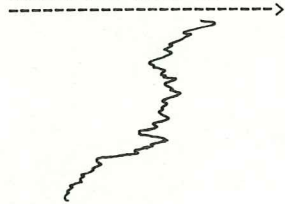
ALTITUDE: 1040 FEET (NGVD 1929)

DEPTH: 81 FEET

DATE COMPLETED: May 25, 1983

INCREASING NATURAL GAMMA

POTENTIAL (mV)



| DEPTH (FEET) | DESCRIPTION OF MATERIALS   |
|--------------|--|
|              | QUATERNARY   |
| 0-10         | Road bed; top soil   |
| 10-14        | Clay, silty, dark gray   |
| 14-18        | Clay, silty, brown   |
| 18-27        | Clay, silty, gray  |
| 27-36        | Clay, silty, yellow-gray   |
| 36-41        | Clay, silty, gray grading to gray-green; snail shells            |
| 41-50        | Clay, silty, soft, gray-green; wood; snail shells                |
| 50-60        | Sand, fine; clay, silty, sandy, gray, gray-green; wood; silt     |
| 60-64        | Sand, very fine to coarse, gray, brown at base; silt; clay; wood |
| 64-73        | Sand and gravel, fine to coarse, brown, yellow-brown             |
|              | CRETACEOUS   |
|              | DAKOTA FORMATION   |
| 73-81        | Sandstone, fine, tan, yellow-brown                               |

LOCATION: 081-44-33CABB

WC-186

STATION ID: 414700-0955838-01

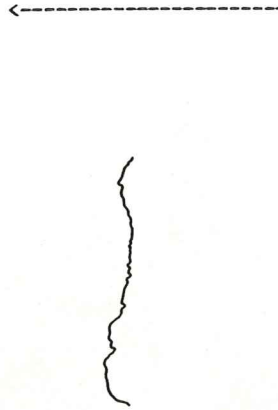
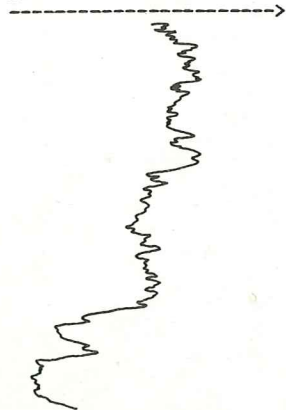
ALTITUDE: 1130 FEET (NGVD 1929)

DEPTH: 177 FEET

DATE COMPLETED: May 25, 1983

INCREASING NATURAL GAMMA

POTENTIAL (mV)



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                                       |
|--------------|--|
|              | QUATERNARY   |
| 0-5          | Road bed   |
| 5-25         | Loess, yellow-tan  |
| 25-41        | Loess, hard, yellow-brown, brown                               |
| 41-54        | Loess, hard, yellow-brown, yellow-tan; snails                  |
| 54-57        | Clay, silty, brown, yellow-brown; loess, hard                  |
| 57-70        | Loess, yellow-brown, yellow-tan                                |
| 70-90        | Clay, silty, yellow-tan; loess                                 |
| 90-100       | Loess, yellow-tan grading to yellow-gray                       |
| 100-102      | Clay, silty, gray; loess                                       |
| 102-130      | Clay, silty, yellow-tan, yellow-gray; loess                    |
| 130-136      | Clay, sandy, silty, blue-gray; sand, very fine                 |
| 136-137      | Sand and gravel, fine to medium, olive                         |
| 137-144      | Sand, fine to coarse, well cemented, yellow-tan                |
| 144-151      | Sand and gravel, fine to coarse, cemented, brown, yellow-brown |
|              | CRETACEOUS   |
|              | DAKOTA FORMATION   |
| 151-165      | Sandstone, fine, hard, yellow-tan                              |
| 165-171      | Sandstone, fine to coarse, yellow-brown, tan                   |
|              | PENNSYLVANIAN  |
| 171-172      | Shale, gray-green, yellow-gray                                 |
| 172-177      | Shale, yellow-gray, reddish-brown gray                         |

Table 2. Logs of wells and test holes--Continued.

LOCATION: 082-29-18CAAA

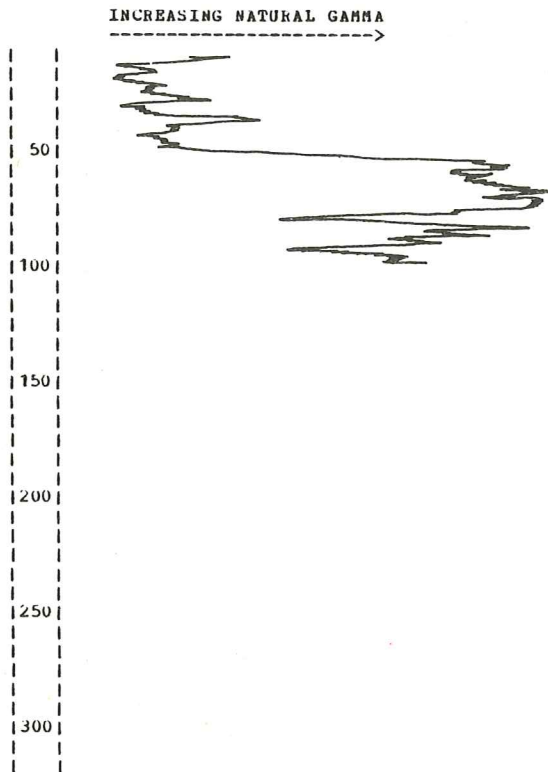
WC-116

STATION ID: 415449-0941615-01

ALTITUDE: 960 FEET (NGVD 1929)

DEPTH: 101 FEET

DATE COMPLETED: August 24, 1983



| DEPTH (FEET) | DESCRIPTION OF MATERIALS   |
|--------------|--|
| 0-6          | QUATERNARY<br>Clay, very sandy, brown                                  |
| 6-11         | Sand, very fine to coarse, brown; shells                               |
| 11-17        | Sand and gravel, fine, gray-tan; shells                                |
| 17-26        | Sand and gravel, fine to coarse, gray; shells                          |
| 26-31        | Sand, fine to coarse, gray   |
| 31-34        | Clay or till, very sandy, gray   |
| 34-46        | Sand and gravel, fine to coarse  |
| 46-48        | Clay or till, sandy, blue-gray; shale, reworked                        |
| 48-60        | PENNSYLVANIAN<br>Shale, silty, sandy, reworked, olive; pyrite          |
| 60-73        | Shale, silty, sandy, gray; siltstone; pyrite                           |
| 73-80        | Sandstone, lime cemented; siltstone, hard; shale layers, silty; pyrite |
| 80-101       | Sandstone, fine, silty, interbedded, hard; shale, silty, gray          |

Casing record: set 2 inch pipe to 100 feet, slotted from 89 to 100 feet, gravel packed

LOCATION: 082-29-18CBAA

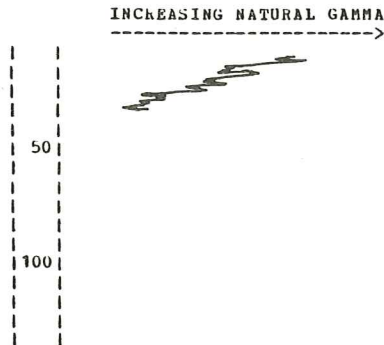
WC-115

STATION ID: 415448-0941634-01

ALTITUDE: 965 FEET (NGVD 1929)

DEPTH: 34 FEET

DATE COMPLETED: August 23 1982

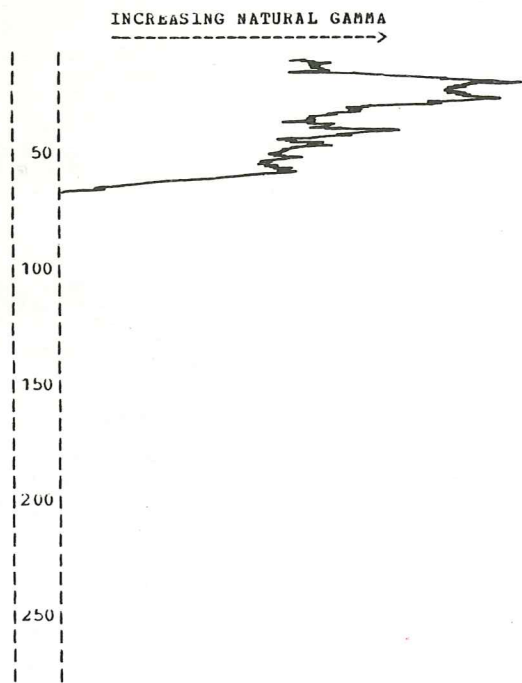


| DEPTH (FEET) | DESCRIPTION OF MATERIALS                             |
|--------------|--|
| 0-6          | QUATERNARY<br>Clay, sandy, dark brown                |
| 6-8          | Sand and gravel, fine to medium, brown; clay mixed   |
| 8-10         | Sand and gravel, fine to medium, brown               |
| 10-29        | Sand and gravel, fine to coarse, tan to yellow-brown |
| 29-34        | Till, sandy, blue-gray                               |

Casing record: set 2 inch to 30 feet, slotted from 20 to 30 feet, gravel packed

Table 2. Logs of wells and test holes--Continued.

LOCATION: 082-29-18DBAA WC-117 STATION ID: 415449-0941556-01  
 ALTITUDE: 1005 FEET (NGVD 1929) DEPTH: 90 FEET DATE COMPLETED: August 25, 1982



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                                   |
|--------------|--|
|              | QUATERNARY   |
| 0-1          | Top soil   |
| 1-10         | Till, gravelly, yellow-tan, yellow-brown                   |
| 10-12        | Till, sandy, gravelly, blue-gray                           |
| 12-16        | Till, sandy, brown, gray                                   |
| 16-36        | Clay, silty, yellow-gray at top, blue-gray; wood           |
| 36-40        | Till, sandy, olive   |
| 40-42        | Till, yellow-brown   |
| 42-54        | Till, olive  |
| 54-60        | Sand and gravel, fine to coarse, yellow-brown; till layers |
| 60-84        | Sand, fine to coarse, possibly cemented, tan; gravel       |
| 84-86        | As above; clay mixed                                       |
|              | PENNSYLVANIAN  |
| 86-90        | Shale, silty, sandy, gray, light gray; siltstone layers    |

Casing record: set 2 inch pipe to 75 feet, slotted from 65 to 75 feet, gravel packed

LOCATION: 082-30-13ADDC WC-119 STATION ID: 415449-0941654-01  
 ALTITUDE: 965 FEET (NGVD 1929) DEPTH: 115 FEET DATE COMPLETED: August 27, 1982

| DEPTH (FEET) | DESCRIPTION OF MATERIALS                         |
|--------------|--|
|              | QUATERNARY                                       |
| 0-6          | Road bed   |
| 6-9          | Clay, sandy, gravelly, brown                     |
| 9-10         | Clay, sandy and gravelly, yellow-brown;          |
| 10-15        | Sand and gravel, fine to very coarse, brown, tan |
| 15-22        | Sand and gravel, fine to coarse, yellow-brown    |
| 22-24        | Sand and gravel, fine to very coarse, gray       |
| 24-48        | Till, sandy, gravelly, soft, blue-gray           |
| 48-50        | Sand and gravel, fine to coarse, gray; wood      |
| 50-70        | Till, sandy, gravelly, blue-gray                 |
| 70-80        | Sand and gravel, fine to coarse, gray-tan; wood  |
| 80-104       | Sand and gravel, fine, some cemented, gray       |
|              | PENNSYLVANIAN                                    |
| 104-115      | Sandstone, silty, gray, tan; shale; organics     |

Table 2. Logs of wells and test holes--Continued.

LOCATION: 082-30-13CABA

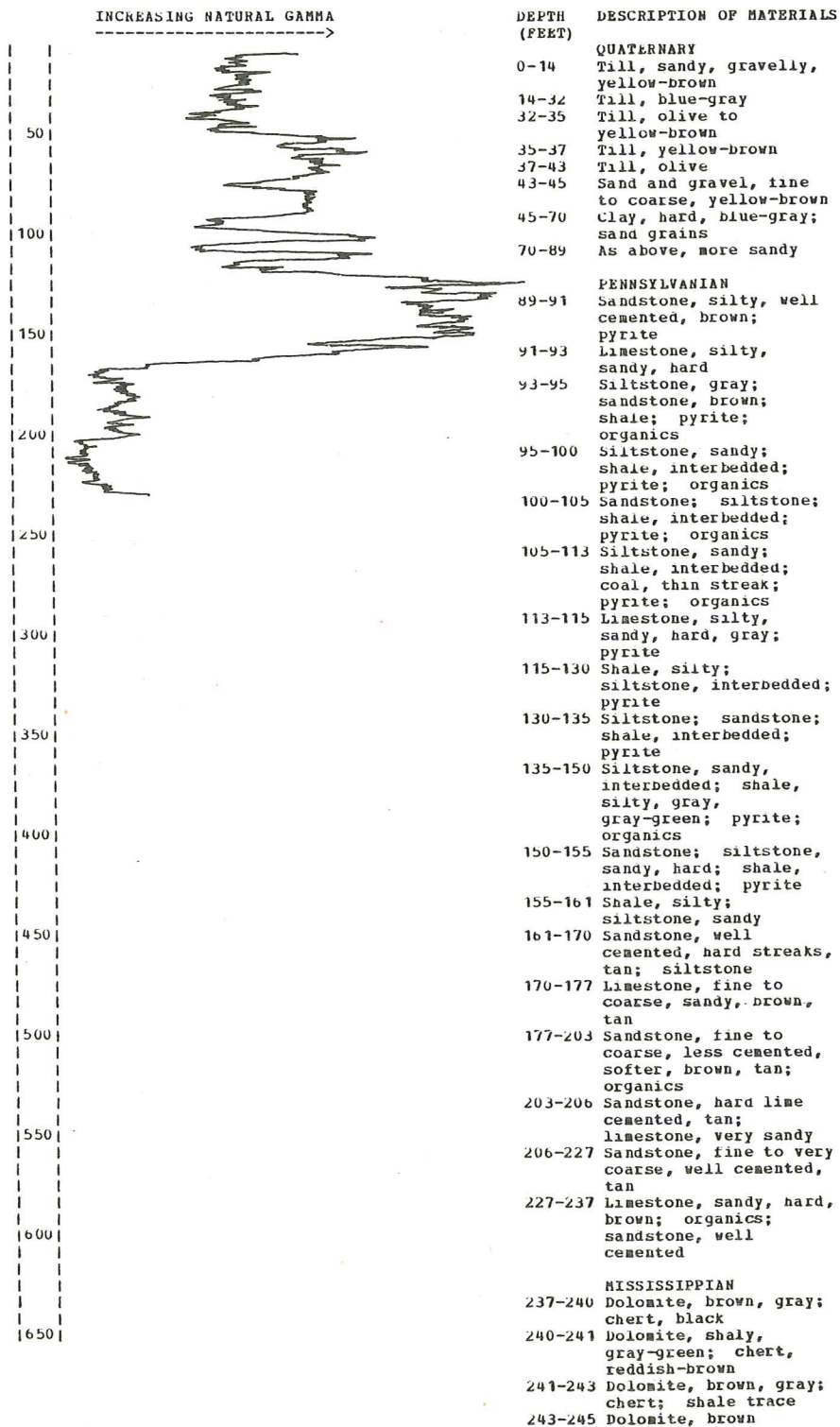
WC-118

STATION ID: 415449-0941732-01

ALTITUDE: 1035 FEET (NGVD 1929)

DEPTH: 245 FEET

DATE COMPLETED: August 25, 1982



Casing record: set 2 inch pipe to 230 feet, slotted from 209 to 230 feet, gravel packed

Table 2. Logs of wells and test holes--Continued.

LOCATION: 082-31-04DAAD

WC-23b

STATION ID: 415631-0942716-01

ALTITUDE: 1115 FEET (NGVD 1929)

DEPTH: 127 FEET

DATE COMPLETED: August 10, 1983

INCREASING NATURAL GAMMA →

POTENTIAL (mV) ←



| DEPTH (FEET)     | DESCRIPTION OF MATERIALS  |
|------------------|---|
| QUATERNARY       |   |
| 0-5              | Road bed; top soil  |
| 5-6              | Clay, dark gray   |
| 6-8              | Sand and gravel, fine to coarse; boulders                                       |
| 8-13             | Till, yellow-tan  |
| 13-19            | Till, yellow-gray grading to blue-gray; boulder at top                          |
| 19-26            | Till, blue-gray   |
| 26-30            | Sand and gravel, fine to medium, gray-tan                                       |
| 30-32            | Clay or till, sandy, yellow-brown   |
| 32-35            | Clay, gray-tan  |
| 35-38            | Clay, light brown   |
| 38-41            | Boulder, quartzite  |
| 41-42            | Till, yellow-tan  |
| 42-44            | Till, very sandy, blue-gray   |
| 44-45            | Boulder   |
| 45-72            | Clay or till, sandy, yellow-brown   |
| 72-79            | Sand, fine to coarse  |
| 79-82            | Till or clay, sandy, yellow-brown   |
| 82-87            | Till, blue-gray; sand and gravel  |
| 87-90            | Sand and gravel, fine to medium, oxidized, yellow-brown; till, occasional layer |
| 90-117           | Sand and gravel, fine to medium, some oxidized, yellow-brown                    |
| 117-120          | Clay or till  |
| CRETACEOUS       |   |
| DAKOTA FORMATION |   |
| 120-121          | Sandstone, very coarse, hard  |
| PENNSYLVANIAN    |   |
| 121-123          | Coal  |
| 123-127          | Shale, silty, sandy, gray   |

Table 2. Logs of wells and test holes--Continued.

LOCATION: 082-31-10AAAA

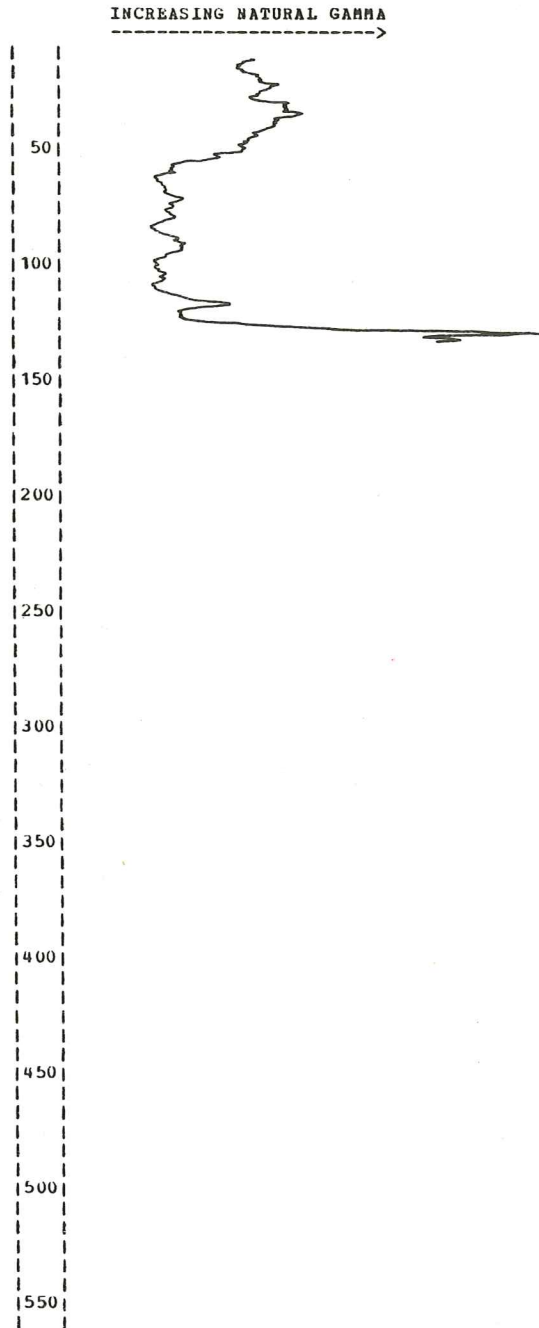
WC-235

STATION ID: 415608-0942607-01

ALTITUDE: 1108 FEET (NGVD 1929)

DEPTH: 125 FEET

DATE COMPLETED: August 9, 1983



| DEPTH (FEET)     | DESCRIPTION OF MATERIALS  |
|------------------|---|
| QUATERNARY       |   |
| 0-5              | Fill; top soil  |
| 5-13             | Till, gravelly at base, yellow-brown                                      |
| 13-15            | Till, yellow-gray   |
| 15-17            | Clay, brown   |
| 17-18            | Clay, some sandy, yellow-brown  |
| 18-23            | Till, yellow-brown  |
| 23-25            | Clay, gray-brown grading to gray-tan                                      |
| 25-35            | Clay, gray-tan  |
| 35-37            | Clay, gray-brown  |
| 37-40            | Till or clay, gray-brown to yellow-brown; sand                            |
| 40-45            | Till or clay, sandy, yellow-brown   |
| 45-47            | Sand, fine to medium, gray-brown  |
| 47-49            | Clay or till, sandy, yellow-gray  |
| CRETACEOUS       |   |
| DAKOTA FORMATION |   |
| 49-55            | Sandstone, fine to coarse, tan  |
| 55-60            | Sandstone, fine to medium, tan; shale, thin streaks, some coarse          |
| 60-70            | Sandstone, fine to coarse, tan, yellow-brown, brown layers; shale streaks |
| 70-75            | Sandstone, very coarse, tan; shale trace                                  |
| 75-80            | Sandstone, fine to coarse, brown  |
| 80-82            | Sandstone, fine to coarse, oxidized, brown                                |
| 82-87            | Sandstone, fine to very coarse, yellow-brown; shale                       |
| 87-88            | Ironstone conglomerate, dark brown  |
| 88-101           | Sandstone, fine to very coarse (gravel), yellow-brown                     |
| 101-109          | Sandstone, fine to very coarse, brown, yellow-brown                       |
| 109-112          | Shale, silty, yellow, gray  |
| 112-121          | Sandstone, fine to very coarse (gravel), yellow-brown                     |
| PENNSYLVANIAN    |   |
| 121-122          | Shale, black; coal  |
| 122-124          | Coal  |
| 124-125          | Shale, gray   |

Casing record: set 2 inch pipe to 125 feet, slotted from 111 to 120 feet, gravel packed

Table 2. Logs of wells and test holes--Continued.

LOCATION: 082-34-02AABB

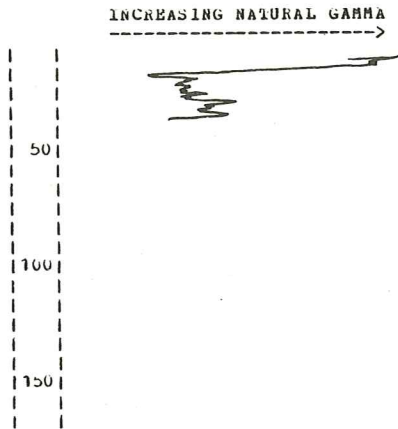
WC-152

STATION ID: 415659-0944606-01

ALTITUDE: 1170 FEET (NGVD 1929)

DEPTH: 32 FEET

DATE COMPLETED: September 30, 1982



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                                      |
|--------------|---|
| QUATERNARY   |   |
| 0-5          | Road bed; top soil  |
| 5-7          | Clay, very dark   |
| 7-10         | Clay, gray  |
| 10-12        | Clay, silty, sandy, yellow-brown                              |
| 12-25        | Sand and gravel, fine to medium, some coarse, tan, yellow-tan |
| 25-28        | Sand and gravel, fine to medium, gray                         |
| 28-32        | Clay, silty, sandy, gray                                      |

Casing record: set 2 inch pipe to 31 feet, slotted from 24 to 27 feet, gravel packed  
 --Casing was pulled after collecting water sample

LOCATION: 082-34-02ABBB

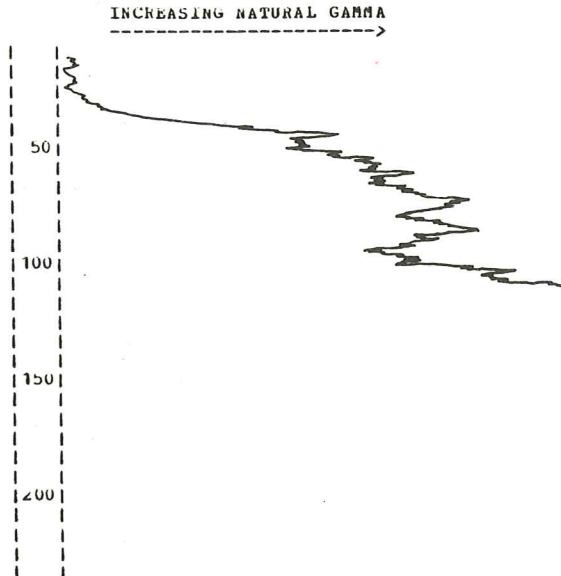
WC-149

STATION ID: 415658-0944626-01

ALTITUDE: 1170 FEET (NGVD 1929)

DEPTH: 105 FEET

DATE COMPLETED: September 27, 1982



| DEPTH (FEET)  | DESCRIPTION OF MATERIALS                                   |
|---------------|--|
| QUATERNARY    |  |
| 0-10          | Clay, silty, sandy, very dark gray                         |
| 10-15         | Sand and gravel, fine to coarse, silty, gray; clay; shells |
| 15-20         | Sand and gravel, fine to coarse, yellow-brown              |
| 20-30         | Sand, fine to coarse, tan, gray; wood                      |
| 30-40         | As above, finer  |
| 40-50         | Sand, silty, very fine to fine, gray                       |
| 50-60         | Silt; clay   |
| 60-88         | Clay, very silty, gray; sand layers, very fine             |
| 88-96         | Sand and gravel, fine to medium; clay                      |
| PENNSYLVANIAN |  |
| 96-105        | Shale or clay, silty, light blue-gray                      |

Casing record: set 2 inch pipe to 105 feet, slotted from 87 to 96 feet, gravel packed

Table 2. Logs of wells and test holes--Continued.

LOCATION: 082-34-02BABB

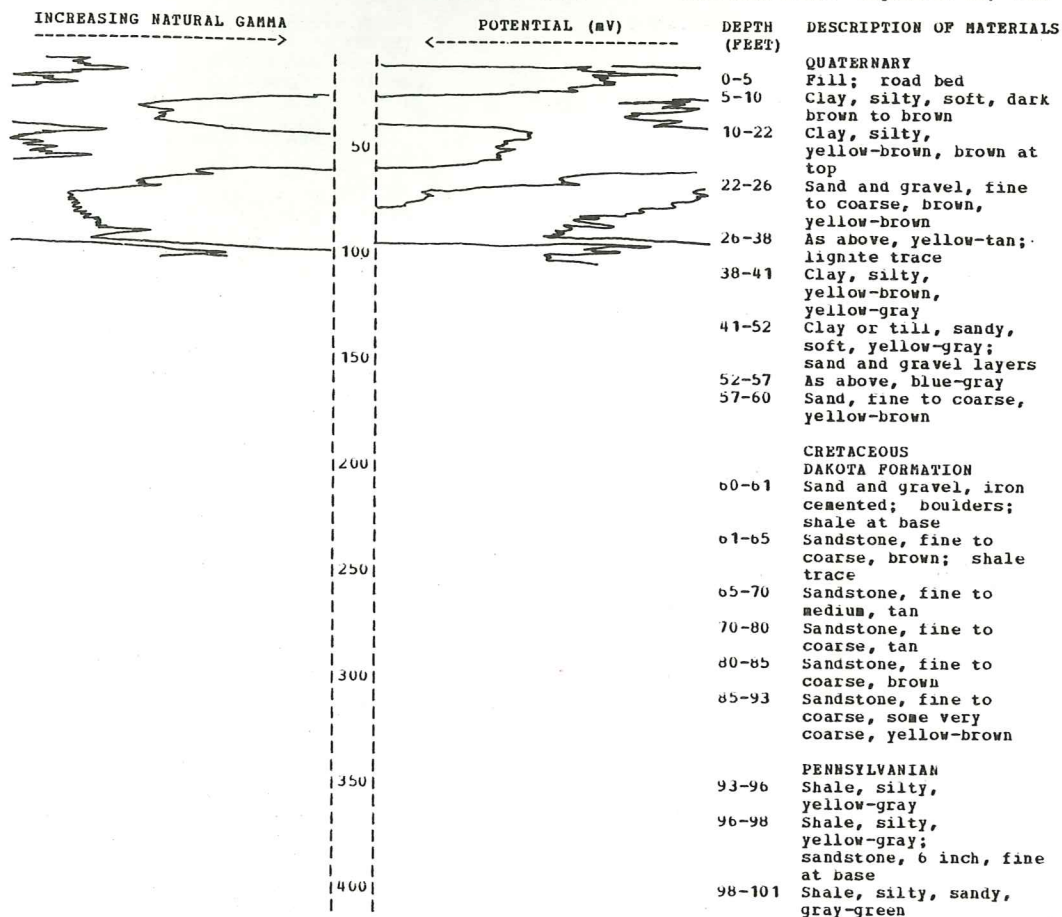
WC-150

STATION ID: 415659-0944642-01

ALTITUDE: 1180 FEET (NGVD 1929)

DEPTH: 101 FEET

DATE COMPLETED: September 28, 1982



LOCATION: 082-37-20AAA

WC-19

STATION ID: 415425-0951018-01

ALTITUDE: 1420 FEET (NGVD 1929)

DEPTH: 461 FEET

DATE COMPLETED: August 26, 1981

| DEPTH (FEET) | DESCRIPTION OF MATERIALS                                    |
|--------------|---|
|              | QUATERNARY  |
| 0-9          | Till, yellow-brown, gray; iron concretions                  |
| 9-11         | Till, olive   |
| 11-16        | Till, blue-gray, few sand grains                            |
| 16-18        | Clay, silty, gray-brown                                     |
| 18-19        | Clay, silty, sandy, blue-gray                               |
| 19-20        | Clay, silty, gray-brown                                     |
| 20-26        | Clay, gray, blue-gray                                       |
| 26-29        | Till, sandy, gray-green, light blue-gray                    |
| 29-75        | Till, olive grading to yellow-brown; gypsum crystals        |
| 75-94        | Till, yellow-brown, yellow-gray, blue-gray; gypsum crystals |
| 94-121       | Till, blue-gray   |
| 121-140      | Till, blue-gray   |
| 140-145      | Clay, silty, organic, brown; wood                           |
| 145-155      | Till, sandy, light blue-gray                                |
| 155-164      | Till, yellow-gray   |
| 164-167      | Clay, silty, sandy, gray-brown                              |
| 167-186      | Till, yellow-brown  |
| 186-280      | Till, very gravelly at bottom, blue-gray                    |
| 280-305      | Till, gravelly, blue-gray                                   |
| 305-308      | Sand and gravel, fine; occasional boulder                   |
| 308-370      | Till, gravelly, sandy, blue-gray                            |
| 370-442      | Till, silty, sandy, gray-brown, blue-gray                   |
|              | PENNSYLVANIAN   |
| 442-446      | Shale, gray   |
| 446-450      | Shale, black; coal  |
| 450-461      | Shale, gray, blue-gray                                      |



Table 2. Logs of wells and test holes--Continued.

LOCATION: 082-38-23AAAA

WC-225

STATION ID: 415424-0951340-01

ALTITUDE: 1320 FEET (NGVD 1929)

DEPTH: 481 FEET

DATE COMPLETED: July 8, 1983

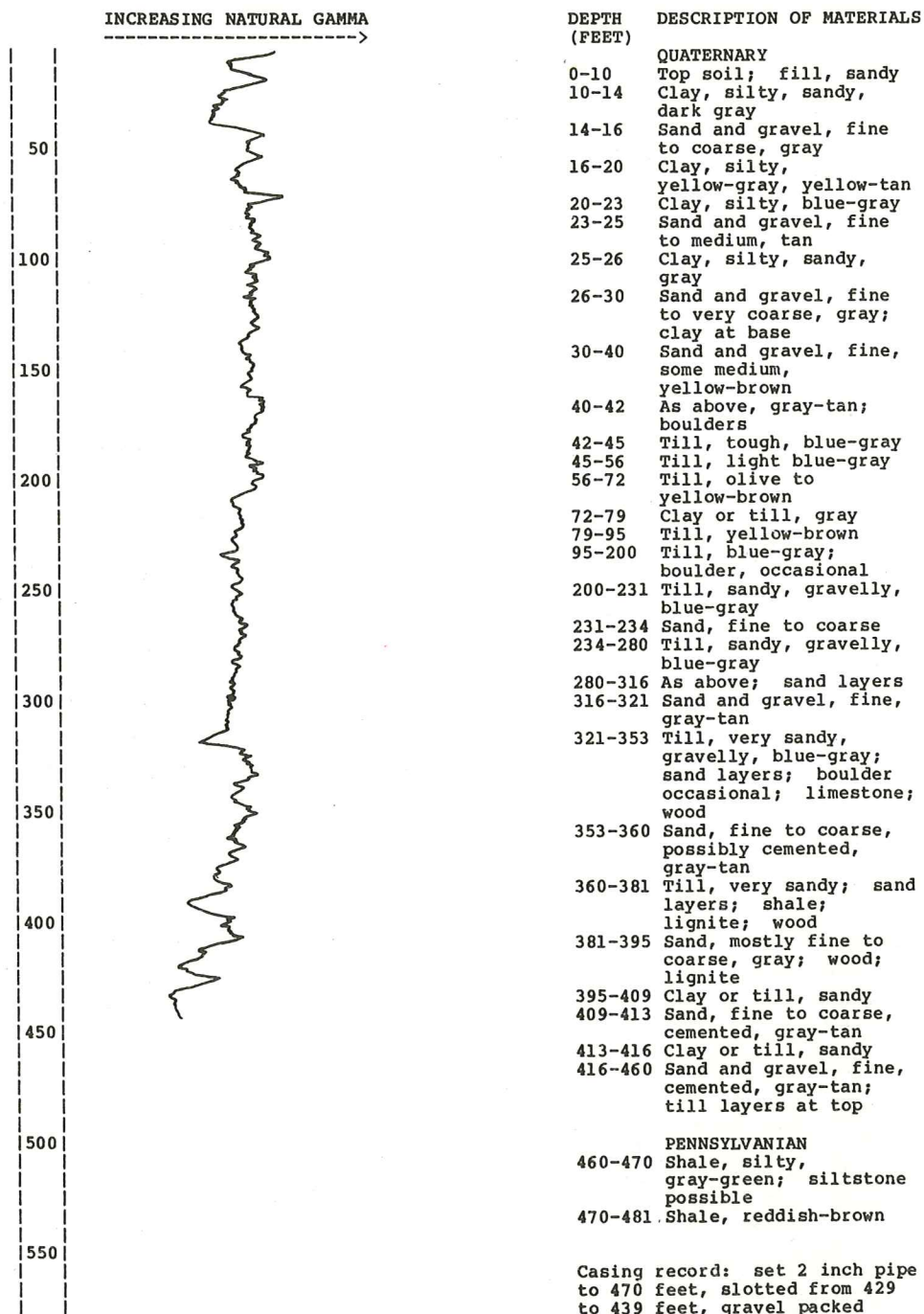


Table 2. Logs of wells and test holes--Continued.

LOCATION: 082-39-15CBAB

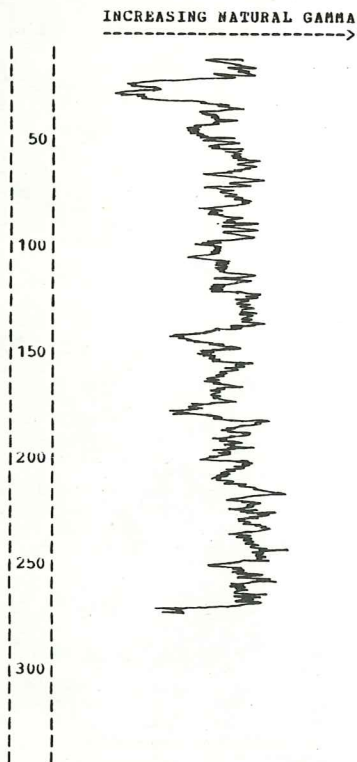
WC-12

STATION ID: 415451-0952247-01

ALTITUDE: 1250 FEET (NGVD 1929)

DEPTH: 285 FEET

DATE COMPLETED: June 23, 1982



| DEPTH (FEET) | DESCRIPTION OF MATERIALS  |
|--------------|---|
| 0-12         | QUATERNARY<br>Clay, silty,<br>yellow-gray   |
| 12-15        | Clay, silty, sandy,<br>very soft, yellow  |
| 15-18        | Sand and gravel, fine<br>to coarse, oxidized,<br>brown, yellow-brown                                    |
| 18-21        | Sand and gravel, fine<br>to coarse, tan, gray;<br>occasional boulders                                   |
| 21-25        | Sand and gravel, fine<br>to medium, olive   |
| 25-26        | Till, olive   |
| 26-81        | Till, blue-gray   |
| 81-131       | Till, blue-gray;<br>occasional boulders   |
| 131-135      | Sand and gravel, fine<br>to medium, gray  |
| 135-150      | Till, sandy, gravelly,<br>blue-gray   |
| 150-160      | As above, much sandier;<br>sand and gravel layer  |
| 160-264      | Sand and gravel, fine;<br>till or clay mixed;<br>wood; lignite; sand<br>and gravel, occasional<br>layer |
|              | CRETACEOUS  |
|              | DAKOTA FORMATION  |
| 264-273      | Sandstone, tan  |
|              | PENNSYLVANIAN   |
| 273-285      | Shale, silty, gray  |
| 285-285      | Limestone   |

Casing record: set 2 inch pipe  
to 285 feet, slotted from 268  
to 285 feet, gravel packed

LOCATION: 082-40-07DDAA

WC-45

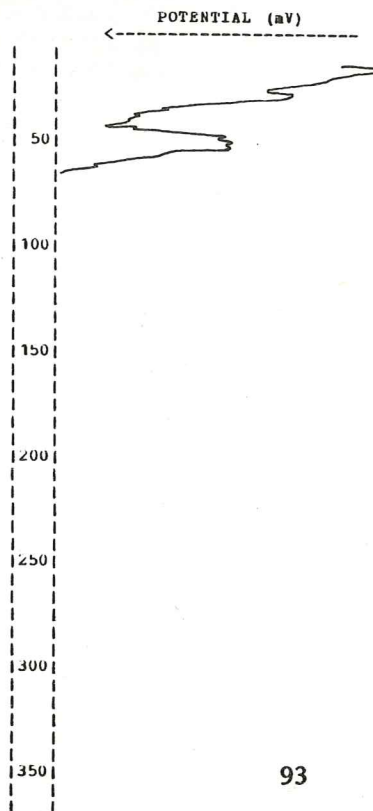
STATION ID: 415531-0953215-01

ALTITUDE: 1116 FEET (NGVD 1929)

DEPTH: 76 FEET

DATE COMPLETED: May 26, 1982

INCREASING NATURAL GAMMA  
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| DEPTH (FEET) | DESCRIPTION OF MATERIALS   |
|--------------|--|
| 0-5          | QUATERNARY<br>Road bed   |
| 5-10         | Clay, silty, soft, very<br>dark gray, blue-gray  |
| 10-12        | As above with wood<br>chunks   |
| 12-17        | As above, no wood  |
| 17-19        | As above with wood<br>chunks   |
| 19-21        | Sand and gravel, fine<br>to medium, gray   |
| 21-24        | As above, fine to<br>coarse  |
| 24-26        | Clay, silty, blue-gray   |
| 26-34        | Sand and gravel, fine,<br>yellow-tan   |
| 34-37        | Sand, fine to coarse,<br>tan   |
| 37-41        | Sand and gravel, fine,<br>gray, tan; occasional<br>boulders                              |
| 41-48        | Sand, fine to coarse,<br>mostly quartz with dark<br>grains; clay near top,<br>gray-green |
| 48-49        | Clay, sandy, gray-green  |
| 49-51        | Sand, very fine to<br>medium, mostly quartz<br>with dark grains,<br>gray-green           |
|              | CRETACEOUS   |
|              | DAKOTA FORMATION   |
| 51-54        | Sandstone, fine grading<br>to medium, tan grading<br>to yellow-brown; shale              |
| 54-60        | Sandstone, fine to very<br>coarse, oxidized,<br>orange-brown                             |
| 60-70        | Sandstone, fine to<br>coarse, oxidized,<br>yellow-brown                                  |
| 70-76        | Sandstone, fine to<br>coarse, tan  |

Table 2. Logs of wells and test holes--Continued.

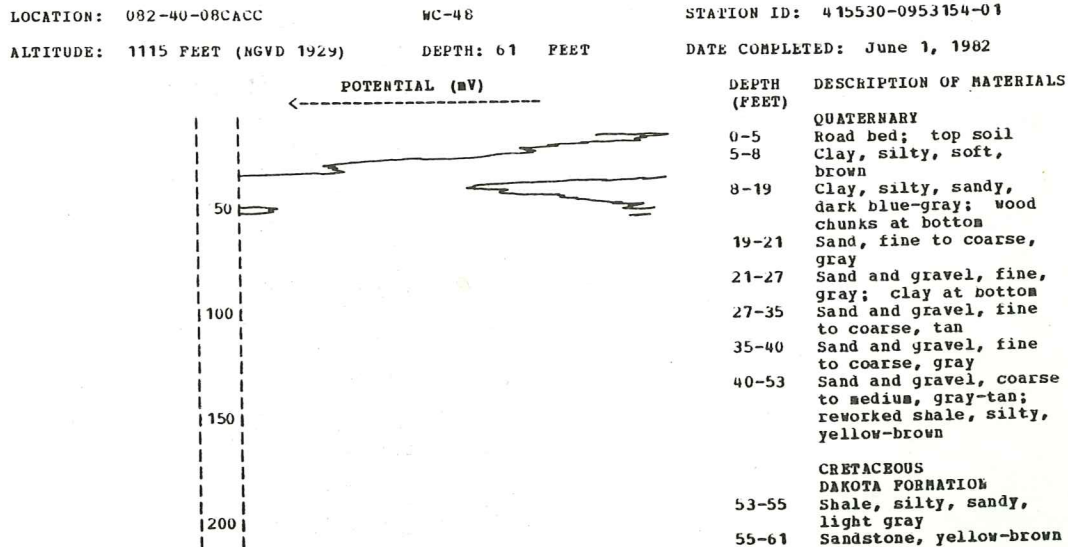
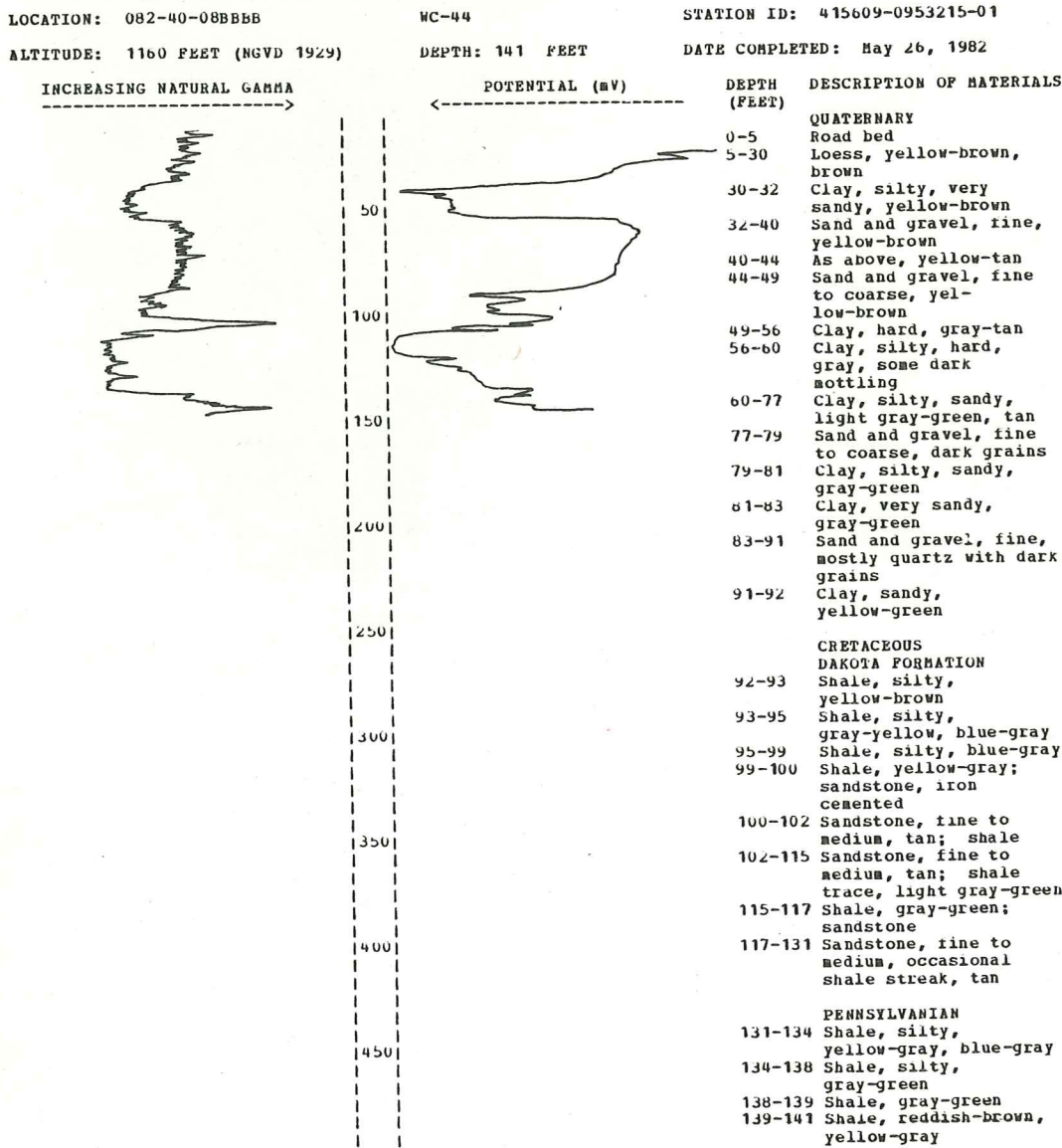


Table 2. Logs of wells and test holes--Continued.

LOCATION: 082-40-08DCCB

WC-46

STATION ID: 415521-0953139-01

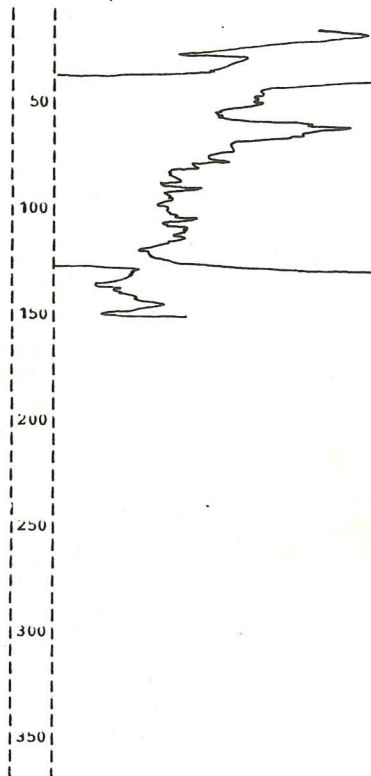
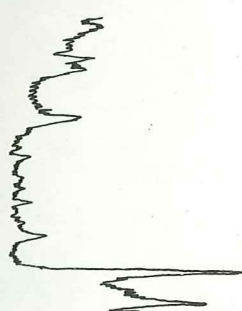
ALTITUDE: 1115 FEET (NGVD 1929)

DEPTH: 148 FEET

DATE COMPLETED: May 27, 1982

INCREASING NATURAL GAMMA →

POTENTIAL (mV) ←



| DEPTH (FEET) | DESCRIPTION OF MATERIALS  |
|--------------|---|
| 0-5          | QUATERNARY<br>Road bed; top soil  |
| 5-10         | Clay, silty, soft, dark gray-brown  |
| 10-16        | As above, very silty, softer  |
| 16-22        | Sand, brown; clay, silty, dark gray   |
| 22-25        | Sand, fine to medium, brown   |
| 25-28        | Clay, silty, gray-green   |
| 28-33        | Clay, silty, olive  |
| 33-39        | Sand and gravel, fine to coarse, gray   |
| 39-48        | Sand and gravel, fine to coarse, tan, yellow-brown                            |
| 48-53        | Sand and gravel, fine to coarse, oxidized, yellow-brown, orange               |
|              | CRETACEOUS  |
|              | DAKOTA FORMATION  |
| 53-54        | Sandstone, iron cemented; boulder   |
| 54-58        | Sandstone, fine to coarse, oxidized orange, brown                             |
| 58-110       | Sandstone, fine to coarse, tan, yellow-brown; shale, occasional streak        |
| 110-123      | Sandstone, fine to coarse, tan  |
|              | PENNSYLVANIAN   |
| 123-142      | Shale, silty, blue-gray   |
| 142-144      | Shale, yellow-brown, reddish-brown  |
| 144-146      | Shale, silty, gray-green, reddish brown at bottom; siltstone; limestone layer |

LOCATION: 082-40-17AABB

WC-9

STATION ID: 415514-0953120-01

ALTITUDE: 1150 FEET (NGVD 1929)

DEPTH: 141 FEET

DATE COMPLETED: June 5, 1981

INCREASING NATURAL GAMMA →



| DEPTH (FEET) | DESCRIPTION OF MATERIALS  |
|--------------|---|
| 0-7          | QUATERNARY<br>Fill; clay, silty, sandy                          |
| 7-19         | Sand and gravel, fine to coarse, tan to yellow-brown            |
| 19-22        | Till, tan   |
| 22-24        | Sand and gravel, fine to coarse, cemented, iron oxidized, brown |
| 24-30        | Clay, tan to light gray   |
| 30-40        | As above, silty, sandy  |
| 40-50        | Sand, very fine; silt   |
| 50-60        | Sand, fine, tan, light brown, dark specks                       |
| 60-70        | Sand, fine to coarse, as above                                  |
|              | CRETACEOUS  |
|              | DAKOTA FORMATION  |
| 70-75        | Sandstone, coarse, hard, iron, oxidized, brown                  |
| 75-80        | Sandstone, coarse, oxidized, yellow-brown                       |
| 80-90        | Sandstone, medium to coarse, light yellow-brown                 |
| 90-104       | Sandstone, medium to coarse, tan                                |
| 104-112      | Shale, silty, sandy, gray; sandstone layers, thin               |
| 112-136      | Sandstone, medium, tan; occasional shale layer, silty           |
| 136-141      | Shale, blue-gray, reddish-brown                                 |

Casing record: set 2 inch pipe to 141 feet, slotted from 123 to 141 feet, gravel packed

Table 2. Logs of wells and test holes--Continued.

LOCATION: 082-40-17ABBC

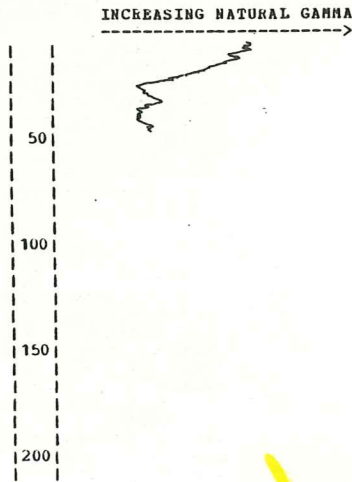
WC-188

STATION ID: 415512-0953138-01

ALTITUDE: 1122 FEET (NGVD 1929)

DEPTH: 46 FEET

DATE COMPLETED: May 26, 1983



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                             |
|--------------|--|
| 0-5          | QUATERNARY<br>Road bed; top soil                     |
| 5-8          | Clay, silty, dark brown                              |
| 8-12         | Clay, silty, dark gray                               |
| 12-15        | Clay, silty, gray                                    |
| 15-20        | Clay, silty, gray-brown                              |
| 20-25        | Clay, silty, sandy, brown; sand, fine to coarse      |
| 25-27        | Clay, silty, sandy, very dark gray                   |
| 27-29        | Clay, silty, gray-green                              |
| 29-33        | Clay, silty, sandy, gray, yellow-brown; sand layers  |
| 33-35        | Clay, silty, sandy, gray; gravel at base             |
| 35-46        | Sand and gravel, fine to coarse, brown, yellow-brown |

Casing record: set 2 inch pipe to 46 feet, slotted from 40 to 46 feet, gravel packed

LOCATION: 082-40-17ACBC

WC-47

STATION ID: 415458-0953138-01

ALTITUDE: 1165 FEET (NGVD 1929)

DEPTH: 178 FEET

DATE COMPLETED: May 27, 1982

INCREASING NATURAL GAMMA

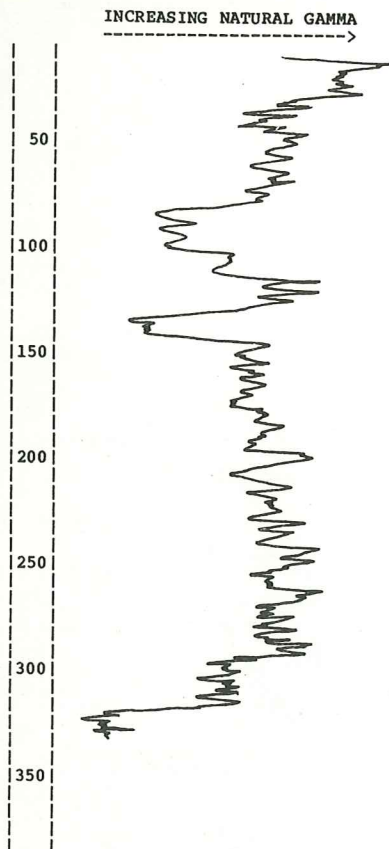


| DEPTH (FEET) | POTENTIAL (mV) | DESCRIPTION OF MATERIALS   |
|--------------|----------------|--|
| 0-6          |                | QUATERNARY<br>Road bed   |
| 6-20         |                | Loess, yellow-brown  |
| 20-35        |                | Sand, fine to coarse, yellow-tan, yellow-brown                   |
| 35-38        |                | Clay, sandy, yellow-brown, gray                                  |
| 38-42        |                | Sand, fine to coarse, yellow-brown                               |
| 42-49        |                | Clay, silty, very sandy, yellow-gray; sand layers                |
| 49-60        |                | Sand and gravel, fine to coarse, yellow-brown                    |
| 60-65        |                | As above, oxidized; clay   |
| 65-66        |                | Clay, tan  |
| 66-68        |                | Clay, gray-green   |
| 68-71        |                | Clay, yellow-tan   |
| 71-73        |                | Clay, very silty   |
| 73-75        |                | Sand, very fine, yellow-tan with dark grains; silt               |
| 75-80        |                | Sand, very fine to medium, gray-tan, dark grains                 |
| 80-83        |                | As above, coarse   |
| 83-86        |                | Sand and gravel, fine to medium, yellow-brown                    |
| 86-87        |                | Boulder, pink quartzite  |
| 87-100       |                | Sand, very fine to coarse, gray-tan                              |
|              |                | CRETACEOUS   |
|              |                | DAKOTA FORMATION   |
| 100-102      |                | Sandstone, iron cemented, brown                                  |
| 102-103      |                | Shale, reddish-brown, yellow-brown                               |
| 103-108      |                | Sandstone, fine, yellow-tan; shale                               |
| 108-118      |                | Sandstone, fine to medium, yellow-brown, tan                     |
| 118-119      |                | Sandstone, iron cemented   |
| 119-121      |                | Sandstone, fine to medium, oxidized, yellow-brown                |
| 121-170      |                | Sandstone, fine to coarse (coarser at bottom), yellow-brown, tan |
| 170-175      |                | Shale, silty, blue-gray  |
| 175-177      |                | Sandstone, very coarse   |
|              |                | PENNSYLVANIAN  |
| 177-178      |                | Shale, gray-green  |

Table 2. Logs of wells and test holes--Continued.

LOCATION: 082-42-14ADCA WC-4  
 ALTITUDE: 1340 FEET (NGVD 1929) DEPTH: 341 FEET

STATION ID: 415456-0954141-01  
 DATE COMPLETED: April 28, 1981



| DEPTH (FEET)     | DESCRIPTION OF MATERIALS                             |
|------------------|--|
| QUATERNARY       |  |
| 0-5              | Loess, tan   |
| 5-15             | Loess, yellow-tan, yellow-brown                      |
| 15-48            | Loess, yellow-tan with brown mottling                |
| 48-60            | Till, yellow-tan                                     |
| 60-75            | Till, yellow-brown, gravel at 64 feet                |
| 75-90            | Sand and gravel, fine to coarse; occasional boulders |
| 90-95            | As above, till mixed; boulders                       |
| 95-104           | Till, olive  |
| 104-107          | Sand, fine to medium                                 |
| 107-112          | Till, blue-gray                                      |
| 112-114          | Sand, fine to medium                                 |
| 114-116          | Till, olive, blue-gray                               |
| 116-118          | Sand, fine to coarse; gravel                         |
| 118-128          | Till, blue-gray; sand layers                         |
| 128-141          | Sand and gravel, fine                                |
| 141-240          | Till, blue-gray                                      |
| 240-250          | Clay, gray-tan; sand grains                          |
| 250-280          | Clay, silty, gray-tan; sand grains                   |
| 280-286          | Clay, silty, gray-green                              |
| 286-295          | Sand, fine, cemented, gray to gray-green             |
| 295-310          | Sand, fine to coarse, cemented, dark specks          |
| CRETACOUS        |  |
| DAKOTA FORMATION |  |
| 310-330          | Sandstone or cemented sand, tan                      |
| 330-334          | Shale, light blue-gray                               |
| 334-341          | Shale, reddish-brown                                 |

Casing record: set 2 inch pipe to 336 feet, slotted from 311 to 336 feet, gravel packed

LOCATION: 082-43-10AADD WC-2  
 ALTITUDE: 1115 FEET (NGVD 1929) DEPTH: 233 FEET

STATION ID: 415557-0954941-01  
 DATE COMPLETED: April 20, 1981

| DEPTH (FEET)  | DESCRIPTION OF MATERIALS  |
|---------------|---|
| QUATERNARY    |   |
| 0-30          | Loess, yellow-tan   |
| 30-35         | Clay, silty, gray   |
| 35-39         | Clay, silty, blue-gray; some wood at bottom                           |
| 39-45         | Sand and gravel, fine to very coarse; clay mixed; occasional boulders |
| 45-48         | Clay, some sandy, gray, blue-gray                                     |
| 48-52         | Sand and gravel, fine to very coarse; boulders                        |
| 52-53         | Till, olive   |
| 53-63         | Till, blue-gray   |
| 63-64         | Sand and gravel, fine to coarse                                       |
| 64-116        | Till, blue-gray   |
| 116-117       | Sand and gravel, gray   |
| 117-118       | Till, blue-gray   |
| 118-120       | Boulder   |
| 120-123       | Till, blue-gray   |
| 123-153       | Sand and gravel, fine, gray   |
| PENNSYLVANIAN |   |
| 153-154       | Limestone, shaly, silty, gray to gray-green                           |
| 154-156       | Shale, reddish-brown, yellow  |
| 156-158       | Shale, gray, yellow; limestone  |
| 158-159       | Shale, blue-gray  |
| 159-163       | Limestone, shaly, gray  |
| 163-166       | Shale, yellow-gray  |
| 166-167       | Limestone, shaly, gray  |
| 167-168       | Shale, gray   |
| 168-170       | Shale, black  |
| 170-171       | Shale, blue-gray  |
| 171-176       | Shale, yellow-gray grading to yellow-brown                            |
| 176-180       | Shale, reddish-brown  |
| 180-195       | Shale, light gray, yellow, reddish-brown                              |
| 195-210       | Shale, yellow, gray, trace of reddish-brown                           |
| 210-215       | Shale, yellow-gray  |
| 215-227       | Shale, reddish-brown  |
| 227-233       | Shale, yellow-gray, gray, trace of red                                |

Table 2. Logs of wells and test holes--Continued.

LOCATION: 082-43-31CDDC WC-181 STATION ID: 415148-0955357-01  
 ALTITUDE: 1075 FEET (NGVD 1929) DEPTH: 81 FEET DATE COMPLETED: May 20, 1983

| DEPTH (FEET) | DESCRIPTION OF MATERIALS   |
|--------------|--|
|              | QUATERNARY   |
| 0-5          | Road bed; top soil   |
| 5-9          | Clay, silty, brown   |
| 9-14         | Clay, silty, yellow-gray   |
| 14-17        | Clay, silty, yellow-brown  |
| 17-20        | Clay, silty, gray to gray-green  |
| 20-30        | Clay, gray, yellow-brown, gray-green   |
| 30-35        | Sand, fine to coarse; wood; silt; clay   |
| 35-40        | Sand and gravel (mostly sand), very fine to medium, gray                             |
| 40-50        | Sand and gravel (mostly sand), fine to coarse, yellow-gray                           |
| 50-70        | As above, coarser at base, yellow-brown  |
| 70-74        | Sand and gravel, brown, yellow-brown; boulders                                       |
| 74-78        | Sand and gravel, fine to very coarse, gray; till or clay, mixed, blue-gray; boulders |
| 78-81        | Till, sandy, blue-gray   |

LOCATION: 082-43-31DDDD WC-182 STATION ID: 415151-0955311-01  
 ALTITUDE: 1170 FEET (NGVD 1929) DEPTH: 121 FEET DATE COMPLETED: May 20, 1983

| DEPTH (FEET) | DESCRIPTION OF MATERIALS                                      |
|--------------|---|
|              | QUATERNARY  |
| 0-5          | Road bed; top soil  |
| 5-45         | Loess, brown to yellow-tan                                    |
| 45-60        | Loess, yellow-tan, brown streaks                              |
| 60-65        | Clay, silty, gray, yellow-gray                                |
| 65-69        | Clay, silty, hard, gray                                       |
| 69-75        | Clay, silty, hard, gray-tan                                   |
| 75-85        | Clay, silty, yellow-tan, yellow-gray                          |
| 85-90        | Clay, silty, yellow-brown, yellow-tan                         |
| 90-104       | Clay, silty, yellow-tan grading to gray, yellow-brown at base |
| 104-111      | Sand and gravel, fine to coarse, yellow-brown                 |
| 111-113      | Till, yellow-brown to yellow-gray                             |
| 113-121      | Till, blue-gray   |

LOCATION: 082-44-35DDDC WC-180 STATION ID: 415148-0955535-01  
 ALTITUDE: 1120 FEET (NGVD 1929) DEPTH: 120 FEET DATE COMPLETED: May 19, 1983

| DEPTH (FEET) | DESCRIPTION OF MATERIALS   |
|--------------|--|
|              | QUATERNARY   |
| 0-10         | Road bed; top soil   |
| 10-60        | Loess, brown to yellow-brown   |
| 60-80        | Loess, yellow-tan, yellow-brown                                      |
| 80-88        | Loess, yellow-gray   |
| 88-93        | Clay, silty, gray-green  |
| 93-96        | Sand, fine to coarse, tan; clay                                      |
| 96-101       | Sand and gravel, fine to very coarse; boulders; till at base, yellow |
| 101-120      | Till; blue-gray  |

Table 2. Logs of wells and test holes--Continued.

LOCATION: 082-44-36DDDC

WC-178

STATION ID: 415148-0955427-01

ALTITUDE: 1075 FEET (NGVD 1929)

DEPTH: 120 FEET

DATE COMPLETED: May 18, 1983

INCREASING NATURAL GAMMA →

POTENTIAL (mV) ←



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                           |
|--------------|--|
| 0-5          | QUATERNARY<br>Road bed; top soil                   |
| 5-9          | Clay, gray-brown                                   |
| 9-14         | Clay, silty, yellow-gray                           |
| 14-25        | Clay, silty, blue-gray                             |
| 25-32        | Clay, silty, gray-green; shells                    |
| 32-36        | Clay, silty, brown, gray; wood                     |
| 36-45        | Sand and gravel, fine to coarse, yellow-brown      |
| 45-48        | Sand and gravel, oxidized, brown, yellow-brown     |
| 48-78        | Till, blue-gray; sand layers at 55-58 feet         |
| 78-80        | Sand and gravel, fine, gray-tan                    |
| 80-94        | Till, sandy, gravelly, blue-gray                   |
| 94-114       | Till, sandy, gravelly, gray-brown; shale, reworked |
| 114-117      | PENNSYLVANIAN<br>Limestone, gray-green             |
| 117-118      | As above, shaly                                    |
| 118-120      | Limestone, tan; shale streaks                      |

LOCATION: 083-31-03C6CH

WC-123

STATION ID: 420134-0942718-01

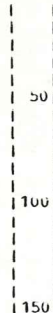
ALTITUDE: 995 FEET (NGVD 1929)

DEPTH: 41 FEET

DATE COMPLETED: August 31, 1982

INCREASING NATURAL GAMMA →

POTENTIAL (mV) ←



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                              |
|--------------|---|
| 0-8          | QUATERNARY<br>Fill; road bed                          |
| 8-9          | Clay, silty, dark gray                                |
| 9-11         | Clay, silty, brown                                    |
| 11-15        | Sand and gravel, fine to medium, tan, brown; shells   |
| 15-20        | Sand and gravel, fine to coarse, tan, brown           |
| 20-25        | As above, gray; shells                                |
| 25-32        | Sand and gravel, fine to very coarse, coarser at base |
| 32-36        | Till, gravelly, blue-gray                             |
| 36-38        | Sand and gravel, fine to medium, tan                  |
| 38-41        | Till, blue-gray, tan                                  |

LOCATION: 083-31-04ADDB

WC-120

STATION ID: 420146-0942723-01

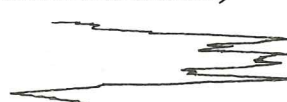
ALTITUDE: 1000 FEET (NGVD 1929)

DEPTH: 54 FEET

DATE COMPLETED: August 30, 1982

INCREASING NATURAL GAMMA →

DEPTH (FEET)



| DEPTH (FEET) | DESCRIPTION OF MATERIALS   |
|--------------|--|
| 0-1          | QUATERNARY<br>Top soil, sandy, gravelly  |
| 1-13         | Sand and gravel, fine to very coarse, tan  |
| 13-14        | Till, yellow-gray  |
| 14-23        | Till, blue-gray  |
| 23-27        | Clay, gray to blue-gray, dark at top   |
| 27-28        | Clay, gray, very sandy   |
| 28-35        | Sand, fine to coarse; clay, occasional layer, gray   |
| 35-51        | CRETACEOUS<br>DAKOTA FORMATION<br>Sand and gravel or sandstone, fine, some coarse, tan, yellow-brown |
| 51-53        | PENNSYLVANIAN<br>Shale, light blue-gray  |
| 53-54        | Shale, reddish-brown   |

Casing record: set 2 inch pipe to 51 feet, slotted from 40 to 51 feet, gravel packed



Table 2. Logs of wells and test holes--Continued.

LOCATION: 083-31-10AABB

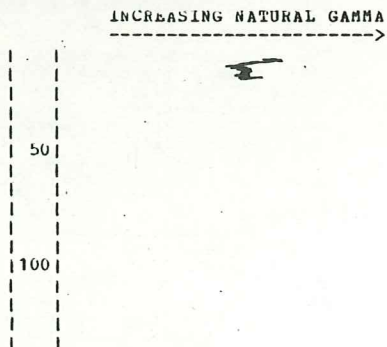
WC-121

STATION ID: 420121-0942625-01

ALTITUDE: 1012 FEET (NGVD 1929)

DEPTH: 21 FEET

DATE COMPLETED: August 30, 1982



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                           |
|--------------|--|
| QUATERNARY   |  |
| 0-1          | Top soil, sandy, gravelly                          |
| 1-3          | Sand and gravel, fine to medium, silty, brown      |
| 3-17         | Sand and gravel, fine to very coarse, yellow-brown |
| 17-18        | Clay or till, silty, yellow-gray                   |
| 18-21        | Till, blue-gray                                    |

Casing record: set 2 inch pipe to 17 feet, slotted from 7 to 17 feet, gravel packed

LOCATION: 083-31-10B5BB

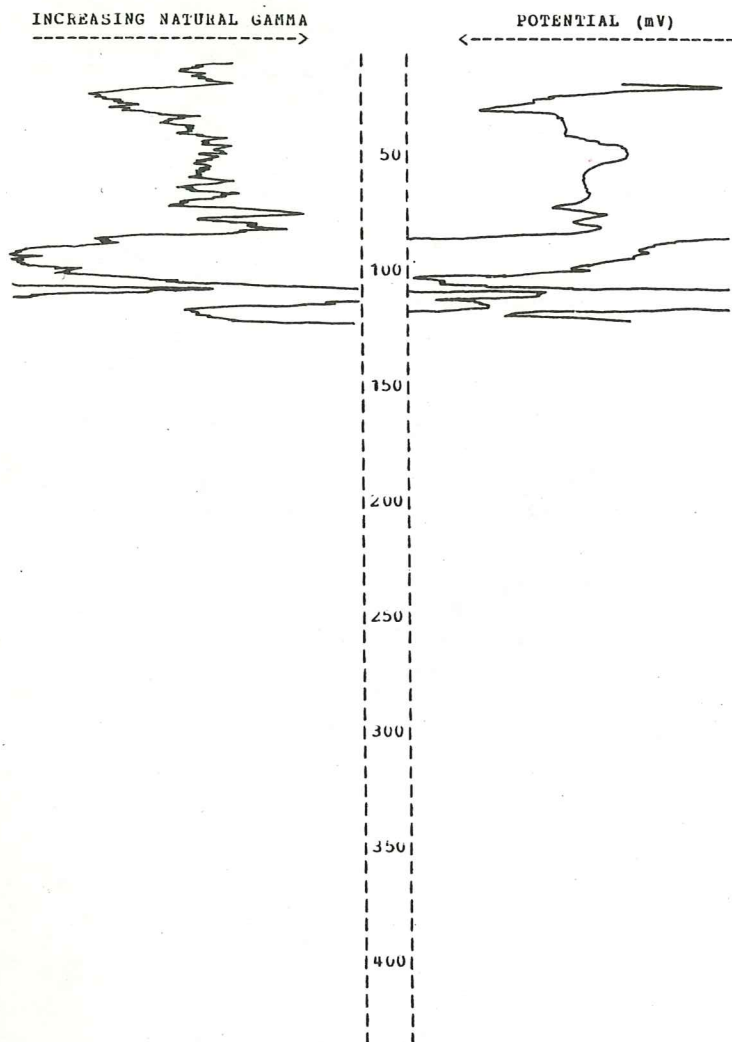
WC-122

STATION ID: 420118-0942714-01

ALTITUDE: 1080 FEET (NGVD 1929)

DEPTH: 121 FEET

DATE COMPLETED: August 31, 1981



| DEPTH (FEET)     | DESCRIPTION OF MATERIALS   |
|------------------|--|
| QUATERNARY       |  |
| 0-5              | Road bed   |
| 5-14             | Till, blue-gray, yellow-brown  |
| 14-15            | Till, yellow-gray  |
| 15-19            | Till, yellow-brown   |
| 19-23            | Sand and gravel, fine to coarse, yellow-brown; till mixed                        |
| 23-26            | Till, sandy, gray, yellow-brown  |
| 26-28            | Sand and gravel, fine to coarse; till mixed, yellow-brown                        |
| 28-34            | Till, olive  |
| 34-39            | Till, blue-gray  |
| 39-40            | Clay or gumbo, very dark gray  |
| 40-42            | Till, blue-gray, yellow-brown  |
| 42-48            | Till, sandy, light blue-gray   |
| 48-66            | Till, yellow-brown   |
| 66-67            | Till, sandy, brown, gray   |
| 67-69            | Sand and gravel, fine, yellow-brown  |
| 69-70            | Till, blue-gray, brown   |
| 70-73            | Till, blue-gray  |
| 73-74            | Sand, fine to coarse, tan  |
| 74-80            | Clay, dark blue-gray; sand grains  |
| CRETACEOUS       |  |
| DAKOTA FORMATION |  |
| 80-90            | Sandstone, fine to coarse, brown, tan  |
| 90-95            | Sandstone, very fine to very coarse, tan   |
| 95-103           | Sandstone (gravel), tan  |
| PENNSYLVANIAN    |  |
| 103-113          | Shale, light blue-gray, reddish-brown, yellow-brown                              |
| 113-114          | Limestone, sandy, tan  |
| 114-121          | Shale, silty, sandy, light gray; siltstone or sandstone, occasional thin streaks |

Table 2. Logs of wells and test holes--Continued.

LOCATION: 083-32-04ACCC

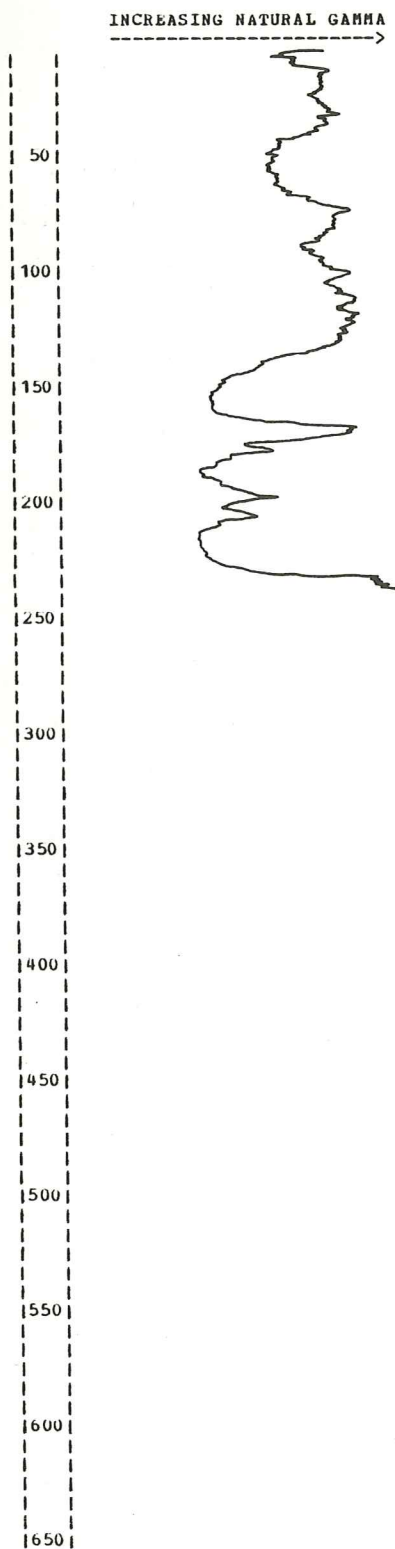
WC-228

STATION ID: 420149-0943447-01

ALTITUDE: 1202 FEET (NGVD 1929)

DEPTH: 240 FEET

DATE COMPLETED: July 26, 1982



| DEPTH (FEET)     | DESCRIPTION OF MATERIALS  |
|------------------|---|
| QUATERNARY       |   |
| 0-3              | Clay, silty, sandy, brown   |
| 3-6              | Clay or till, sandy, gray, yellow-gray                                    |
| 6-10             | Till, yellow-brown  |
| 10-14            | Till, gray-brown  |
| 14-16            | Clay, silty, oxidized streaks, gray                                       |
| 16-34            | Clay, silty, sandy, blue-gray   |
| 34-36            | Clay, silty, brown, gray-green  |
| 36-38            | Clay, silty, dark brown   |
| 38-45            | Till, sandy, gray-green   |
| 45-70            | Till, sandy, gravelly, light blue-gray                                    |
| 70-73            | Till, gray  |
| 73-74            | Clay, silty, brown; organics  |
| 74-81            | Clay, gray; sand grains, few  |
| 81-94            | Till, gray-green  |
| 94-100           | Till, olive   |
| 100-111          | Till, light blue-gray   |
| 111-116          | Till, yellow-brown, yellow-gray   |
| 116-123          | Clay, gray  |
| 123-130          | Clay, silty, dark brown; organics   |
| 130-132          | Clay, gray, yellow-brown  |
| 132-136          | Clay or till, sandy, blue-gray  |
| 136-138          | Till, olive, gray-green   |
| 138-139          | Till, blue-gray   |
| 139-143          | Sand and gravel, fine, yellow-brown, brown; clay, mixed; sandstone, shaly |
| CRETACEOUS       |   |
| DAKOTA FORMATION |   |
| 143-150          | Sandstone, coarse, tan, yellow-brown                                      |
| 150-167          | Sandstone, coarse, tan, yellow-brown                                      |
| 167-170          | Sandstone, fine to coarse, tan, yellow-brown                              |
| 170-173          | Shale, silty, gray, yellow-brown  |
| 173-177          | Sandstone, fine to coarse, tan  |
| 177-178          | Shale, sandy, gray  |
| 178-182          | Limestone, fine to coarse; shale  |
| 182-185          | Sandstone, fine to coarse, tan  |
| 185-190          | Sandstone, fine to coarse, yellow-brown                                   |
| 190-195          | Sandstone, fine to coarse, oxidized, well cemented, yellow-brown, brown   |
| 195-199          | Sandstone, fine to coarse, tan  |
| 199-201          | Shale, sandy, yellow-gray, gray-green                                     |
| 201-206          | Sandstone, fine to coarse; shale  |
| 206-208          | Shale, sandy, light gray; gravel  |
| 208-234          | Sandstone, fine to coarse, grading to coarser at base, tan                |
| PENNSYLVANIAN    |   |
| 234-235          | Shale, yellow-brown   |
| 235-236          | Shale, reddish-brown  |
| 238-240          | Shale, gray, reddish-brown  |

Casing record: set 2 inch pipe to 240 feet, slotted from 220 to 240 feet, gravel packed

Table 2. Logs of wells and test holes--Continued.

LOCATION: 083-32-06BBBC

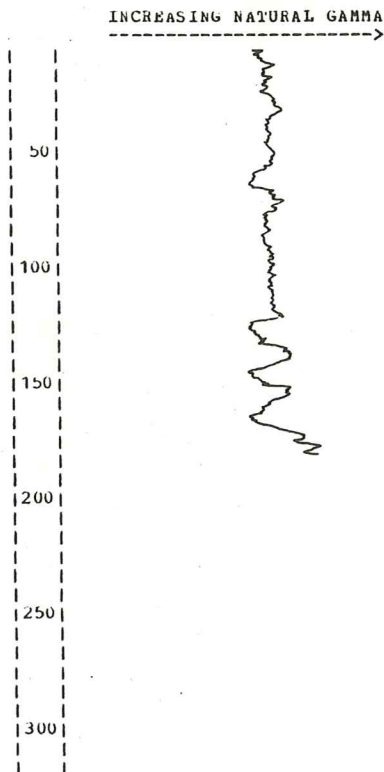
WC-229

STATION ID: 420116-0943634-01

ALTITUDE: 1135 FEET (NGVD 1929)

DEPTH: 181 FEET

DATE COMPLETED: July 27, 1983



DEPTH DESCRIPTION OF MATERIALS  
(FEET)

QUATERNARY  
 0-2 Top soil  
 2-12 Till, light yellow-brown  
 12-19 Till, yellow-gray grading darker  
 19-62 Till, blue-gray  
 62-65 Sand and gravel, fine to coarse, yellow-tan  
 65-88 Till, sandy, gravelly, blue-gray  
 88-90 Till, olive  
 90-91 Till, gray  
 91-92 Clay, silty, brown  
 92-117 Till, blue-gray  
 117-122 Clay, silty, gray  
 122-135 Sand and gravel; clay, silty, layers  
 135-140 Clay, silty, brown, gray; organics; wood  
 140-150 Sand, fine to very coarse; clay, layers  
 150-162 Clay, silty, soft, brown; organics  
 162-171 Sand and gravel; boulders at base

PENNSYLVANIAN  
 171-180 Shale, silty, sandy, gray-brown; sandstone, very fine layers  
 180-181 Shale, silty, sandy, hard, light green

Casing resord: set 2 inch pipe to 181 feet, slotted from 161 to 171 feet, gravel packed

Table 2. Logs of wells and test holes--Continued.

LOCATION: 083-34-36CCCC      WC-151      STATION ID: 415700-0944552-01  
 ALTITUDE: 1206 FEET (NGVD 1929)      DEPTH: 141 FEET      DATE COMPLETED: September 29, 1982

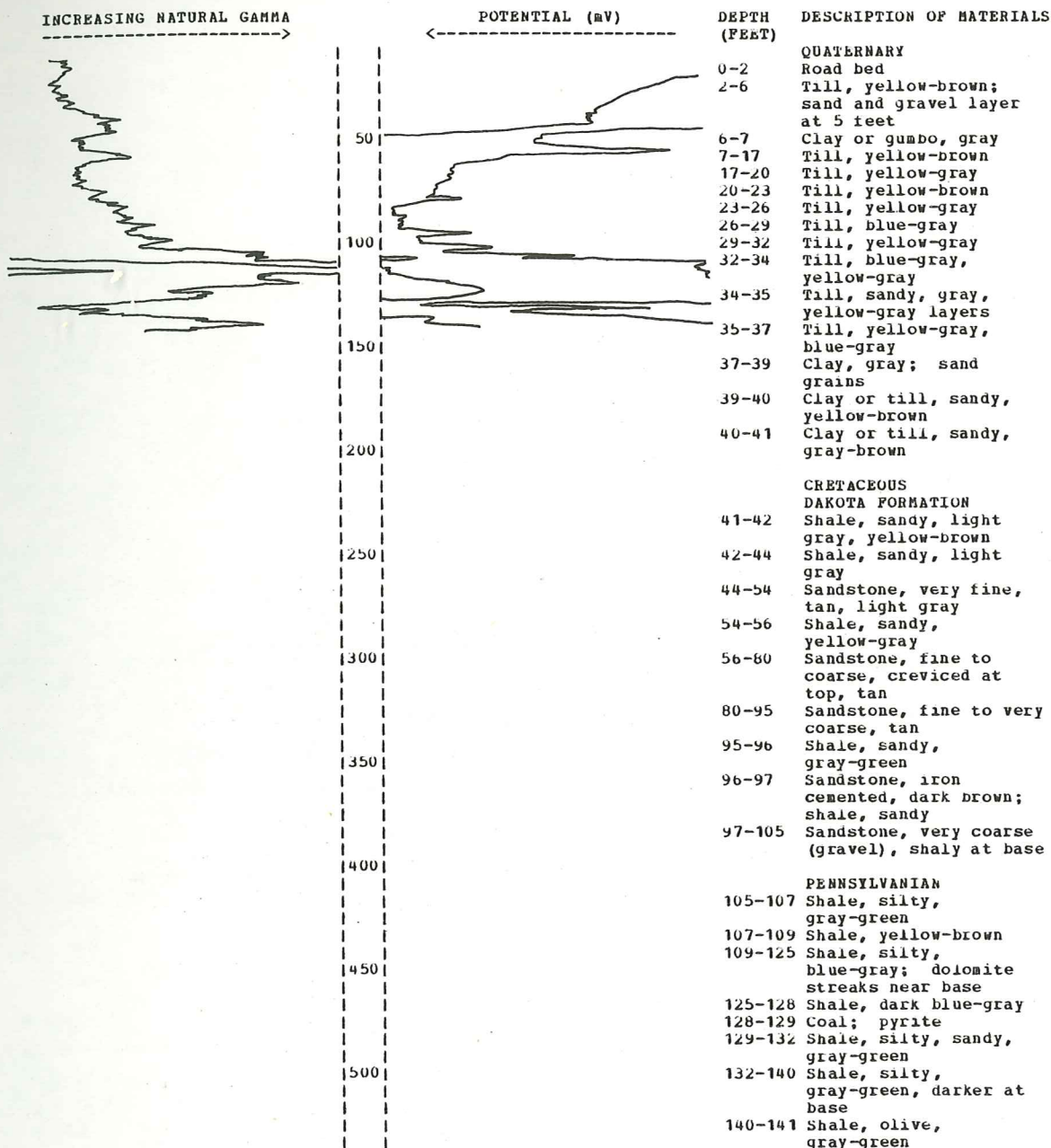


Table 2. Logs of wells and test holes--Continued.

LOCATION: 083-37-06AABB                      WC-20                      STATION ID: 420211-0951136-01  
 ALTITUDE: 1355 FEET (NGVD 1929)              DEPTH: 572 FEET                      DATE COMPLETED: September 7, 1981

| DEPTH (FEET) | DESCRIPTION OF MATERIALS  |
|--------------|---|
|              | QUATERNARY  |
| 0-3          | Topsoil, roadbed  |
| 3-9          | Clay, silty, hard, gray-brown   |
| 9-15         | Clay, silty, oxidized, soft, yellow-brown                                 |
| 15-19        | Clay, silty, soft, tan grading to blue-gray                               |
| 19-23        | Clay, silty, sandy, blue-gray   |
| 23-32        | Till, gravelly at top, yellow-brown                                       |
| 32-34        | Till, silty, sandy, light blue-gray                                       |
| 34-39        | Till, blue-gray   |
| 39-41        | Sand and gravel; till mixed; boulders                                     |
| 41-50        | Till, olive, blue-gray  |
| 50-70        | Till, blue-gray   |
| 70-75        | Sand and gravel, coarse; till mixed                                       |
| 75-86        | Till, silty, gray-brown   |
| 86-88        | Clay, silty, organic, dark  |
| 88-92        | Clay, blue-gray   |
| 92-102       | Till, silty, some gravelly, light blue-gray; sand and gravel, thin layers |
| 102-147      | Till, sandy, gravelly, yellow-brown; occasional boulders                  |
| 147-160      | Till, gravelly, sandy, blue-gray  |
| 160-271      | Till, sandy, gravelly, blue-gray; occasional boulders                     |
| 271-274      | Sand and gravel; wood; lignite  |
| 274-282      | Till, very sandy, gravelly, blue-gray                                     |
| 282-285      | Sand and gravel, fine to medium   |
| 285-435      | Till, sandy, gravelly, blue-gray  |
| 435-437      | Till or clay, hard  |
| 437-520      | Sand, fine to coarse; gravel, fine grading coarser to the bottom          |
| 520-562      | Sand and gravel, fine; till mixed   |
|              | PENNSYLVANIAN   |
| 562-572      | Shale, very dark gray, black streaks                                      |

LOCATION: 083-38-03CCBC                      WC-62                      STATION ID: 420133-0951557-01  
 ALTITUDE: 1260 FEET (NGVD 1929)              DEPTH: 61 FEET                      DATE COMPLETED: June 16, 1982

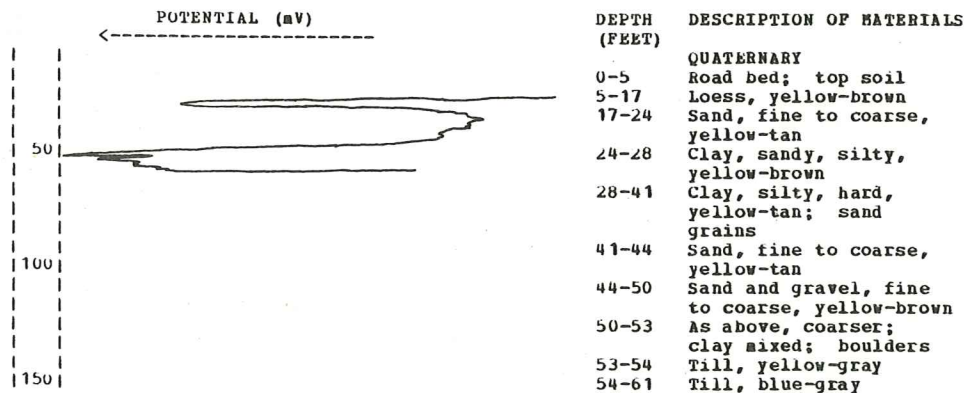


Table 2. Logs of wells and test holes--Continued.

LOCATION: 083-38-04ADEC

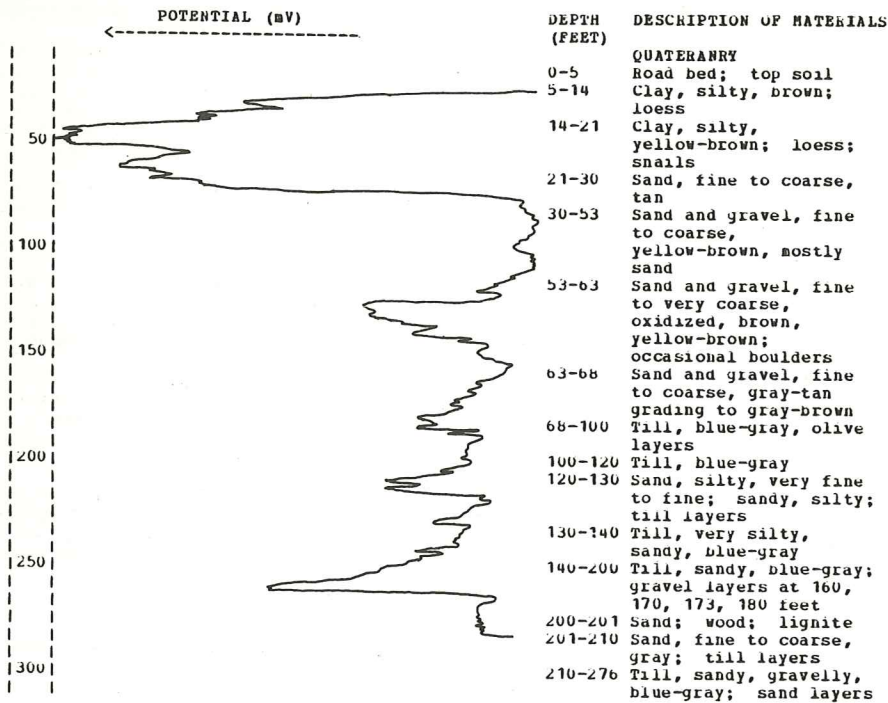
WC-60

STATION ID: 420158-0951614-01

ALTITUDE: 1240 FEET (NGVD 1929)

DEPTH: 276 FEET

DATE COMPLETED: June 15, 1982



LOCATION: 083-38-04DABC

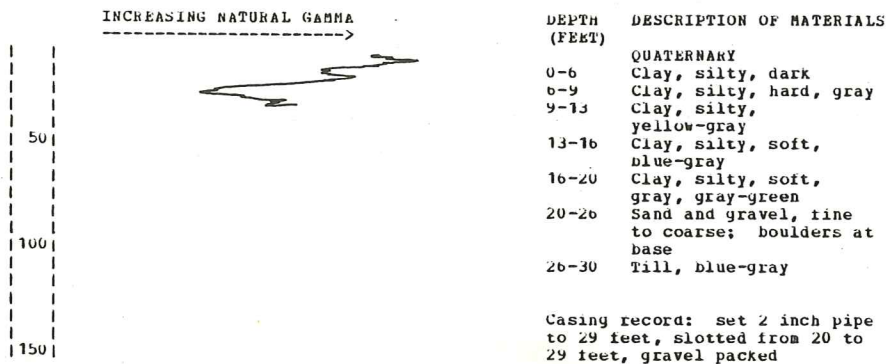
WC-63

STATION ID: 420147-0951613-01

ALTITUDE: 1220 FEET (NGVD 1929)

DEPTH: 30 FEET

DATE COMPLETED: June 16, 1982



LOCATION: 083-38-04DADA

WC-61

STATION ID: 420142-0951557-01

ALTITUDE: 1215 FEET (NGVD 1929)

DEPTH: 41 FEET

DATE COMPLETED: June 15, 1982

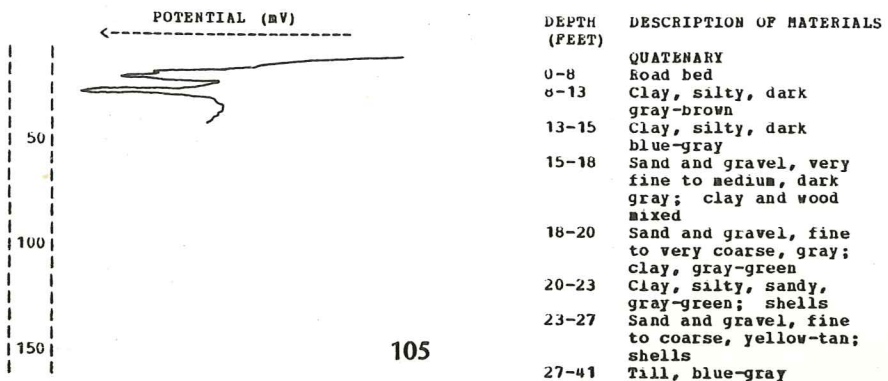
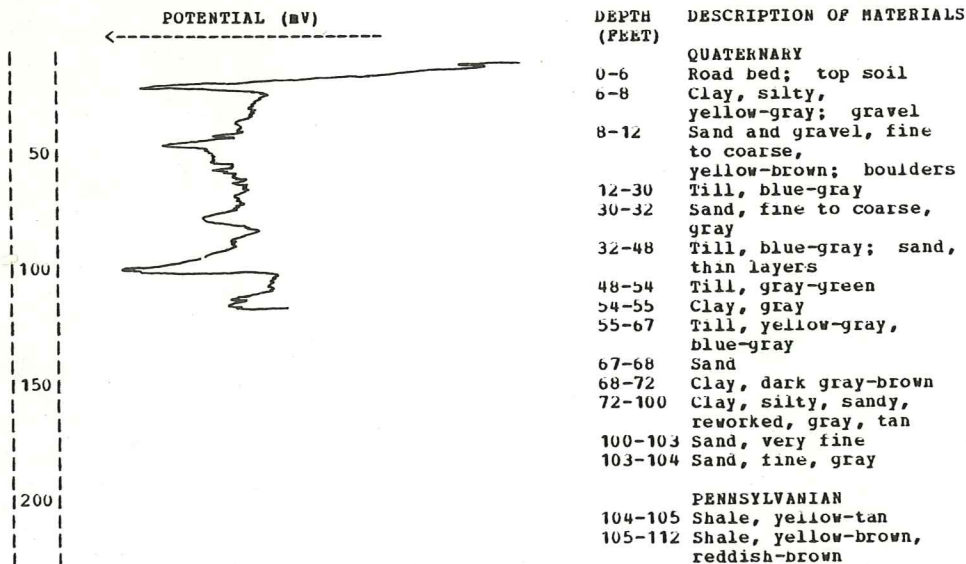


Table 2. Logs of wells and test holes--Continued.

LOCATION: 083-39-30DCBB WC-49 STATION ID: 415804-0952548-01  
 ALTITUDE: 1150 FEET (NGVD 1929) DEPTH: 112 FEET DATE COMPLETED: June 1, 1982



LOCATION: 083-40-15CCDC WC-13 STATION ID: 415938-0952943-01  
 ALTITUDE: 1198 FEET (NGVD 1929) DEPTH: 173 FEET DATE COMPLETED: July 6, 1981

| DEPTH (FEET)     | DESCRIPTION OF MATERIALS                                   |
|------------------|--|
| QUATERNARY       |  |
| 0-10             | Loess, tan   |
| 10-15            | Loess, brown grading to gray                               |
| 15-28            | Loess, yellow-brown  |
| 28-31            | Clay, silty, sandy, blue-gray                              |
| 31-35            | Sand and gravel, fine to coarse, gray; occasional boulders |
| 35-50            | Till, blue-gray  |
| 50-56            | Clay, silty, gray, gray-green                              |
| 56-67            | Sand and gravel, fine to medium, gray, reddish color       |
| 67-82            | Clay, sandy, gray, gray-green                              |
| 82-132           | Sand, very fine to fine, silty, red, gray, dark grains     |
| 132-164          | As above, gray, brown                                      |
| CRETACEOUS       |  |
| DAKOTA FORMATION |  |
| 164-173          | Sandstone; possible shale layers                           |

LOCATION: 083-42-17ACCC WC-175 STATION ID: 420004-0954529-01  
 ALTITUDE: 1135 FEET (NGVD 1929) DEPTH: 81 FEET DATE COMPLETED: May 13, 1983

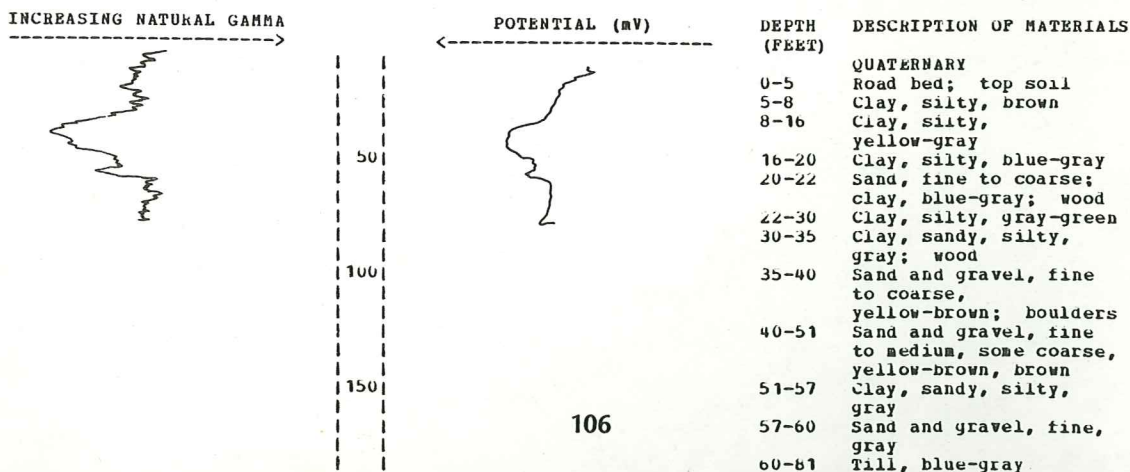


Table 2. Logs of wells and test holes--Continued.

LOCATION: 083-42-17ACDD

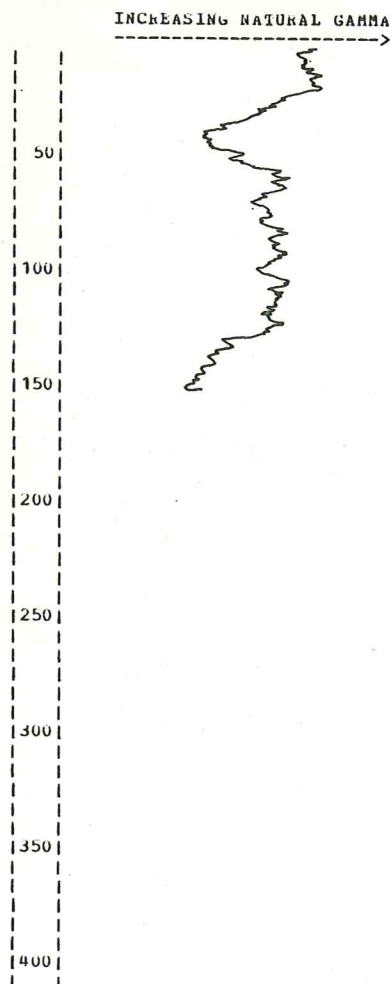
WC-176

STATION ID: 420004-0954515-01

ALTITUDE: 1160 FEET (NGVD 1929)

DEPTH: 161 FEET

DATE COMPLETED: May 16, 1983



| DEPTH (FEET) | DESCRIPTION OF MATERIALS   |
|--------------|--|
|              | QUATERNARY   |
| 0-2          | Top soil   |
| 2-10         | Clay, silty, brown; loess  |
| 10-20        | Clay, silty, yellow-brown; loess   |
| 20-35        | Loess, yellow-tan  |
| 35-40        | Sand, very fine to coarse; clay; silt                                    |
| 40-45        | Sand, very fine to coarse, yellow-tan                                    |
| 45-50        | Sand and gravel, fine, oxidized yellow-brown                             |
| 50-55        | Wood; sand   |
| 55-56        | Gravel; boulder; till, yellow  |
| 56-93        | Till, blue-gray  |
| 93-95        | Clay, gray, sand grains  |
| 95-97        | Clay, yellow-brown, gray   |
| 97-100       | Clay, gray, yellow-brown trace   |
| 100-118      | Clay, gray, blue-gray  |
| 118-128      | Clay, silty, gray  |
| 128-140      | Sand, very fine to medium, some silty, cemented, dark specks, gray-green |
| 140-153      | As above, grading coarser, fine gravel near base                         |
|              | PENNSYLVANIAN  |
| 153-154      | Shale; limestone streak at base; gravel, fine                            |
| 154-156      | Shale, yellow-gray, gray-green, reddish-brown trace                      |
| 156-157      | Limestone, tan   |
| 157-158      | Shale, gray-green, tan   |
| 158-159      | Shale, black; coal, thin streaks   |
| 159-161      | Shale, gray  |

Casing record: set 2 inch pipe to 161 feet, slotted from 149 to 154 feet, gravel packed

LOCATION: 083-42-17CABB

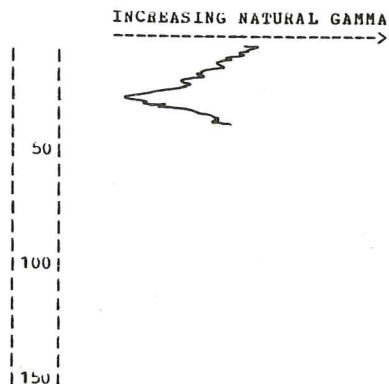
WC-173

STATION ID: 420004-0954548-01

ALTITUDE: 1140 FEET (NGVD 1929)

DEPTH: 37 FEET

DATE COMPLETED: May 12, 1983



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                                  |
|--------------|---|
|              | QUATERNARY  |
| 0-3          | Top soil, dark gray                                       |
| 3-6          | Clay, silty, gray   |
| 6-10         | Clay, silty, yellow-gray                                  |
| 10-16        | Clay, silty, yellow-brown                                 |
| 16-26        | Clay, silty, sandy at base, gray to blue-gray             |
| 26-32        | Sand and gravel, fine to medium, some coarse, yellow-gray |
| 32-37        | Till, blue-gray   |

Casing record: set 2 inch pipe to 37 feet, slotted from 23.5 to 26 feet, gravel packed



**Table 2. Logs of wells and test holes--Continued.**

LOCATION: 083-42-17CBAB

WC-174

STATION ID: 420004-0954557-01

ALTITUDE: 1150 FEET (NGVD 1929)

DEPTH: 61 FEET

DATE COMPLETED: May 13, 1983

INCREASING NATURAL GAMMA

POTENTIAL (mV)



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                                      |
|--------------|---|
| 0-8          | QUATERNARY<br>Road bed; top soil                              |
| 8-14         | Clay, silty, very dark  |
| 14-18        | Clay, silty, gray   |
| 18-22        | Clay, silty, yellow-gray                                      |
| 22-28        | Clay, sandy, silty, gray-green; wood; sand layers             |
| 28-33        | Sand, fine to coarse, gray                                    |
| 33-40        | Sand and gravel, fine, medium to coarse at base, yellow-brown |
| 40-43        | Sand and gravel, fine to coarse, yellow-brown; boulders       |
| 43-45        | Till; yellow-gray   |
| 45-61        | Till, blue-gray; boulder at 59 feet                           |

LOCATION: 083-43-04CBCB

WC-5

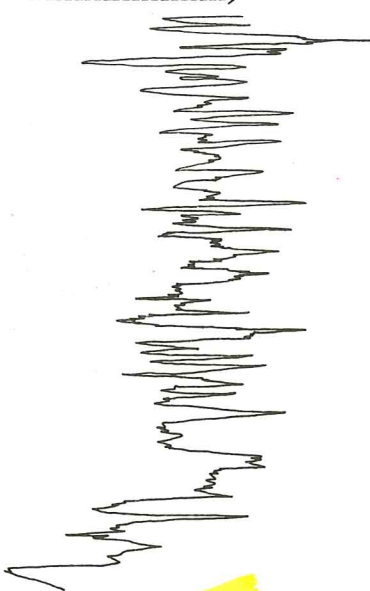
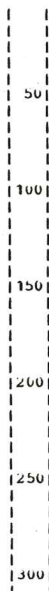
STATION ID: 420139-0955157-01

ALTITUDE: 1235 FEET (NGVD 1929)

DEPTH: 321 FEET

DATE COMPLETED: May 4, 1981

INCREASING NATURAL GAMMA



| DEPTH (FEET) | DESCRIPTION OF MATERIALS               |
|--------------|--|
| 0-10         | QUATERNARY<br>Fill; loess, brown       |
| 10-30        | Loess, brown, tan                      |
| 30-35        | Loess, yellow-brown                    |
| 35-36        | Loess, blue-gray                       |
| 36-38        | Loess, gray                            |
| 38-43        | Loess, yellow-brown                    |
| 43-53        | Till, yellow-brown                     |
| 53-65        | Clay or till, sandy, soft, yellow-gray |
| 65-69        | Till, yellow-brown                     |
| 69-71        | Gravel; boulder                        |
| 71-81        | Till, yellow-gray to blue-gray         |
| 81-235       | Till, blue-gray                        |
| 235-253      | Till, blue-gray                        |
| 253-284      | Sand and gravel, fine to medium        |
|              | CRETACEOUS<br>DAKOTA FORMATION         |
| 284-321      | Sandstone, fine, tan                   |

Casing record: set 2 inch pipe to 315 feet, slotted from 297 to 315 feet, gravel packed

LOCATION: 084-29-16CBAB

WC-233

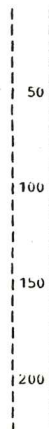
STATION ID: 420507-0941419-01

ALTITUDE: 1075 FEET (NGVD 1929)

DEPTH: 181 FEET

DATE COMPLETED: August 4, 1983

INCREASING NATURAL GAMMA



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                   |
|--------------|--|
| 0-14         | QUATERNARY<br>Till, yellow-brown           |
| 14-30        | Till, brown, blue-gray                     |
| 30-32        | Boulder                                    |
| 32-47        | Till, blue-gray                            |
| 47-49        | Sand and gravel, fine to coarse            |
| 49-50        | Till, olive                                |
| 50-130       | Till, blue-gray, layer of olive at 95 feet |
| 130-137      | Till, gray                                 |
| 137-139      | Till, light blue-gray                      |
| 139-143      | Till, blue-gray                            |
| 143-145      | Wood; gravel; sand                         |
| 145-177      | Sand and gravel, fine to coarse            |
|              | PENNSYLVANIAN                              |
| 177-179      | Shale, gray-tan                            |
| 179-181      | Shale, yellow-reddish-brown, gray-green    |

Casing record: set 2 inch pipe to 181 feet, slotted from 161 to 176 feet, gravel packed

Table 2. Logs of wells and test holes--Continued.

LOCATION: 084-29-31DAAD

WC-234

STATION ID: 420227-0941542-01

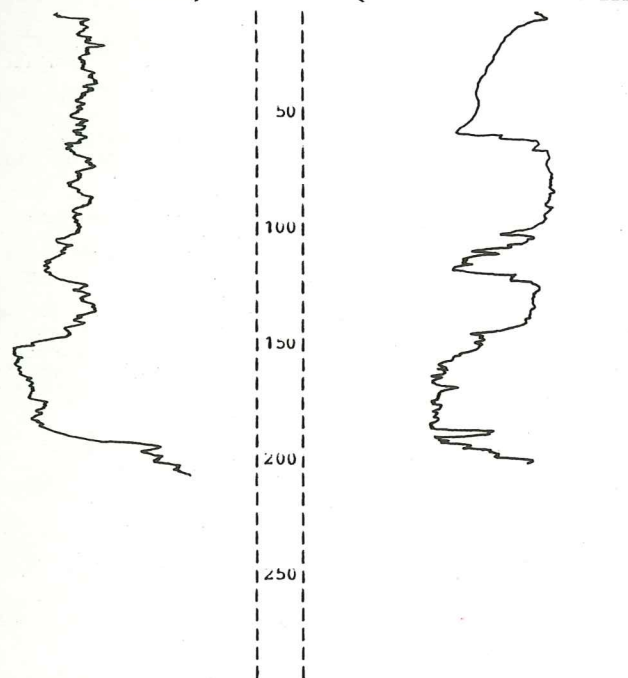
ALTITUDE: 1027 FEET (NGVD 1929)

DEPTH: 201 FEET

DATE COMPLETED: August 8, 1983

INCREASING NATURAL GAMMA

POTENTIAL (mV)



| DEPTH (FEET)  | DESCRIPTION OF MATERIALS  |
|---------------|---|
| QUATERNARY    |   |
| 0-5           | Road bed; top soil  |
| 5-6           | Till, yellow-gray   |
| 6-10          | Sand and gravel, fine to medium, brown                                      |
| 10-56         | Till, blue-gray   |
| 56-60         | Till, yellow-brown  |
| 60-68         | Till, hard, gray-green  |
| 68-70         | Till, blue-gray, olive  |
| 70-102        | Till, blue-gray   |
| 102-104       | Sand and gravel, fine to medium, gray-tan                                   |
| 104-110       | Till, blue-gray; gravel layers  |
| 110-120       | Sand and gravel, fine to coarse; till, mixed, blue-gray                     |
| 120-144       | Till, blue-gray; sand and gravel  |
| 144-145       | Clay, silty, gray   |
| 145-155       | Sand, fine to coarse, possibly cemented, gray-tan                           |
| 155-188       | Sand and gravel, fine to coarse, gray-brown; till or clay layer at 169 feet |
| PENNSYLVANIAN |   |
| 188-189       | Shale, silty, gray  |
| 189-191       | Sandstone, fine, hard, gray   |
| 191-201       | Shale, blue-gray, gray; sandstone, fine, interbedded; siltstone             |

LOCATION: 084-30-19AAAA

WC-230

STATION ID: 420440-0942243-01

ALTITUDE: 1065 FEET (NGVD 1929)

DEPTH: 201 FEET

DATE COMPLETED: July 28, 1983

| DEPTH (FEET)     | DESCRIPTION OF MATERIALS   |
|------------------|--|
| QUATERNARY       |  |
| 0-2              | Top soil   |
| 2-5              | Till, sandy, gravelly, yellow-gray   |
| 5-10             | Sand and gravel, tan, yellow-brown   |
| 10-12            | Till, sandy, gravelly, yellow-gray   |
| 12-20            | Sand and gravel, fine to coarse, gray-tan  |
| 20-21            | Till, sandy, gravelly, yellow-gray   |
| 21-24            | Sand and gravel, fine, brown   |
| 24-25            | Till, brown  |
| 25-44            | Till, blue-gray; sand layer at 38'   |
| 44-62            | Sand and gravel, fine to coarse, gray-tan  |
| 62-72            | Till, blue-gray  |
| 72-74            | As above; sand and gravel  |
| 74-94            | Till, blue-gray  |
| 94-99            | Sand and gravel, very fine to fine, gray-tan   |
| 99-100           | Till, olive  |
| CRETACEOUS       |  |
| DAKOTA FORMATION |  |
| 100-108          | Till, yellow-gray, gray; clay or shale   |
| 108-112          | Clay or shale, silty, gray, yellow-gray  |
| 112-114          | Shale, sandy, yellow-brown, gray   |
| 114-120          | Sandstone, fine to very coarse   |
| 120-124          | Sandstone, very coarse, brown, yellow-brown  |
| 124-135          | Sandstone, well cemented, brown; shale, thin layers                                  |
| 135-137          | Shale, silty, gray   |
| 137-141          | Sandstone, very fine, tan, yellow-brown  |
| PENNSYLVANIAN    |  |
| 141-150          | Shale, silty, gray, yellow-gray; sandstone, fine, interbedded; organics, dark specks |
| 150-157          | Sandstone, fine to medium, hard, gray; organics                                      |
| 157-161          | Shale, gray-brown; shale, streaks  |
| 161-163          | Coal; pyrite   |
| 163-170          | Shale, gray; organics, dark specks   |
| 170-176          | Shale, sandy, light blue-gray; pyrite  |
| 176-180          | Shale, dark gray, gray-brown; pyrite   |
| 180-201          | Shale, silty, gray; pyrite   |

Table 2. Logs of wells and test holes--Continued.

LOCATION: 084-32-08ACDB

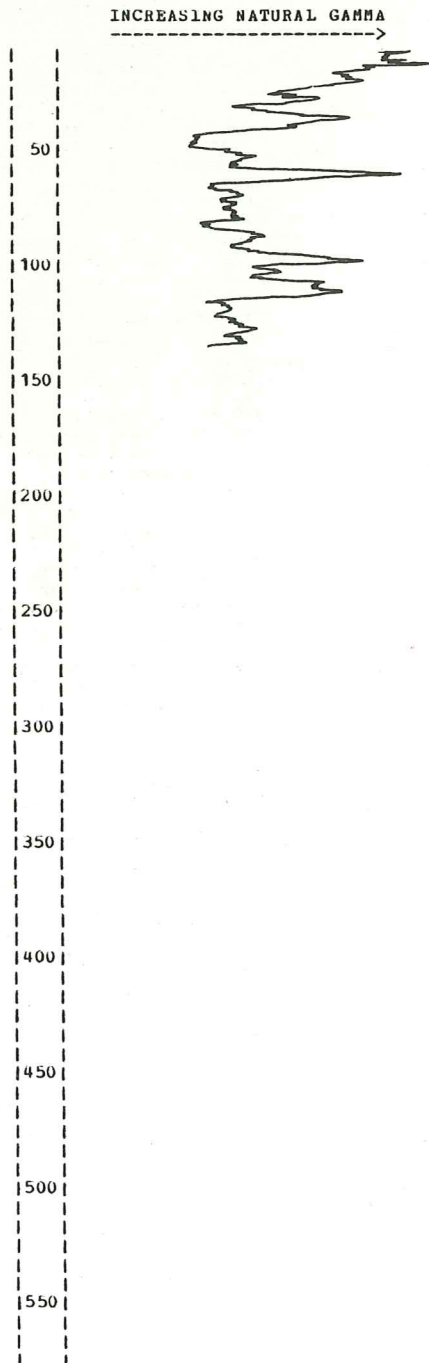
WC-124

STATION ID: 420603-0943551-01

ALTITUDE: 1070 FEET (NGVD 1929)

DEPTH: 141 FEET

DATE COMPLETED: September 1, 1962



| DEPTH (FEET)     | DESCRIPTION OF MATERIALS   |
|------------------|--|
| QUATERNARY       |  |
| 0-12             | Till, yellow-brown, yellow-gray; boulder at 3 feet                         |
| CRETACEOUS       |  |
| DAKOTA FORMATION |  |
| 12-15            | Sand or sandstone, fine to medium, brown                                   |
| 15-20            | Sandstone, fine to coarse, yellow-brown, tan                               |
| 20-24            | Sandstone, fine to coarse, tan; shale, thin layers, tan                    |
| 24-28            | Sandstone, fine to very coarse, yellow-brown                               |
| 28-33            | Shale, silty, sandy, light gray; sandstone layers, fine to medium, tan     |
| 33-40            | Sandstone, fine to medium, some coarse, yellow-brown; shale at top, yellow |
| 40-45            | Sandstone, fine to coarse, brown   |
| 45-46            | Shale, silty, yellow-brown   |
| 46-48            | Sandstone, yellow-brown; shale   |
| 48-53            | Sandstone, fine to very coarse, brown, yellow-brown                        |
| 53-56            | Shale, silty, sandy, light gray  |
| 56-60            | Sandstone, fine to coarse, tan, brown at top                               |
| 60-65            | Sandstone, fine to coarse, yellow-brown; shale, thin streaks               |
| 65-70            | Sandstone, brown (as above)  |
| 70-79            | Sandstone, fine to coarse, tan, yellow-brown                               |
| 79-89            | Sandstone, fine to very coarse (gravel), tan, yellow-brown                 |
| 89-91            | Shale, silty, sandy, gray  |
| 91-105           | Sandstone, fine to very coarse (gravel), tan; shale at base                |
| 105-115          | Sandstone, fine to coarse, tan   |
| 115-127          | Sandstone, fine to very coarse, (gravel at base), yellow-brown             |
| PENNSYLVANIAN    |  |
| 127-141          | Sandstone, fine, silty, gray; organic streaks                              |

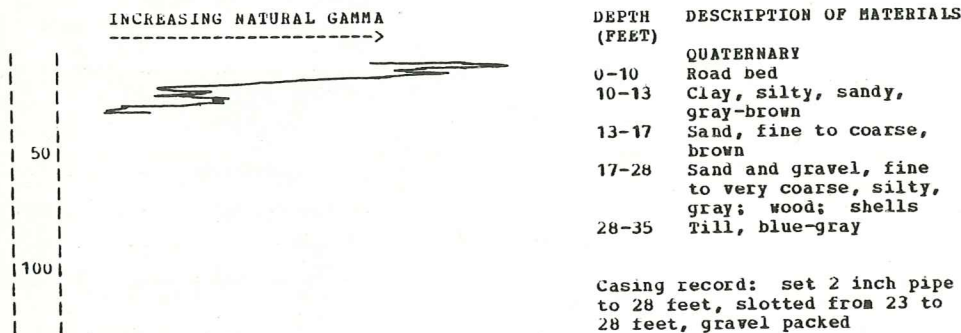
Casing record: set 2 inch pipe to 129 feet, slotted from 119 to 129 feet, gravel packed

Table 2. Logs of wells and test holes--Continued.

LOCATION: 084-32-08BCBC WC-127 STATION ID: 420606-0943634-01  
 ALTITUDE: 1070 FEET (NGVD 1929) DEPTH: 107 FEET DATE COMPLETED: September 3, 1982

| DEPTH (FEET) | DESCRIPTION OF MATERIALS  |
|--------------|---|
|              | QUATERNARY  |
| 0-3          | Road bed; top soil  |
| 3-6          | Sand and gravel, oxidized, brown, yellow-brown; boulders                      |
| 6-18         | Till, yellow-gray, yellow-tan   |
| 18-21        | Till, blue-gray, yellow-gray  |
| 21-38        | Till, blue-gray   |
| 38-39        | Sand and gravel, fine to coarse, gray   |
| 39-54        | Till, sandy, gravelly, soft, blue-gray  |
| 54-55        | Sand and gravel, fine to coarse   |
| 55-66        | Till, blue-gray   |
| 66-72        | Sand and gravel, fine to very coarse, mostly lime fragments; boulders at base |
| 72-73        | Till, blue-gray   |
| 73-74        | Sand and gravel, as above   |
| 74-77        | Till, blue-gray   |
| 77-80        | Sand and gravel, as above, finer  |
| 80-99        | Till, sandy, gravelly, hard, blue-gray; sand and gravel, occasional layer     |
| 99-106       | Sand and gravel, fine to very coarse; boulders                                |
|              | CRETACEOUS  |
|              | DAKOTA FORMATION  |
| 106-107      | Possible bedrock  |

LOCATION: 084-32-08BDCA WC-126 STATION ID: 420606-0943613-01  
 ALTITUDE: 1040 FEET (NGVD 1929) DEPTH: 35 FEET DATE COMPLETED: September 8, 1982



LOCATION: 084-32-08BDDBA WC-125 STATION ID: 420604-0943603-01  
 ALTITUDE: 1040 FEET (NGVD 1929) DEPTH: 41 FEET DATE COMPLETED: September 2, 1982

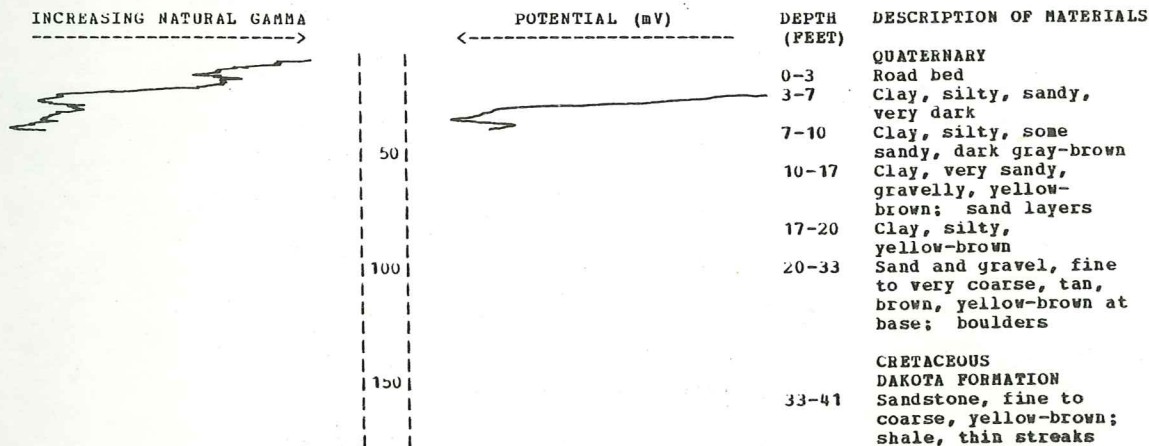


Table 2. Logs of wells and test holes--Continued.

LOCATION: 084-33-02BDBA

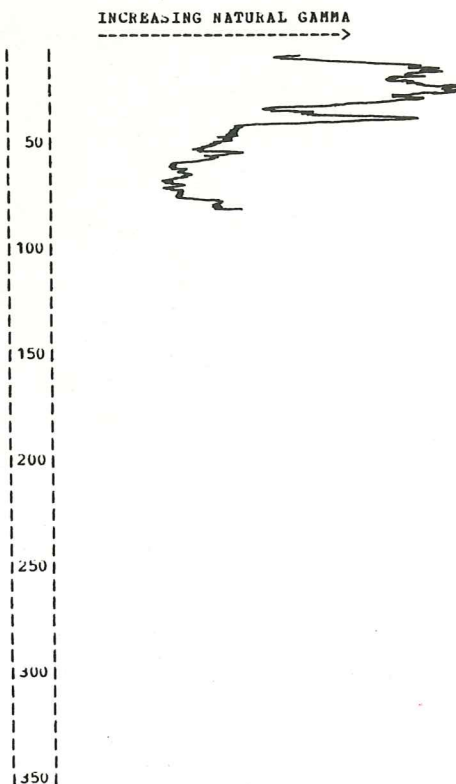
WC-132

STATION ID: 420705-0943945-01

ALTITUDE: 1110 FEET (NGVD 1929)

DEPTH: 81 FEET

DATE COMPLETED: September 9, 1982



| DEPTH (FEET) | DESCRIPTION OF MATERIALS  |
|--------------|---|
| 0-1          | QUATERNARY<br>Top soil; sandy   |
| 1-8          | Sand, fine to coarse, tan, brown  |
| 8-11         | As above, gravel, yellow-brown  |
| 11-13        | Till, yellow-tan  |
| 13-14        | Till, yellow-gray   |
| 14-26        | Till, sandy, gravelly, blue-gray  |
| 28-34        | CRETACEOUS<br>DAKOTA FORMATION<br>Sandstone, fine to coarse, iron cemented, oxidized, brown |
| 34-36        | Shale, hard, tan, brown; sandstone at base  |
| 36-38        | Sandstone, fine to coarse, oxidized, brown  |
| 38-40        | Sandstone, fine to coarse, hard, iron cemented  |
| 40-50        | Sandstone, fine to coarse, iron cemented layers, brown                                      |
| 50-55        | Sandstone, fine to very coarse (gravel), brown, yellow-brown                                |
| 55-75        | Sandstone, fine to coarse, iron cemented layers, yellow-brown                               |
| 75-76        | Sandstone, fine to very coarse (gravel); shale trace  |
| 76-81        | No sample   |

Casing record: set 2 inch pipe to 76 feet, slotted from 73 to 76 feet, gravel packed

LOCATION: 084-33-03AADC

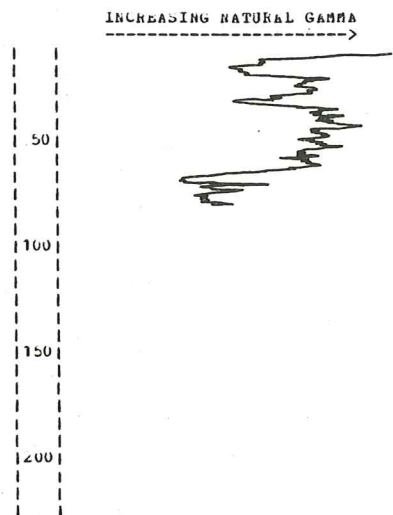
WC-129

STATION ID: 420706-0944009-01

ALTITUDE: 1069 FEET (NGVD 1929)

DEPTH: 81 FEET

DATE COMPLETED: September 7, 1982



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                                |
|--------------|---|
| 0-2          | QUATERNARY<br>Top soil, black                           |
| 2-4          | Clay, sandy, brown                                      |
| 4-12         | Sand and gravel, fine to coarse                         |
| 12-14        | Sand and gravel, fine to coarse, yellow-brown           |
| 14-15        | Till, yellow-gray                                       |
| 15-23        | Till, blue-gray   |
| 23-24        | Sand, fine to coarse, gray                              |
| 24-25        | Till, yellow-gray                                       |
| 25-28        | Sand, fine to coarse, gray                              |
| 28-56        | Till, very sandy, gravelly, blue-gray                   |
| 56-78        | Sand and gravel, fine to coarse tan, brown              |
| 78-81        | PENNSYLVANIAN<br>Shale, gray-brown, reddish-brown trace |

Casing record: set 2 inch pipe to 77 feet, slotted from 72 to 77 feet, gravel packed

LOCATION: 084-33-03ABDD

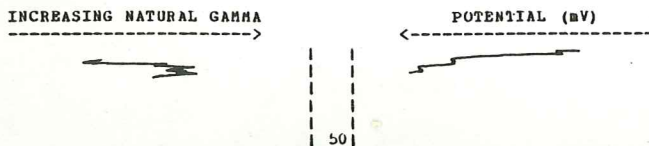
WC-128

STATION ID: 420708-0944022-01

ALTITUDE: 1060 FEET (NGVD 1929)

DEPTH: 21 FEET

DATE COMPLETED: September 7, 1982



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                              |
|--------------|---|
| 0-1          | QUATERNARY<br>Top soil, sandy                         |
| 1-8          | Sand and gravel, fine to very coarse, brown; boulders |
| 8-21         | Till, blue-gray                                       |

Table 2. Logs of wells and test holes--Continued.

LOCATION: 084-33-03BDAA

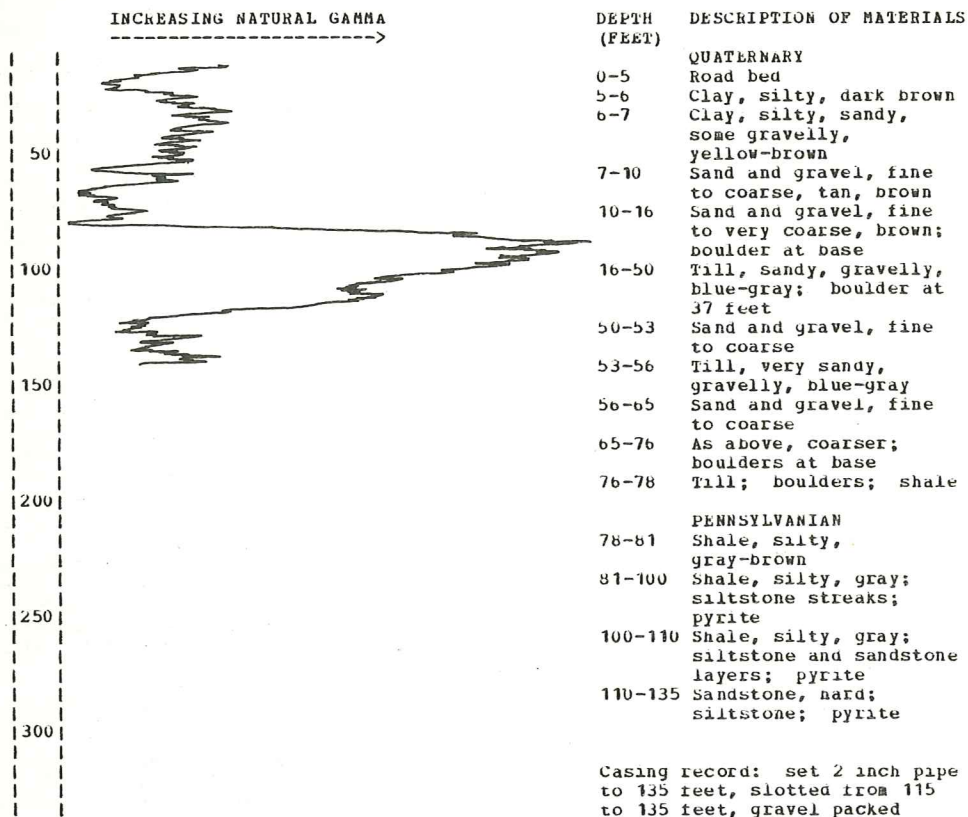
WC-130

STATION ID: 420702-0944040-01

ALTITUDE: 1065 FEET (NGVD 1929)

DEPTH: 135 FEET

DATE COMPLETED: September 8, 1982



LOCATION: 084-33-03CADA

WC-131

STATION ID: 420643-0944037-01

ALTITUDE: 1090 FEET (NGVD 1929)

DEPTH: 21 FEET

DATE COMPLETED: September 9, 1982

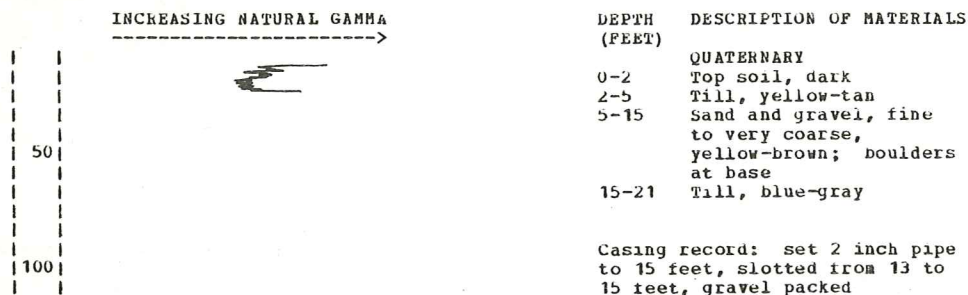


Table 2. Logs of wells and test holes--Continued.

LOCATION: 084-34-35BCDC

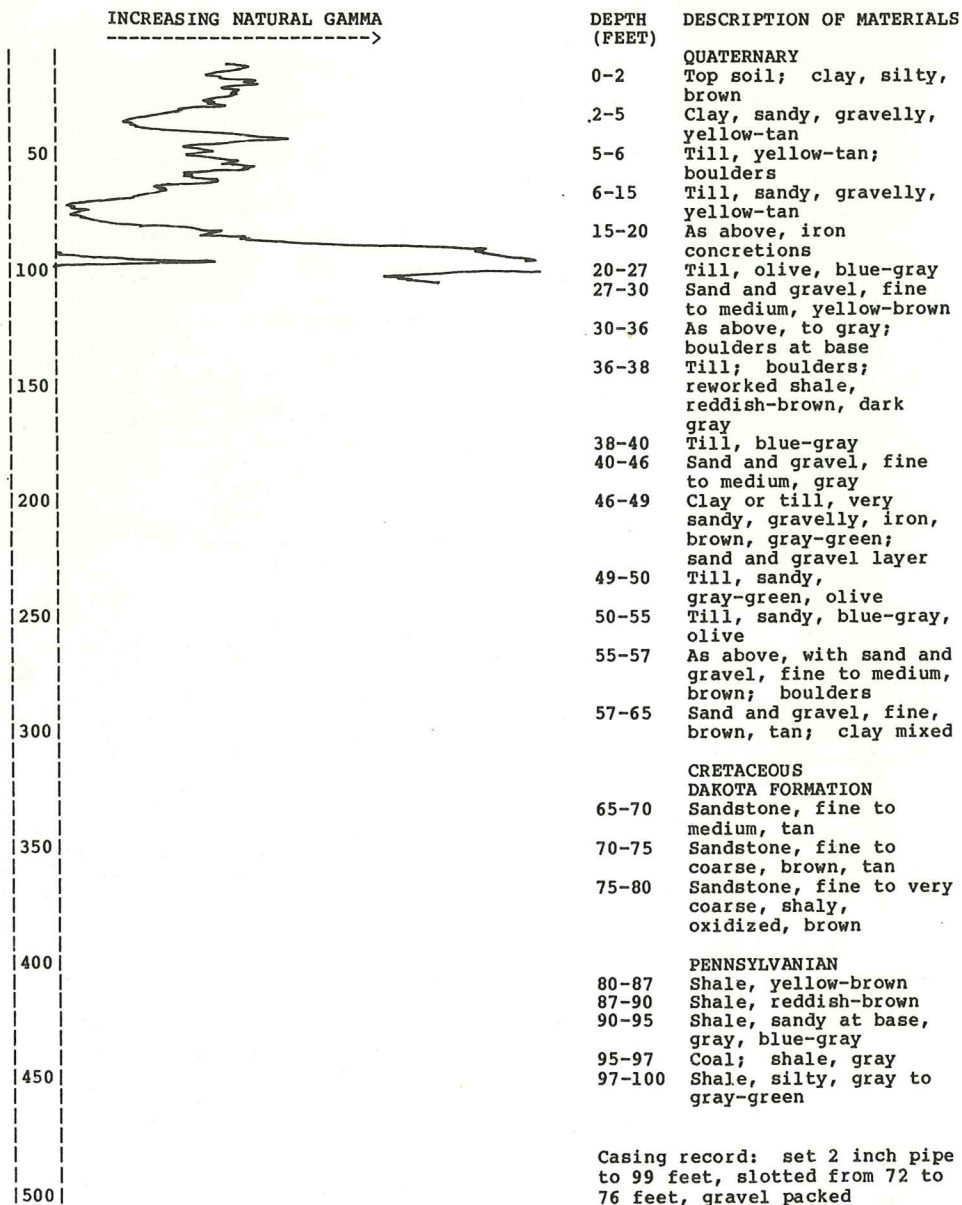
WC-148

STATION ID: 420233-0944759-01

ALTITUDE: 1225 FEET (NGVD 1929)

DEPTH: 100 FEET

DATE COMPLETED: September 27, 1982



LOCATION: 084-34-35BCDC

WC-147

STATION ID: 420232-0944639-01

ALTITUDE: 1195 FEET (NGVD 1929)

DEPTH: 101 FEET

DATE COMPLETED: September 24, 1982

| DEPTH (FEET)         | DESCRIPTION OF MATERIALS                           |
|----------------------|--|
| <b>QUATERNARY</b>    |  |
| 0-3                  | Road bed; top soil                                 |
| 3-9                  | Clay, silty, very soft, gray; shells at base       |
| 9-14                 | Clay, silty, sandy, very soft, yellow-gray; shells |
| 14-18                | Sand and gravel, fine                              |
| 18-19                | Clay, silty; wood; shells                          |
| 19-56                | Till, very sandy, gravelly                         |
| 56-60                | Sand and gravel, fine to medium; till layers       |
| 60-80                | Sand and gravel, fine to medium (mostly sand)      |
| 80-84                | Till, sandy, gravelly, blue-gray; boulders         |
| <b>PENNSYLVANIAN</b> |  |
| 84-93                | Shale, gray, yellow-gray                           |
| 93-97                | Shale, blue-gray                                   |
| 97-100               | Shale, gray-green, yellow trace, reddish-brown     |
| 100-101              | Shale, gray-green, reddish-brown, yellow-brown     |

Table 2. Logs of wells and test holes--Continued.

LOCATION: 084-34-35DAAA

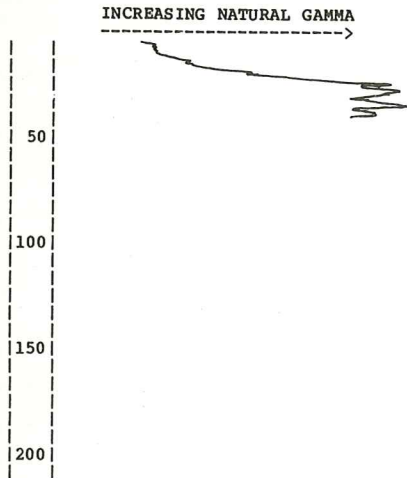
WC-146

STATION ID: 420230-0944551-01

ALTITUDE: 1190 FEET (NGVD 1929)

DEPTH: 41 FEET

DATE COMPLETED: September 23, 1982



| DEPTH (FEET) | DESCRIPTION OF MATERIALS   |
|--------------|--|
| 0-3          | QUATERNARY<br>Top soil; clay, dark gray                          |
| 3-9          | Clay, silty, soft, yellow-gray                                   |
| 9-12         | Sand, fine to coarse, gray; clay at top, gray-green; shells      |
| 12-20        | Sand and gravel, fine, gray; clay; shells; wood                  |
| 20-29        | Clay, sandy, silty, very soft, gray; sand layers, fine to coarse |
| 29-31        | Sand and gravel, fine, gray                                      |
| 31-36        | Till, sandy, blue-gray   |
| 36-37        | Sand and gravel, fine, gray                                      |
| 37-41        | Till, sandy, blue-gray   |

Casing record: set 2 inch pipe to 40 feet, slotted from 28 to 40 feet, gravel packed

LOCATION: 084-34-35DABB

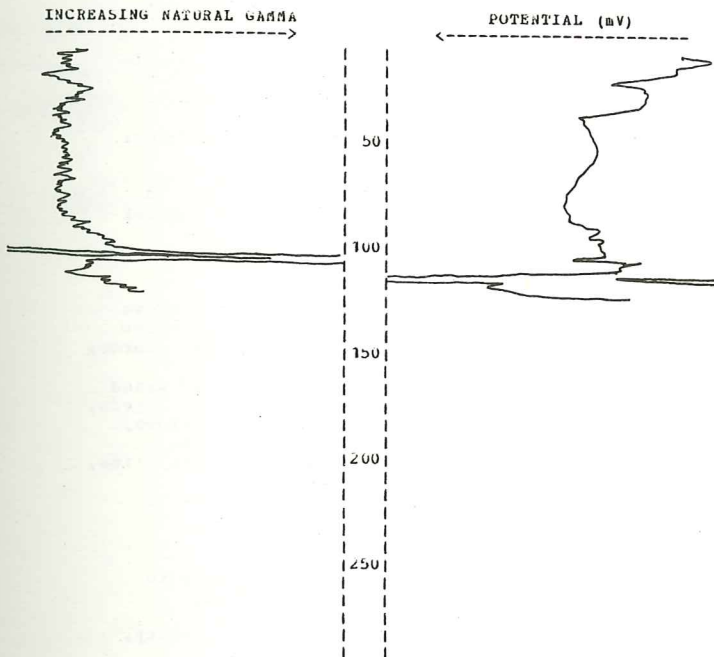
WC-145

STATION ID: 420231-0944607-01

ALTITUDE: 1195 FEET (NGVD 1929)

DEPTH: 121 FEET

DATE COMPLETED: September 23, 1982



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                                     |
|--------------|--|
| 0-14         | QUATERNARY<br>Fill   |
| 14-16        | Clay, silty, very dark                                       |
| 16-19        | Sand, fine to coarse, gray                                   |
| 19-34        | Clay, silty, crumbly, gray                                   |
| 34-35        | Sand and gravel, fine to coarse                              |
| 35-80        | Till, sandy, gravelly, blue-gray                             |
| 80-90        | As above, olive layers                                       |
| 90-94        | PENNSYLVANIAN<br>Shale, silty, yellow-gray, blue-gray at top |
| 94-97        | Shale, silty, brown, reddish-brown                           |
| 97-100       | As above, grading to yellow-gray                             |
| 100-101      | Shale, blue-gray   |
| 101-102      | Limestone; shale, gray                                       |
| 102-103      | Shale, black   |
| 103-105      | Shale, gray  |
| 105-107      | Shale, yellow-brown  |
| 107-109      | Shale, silty, sandy, light gray-green                        |
| 109-113      | Siltstone; sandstone, fine, lime-cemented, hard              |
| 113-120      | Shale, silty, sandy, gray-green                              |
| 120-121      | Shale, gray-green, reddish-brown                             |

LOCATION: 084-35-07AAAA

WC-144

STATION ID: 420627-0945725-01

ALTITUDE: 1300 FEET (NGVD 1929)

DEPTH: 101 FEET

DATE COMPLETED: September 22, 1982

| DEPTH (FEET) | DESCRIPTION OF MATERIALS                         |
|--------------|--|
| 0-2          | QUATERNARY<br>Clay, some sandy, yellow-gray      |
| 2-5          | As above, sandy, gravelly                        |
| 5-8          | Till, yellow-gray; iron concretions              |
| 8-18         | Till, yellow-brown; iron concretions, occasional |
| 18-20        | Till, blue-gray, gray                            |
| 20-24        | Till, yellow-brown                               |
| 24-27        | Till, blue-gray, yellow-brown                    |
| 27-37        | Till, blue-gray, olive layers                    |
| 37-62        | Till, blue-gray                                  |
| 62-64        | Boulder  |
| 64-97        | Till, blue-gray                                  |
| 97-98        | Sand and gravel                                  |
| 98-101       | Till, blue-gray                                  |



Table 2. Logs of wells and test holes--Continued.

LOCATION: 084-35-08ABBB

WC-142

STATION ID: 420627-0945643-01

ALTITUDE: 1285 FEET (NGVD 1929)

DEPTH: 241 FEET

DATE COMPLETED: September 20, 1982

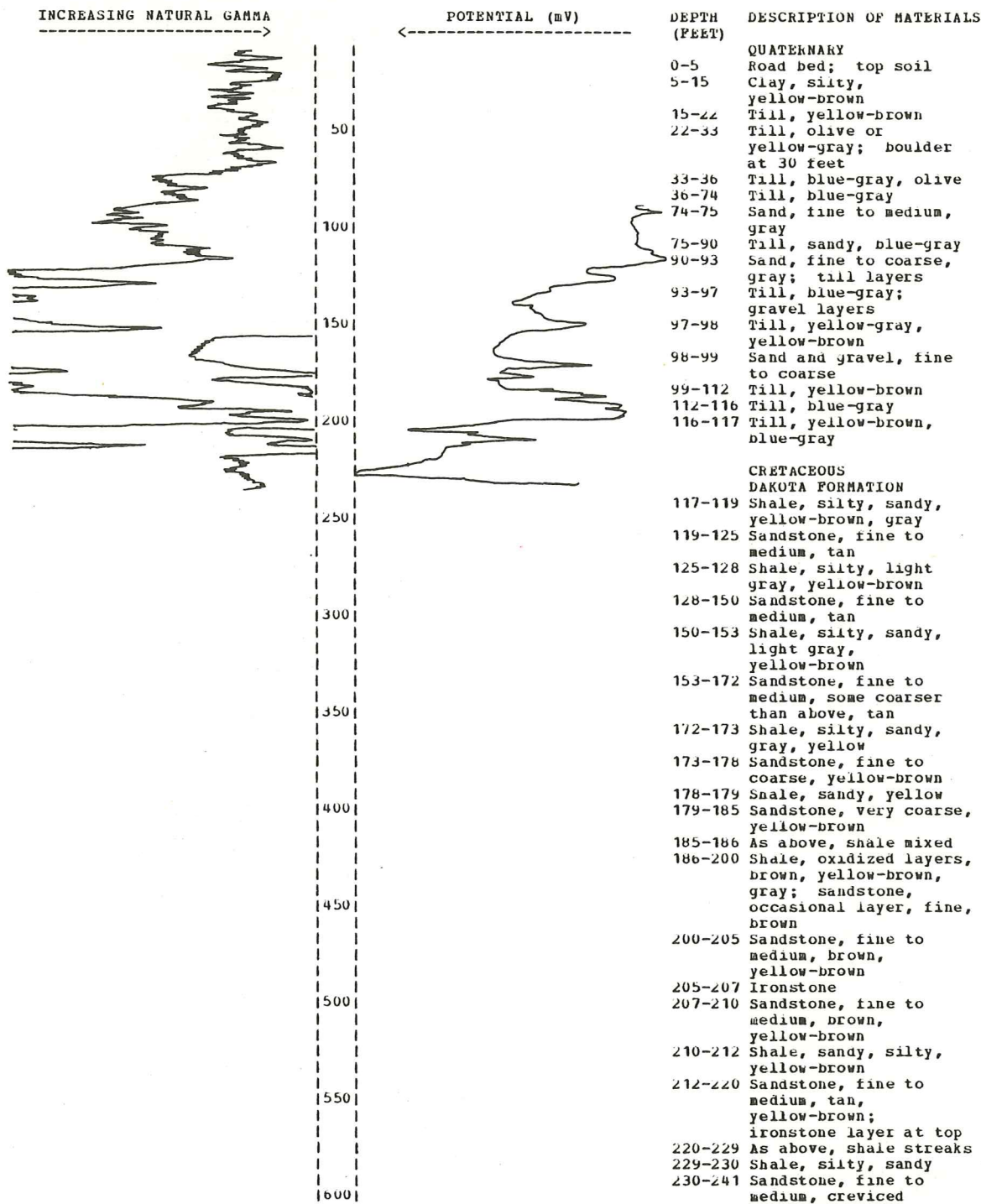


Table 2. Logs of wells and test holes--Continued.

LOCATION: 084-35-08BAAB

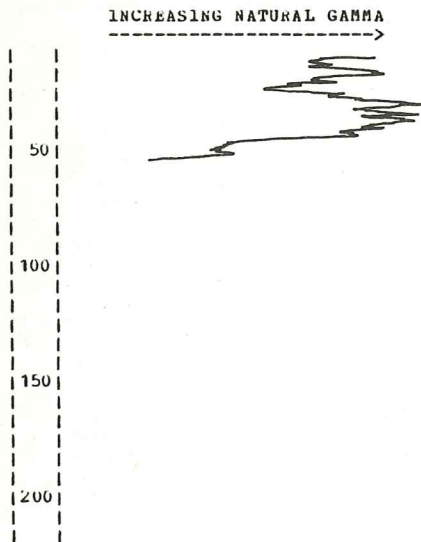
WC-141

STATION ID: 420626-0945653-01

ALTITUDE: 1265 FEET (NGVD 1929)

DEPTH: 51 FEET

DATE COMPLETED: September 20, 1982



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                             |
|--------------|--|
| 0-4          | QUATERNARY Clay, very dark gray-brown                |
| 4-7          | Clay, silty, gray-brown                              |
| 7-10         | Clay, silty, sandy, gray; sand layers                |
| 10-14        | Clay, silty, sandy, gray-green; shells               |
| 14-15        | Sand and gravel, fine to coarse, yellow-brown        |
| 15-18        | Clay, sandy, silty, gray-green; shells; wood at base |
| 18-21        | Sand, very fine to medium, gray                      |
| 21-40        | Clay, silty, soft, gray, gray-green                  |
| 40-49        | Sand and gravel, fine to coarse; boulder at base     |
| 49-51        | Till, blue-gray                                      |

Casing record: set 2 inch pipe to 48 feet, slotted from 44.5 to 48 feet, gravel packed

LOCATION: 084-35-08BBAA

WC-140

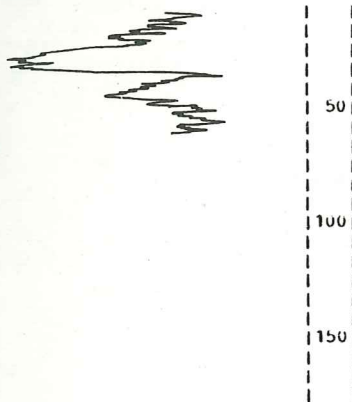
STATION ID: 420627-0945704-01

ALTITUDE: 1272 FEET (NGVD 1929)

DEPTH: 61 FEET

DATE COMPLETED: September 17, 1982

INCREASING NATURAL GAMMA



POTENTIAL (mV)

| DEPTH (FEET) | DESCRIPTION OF MATERIALS                                  |
|--------------|---|
| 0-4          | QUATERNARY Road bed                                       |
| 4-12         | Clay, silty, very dark gray-brown                         |
| 12-19        | Clay, silty, soft, very dark blue-gray                    |
| 19-21        | Clay, silty, sandy, gray-green                            |
| 21-24        | Sand and gravel, fine to medium; wood; clay, banded, gray |
| 24-30        | Sand and gravel, fine to very coarse; clay layers, gray   |
| 30-37        | Clay, silty, gray-green                                   |
| 37-41        | Sand and gravel, fine to medium, yellow-brown             |
| 41-42        | Till, yellow-brown to brown                               |
| 42-61        | Till, blue-gray fine to medium, yellow-brown              |

Table 2. Logs of wells and test holes--Continued.

LOCATION: 084-35-08BBBA

WC-143

STATION ID: 420627-0945716-01

ALTITUDE: 1270 FEET (NGVD 1929)

DEPTH: 115 FEET

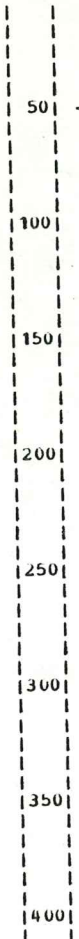
DATE COMPLETED: September 21, 1982

INCREASING NATURAL GAMMA

POTENTIAL (mV)

----->

<-----



| DEPTH (FEET)     | DESCRIPTION OF MATERIALS                                  |
|------------------|---|
| QUATERNARY       |   |
| 0-4              | Road bed  |
| 4-7              | Clay, sandy, yellow-brown; gravel                         |
| 7-16             | Sand and gravel, fine to coarse, tan yellow-brown         |
| 16-18            | Clay, silty, yellow-gray                                  |
| 18-29            | Clay, silty, soft, blue-gray; sand, very fine, gray; wood |
| 29-34            | Sand and gravel, fine, gray                               |
| 34-45            | Clay, silty, soft, gray                                   |
| 45-51            | Sand and gravel, fine to coarse, brown, yellow-brown      |
| 51-56            | Till or clay, very sandy, very gravelly, olive; boulders  |
| 56-58            | Sand, fine to coarse, oxidized, brown; clay or till       |
| 58-62            | Boulders; clay or till, sandy, gravelly                   |
| 62-64            | Sand and gravel, fine, brown, yellow-brown                |
| 64-66            | Clay or till, sandy, gravelly, brown, gray                |
| 66-68            | Sand and gravel, fine to medium                           |
| 68-84            | Till, blue-gray   |
| 84-86            | Sand, fine  |
| 86-87            | Till, gray, yellow-brown                                  |
| 87-90            | Till, yellow-brown  |
| 90-91            | Sand and gravel, fine to medium                           |
| 91-100           | Till, yellow-brown, gray, blue-gray                       |
| 100-105          | Till, blue-gray   |
| CRETACEOUS       |   |
| DAKOTA FORMATION |   |
| 105-110          | Shale, silty, yellow-brown, reddish-brown                 |
| 110-115          | Shale, silty, gray  |

Table 2. Logs of wells and test holes--Continued.

LOCATION: 084-37-08BCCB

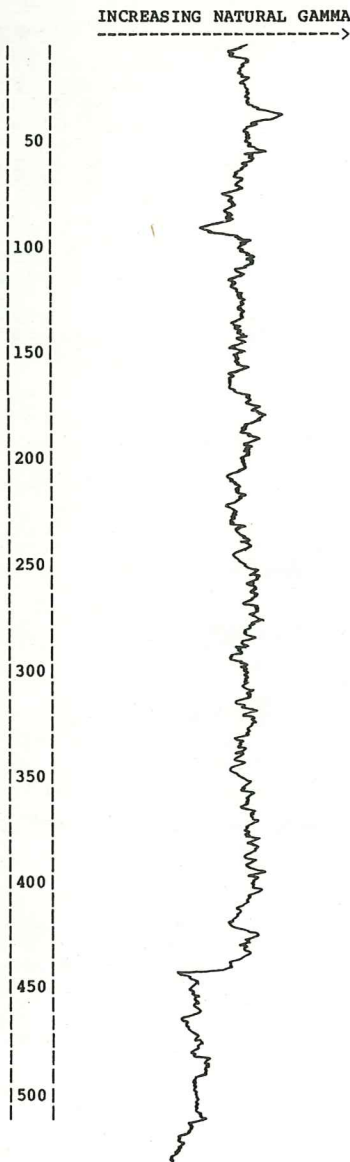
WC-226

STATION ID: 420608-0951117-01

ALTITUDE: 1380 FEET (NGVD 1929)

DEPTH: 541 FEET

DATE COMPLETED: July 12, 1983



| DEPTH (FEET) | DESCRIPTION OF MATERIALS  |
|--------------|---|
| 0-5          | QUATERNARY<br>Clay, silty, yellow-brown; loess  |
| 5-31         | Till, yellow-brown  |
| 31-37        | Till, olive grading to blue-gray  |
| 37-65        | Till, blue-gray   |
| 65-66        | Sand and gravel, medium, blue-gray  |
| 66-74        | Till, sandy, blue-gray  |
| 74-76        | Sand and gravel, fine to coarse, gray   |
| 76-80        | Till, sandy, gravelly, blue-gray  |
| 80-90        | Till, sandy, gravelly, gray-brown   |
| 90-93        | Sand and gravel, fine, gray; wood   |
| 93-101       | Till, sandy, gravelly, blue-gray  |
| 101-108      | Clay, tough, gray to blue-gray; gravel; sand, very few grains   |
| 108-114      | Till, tough, light blue-gray  |
| 114-137      | Till, yellow-brown  |
| 137-139      | Clay or till, gray  |
| 139-179      | Till, yellow-brown  |
| 179-200      | Till, sandy, gravelly, blue-gray  |
| 200-241      | Till, very sandy, very gravelly, blue-gray; sand and gravel, layers; boulder, occasional              |
| 241-420      | Till, very sandy, very gravelly; sand and gravel, layers; boulders, occasional; shale, reworked; wood |
| 420-440      | Till, cemented (possibly), thicker than above; sand, layers   |
| 440-460      | Sand, fine to coarse, cemented  |
| 460-485      | Sand and gravel, cemented, gray-brown   |
| 485-495      | Sand and gravel, cemented   |
| 495-539      | Sand, cemented (possibly)   |
| 539-541      | PENNSYLVANIAN<br>Limestone, sandy, shaly at base, gray, brown   |

Casing record: set 2 inch pipe to 541 feet, slotted from 527 to 541 feet, gravel packed

LOCATION: 084-37-11BBBB

WC-66

STATION ID: 420628-0950748-01

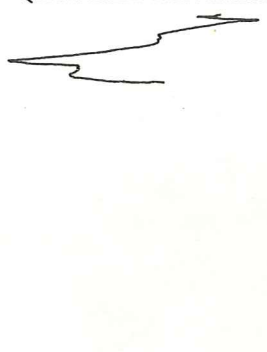
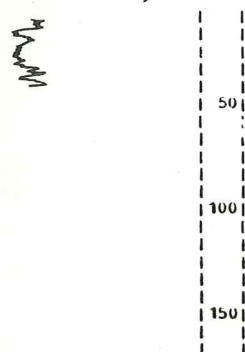
ALTITUDE: 1300 FEET (NGVD 1929)

DEPTH: 41 FEET

DATE COMPLETED: June 17, 1982

INCREASING NATURAL GAMMA

POTENTIAL (mV)



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                                      |
|--------------|---|
| 0-7          | QUATERNARY<br>Road bed; top soil                              |
| 7-11         | Clay, silty, very dark  |
| 11-14        | Clay, silty, dark; gravel mixed; sand layers                  |
| 14-16        | Clay, silty, sandy, gray-green; sand and gravel layers        |
| 16-21        | Sand and gravel, fine to coarse, very dark gray; clay; shells |
| 21-26        | As above, fine to very coarse                                 |
| 26-30        | Till, blue-gray   |
| 30-31        | Sand and gravel, very fine to coarse, gray-tan                |
| 31-41        | Till, sandy, gravelly, blue-gray                              |

Table 2. Logs of wells and test holes--Continued.

LOCATION: 084-37-14CBBC

WC-64

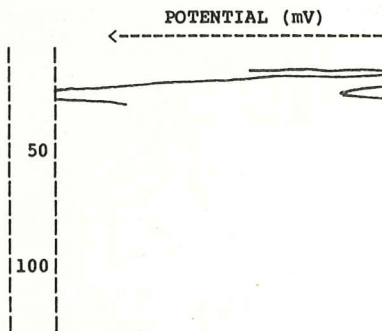
STATION ID: 420506-0950748-01

ALTITUDE: 1300 FEET (NGVD 1929)

DEPTH: 21 FEET

DATE COMPLETED: June 17, 1982

INCREASING NATURAL GAMMA



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                              |
|--------------|---|
| 0-5          | QUATERNARY<br>Road bed; top soil                      |
| 5-8          | Clay, silty, dark gray                                |
| 8-11         | Clay, silty, sandy, soft, dark gray                   |
| 11-12        | Clay, sandy, gravelly, dark blue-gray                 |
| 12-15        | Sand and gravel, fine to coarse, gray-tan; clay trace |
| 15-16        | Sand and gravel, fine to coarse, oxidized, brown      |
| 16-17        | Till, yellow-gray                                     |
| 17-21        | Till, blue-gray                                       |

LOCATION: 084-37-14DDCC

WC-67

STATION ID: 420446-0950655-01

ALTITUDE: 1330 FEET (NGVD 1929)

DEPTH: 41 FEET

DATE COMPLETED: June 18, 1982

| DEPTH (FEET) | DESCRIPTION OF MATERIALS                         |
|--------------|--|
| 0-12         | QUATERNARY<br>Clay or loess, silty, yellow-brown |
| 12-20        | Sand, fine to coarse, gravel, fine, yellow-brown |
| 20-23        | Clay, silty, sandy, gray-brown; sand layers      |
| 23-26        | Sand and gravel, fine to coarse, yellow-brown    |
| 26-27        | Till, brown                                      |
| 27-37        | Till, blue-gray                                  |
| 37-39        | Till, sandy, olive; sand layers, fine to medium  |
| 39-41        | Till, blue-gray                                  |

LOCATION: 084-37-15DABA

WC-65

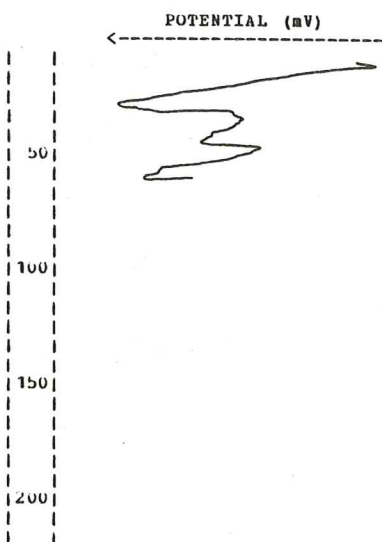
STATION ID: 420511-0950757-01

ALTITUDE: 1300 FEET (NGVD 1929)

DEPTH: 61 FEET

DATE COMPLETED: June 17, 1982

INCREASING NATURAL GAMMA

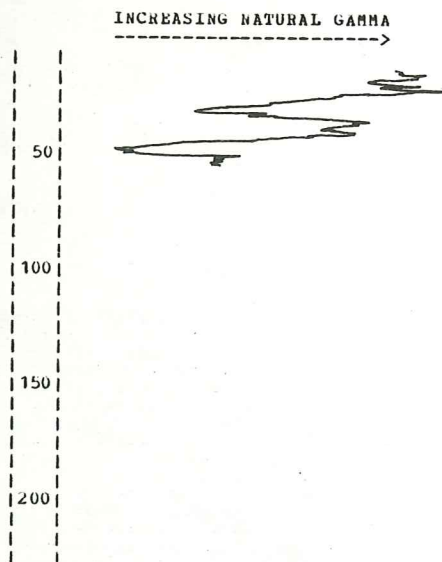


| DEPTH (FEET) | DESCRIPTION OF MATERIALS                          |
|--------------|---|
| 0-4          | QUATERNARY<br>Road bed; top soil                  |
| 4-7          | Clay, silty, dark gray                            |
| 7-9          | Clay, silty, gray-brown                           |
| 9-11         | Clay, silty, soft, blue-gray                      |
| 11-15        | Clay, silty, sandy, soft, gray-green; sand layers |
| 15-19        | Sand and gravel, fine to coarse, gray-tan         |
| 19-22        | As above, oxidized, yellow-brown                  |
| 22-26        | Sand and gravel, fine, yellow-tan, gray at base   |
| 26-40        | Clay, very silty, sandy, blue-gray                |
| 40-41        | Sand, fine to coarse, gray                        |
| 41-44        | Clay or till, light blue-gray; sand grains        |
| 44-50        | Till, light blue-gray, yellow-gray                |
| 50-61        | Till, yellow-gray or olive                        |

Table 2. Logs of wells and test holes--Continued.

LOCATION: 084-39-24CCAA WC-57  
 ALTITUDE: 1245 FEET (NGVD 1929) DEPTH: 46 FEET

STATION ID: 420408-0952017-01  
 DATE COMPLETED: June 10, 1982



| DEPTH (FEET) | DESCRIPTION OF MATERIALS  |
|--------------|---|
| 0-5          | QUATERNARY Clay, silty, brown   |
| 5-14         | Clay, silty, soft, tan, yellow-brown  |
| 14-20        | Sand, fine to coarse, yellow-tan  |
| 20-25        | Sand and gravel, fine, yellow-brown   |
| 25-26        | Clay, gray-brown  |
| 26-28        | Clay, yellow-brown  |
| 28-33        | Clay, silty, yellow-gray; sand grains   |
| 33-34        | As above, very sandy  |
| 34-38        | Sand, fine to coarse, yellow-brown  |
| 38-43        | Sand and gravel, fine to very coarse, oxidized, brown, yellow-brown; boulders |
| 43-44        | Till, yellow-brown  |
| 44-46        | Till, blue-gray   |

Casing record: Set 2 inch pipe to 46 feet, slotted from 36 to 46 feet, gravel packed

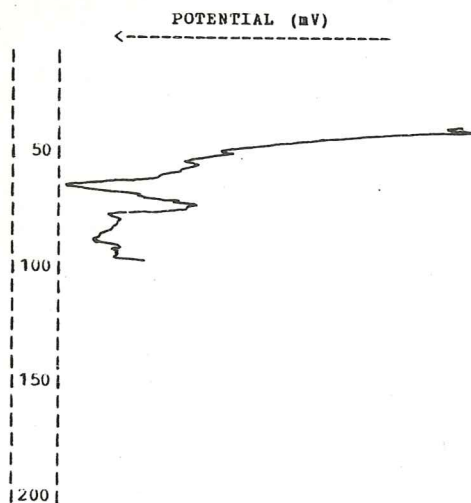
LOCATION: 084-39-26AAAA WC-56  
 ALTITUDE: 1175 FEET (NGVD 1929) DEPTH: 41 FEET

STATION ID: 420355-0952035-01  
 DATE COMPLETED: June 9, 1982

| DEPTH (FEET) | DESCRIPTION OF MATERIALS  |
|--------------|---------------------------|
| 0-2          | QUATERNARY Top soil       |
| 2-4          | Clay, silty, yellow-brown |
| 4-5          | Gravel; boulders; till    |
| 5-15         | Till, yellow-tan          |
| 15-22        | Till, yellow-gray         |
| 22-41        | Till, blue-gray           |

LOCATION: 084-39-26AABA WC-54  
 ALTITUDE: 1185 FEET (NGVD 1929) DEPTH: 81 FEET

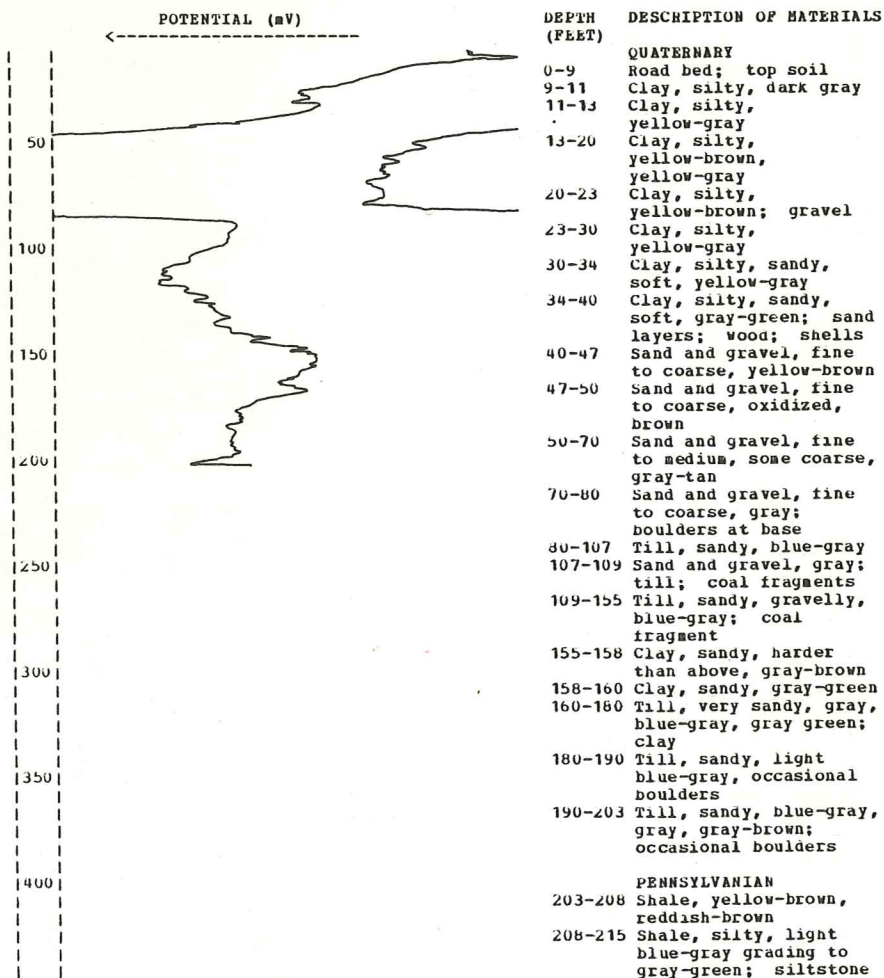
STATION ID: 420356-0952045-01  
 DATE COMPLETED: June 8, 1982



| DEPTH (FEET) | DESCRIPTION OF MATERIALS   |
|--------------|--|
| 0-5          | QUATERNARY road bed; top soil  |
| 5-7          | Clay, dark gray  |
| 7-15         | Clay, silty, yellow-gray   |
| 15-17        | Clay, silty, oxidized, brown   |
| 17-18        | Clay, silty, sandy, gray   |
| 18-20        | Sand and gravel, fine to medium, yellow-brown; clay                      |
| 20-30        | Clay, silty, blue-gray; sand, fine to medium                             |
| 30-34        | Sand and gravel, fine, gray, blue-gray; clay; wood                       |
| 34-39        | Sand and gravel, fine to coarse, yellow-tan                              |
| 39-70        | Sand and gravel, fine to coarse, yellow-tan; occasional boulders at base |
| 70-81        | Till, blue-gray  |

Table 2. Logs of wells and test holes--Continued.

LOCATION: 084-39-26ABAB WC-55 STATION ID: 420356-0952057-01  
 ALTITUDE: 1190 FEET (NGVD 1929) DEPTH: 215 FEET DATE COMPLETED: June 9, 1982



LOCATION: 084-42-10DCCC WC-171 STATION ID: 420544-0954307-01  
 ALTITUDE: 1182 FEET (NGVD 1929) DEPTH: 221 FEET DATE COMPLETED: May 11, 1983

| DEPTH (FEET)     | DESCRIPTION OF MATERIALS                                       |
|------------------|--|
| QUATERNARY       |  |
| 0-5              | Road bed; top soil   |
| 5-10             | Clay, silty, brown   |
| 10-15            | Clay, silty, yellow-brown                                      |
| 15-25            | Clay, silty, oxidized zones, brown, yellow-tan                 |
| 25-29            | Clay, silty, gray  |
| 29-33            | Sand and gravel, fine to coarse, yellow-brown; boulder at base |
| 33-53            | Clay, lime concretions, gray, yellow-gray, gray-brown at base  |
| 53-70            | Clay or till, yellow-gray                                      |
| 70-88            | Clay or till, gray   |
| 88-93            | Clay or till, gray-tan   |
| 93-144           | Clay or till, blue-gray  |
| 144-146          | Clay, gray-green   |
| 146-149          | Clay, silty, blue-gray   |
| 149-155          | Clay, silty, very hard, cemented, gray, blue-gray              |
| 155-165          | Sand, very fine, gray-green, dark gray-green; silt             |
| 165-170          | As above, very fine to medium, cemented                        |
| 170-175          | As above, coarser  |
| 175-178          | Sand, fine, cemented, green                                    |
| CRETACEOUS       |  |
| DAKOTA FORMATION |  |
| 178-190          | Shale, silty, gray-brown                                       |
| 190-195          | As above; sandstone, very fine, interbedded, tan               |
| 195-208          | Shale, silty, gray-brown                                       |
| 208-221          | Sandstone, fine to coarse                                      |

Table 2. Logs of wells and test holes--Continued.

LOCATION: 084-42-10DDDD

WC-172

STATION ID: 420545-0954239-01

ALTITUDE: 1195 FEET (NGVD 1929)

DEPTH: 81 FEET

DATE COMPLETED: May 12, 1983

| DEPTH (FEET) | DESCRIPTION OF MATERIALS   |
|--------------|--|
| QUATERNARY   |  |
| 0-7          | Road bed; top soil   |
| 7-20         | Clay, silty, yellow-brown; loess   |
| 20-30        | Loess, yellow-tan  |
| 30-38        | Loess, yellow-gray, gray   |
| 38-41        | Clay, silty, gray to blue-gray; loess  |
| 41-50        | Sand and gravel, fine to medium (mostly fine), yellow-tan                    |
| 50-65        | Sand and gravel, fine to coarse, brown, yellow-brown                         |
| 65-67        | Sand and gravel, fine to coarse; clay mixed, yellow-tan; boulder, occasional |
| 67-71        | Sand and gravel, fine to very coarse, yellow-brown; boulders                 |
| 71-78        | Clay, lime concretions, gray to blue-gray                                    |
| 78-81        | As above, yellow-tan   |

LOCATION: 084-42-15AABB

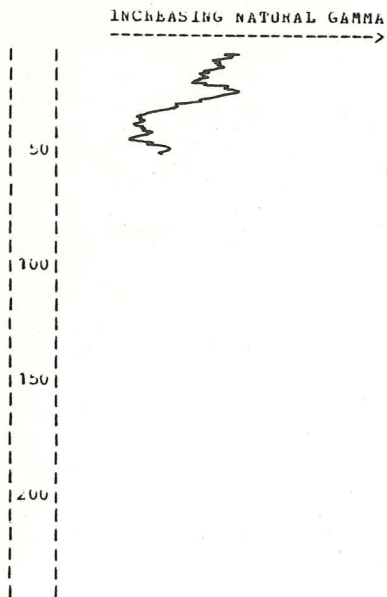
WC-170

STATION ID: 420544-0954252-01

ALTITUDE: 1170 FEET (NGVD 1929)

DEPTH: 51 FEET

DATE COMPLETED: May 10, 1983



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                                       |
|--------------|--|
| QUATERNARY   |  |
| 0-5          | Top soil   |
| 5-15         | Clay, silty, brown   |
| 15-17        | Clay, silty, gray  |
| 17-19        | Sand and gravel, fine to medium, oxidized, brown, yellow-brown |
| 19-22        | Clay, gray-green   |
| 22-27        | Clay, silty, gray  |
| 27-30        | Sand, fine to coarse; clay, silty, gray; wood                  |
| 30-35        | Sand and gravel, fine to medium, tan                           |
| 35-40        | Sand and gravel, fine to medium (mostly fine), yellow-brown    |
| 40-43        | Sand and gravel, fine, tan                                     |
| 43-44        | Sand and gravel, fine to very coarse, yellow-brown             |
| 44-51        | Till, blue-gray, yellow at top                                 |

Casing record: set 2 inch pipe to 47 feet, slotted from 40 to 47 feet, gravel packed

LOCATION: 084-43-04ABAA

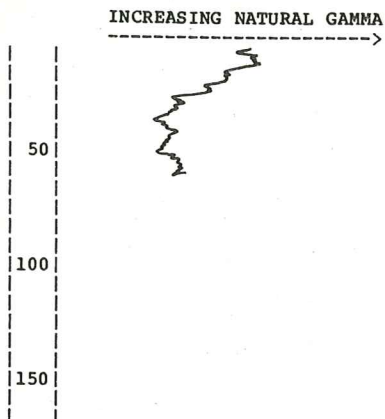
WC-163

STATION ID: 420730-0955107-01

ALTITUDE: 1090 FEET (NGVD 1929)

DEPTH: 72 FEET

DATE COMPLETED: May 4, 1983



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                                |
|--------------|---|
| QUATERNARY   |   |
| 0-5          | Fill; top soil  |
| 5-15         | Clay, silty, gray-brown                                 |
| 15-23        | Clay, sandy, silty, blue-gray; wood                     |
| 23-30        | Sand and gravel, fine to medium, gray                   |
| 30-36        | Sand and gravel, fine to coarse, tan; boulders          |
| 36-68        | Sand and gravel, fine to coarse, yellow-brown; boulders |
| 68-72        | Till, blue-gray   |

Casing record: set 2 inch pipe to 58 feet, slotted from 53 to 58 feet, gravel packed



**Table 2. Logs of wells and test holes--Continued.**

LOCATION: 084-43-04BABA

WC-162

STATION ID: 420730-0955130-01

ALTITUDE: 1095 FEET (NGVD 1929)

DEPTH: 81 FEET

DATE COMPLETED: May 3, 1963

INCREASING NATURAL GAMMA →

POTENTIAL (mV) ←



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                                       |
|--------------|--|
| QUATERNARY   |  |
| 0-9          | Road bed; top soil   |
| 9-14         | Clay, silty, brown   |
| 14-20        | Clay, silty, yellow-brown grading to yellow-tan                |
| 20-28        | Clay, silty, yellow-gray                                       |
| 28-30        | Sand, fine to coarse, tan                                      |
| 30-36        | Sand and gravel, fine to coarse, yellow-tan                    |
| 36-58        | Sand and gravel, fine to coarse, oxidized, yellow-brown, brown |
| 58-67        | As above; boulders   |
| 67-81        | Till, blue-gray  |

LOCATION: 084-43-04CCBA

WC-164

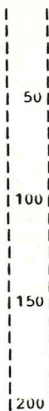
STATION ID: 420649-0955150-01

ALTITUDE: 1085 FEET (NGVD 1929)

DEPTH: 52 FEET

DATE COMPLETED: May 5, 1963

INCREASING NATURAL GAMMA →



| DEPTH (FEET) | DESCRIPTION OF MATERIALS  |
|--------------|---|
| QUATERNARY   |   |
| 0-8          | Fill; top soil  |
| 8-12         | Clay, silty, dark brown   |
| 12-20        | Clay, silty, yellow-gray  |
| 20-23        | Clay, sandy, silty, blue-gray                                     |
| 23-25        | Sand and gravel, fine to medium, gray; wood                       |
| 25-28        | Sand and gravel, fine to coarse, gray-tan                         |
| 28-42        | Sand and gravel, fine to coarse, yellow-brown                     |
| 42-43        | Clay or till, yellow-gray   |
| 43-49        | Sand and gravel, fine to coarse, oxidized, yellow-brown; boulders |
| 49-52        | Boulder   |

Casing record: set 2 inch pipe to 50 feet, slotted from 40 to 50 feet, gravel packed

LOCATION: 084-43-04DDCC

WC-165

STATION ID: 420640-0955103-01

ALTITUDE: 1120 FEET (NGVD 1929)

DEPTH: 227 FEET

DATE COMPLETED: May 5, 1963

INCREASING NATURAL GAMMA →

POTENTIAL (mV) ←



| DEPTH (FEET)     | DESCRIPTION OF MATERIALS                             |
|------------------|--|
| QUATERNARY       |  |
| 0-3              | Road bed; top soil                                   |
| 3-5              | Clay, silty, dark brown                              |
| 5-41             | Loess, yellow-tan                                    |
| 41-45            | Clay and till, very sandy, yellow-tan; sand layer    |
| 45-47            | Till, yellow-tan                                     |
| 47-50            | Till, olive  |
| 50-60            | Till, blue-gray                                      |
| 60-82            | Clay or till, very hard, light blue-gray             |
| 82-132           | Till, blue-gray                                      |
| 132-133          | Sand and gravel, fine to medium, gray-brown          |
| 133-138          | Till, sandy, gravelly, blue-gray                     |
| 138-166          | Sand and gravel, fine, gray-tan                      |
| CRETACEOUS       |  |
| DAKOTA FORMATION |  |
| 166-171          | Shale, silty, gray                                   |
| 171-175          | Sandstone, hard, oxidized, tan; dolomite, sandy      |
| 175-179          | Shale, silty, gray; sandstone streaks, hard          |
| 179-181          | Sandstone, very fine, tan                            |
| PENNSYLVANIAN    |  |
| 181-210          | As above; shale, interbedded, gray; siltstone        |
| 210-217          | Shale, silty, gray                                   |
| 217-219          | Shale, silty, reddish-brown                          |
| 219-227          | Shale, some silty, reddish-brown, yellow-brown, gray |

Table 2. Logs of wells and test holes--Continued.

LOCATION: 084-43-19BBBC

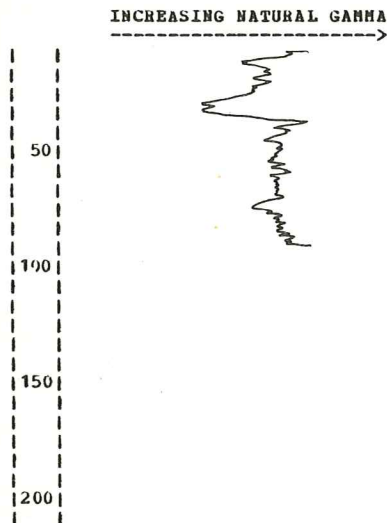
WC-167

STATION ID: 420446-0955414-01

ALTITUDE: 1070 FEET (NGVD 1929)

DEPTH: 113 FEET

DATE COMPLETED: May 9, 1983



| DEPTH (FEET)  | DESCRIPTION OF MATERIALS                    |
|---------------|---|
| QUATERNARY    |   |
| 0-5           | Road bed; top soil                          |
| 5-10          | Clay, silty, brown; loess                   |
| 10-25         | Loess, very soft, yellow-tan                |
| 25-30         | Sand and gravel, fine to coarse, brown      |
| 30-34         | Sand and gravel, fine to coarse, yellow-tan |
| 34-35         | Till, yellow-gray                           |
| 35-71         | Till, blue-gray                             |
| 71-72         | Sand and gravel, fine to medium, tan        |
| 72-90         | Till, sandy, gravelly, blue-gray            |
| 90-92         | Clay, gray; sand grains                     |
| 92-107        | Till, blue-gray                             |
| 107-108       | Sand and gravel, fine, gray-green           |
| PENNSYLVANIAN |   |
| 108-113       | Shale, reddish-brown, light gray            |

LOCATION: 084-44-23DABC

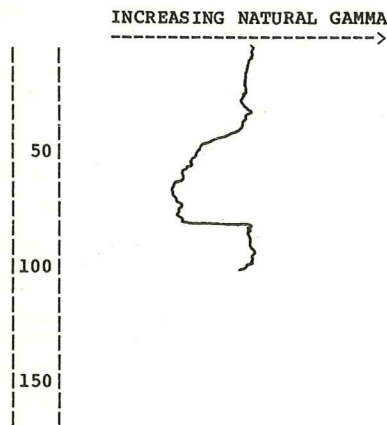
WC-168

STATION ID: 420419-0955544-01

ALTITUDE: 1140 FEET (NGVD 1929)

DEPTH: 130 FEET

DATE COMPLETED: May 9, 1983



| DEPTH (FEET) | DESCRIPTION OF MATERIALS  |
|--------------|---|
| QUATERNARY   |   |
| 0-4          | Top soil; loess, brown  |
| 4-10         | Loess, yellow-brown   |
| 10-90        | Loess, yellow-tan   |
| 90-110       | Loess, yellow-gray, brown   |
| 110-112      | Sand and gravel, fine to coarse   |
| 112-115      | As above; clay mixed  |
| 115-125      | Sand and gravel, fine to very coarse, oxidized zones, brown, yellow-brown; clay streaks |
| 125-130      | Till, blue-gray   |

Casing record: set 2 inch pipe to 126 feet, slotted from 120 to 126 feet, gravel packed

LOCATION: 084-44-24CBDD

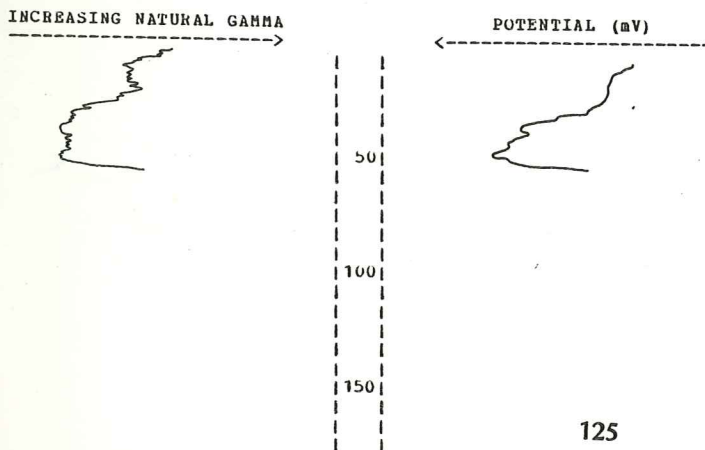
WC-169

STATION ID: 420420-0955517-01

ALTITUDE: 1070 FEET (NGVD 1929)

DEPTH: 80 FEET

DATE COMPLETED: May 10, 1983



| DEPTH (FEET) | DESCRIPTION OF MATERIALS   |
|--------------|--|
| QUATERNARY   |  |
| 0-5          | Road bed; top soil   |
| 5-13         | Clay, silty, gray-brown  |
| 13-20        | Clay, silty, yellow-brown, yellow-tan                                    |
| 20-25        | Clay, silty, gray, tan   |
| 25-30        | Sand and gravel, fine to medium, tan                                     |
| 30-35        | Sand and gravel, fine to coarse, gray                                    |
| 35-56        | Sand and gravel, fine to coarse, oxidized, yellow-brown, brown           |
| 56-58        | Clay or till, yellow-gray  |
| 58-71        | Sand and gravel, fine to medium, oxidized, yellow-brown, brown; boulders |
| 71-80        | Till, blue-gray  |

Table 2. Logs of wells and test holes--Continued.

LOCATION: 084-44-24DCAD

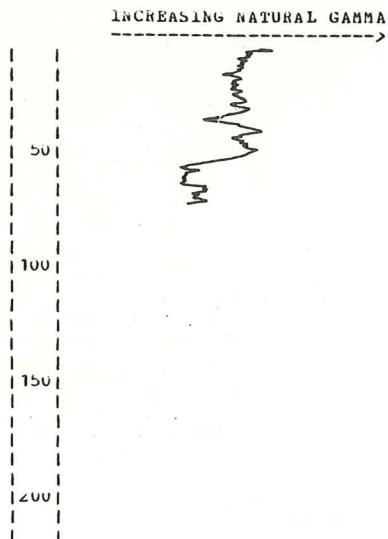
WC-100

STATION ID: 420406-0955433-01

ALTITUDE: 1105 FEET (NGVD 1929)

DEPTH: 74 FEET

DATE COMPLETED: May 6, 1983



| DEPTH (FEET) | DESCRIPTION OF MATERIAL                               |
|--------------|---|
| 0-8          | QUATERNARY<br>Road bed; fill                          |
| 8-32         | Loess, yellow-tan                                     |
| 32-35        | Clay or loess, silty, blue-gray                       |
| 35-37        | Sand and gravel, fine to coarse, oxidized, brown      |
| 37-53        | Clay, silty, yellow-brown; sand grains                |
| 53-57        | Sand and gravel, fine; clay, layered, tan             |
| 57-60        | Sand and gravel, fine to coarse, yellow-brown         |
| 60-65        | As above, oxidized, brown                             |
| 65-72        | Sand and gravel, fine to very coarse, olive; boulders |
| 72-74        | No sample description                                 |

Casing record: set 2 inch pipe to 71 feet, slotted from 66.5 to 71 feet, gravel packed

LOCATION: 085-29-19BAAA

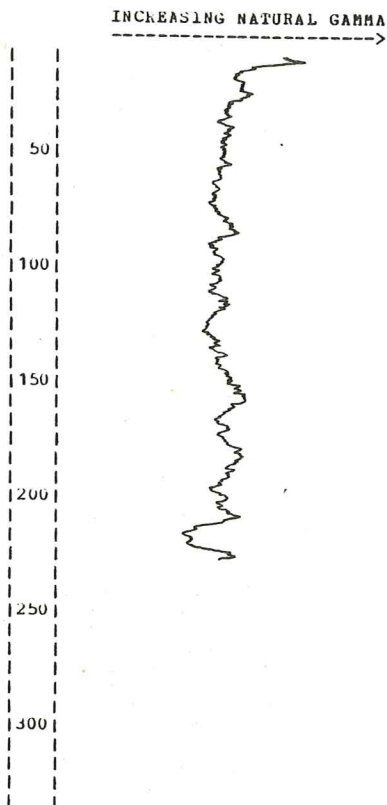
WC-231

STATION ID: 420958-0941622-01

ALTITUDE: 1091 FEET (NGVD 1929)

DEPTH: 221 FEET

DATE COMPLETED: August 1, 1983



| DEPTH (FEET) | DESCRIPTION OF MATERIALS  |
|--------------|---|
| 0-4          | QUATERNARY<br>Top soil, very dark   |
| 4-8          | Till, yellow-gray   |
| 8-35         | Till, gravelly, blue-gray   |
| 35-37        | Till, olive   |
| 37-127       | Till, sandy, gravelly, blue-gray  |
| 127-130      | Sand and gravel; boulder  |
| 130-136      | Till, sandy, gravelly, gray-green, some yellow-brown; boulder, occasional |
| 136-137      | Sand and gravel, fine to coarse, yellow-gray                              |
| 137-150      | Till, hard, yellow-brown, gray  |
| 150-161      | Till, hard, gray; gravel, layer at 153 feet                               |
| 161-170      | As above  |
| 170-180      | Till, olive, gray; shale, reworked  |
| 180-200      | Till, gray  |
| 200-207      | As above, blue-gray, gray   |
| 207-210      | Sand, fine to coarse; clay, layers  |
| 210-216      | Sand and gravel, fine, yellow-brown, tan                                  |
|              | PENNSYLVANIAN   |
| 216-221      | Shale, silty, sandy, dark blue-gray, gray                                 |

Casing record: set 2 inch pipe to 221 feet, slotted from 205 to 220 feet, gravel packed

Table 2. Logs of wells and test holes--Continued.

LOCATION: 085-29-32DDDD

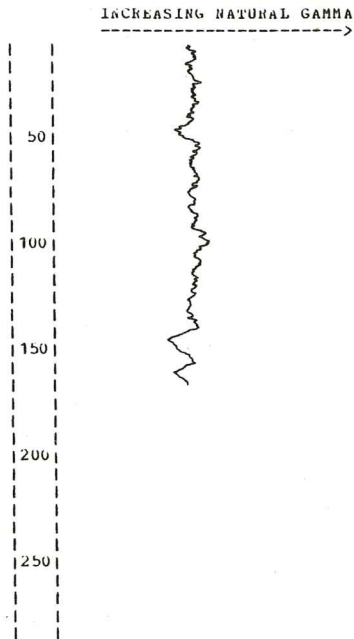
WC-232

STATION ID: 420723-0941432-01

ALTITUDE: 1091 FEET (NGVD 1929)

DEPTH: 171 FEET

DATE COMPLETED: August 3, 1983



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                  |
|--------------|---|
| 0-2          | QUATERNARY<br>Top soil                    |
| 2-8          | Till, yellow-brown                        |
| 8-44         | Till, blue-gray                           |
| 44-50        | Sand and gravel, fine to coarse, gray-tan |
| 50-130       | Till, sandy, gravelly, gray               |
| 130-136      | Till, sandy, gravelly, blue-gray          |
| 136-139      | Till, olive                               |
| 139-141      | Till, blue-gray                           |
| 141-146      | Sand and gravel, fine to coarse, tan      |
| 146-155      | Clay, silty, sandy, gray; gravel, layers  |
| 155-165      | Sand and gravel, fine to coarse, tan      |
| 165-166      | PENNSYLVANIAN<br>Shale, silty, gray-green |
| 166-168      | Limestone, sandy, gray-tan                |
| 168-169      | Shale, sandy, silty, light gray           |
| 169-170      | Limestone, sandy, some shaley, tan, gray  |
| 170-171      | Shale, gray-green                         |

Casing record: set 2 inch pipe to 171 feet, slotted from 153 to 168 feet, gravel packed

LOCATION: 085-33-06DDCC

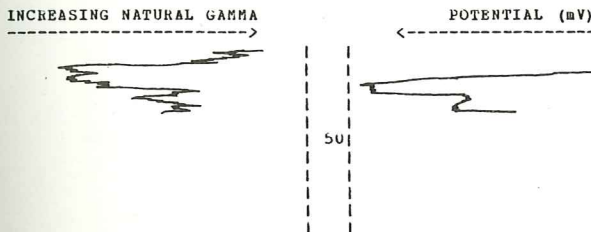
WC-138

STATION ID: 421143-0944352-01

ALTITUDE: 1092 FEET (NGVD 1929)

DEPTH: 41 FEET

DATE COMPLETED: September 15, 1982



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                             |
|--------------|--|
| 0-8          | QUATERNARY<br>Road bed                               |
| 8-11         | Clay, silty, dark brown                              |
| 11-16        | Sand and gravel, fine to coarse yellow-brown; shells |
| 16-21        | Sand and gravel, fine to very coarse, gray; shells   |
| 21-23        | As above, boulders                                   |
| 23-41        | Till, blue-gray                                      |

LOCATION: 085-33-06DDDD

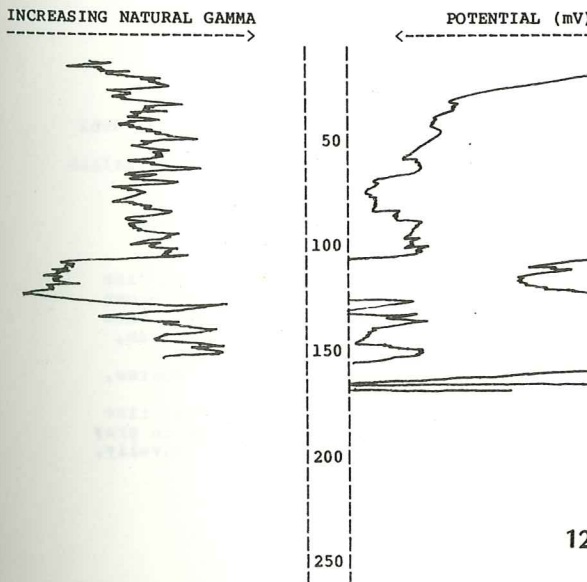
WC-137

STATION ID: 421144-0944336-01

ALTITUDE: 1123 FEET (NGVD 1929)

DEPTH: 167 FEET

DATE COMPLETED: September 14, 1982



| DEPTH (FEET) | DESCRIPTION OF MATERIALS  |
|--------------|---|
| 0-3          | QUATERNARY<br>Road bed  |
| 3-5          | Sand, fine to medium, brown   |
| 5-10         | Sand and gravel, fine to very coarse                                      |
| 10-11        | Till, yellow-brown  |
| 11-101       | Till, sandy and gravelly at base, blue-gray                               |
| 101-120      | Sand and gravel, fine to very coarse                                      |
| 120-146      | Clay, silty, gray; sand, very fine; organics                              |
| 146-150      | Clay or till, sandy, dark blue-gray                                       |
| 150-152      | Clay, silty, sandy, olive   |
| 152-157      | Clay, sandy, gray-olive; sand layer                                       |
| 157-159      | CRETACEOUS<br>DAKOTA FORMATION<br>Sandstone, very coarse                  |
| 159-161      | Gravel, iron cemented   |
| 161-167      | PENNSYLVANIAN<br>Shale, blue-gray to light blue-gray; lignite at 161 feet |

Table 2. Logs of wells and test holes--Continued.

LOCATION: 085-33-07ABBA

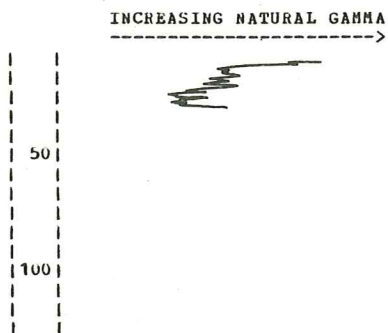
WC-133

STATION ID: 421143-0944402-01

ALTITUDE: 1090 FEET (NGVD 1929)

DEPTH: 32 FEET

DATE COMPLETED: September 10, 1982



| DEPTH (FEET) | DESCRIPTION OF MATERIALS                       |
|--------------|--|
| 0-4          | QUATERNARY<br>Top soil; clay, sandy, brown     |
| 4-8          | Sand and gravel, fine to very coarse           |
| 8-9          | Boulder  |
| 9-27         | Sand and gravel (mostly sand), fine, gray, tan |
| 27-32        | Till (possible), very sandy                    |

Casing record: set 2 inch pipe to 25 feet, slotted from 22.5 to 25 feet, gravel packed

LOCATION: 085-33-07BAAB

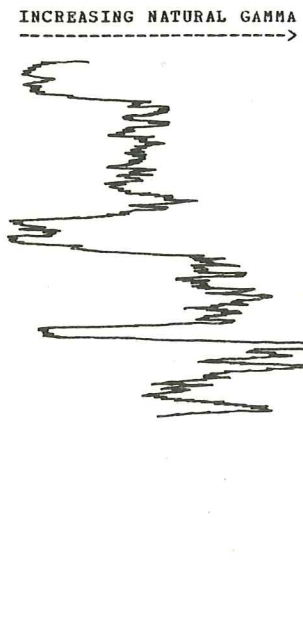
WC-134

STATION ID: 421143-0944416-01

ALTITUDE: 1093 FEET (NGVD 1929)

DEPTH: 161 FEET

DATE COMPLETED: September 15, 1982



POTENTIAL (mV)

| DEPTH (FEET) | DESCRIPTION OF MATERIALS  |
|--------------|---|
| 0-4          | QUATERNARY<br>Road bed; top soil  |
| 4-5          | Clay, sandy, gravelly, yellow-brown                                       |
| 5-15         | Sand and gravel, fine to coarse, tan to yellow-brown                      |
| 15-22        | As above, gray; boulders at base  |
| 22-73        | Till, sandy, gravelly, blue-gray  |
| 73-88        | Sand and gravel, fine to coarse, brown, tan                               |
| 88-121       | Clay, silty, gray; some sand grains                                       |
|              | CRETACEOUS<br>DAKOTA FORMATION  |
| 121-127      | Sand or sandstone, fine to very coarse, tan                               |
|              | PENNSYLVANIAN   |
| 127-135      | Shale, silty, sandy, light blue-gray; siltstone and sandstone interbedded |
| 135-141      | As above, brown   |
| 141-161      | Shale, silty, sandy, gray, brown; sandstone, occasional layer, very fine  |

LOCATION: 085-33-07BBAA

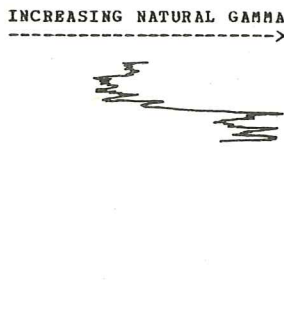
WC-135

STATION ID: 421143-0944428-01

ALTITUDE: 1093 FEET (NGVD 1929)

DEPTH: 41 FEET

DATE COMPLETED: September 13, 1982



POTENTIAL (mV)

| DEPTH (FEET) | DESCRIPTION OF MATERIALS                         |
|--------------|--|
| 0-3          | QUATERNARY<br>Road bed; top soil                 |
| 3-4          | Clay, sandy, yellow-brown                        |
| 4-5          | Sand and gravel, fine to very coarse, brown      |
| 5-17         | Sand and gravel, fine to very coarse, tan, brown |
| 17-20        | Sand, fine to coarse, brown                      |
| 20-28        | Sand and gravel, fine to medium, tan to gray     |
| 28-41        | Till, sandy, gravelly, blue-gray                 |

Table 2. Logs of wells and test holes--Continued.

LOCATION: 085-34-01DCDC

WC-136

STATION ID: 421143-0944504-01

ALTITUDE: 1145 FEET (NGVD 1929)

DEPTH: 201 FEET

DATE COMPLETED: September 14, 1982

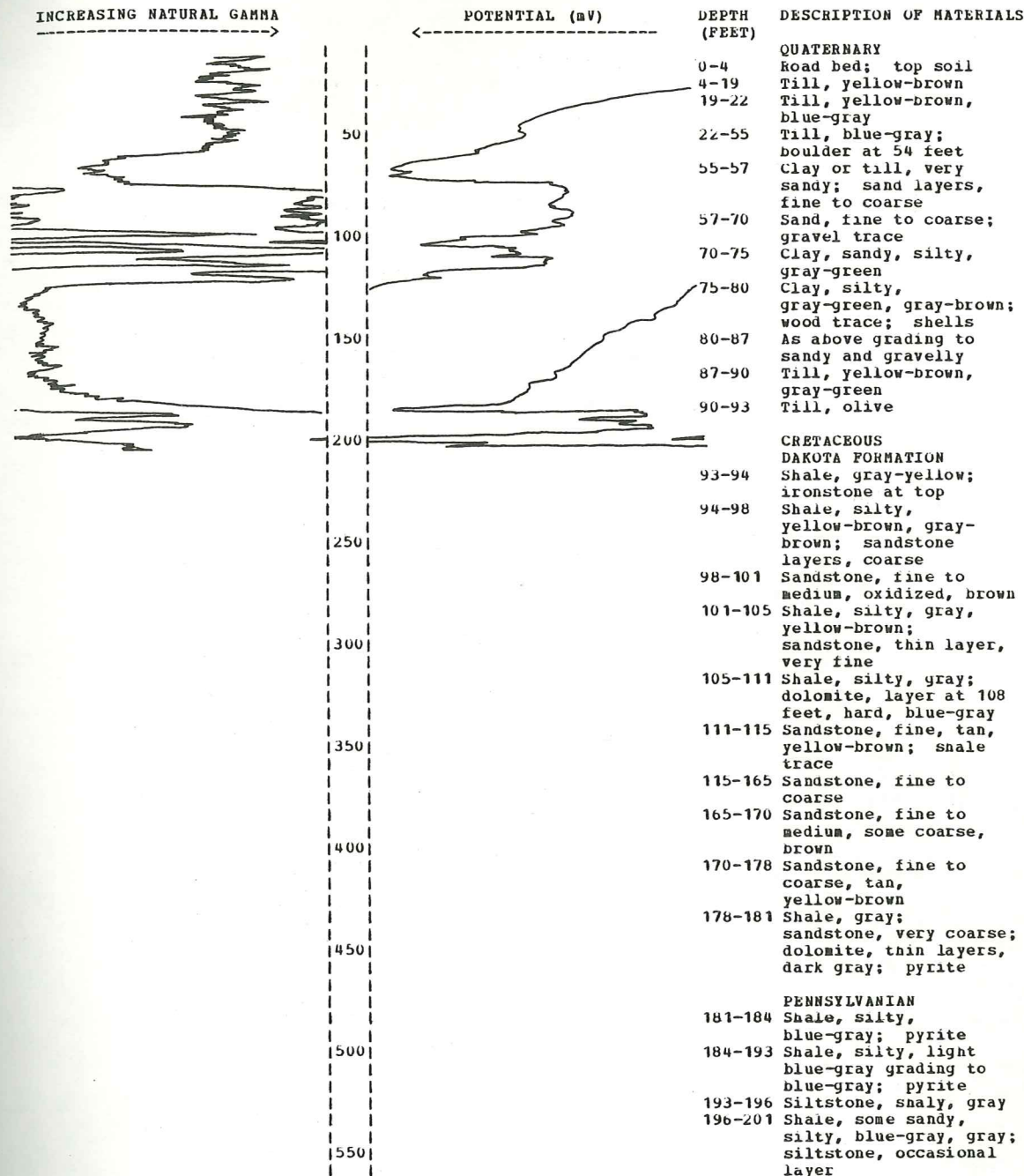


Table 2. Logs of wells and test holes--Continued.

| LOCATION: 085-35-05DDAA            | WC-139                   | STATION ID: 421156-0945610-01      |  |
|------------------------------------|--------------------------|------------------------------------|--|
| ALTITUDE: 1295 FEET (NGVD 1929)    | DEPTH: 278 FEET          | DATE COMPLETED: September 16, 1982 |  |
| INCREASING NATURAL GAMMA<br>-----> | POTENTIAL (mV)<br>-----< | DEPTH (FEET)                       | DESCRIPTION OF MATERIALS   |
|                                    |                          | 0-5                                | QUATERNARY<br>Road bed; top soil   |
|                                    |                          | 5-7                                | Clay, gray   |
|                                    |                          | 7-9                                | Till, gray   |
|                                    |                          | 9-15                               | As above, grading to yellow-brown  |
|                                    |                          | 15-17                              | Till, yellow-gray or olive   |
|                                    |                          | 17-48                              | Till, blue-gray  |
|                                    |                          | 48-55                              | Till, gravelly, olive, blue-gray; occasional boulders                          |
|                                    |                          | 55-70                              | Till, blue-gray  |
|                                    |                          | 70-71                              | Till, olive  |
|                                    |                          | 71-77                              | Till, olive, blue-gray   |
|                                    |                          | 77-79                              | Till, blue-gray  |
|                                    |                          | 79-82                              | Till, olive  |
|                                    |                          | 82-89                              | Till, gravelly, olive, blue-gray   |
|                                    |                          | 89-96                              | Till, yellow-brown   |
|                                    |                          | 96-105                             | Till, gravelly, olive, blue-gray, some gray-green                              |
|                                    |                          | 105-107                            | Clay, gray-tan   |
|                                    |                          | 107-114                            | Till, yellow-brown, blue-gray  |
|                                    |                          | 114-119                            | Till, hard, blue-gray  |
|                                    |                          | 119-123                            | Till, silty, sandy, gray-green, yellow-brown                                   |
|                                    |                          | 123-126                            | Till, hard, yellow-brown   |
|                                    |                          | 126-128                            | Sand and gravel, fine to medium; till mixed, yellow-brown; limestone fragments |
|                                    |                          | 128-138                            | Till, yellow-brown   |
|                                    |                          | 138-143                            | Till, yellow-gray, yellow-brown  |
|                                    |                          | 143-150                            | Till, blue-gray, gray, trace of yellow-brown at top and base                   |
|                                    |                          | 150-164                            | Till, gravelly, light blue-gray, blue-gray, olive streaks; wood at 157 feet    |
|                                    |                          | 164-168                            | Sand and gravel, fine to very coarse; boulders; till                           |
|                                    |                          |                                    | CRETACEOUS<br>DAKOTA FORMATION   |
|                                    |                          | 168-180                            | Sandstone, fine to coarse, brown, tan  |
|                                    |                          | 180-190                            | Sandstone, fine to very coarse, yellow-brown                                   |
|                                    |                          | 190-210                            | Sandstone, fine to coarse, tan, yellow-brown                                   |
|                                    |                          | 210-213                            | Sandstone, fine to very coarse, brown  |
|                                    |                          | 213-215                            | Sandstone, very coarse (gravel); shale, brown, yellow-brown                    |
|                                    |                          | 215-218                            | Shale, light gray, yellow-gray, brown at base                                  |
|                                    |                          | 218-230                            | Sandstone, fine to coarse grading to very coarse (gravel), tan, yellow-brown   |
|                                    |                          | 230-234                            | Shale, yellow-brown; sandstone, very coarse (gravel)                           |
|                                    |                          | 234-247                            | Sandstone, fine to coarse, oxidized, brown; ironstone at base                  |
|                                    |                          | 247-249                            | Shale, silty, yellow-brown, gray   |
|                                    |                          | 249-261                            | Shale, silty, gray   |
|                                    |                          | 261-275                            | Sandstone, fine to medium, tan yellow-brown                                    |
|                                    |                          | 275-278                            | Possible sandstone, creviced   |
|                                    |                          | 275-278                            | Possible sandstone, gray   |

Table 2. Logs of wells and test holes--Continued.

LOCATION: 085-38-12DCBA

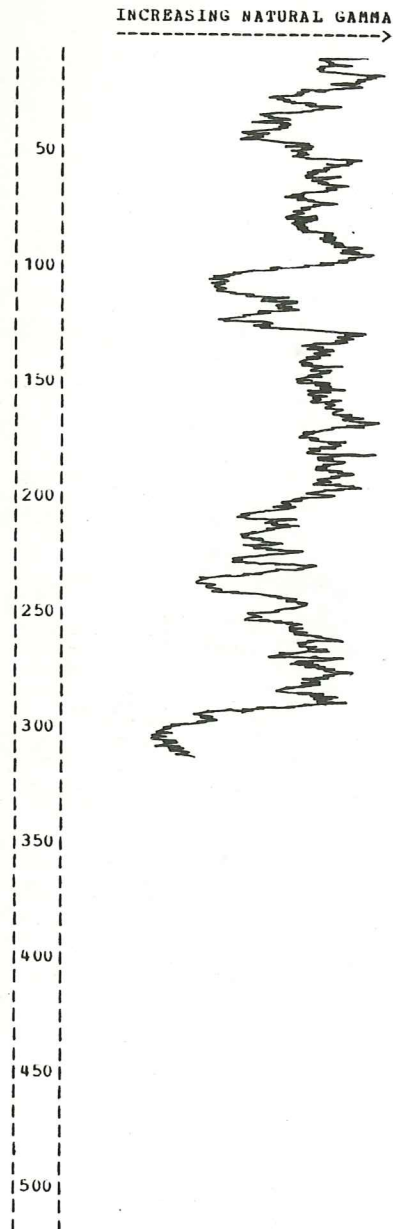
WC-14

STATION ID: 421106-0951255-0.

ALTITUDE: 1225 FEET (NGVD 1929)

DEPTH: 341 FEET

DATE COMPLETED: July 9, 1981



| DEPTH (FEET)  | DESCRIPTION OF MATERIALS   |
|---------------|--|
| QUATERNARY    |  |
| 0-5           | Top soil; fill   |
| 5-10          | Clay, silty, tan   |
| 10-15         | Clay, silty, sandy, yellow-tan, brown  |
| 15-22         | Clay, sandy, yellow-brown  |
| 22-30         | Clay, very sandy, yellow-brown; sand layers  |
| 30-34         | Sand and clay mixed, yellow-tan  |
| 34-36         | Sand and gravel, yellow-brown  |
| 36-39         | Till, yellow-brown   |
| 39-70         | Till, blue-gray  |
| 70-78         | Till, sandy, blue-gray; occasional sand layer                                      |
| 78-81         | Sand and gravel, fine to medium, gray  |
| 81-94         | Till, sandy, gravelly, blue-gray   |
| 94-100        | Sand and gravel, fine to medium, silty, gray                                       |
| 100-124       | Sand and gravel, very fine to fine; occasional till layer, gray                    |
| 124-129       | As above, mostly fine sand and silt, gray  |
| 129-161       | Till, very sandy, silty, blue-gray; reworked shales, dark; sand layers at 145 feet |
| 161-198       | Till, sandy, gravelly, blue-gray; reworked shales, dark                            |
| 198-202       | Sand and gravel, very fine to medium   |
| 202-207       | Till, blue-gray  |
| 207-215       | Sand and gravel, fine, gray-brown  |
| 215-229       | Till, blue-gray; sand and gravel layers  |
| 229-235       | Sand, fine to medium, some cemented  |
| 235-245       | As above, with till mixed  |
| 245-250       | Sand, as above   |
| 250-286       | Sand and gravel; till mixed;   |
| 286-331       | Sand, fine to coarse, cemented, gray-tan   |
| PENNSYLVANIAN |  |
| 331-335       | Limestone, silty, sandy  |
| 335-341       | Shale, gray  |

Casing record: set 2 inch pipe to 315 feet, slotted from 300 to 310 feet, gravel packed



Table 2. Logs of wells and test holes--Continued.

LOCATION: 085-38-13BBCC WC-58 STATION ID: 421051-0951335-01  
 ALTITUDE: 1220 FEET (NGVD 1929) DEPTH: 81 FEET DATE COMPLETED: June 11, 1982

| DEPTH (FEET) | DESCRIPTION OF MATERIALS  |
|--------------|---|
|              | QUATERNARY  |
| 0-8          | Road bed; top soil  |
| 8-14         | Clay, silty, dark gray  |
| 14-17        | Clay, silty, soft, dark gray, brown streaks                           |
| 17-28        | Clay, silty, soft, dark blue-gray                                     |
| 28-30        | Clay, silty, sandy, soft, gray-green                                  |
| 30-33        | Clay, silty, sandy, gray-green; sand layers                           |
| 33-39        | Sand and gravel, fine to medium, gray-green; shells                   |
| 39-55        | Sand and gravel, fine to coarse, yellow-gray                          |
| 55-72        | Sand and gravel, fine to very coarse, yellow-tan; occasional boulders |
| 72-81        | Till, blue-gray; sand layers, gray; lignite                           |

LOCATION: 085-38-13BBCC WC-59 STATION ID: 421043-0951335-01  
 ALTITUDE: 1220 FEET (NGVD 1929) DEPTH: 76 FEET DATE COMPLETED: June 14, 1982

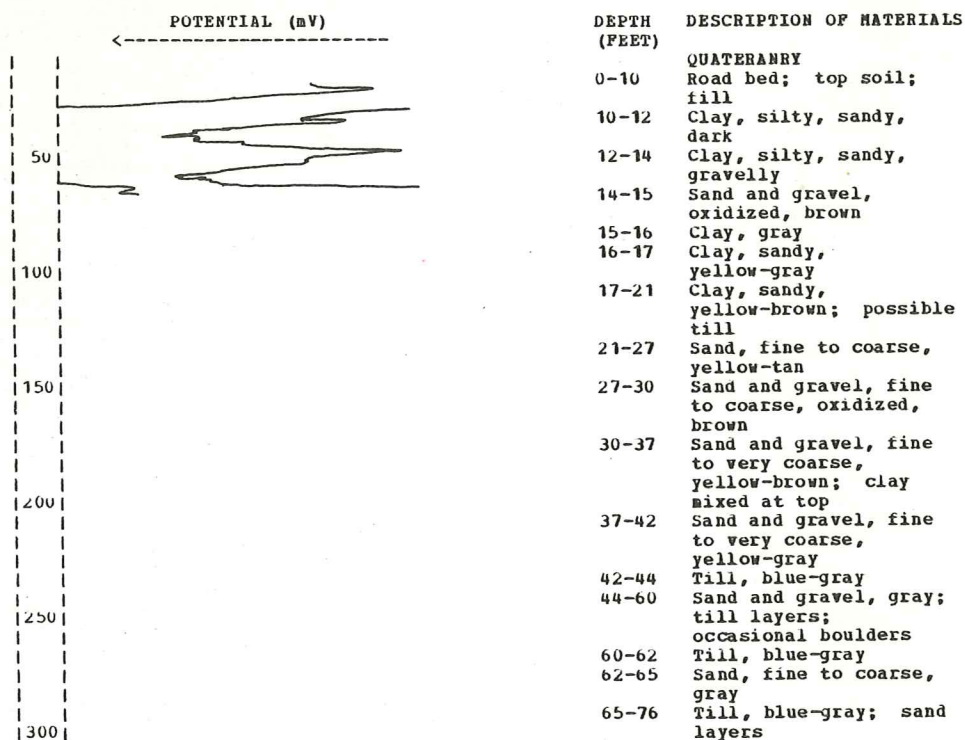


Table 2. Logs of wells and test holes--Continued.

LOCATION: 085-39-16ADDD

WC-7

STATION ID: 421031-0952256-01

ALTITUDE: 1370 FEET (NGVD 1929)

DEPTH: 561 FEET

DATE COMPLETED: May 22, 1981

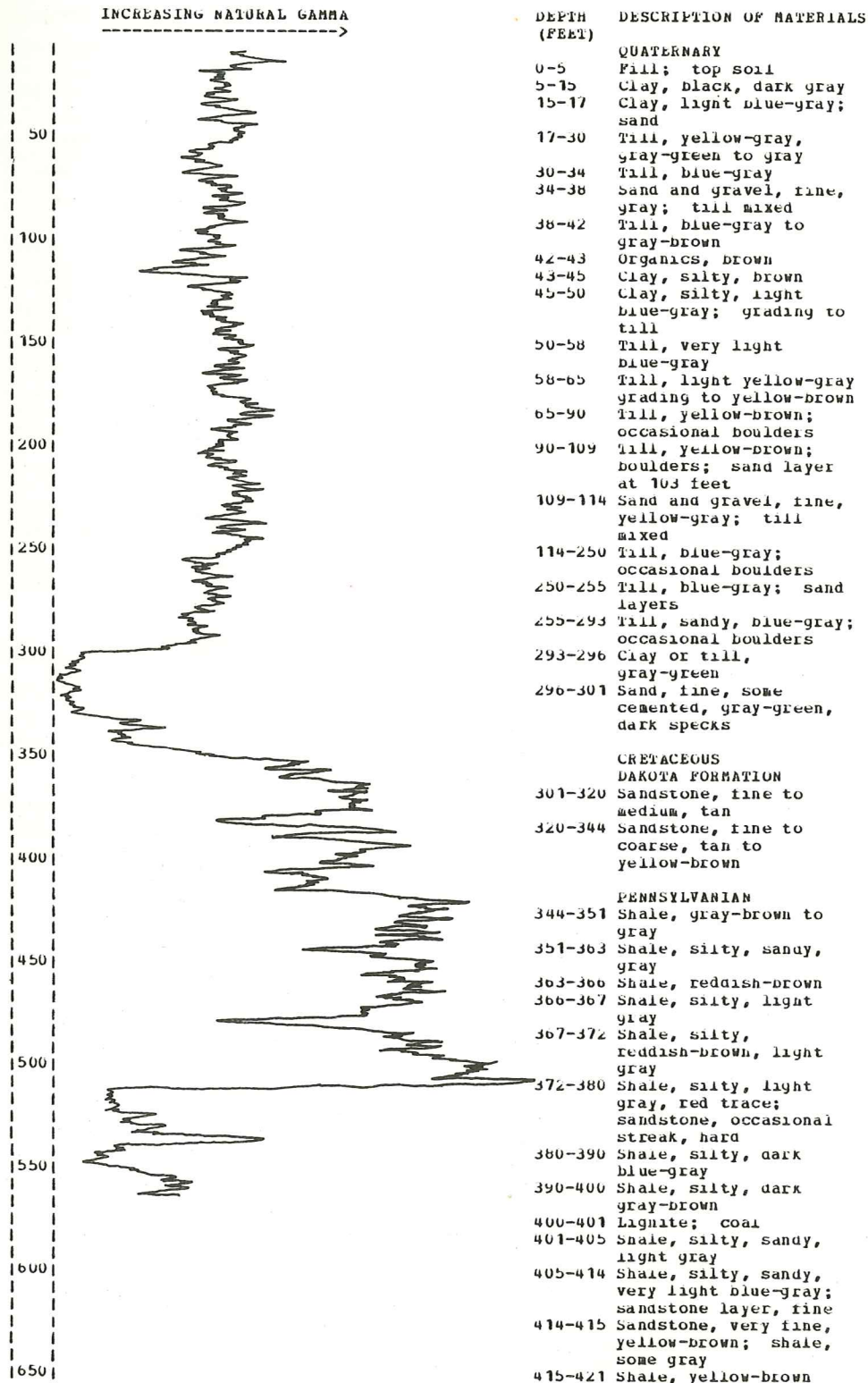


Table 2. Logs of wells and test holes--Continued.

| DEPTH (FEET)  | DESCRIPTION OF MATERIALS                   |
|---------------|--|
| 421-425       | Shale, silty, sandy, yellow-brown          |
| 425-432       | Shale, light gray, red trace               |
| 432-437       | Shale, dark gray                           |
| 437-439       | Coal; shale, dark gray                     |
| 439-446       | Shale, light gray                          |
| 446-451       | Shale, blue-gray                           |
| 451-469       | Shale, light gray                          |
| 469-474       | Shale, blue-gray grading to dark gray      |
| 474-475       | Coal                                       |
| 475-480       | Shale, silty, light gray                   |
| 480-500       | Shale, gray                                |
| 500-501       | Dolomite, shaly, sandy, brown, tan; pyrite |
| 501-505       | Shale, reddish-brown                       |
| 505-510       | Shale, light gray; sandstone layer, hard   |
| 510-531       | Sandstone, very fine, shaly, light gray    |
| MISSISSIPPIAN |  |
| 531-532       | Shale, gray-green; limestone, brown        |
| 532-551       | Limestone, brown                           |
| 551-554       | Limestone, very sandy, brown, tan          |
| 554-561       | Limestone, brown, tan                      |

Casing record: set 5 inch pipe to 351 feet, slotted from 315 to 330 feet, gravel packed. Set 2 inch pipe to 561 feet, slotted from 543 to 561 feet, gravel packed

LOCATION: 085-41-13CCCC

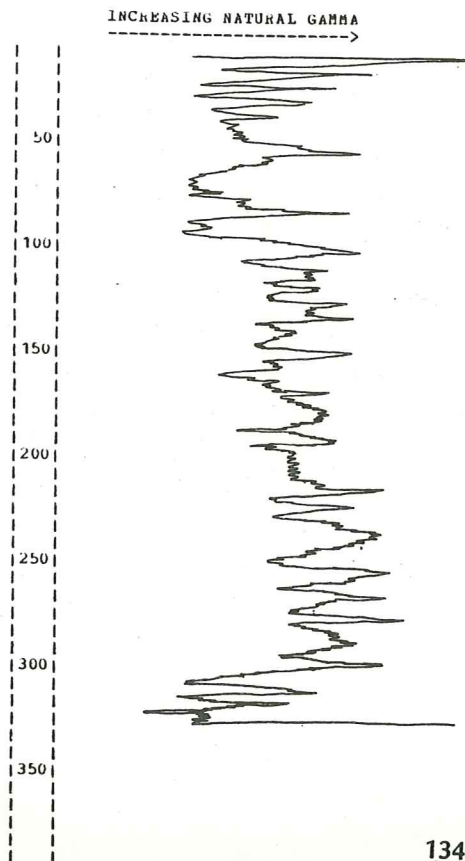
WC-D

STATION ID: 421005-0953428-01

ALTITUDE: 1375 FEET (NGVD 1929)

DEPTH: 361 FEET

DATE COMPLETED: May 7, 1981



| DEPTH (FEET)     | DESCRIPTION OF MATERIALS                                   |
|------------------|--|
| QUATERNARY       |  |
| 0-10             | Fill; top soil   |
| 10-15            | Clay, silty, gray-brown                                    |
| 15-20            | Clay, silty, blue-gray                                     |
| 20-22            | Clay, sandy, blue-gray                                     |
| 22-25            | Sand and gravel, fine to coarse                            |
| 25-27            | Clay, yellow   |
| 27-39            | Till, yellow-gray  |
| 39-41            | Sand and gravel, tan                                       |
| 41-50            | Clay or gumbo, gray; sand grains                           |
| 50-62            | Till, yellow-gray, gray mixed                              |
| 62-69            | Sand, fine, yellow-brown                                   |
| 69-81            | Till, yellow-brown   |
| 81-84            | Sand, fine, yellow-brown                                   |
| 84-90            | Till, very sandy, yellow-brown                             |
| 90-100           | Till, yellow-brown grading to blue-gray                    |
| 100-149          | Till, blue-gray  |
| 149-161          | Clay or gumbo, dark gray to gray                           |
| 161-165          | Clay, silty, gray-green                                    |
| 165-200          | Clay, silty, tan   |
| 200-250          | As above, softer, siltier                                  |
| 250-297          | Clay, very silty, gray, gray-green                         |
| 297-320          | Sand, fine, some cemented, gray to gray-green, dark specks |
| CRETACEOUS       |  |
| DAKOTA FORMATION |  |
| 320-340          | Sandstone, fine to coarse, tan                             |
| 340-361          | Shale, reddish-brown, light gray                           |

Casing record: set 2 inch pipe to 322 feet, slotted from 307 to 322 feet, gravel packed

Table 2. Logs of wells and test holes--Continued.

LOCATION: 085-43-24CCBB WC-1 STATION ID: 420926-0954825-01  
 ALTITUDE: 1110 FEET (NGVD 1929) DEPTH: 261 FEET DATE COMPLETED: April 16, 1981

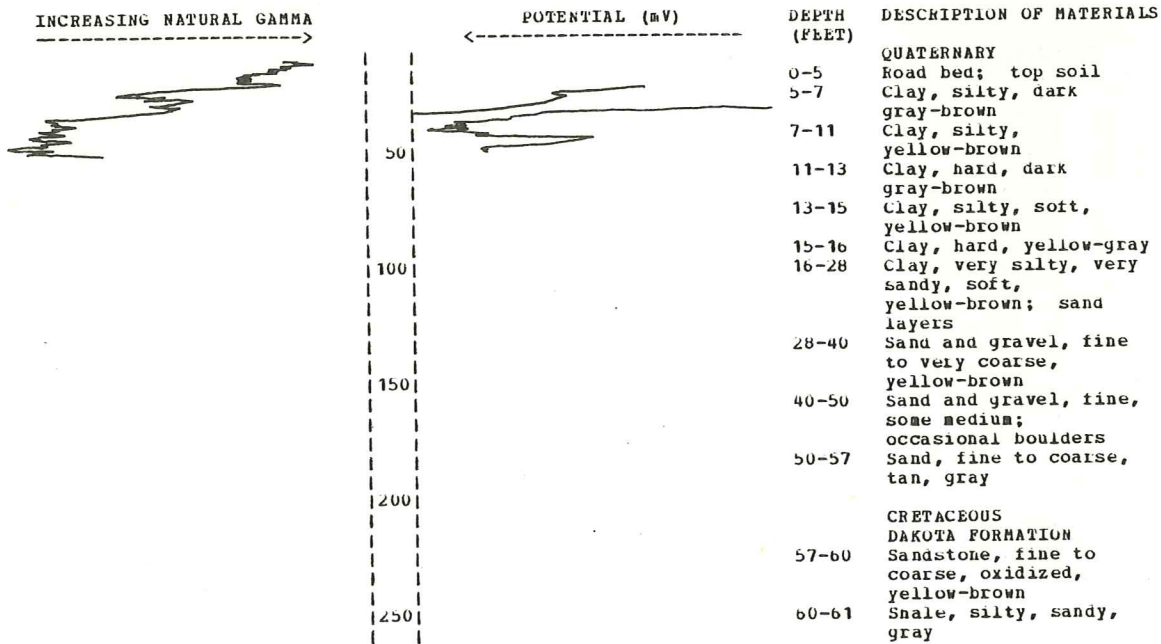
| DEPTH (FEET)  | DESCRIPTION OF MATERIALS  |
|---------------|---|
| QUATERNARY    |   |
| 0-6           | Clay, silty, yellow-tan   |
| 6-10          | Clay, silty, sandy, blue-gray, brown                              |
| 10-12         | Clay, silty, brown  |
| 12-16         | Clay, silty, sandy, yellow-tan                                    |
| 16-20         | Sand, fine to coarse, tan   |
| 20-28         | Sand and gravel, fine to coarse, oxidized, yellow-brown           |
| 28-33         | Clay, silty, sandy, blue-gray                                     |
| 33-36         | Clay, silty, sandy, tan   |
| 36-40         | Sand and gravel, fine to very coarse, oxidized, yellow-brown      |
| 40-60         | Sand and gravel, fine to coarse, yellow-brown; occasional boulder |
| 60-72         | As above, coarser, tan  |
| 72-81         | Till, blue-gray   |
| 81-152        | Till, sandy, blue-gray  |
| 152-173       | Sand and gravel, fine to medium, gray; occasional boulders        |
| PENNSYLVANIAN |   |
| 173-194       | Shale, light gray grading to dark gray                            |
| 194-195       | Limestone layer, dark   |
| 195-217       | Shale, dark blue-gray   |
| 217-224       | Shale, gray   |
| 224-226       | Shale, black; coal  |
| 226-239       | Shale, light gray; pyrite   |
| 239-247       | Shale, light gray-green   |
| 247-250       | Shale, dark blue-gray   |
| 250-258       | Shale, gray-brown   |
| 258-260       | Shale, dark gray-brown, hard                                      |
| 260-261       | Shale, gray   |

LOCATION: 085-43-33CCCB WC-161 STATION ID: 420734-0925155-01  
 ALTITUDE: 1135 FEET (NGVD 1929) DEPTH: 175 FEET DATE COMPLETED: May 3, 1983

| INCREASING NATURAL GAMMA<br>-----> | POTENTIAL (mV)<br>-----< | DEPTH (FEET)  | DESCRIPTION OF MATERIALS                              |
|------------------------------------|--------------------------|---------------|---|
|                                    |                          | 0-5           | QUATERNARY<br>Top soil; fill                          |
|                                    |                          | 5-10          | Loess, dark brown                                     |
|                                    |                          | 10-18         | Loess, yellow-brown                                   |
|                                    |                          | 18-40         | Loess, oxidized, yellow-tan, brown                    |
|                                    |                          | 40-50         | Clay, tan; loess                                      |
|                                    |                          | 50-55         | Loess, yellow-gray                                    |
|                                    |                          | 55-58         | Loess, gray to blue-gray                              |
|                                    |                          | 58-67         | Clay or loess, silty, blue-gray                       |
|                                    |                          | 67-75         | Clay, silty, medium, gray                             |
|                                    |                          | 75-77         | Sand and gravel, fine to medium, gray, brown; boulder |
|                                    |                          | 77-78         | Till, olive   |
|                                    |                          | 78-140        | Till, blue-gray; boulder at 99 feet                   |
|                                    |                          | 140-143       | Sand, fine to coarse, gray                            |
|                                    |                          | 143-165       | Till, sandy, blue-gray                                |
|                                    |                          | PENNSYLVANIAN |   |
|                                    |                          | 165-168       | Shale, silty, light gray                              |
|                                    |                          | 168-170       | Shale, reddish-brown, light gray, yellow-brown        |
|                                    |                          | 170-175       | Shale, reddish-brown                                  |

Table 2. Logs of wells and test holes--Continued.

LOCATION: 085-44-15CCDD WC-157 STATION ID: 421006-0955727-01  
 ALTITUDE: 1065 FEET (NGVD 1929) DEPTH: 61 FEET DATE COMPLETED: October 18, 1982



LOCATION: 085-44-15DDCD WC-160 STATION ID: 421006-0955645-01  
 ALTITUDE: 1145 FEET (NGVD 1929) DEPTH: 121 FEET DATE COMPLETED: October 20, 1982

| DEPTH (FEET) | DESCRIPTION OF MATERIALS  |
|--------------|---|
| 0-3          | QUATERNARY<br>Road bed  |
| 3-10         | Loess, yellow-tan   |
| 10-15        | Loess or clay, some sandy, yellow-tan   |
| 15-18        | Clay, sandy, hard, yellow-tan   |
| 18-31        | Gravel; boulders; till, yellow-brown  |
| 31-33        | Sand and gravel, fine to medium, yellow-brown                                     |
| 33-34        | Till, olive   |
| 34-40        | Till, blue-gray, occasional olive streaks   |
| 40-41        | Sand and gravel, gray   |
| 41-85        | Till, blue-gray   |
| 85-87        | Till or clay, very sandy, blue-gray   |
| 87-92        | Clay, sandy, yellow-brown   |
| 92-114       | CRETACEOUS<br>DAKOTA FORMATION<br>Sandstone, fine to very coarse, (gravel), brown |
| 114-121      | Sandstone, fine to coarse, yellow-brown, tan                                      |

Table 2. Logs of wells and test holes--Continued.

LOCATION: 085-44-16CDAa

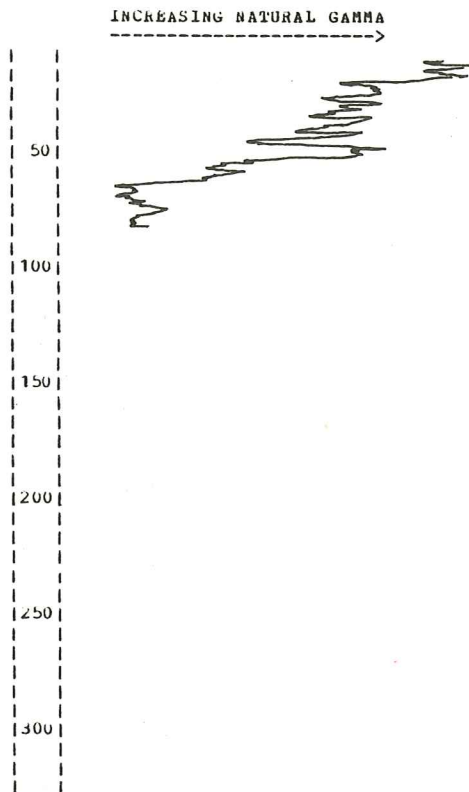
WC-155

STATION ID: 421018-0955820-01

ALTITUDE: 1060 FEET (NGVD 1929)

DEPTH: 81 FEET

DATE COMPLETED: October 14, 1982



| DEPTH (FEET)     | DESCRIPTION OF MATERIALS  |
|------------------|---|
| QUATERNARY       |   |
| 0-5              | Road bed; top soil  |
| 5-8              | Clay, very dark gray  |
| 8-10             | Clay, silty, dark gray-brown                                      |
| 10-21            | Clay, silty, sandy, soft, gray, brown                             |
| 21-26            | Clay, silty, sandy, blue-gray; sand layers                        |
| 26-30            | Sand, fine to medium, gray; clay, silty, dark gray; shells        |
| 30-36            | Clay, silty, sandy, dark gray; shells; gravel layer at base, fine |
| 36-40            | As above, sand layers, fine to coarse                             |
| 40-43            | Sand and gravel, fine to coarse, gray                             |
| 43-46            | Clay, silty; wood   |
| 46-50            | Sand and gravel, fine to coarse, silty; boulders                  |
| CRETACEOUS       |   |
| DAKOTA FORMATION |   |
| 50-51            | Boulder; gravel, iron cemented, oxidized                          |
| 51-60            | Sandstone, fine to very coarse, yellow-brown                      |
| 60-81            | Sandstone, fine to coarse, tan, yellow-brown                      |

Casing record: set 2 inch pipe to 77 feet, slotted from 67 to 77 feet, gravel packed

LOCATION: 085-44-16DCDD

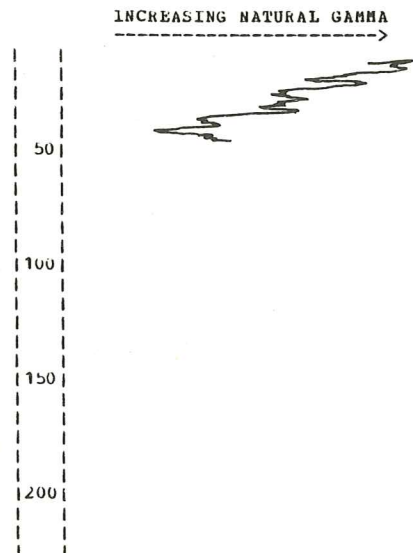
WC-156

STATION ID: 421006-0955803-01

ALTITUDE: 1060 FEET (NGVD 1929)

DEPTH: 43 FEET

DATE COMPLETED: October 15, 1982



| DEPTH (FEET)     | DESCRIPTION OF MATERIALS  |
|------------------|---|
| QUATERNARY       |   |
| 0-5              | Road bed; top soil  |
| 5-8              | Clay, silty, dark gray-brown                                      |
| 8-14             | Clay, silty, yellow-gray  |
| 14-16            | Clay, some silty, hard, gray                                      |
| 16-18            | Clay, silty, soft, yellow-gray                                    |
| 18-28            | Clay, silty, sandy, soft, yellow-brown                            |
| 28-36            | Sand and gravel, fine to medium, some coarse, yellow-brown        |
| 36-40            | Sand and gravel, fine to coarse, oxidized, brown; boulder at base |
| CRETACEOUS       |   |
| DAKOTA FORMATION |   |
| 40-43            | Sandstone   |

Casing record: set 2 inch pipe to 40 feet, slotted from 35 to 40 feet, gravel packed

Table 2. Logs of wells and test holes--Continued.

LOCATION: 085-44-17DCAA

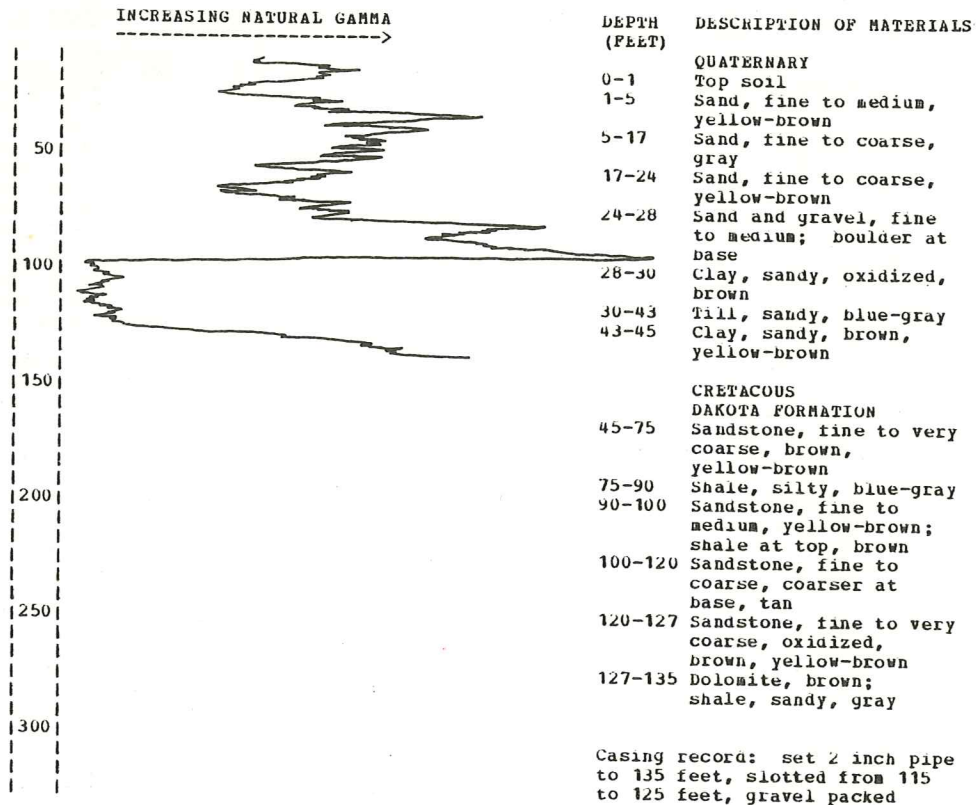
WC-158

STATION ID: 421018-0955913-01

ALTITUDE: 1110 FEET (NGVD 1929)

DEPTH: 135 FEET

DATE COMPLETED: October 18, 1982



LOCATION: 085-44-22ACBB

WC-159

STATION ID: 420952-0955706-01

ALTITUDE: 1090 FEET (NGVD 1929)

DEPTH: 76 FEET

DATE COMPLETED: October 19, 1982

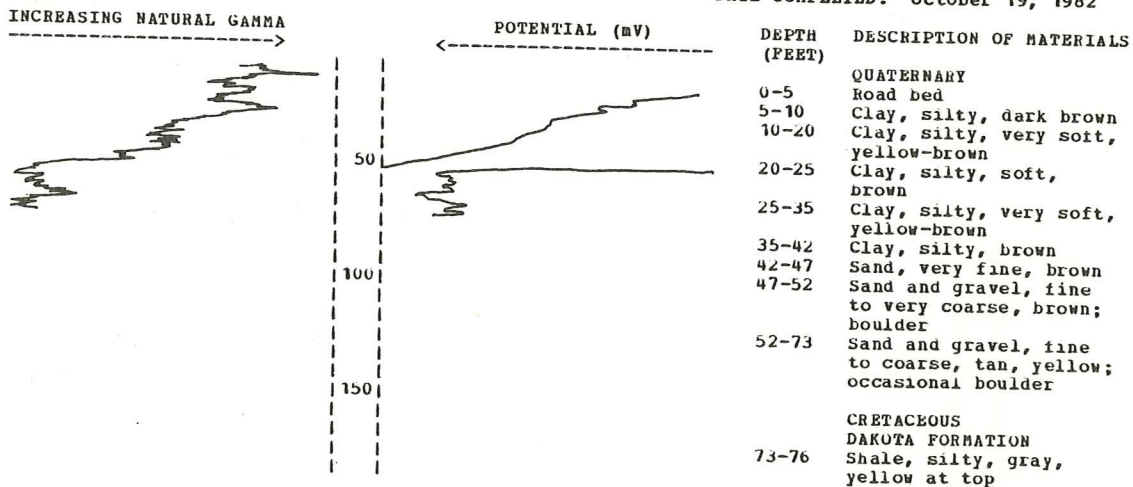


Table 2. Logs of wells and test holes--Continued.

LOCATION: 085-44-22ADAA

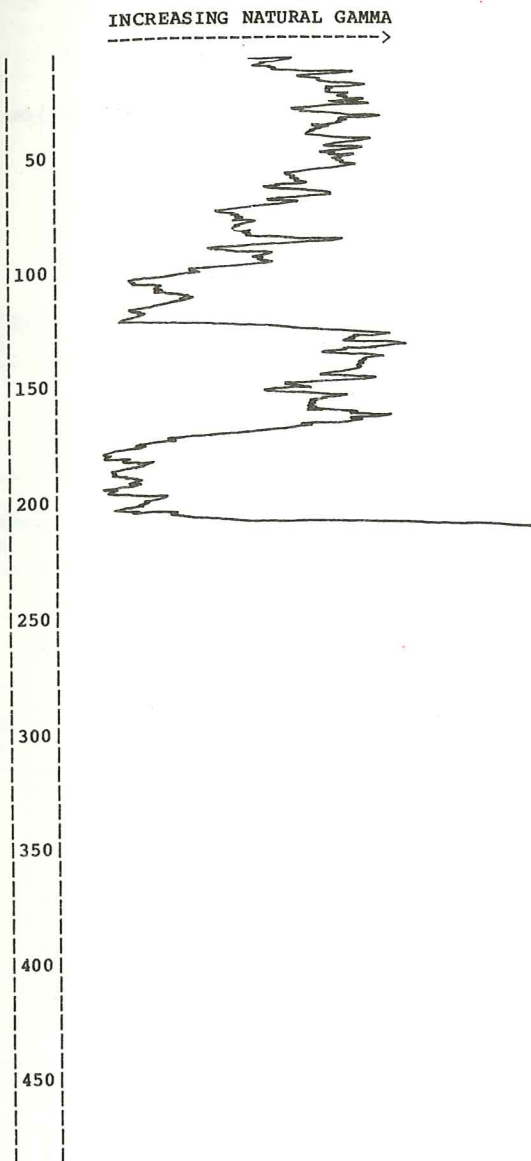
WC-8

STATION ID: 420952-0955634-01

ALTITUDE: 1120 FEET (NGVD 1929)

DEPTH: 212 FEET

DATE COMPLETED: June 2, 1981



DEPTH DESCRIPTION OF MATERIALS (FEET)

| DEPTH (FEET)     | DESCRIPTION OF MATERIALS                                 |
|------------------|--|
| QUATERNARY       |  |
| 0-7              | Loess, tan   |
| 7-15             | Sand and gravel, fine to coarse                          |
| 15-27            | Clay, silty, tan   |
| 27-28            | Sand and gravel  |
| 28-35            | Clay, silty, blue-gray                                   |
| 35-37            | Till, sandy, yellow-brown, gray                          |
| 37-38            | Sand and gravel, fine to coarse; till mixed, yellow-gray |
| 38-40            | As above, mostly till, yellow-gray                       |
| 40-60            | Till, blue-gray  |
| 60-60            | Till, yellow-brown                                       |
| 60-63            | Sand, fine to coarse, tan                                |
| 63-66            | Clay, silty, tan   |
| 66-70            | Sand, fine to coarse, tan                                |
| 70-84            | Sand and gravel, fine to medium, tan, yellow-tan         |
| 84-90            | As above, oxidized, yellow-brown to brown                |
| 90-95            | Sand and gravel, finer than above, yellow-brown          |
| CRETACEOUS       |  |
| DAKOTA FORMATION |  |
| 95-115           | Sandstone, fine to medium, tan                           |
| 115-123          | Sandstone, coarse, tan to yellow-brown                   |
| 123-128          | Shale, silty, sandy, light gray                          |
| 128-145          | Shale, silty, gray                                       |
| 145-150          | As above, thin sandstone streaks                         |
| 150-167          | Shale, silty, gray; lignite trace                        |
| 167-170          | Sandstone, fine to medium, well cemented, tan to brown   |
| 170-205          | Sandstone, fine to medium, tan to brown                  |
| PENNSYLVANIAN    |  |
| 205-208          | Shale, light gray; iron pyrite specks                    |
| 208-212          | Shale, very dark gray                                    |

Casing record: set 2 inch pipe to 210 feet, slotted from 192 to 210 feet, gravel packed



Table 3. Water levels in selected wells.

Water levels shown have been adjusted to feet  
below land surface

MP, measuring point

lsd, land surface datum

>, water level below the depth of well

Table 3. Water levels in selected wells--Continued.

Depth to water, in feet below land surface datum

Location: 78-30-06AACA WC-86 Aquifer: South Raccoon  
 Altitude: 980 feet MP is the top of 2-inch pipe 1.85 feet above lsd

| DATE             | WATER LEVEL | DATE         | WATER LEVEL | DATE             | WATER LEVEL |
|------------------|-------------|--------------|-------------|------------------|-------------|
| July 19, 1982... | 11.55       | Feb. 9.....  | 11.30       | Sep. 6.....      | 12.61       |
| Aug. 2.....      | 12.13       | Mar. 10..... | 9.52        | Oct. 3.....      | 11.97       |
| Sep. 2.....      | 12.59       | Apr. 11..... | 7.54        | Nov. 7.....      | 12.65       |
| Oct. 8.....      | 12.81       | May 4.....   | 8.69        | Dec. 8.....      | 11.82       |
| Nov. 5.....      | 12.87       | June 6.....  | 8.17        | Jan. 10, 1984... | 11.60       |
| Dec. 9.....      | 11.22       | July 1.....  | 8.99        | Feb. 9.....      | 11.09       |
| Jan. 4, 1983...  | 11.02       | Aug. 3.....  | 11.75       | Mar. 6.....      | 10.97       |

Location: 78-30-24CAAB WC-238 Aquifer: Dakota  
 Altitude: 1020 feet MP is the top of 2-inch pipe 2.10 feet above lsd

|                  |       |                  |       |             |       |
|------------------|-------|------------------|-------|-------------|-------|
| Aug. 15, 1983... | 45.73 | Nov. 7.....      | 44.30 | Feb. 9..... | 43.06 |
| Sep. 6.....      | 44.95 | Dec. 8.....      | 43.00 | Mar. 6..... | 40.18 |
| Oct. 3.....      | 44.01 | Jan. 10, 1984... | 43.20 |             |       |

Location: 78-32-21AAAA WC-239 Aquifer: Dakota  
 Altitude: 1250 feet MP is the top of 2-inch pipe 1.90 feet above lsd

|                  |       |                  |       |             |       |
|------------------|-------|------------------|-------|-------------|-------|
| Aug. 17, 1983... | 73.04 | Nov. 7.....      | 72.95 | Feb. 9..... | 73.12 |
| Sep. 6.....      | 72.99 | Dec. 8.....      | 73.05 | Mar. 6..... | 73.22 |
| Oct. 3.....      | 73.56 | Jan. 10, 1984... | 73.64 |             |       |

Location: 78-36-35ADCC WC-69 Aquifer: Dakota  
 Altitude: 1230 feet MP is the top of 2-inch pipe 2.15 feet above lsd

|                  |       |                 |       |                  |       |
|------------------|-------|-----------------|-------|------------------|-------|
| June 22, 1982... | 53.04 | Jan. 4, 1983... | 52.40 | Sep. 6.....      | 47.95 |
| July 2.....      | 52.99 | Mar. 9.....     | 51.29 | Oct. 3.....      | 48.16 |
| Aug. 3.....      | 53.05 | Apr. 11.....    | 51.20 | Nov. 10.....     | 48.72 |
| Sep. 1.....      | 53.03 | May 3.....      | 49.54 | Jan. 10, 1984... | 49.40 |
| Oct. 7.....      | 52.94 | June 6.....     | 48.83 | Feb. 6.....      | 49.52 |
| Nov. 4.....      | 52.93 | July 1.....     | 47.89 | Mar. 6.....      | 49.20 |
| Dec. 7.....      | 53.81 | Aug. 2.....     | 47.74 |                  |       |

Location: 78-36-36DABB WC-71 Aquifer: East Nishnabotna  
 Altitude: 1195 feet MP is the top of 2-inch pipe 3.00 feet above lsd

|                  |       |                 |       |                 |       |
|------------------|-------|-----------------|-------|-----------------|-------|
| June 23, 1982... | 16.29 | Jan. 4, 1983... | 16.98 | Aug. 2.....     | 15.98 |
| July 2.....      | 16.55 | Feb. 8.....     | 16.67 | Sep. 6.....     | 16.78 |
| Aug. 3.....      | 17.02 | Mar. 9.....     | 15.11 | Oct. 3.....     | 17.22 |
| Sep. 1.....      | 16.99 | Apr. 11.....    | 12.80 | Nov. 10.....    | 17.37 |
| Oct. 7.....      | 17.70 | May 3.....      | 12.65 | Feb. 6, 1984... | 17.24 |
| Nov. 4.....      | 17.84 | June 6.....     | 15.04 | Mar. 6.....     | 16.61 |
| Dec. 7.....      | 17.56 | July 1.....     | 14.60 |                 |       |

Location: 78-37-17DDDD WC-16 Aquifer: Dakota  
 Altitude: 1208 feet MP is the top of 2-inch pipe 2.80 feet above lsd

|                  |       |                 |       |                  |       |
|------------------|-------|-----------------|-------|------------------|-------|
| Aug. 19, 1981... | 42.85 | Sep. 1.....     | 41.42 | June 6.....      | 39.19 |
| Sep. 24.....     | 42.86 | Oct. 7.....     | 41.89 | July 1.....      | 39.08 |
| Nov. 3.....      | 42.73 | Nov. 4.....     | 42.00 | Aug. 2.....      | 40.01 |
| Feb. 5, 1982...  | 42.13 | Dec. 7.....     | 41.71 | Sep. 6.....      | 40.32 |
| Apr. 6.....      | 41.83 | Jan. 4, 1983... | 41.27 | Oct. 3.....      | 41.33 |
| May 6.....       | 42.06 | Feb. 8.....     | 41.18 | Nov. 10.....     | 41.42 |
| June 7.....      | 40.83 | Mar. 10.....    | 39.93 | Jan. 10, 1984... | 41.24 |
| July 7.....      | 41.07 | Apr. 11.....    | 39.57 | Feb. 6.....      | 40.77 |
| Aug. 3.....      | 41.48 | May 3.....      | 38.65 | Mar. 6.....      | 40.78 |

Table 3. Water levels in selected wells--Continued.

Depth to water, in feet below land surface datum

Location: 78-38-11CCBC WC-227 Aquifer: Fremont  
 Altitude: 1310 feet MP is the top of 2-inch pipe 1.65 feet above lsd

| DATE             | WATER LEVEL | DATE             | WATER LEVEL | DATE        | WATER LEVEL |
|------------------|-------------|------------------|-------------|-------------|-------------|
| July 21, 1983... | 149.12      | Oct. 3.....      | 147.56      | Feb. 9..... | 150.58      |
| Aug. 2.....      | 151.07      | Nov. 8.....      | 150.98      | Mar. 6..... | 149.63      |
| Sep. 6.....      | 146.61      | Jan. 12, 1984... | 150.40      |             |             |

Location: 78-39-10BBBA WC-200 Aquifer: West Nishnabotna  
 Altitude: 1168 feet MP is the top of 2-inch pipe 2.50 feet above lsd

|                 |       |             |       |                  |       |
|-----------------|-------|-------------|-------|------------------|-------|
| June 7, 1983... | 20.12 | Sep. 6..... | 21.97 | Jan. 12, 1984... | 21.85 |
| July 6.....     | 19.57 | Oct. 3..... | 22.29 | Feb. 9.....      | 21.66 |
| Aug. 2.....     | 21.00 | Nov. 8..... | 22.29 | Mar. 6.....      | 21.14 |

Location: 78-39-13BCCC WC-204 Aquifer: West Nishnabotna  
 Altitude: 1180 feet MP is the top of 2-inch pipe 2.55 feet above lsd

|                 |       |             |       |                 |       |
|-----------------|-------|-------------|-------|-----------------|-------|
| June 9, 1983... | 17.58 | Sep. 6..... | 20.31 | Feb. 9, 1984... | 21.33 |
| July 6.....     | 12.79 | Oct. 3..... | 26.00 | Mar. 6.....     | 21.11 |
| Aug. 2.....     | 18.53 | Nov. 8..... | 21.29 |                 |       |

Location: 78-39-32DDAA WC-197 Aquifer: West Nishnabotna  
 Altitude: 1144 feet MP is the top of 2-inch pipe 1.95 feet above lsd

|                 |       |                  |       |             |       |
|-----------------|-------|------------------|-------|-------------|-------|
| June 6, 1983... | 12.04 | Oct. 3.....      | 16.51 | Feb. 9..... | 15.71 |
| July 6.....     | 9.52  | Nov. 8.....      | 15.12 | Mar. 6..... | 15.17 |
| Aug. 2.....     | 12.10 | Dec. 13.....     | 15.37 |             |       |
| Sep. 6.....     | 14.08 | Jan. 12, 1984... | 15.70 |             |       |

Location: 78-41-31DDDD WC-27 Aquifer: Basal Pleistocene  
 Altitude: 1158 feet MP is the top of 2-inch pipe 2.05 feet above lsd

|                  |       |                 |       |                  |       |
|------------------|-------|-----------------|-------|------------------|-------|
| Jan. 13, 1982... | 57.49 | Dec. 2.....     | 57.59 | Sep. 7.....      | 56.93 |
| Apr. 6.....      | 56.84 | Jan. 4, 1983... | 57.75 | Oct. 3.....      | 57.38 |
| May 6.....       | 56.70 | Feb. 8.....     | 57.73 | Nov. 8.....      | 57.41 |
| June 3.....      | 55.94 | Mar. 10.....    | 57.48 | Dec. 13.....     | 57.50 |
| July 7.....      | 55.26 | Apr. 12.....    | 56.97 | Jan. 12, 1984... | 57.87 |
| Aug. 3.....      | 55.31 | May 2.....      | 56.33 | Feb. 9.....      | 58.03 |
| Sep. 9.....      | 55.36 | June 1.....     | 56.33 | Mar. 6.....      | 57.82 |
| Oct. 7.....      | 55.39 | July 6.....     | 56.35 |                  |       |
| Nov. 1.....      | 55.33 | Aug. 2.....     | 56.76 |                  |       |

Location: 78-43-05ACDD WC-33 Aquifer: Dakota  
 Altitude: 1080 feet MP is the top of 2-inch pipe 2.35 feet above lsd

|                 |       |                 |       |                  |       |
|-----------------|-------|-----------------|-------|------------------|-------|
| May 13, 1982... | 73.76 | Jan. 3, 1983... | 73.00 | Sep. 7.....      | 73.72 |
| June 3.....     | 72.79 | Feb. 8.....     | 73.14 | Oct. 4.....      | 73.91 |
| July 7.....     | 72.94 | Mar. 10.....    | 72.02 | Nov. 8.....      | 73.50 |
| Aug. 3.....     | 73.64 | Apr. 12.....    | 71.04 | Dec. 13.....     | 73.30 |
| Sep. 9.....     | 74.19 | May 2.....      | 71.38 | Jan. 12, 1984... | 73.54 |
| Oct. 7.....     | 73.70 | June 1.....     | 71.95 | Feb. 8.....      | 73.59 |
| Nov. 1.....     | 73.17 | July 6.....     | 71.79 | Mar. 6.....      | 72.34 |
| Dec. 2.....     | 72.82 | Aug. 2.....     | 72.87 |                  |       |

Table 3. Water levels in selected wells--Continued.

Depth to water, in feet below land surface datum

Location: 78-43-05BCDD      WC-32      Aquifer: Boyer  
 Altitude: 1010 feet      MP is the top of 2-inch pipe 3.10 feet above lsd

| DATE            | WATER LEVEL | DATE            | WATER LEVEL | DATE             | WATER LEVEL |
|-----------------|-------------|-----------------|-------------|------------------|-------------|
| May 13, 1982... | 4.71        | Jan. 3, 1983... | 4.74        | Sep. 7.....      | 6.09        |
| June 3.....     | 4.18        | Feb. 8.....     | 4.89        | Oct. 4.....      | 6.44        |
| July 7.....     | 4.31        | Mar. 10.....    | 3.65        | Nov. 8.....      | 5.32        |
| Aug. 3.....     | 5.66        | Apr. 12.....    | 2.71        | Dec. 13.....     | 5.20        |
| Sep. 9.....     | 5.99        | May 2.....      | 3.26        | Jan. 12, 1984... | 5.45        |
| Oct. 7.....     | 5.19        | June 1.....     | 4.29        | Feb. 8.....      | 5.40        |
| Nov. 1.....     | 4.81        | July 6.....     | 4.13        | Mar. 6.....      | 4.12        |
| Dec. 2.....     | 4.40        | Aug. 2.....     | 5.16        |                  |             |

Location: 79-30-22BAAC      WC-109      Aquifer: Dakota  
 Altitude: 1140 feet      MP is the top of 2-inch pipe 1.85 feet above lsd

|                  |        |              |        |                  |        |
|------------------|--------|--------------|--------|------------------|--------|
| Aug. 18, 1982... | 141.65 | Apr. 11..... | 140.17 | Nov. 7.....      | 139.57 |
| Sep. 2.....      | 140.22 | May 4.....   | 140.06 | Dec. 8.....      | 139.68 |
| Oct. 8.....      | 138.50 | June 7.....  | 140.17 | Jan. 10, 1984... | 140.15 |
| Nov. 5.....      | 139.85 | July 1.....  | 139.77 | Feb. 9.....      | 139.58 |
| Jan. 4, 1983...  | 140.14 | Aug. 3.....  | 139.72 | Mar. 6.....      | 139.83 |
| Feb. 9.....      | 140.08 | Sep. 6.....  | 139.89 |                  |        |
| Mar. 9.....      | 140.25 | Oct. 3.....  | 139.83 |                  |        |

Location: 79-31-14CBCC      WC-82      Aquifer: South Raccoon Terrace and Dakota  
 Altitude: 1090 feet      MP is the top of 2-inch pipe 2.50 feet above lsd

|                  |       |              |       |                  |       |
|------------------|-------|--------------|-------|------------------|-------|
| July 15, 1982... | 32.56 | Feb. 9.....  | 32.92 | Sep. 6.....      | 29.43 |
| Aug. 2.....      | 33.46 | Mar. 9.....  | 32.87 | Oct. 3.....      | 29.64 |
| Sep. 2.....      | 33.31 | Apr. 11..... | 32.44 | Nov. 7.....      | 29.86 |
| Oct. 8.....      | 33.12 | May 4.....   | 31.66 | Dec. 8.....      | 30.06 |
| Nov. 5.....      | 33.09 | June 6.....  | 31.41 | Jan. 10, 1984... | 30.36 |
| Dec. 9.....      | 33.08 | July 1.....  | 30.04 | Feb. 9.....      | 30.57 |
| Jan. 4, 1983...  | 33.03 | Aug. 3.....  | 29.51 | Mar. 5.....      | 30.64 |

Location: 79-31-23BBBB      WC-85      Aquifer: South Raccoon  
 Altitude: 1037 feet      MP is the top of 2-inch pipe 1.50 feet above lsd

|                  |       |              |      |                  |       |
|------------------|-------|--------------|------|------------------|-------|
| July 19, 1982... | 7.75  | Feb. 9.....  | 7.62 | Sep. 6.....      | 9.99  |
| Aug. 2.....      | 9.43  | Mar. 9.....  | 5.07 | Oct. 3.....      | 10.12 |
| Sep. 2.....      | 9.66  | Apr. 11..... | 3.93 | Nov. 7.....      | 8.94  |
| Oct. 8.....      | 10.17 | May 4.....   | 4.87 | Dec. 8.....      | 8.26  |
| Nov. 5.....      | 10.47 | June 6.....  | 4.93 | Jan. 10, 1984... | 7.62  |
| Dec. 9.....      | 7.22  | July 1.....  | 4.97 | Feb. 9.....      | 7.07  |
| Jan. 4, 1983...  | 6.55  | Aug. 3.....  | 8.59 | Mar. 6.....      | 6.31  |

Location: 79-35-10CABB      WC-17      Aquifer: Dakota  
 Altitude: 1280 feet      MP is the top of 2-inch pipe 3.70 feet above lsd

|                  |       |                 |       |                  |       |
|------------------|-------|-----------------|-------|------------------|-------|
| Aug. 20, 1981... | 37.62 | Sep. 1.....     | 36.81 | June 6.....      | 35.97 |
| Sep. 24.....     | 36.97 | Oct. 7.....     | 36.40 | July 1.....      | 35.92 |
| Nov. 3.....      | 37.59 | Nov. 4.....     | 36.42 | Aug. 2.....      | 36.27 |
| Feb. 1, 1982...  | 37.04 | Dec. 7.....     | 36.25 | Sep. 6.....      | 36.39 |
| Apr. 6.....      | 37.44 | Jan. 4, 1983... | 36.03 | Oct. 3.....      | 36.44 |
| May 17.....      | 37.27 | Feb. 8.....     | 35.94 | Nov. 10.....     | 36.09 |
| June 7.....      | 37.28 | Mar. 9.....     | 36.06 | Jan. 10, 1984... | 36.35 |
| July 2.....      | 36.90 | Apr. 11.....    | 35.95 | Feb. 6.....      | 36.12 |
| Aug. 3.....      | 36.79 | May 3.....      | 35.82 | Mar. 6.....      | 36.09 |

Table 3. Water levels in selected wells--Continued.

Depth to water, in feet below land surface datum

Location: 79-35-15DCDD WC-75 Aquifer: East Nishnabotna  
 Altitude: 1245 feet MP is the top of 2-inch pipe 1.50 feet above lsd

| DATE             | WATER LEVEL | DATE            | WATER LEVEL | DATE             | WATER LEVEL |
|------------------|-------------|-----------------|-------------|------------------|-------------|
| June 29, 1982... | 16.17       | Jan. 4, 1983... | 15.75       | Aug. 2.....      | 16.87       |
| July 1.....      | 15.07       | Feb. 8.....     | 16.03       | Sep. 6.....      | 17.71       |
| Aug. 3.....      | 15.59       | Mar. 9.....     | 14.24       | Oct. 3.....      | 16.98       |
| Sep. 1.....      | 15.55       | Apr. 11.....    | 13.61       | Nov. 10.....     | 17.79       |
| Oct. 7.....      | 17.66       | May 3.....      | 11.28       | Jan. 10, 1984... | 17.19       |
| Nov. 4.....      | 17.74       | June 6.....     | 14.75       | Feb. 6.....      | 16.89       |
| Dec. 7.....      | 16.93       | July 1.....     | 14.54       | Mar. 6.....      | 16.53       |

Location: 79-38-23DCCC WC-208 Aquifer: West Nishnabotna  
 Altitude: 1202 feet MP is the top of 2-inch pipe 2.50 feet above lsd

|                  |       |             |       |                  |       |
|------------------|-------|-------------|-------|------------------|-------|
| June 13, 1983... | 19.83 | Sep. 6..... | 22.03 | Jan. 10, 1984... | 20.97 |
| July 7.....      | 19.87 | Oct. 3..... | 21.36 | Feb. 6.....      | 20.82 |
| Aug. 2.....      | 20.51 | Nov. 8..... | 21.37 | Mar. 6.....      | 20.56 |

Location: 79-40-09DBCA WC-15 Aquifer: Basal Pleistocene  
 Altitude: 1205 feet MP is the top of 2-inch pipe 4.10 feet above lsd

|                  |       |                 |       |                  |       |
|------------------|-------|-----------------|-------|------------------|-------|
| July 28, 1981... | 19.45 | Oct. 7.....     | 18.74 | Aug. 2.....      | 18.68 |
| Sep. 25.....     | 19.31 | Nov. 1.....     | 18.63 | Sep. 6.....      | 18.99 |
| Nov. 3.....      | 19.19 | Dec. 2.....     | 18.50 | Oct. 3.....      | 18.92 |
| Feb. 4, 1982...  | 18.99 | Jan. 4, 1983... | 18.40 | Nov. 8.....      | 18.71 |
| Apr. 6.....      | 19.03 | Feb. 8.....     | 18.20 | Dec. 8.....      | 18.48 |
| May 6.....       | 18.89 | Mar. 10.....    | 18.45 | Jan. 12, 1984... | 18.43 |
| June 3.....      | 18.88 | Apr. 12.....    | 18.01 | Feb. 9.....      | 18.42 |
| July 7.....      | 18.68 | May 2.....      | 18.07 | Mar. 7.....      | 18.44 |
| Aug. 3.....      | 18.90 | June 2.....     | 18.31 |                  |       |
| Sep. 1.....      | 18.92 | July 6.....     | 18.39 |                  |       |

Location: 79-42-19BADC WC-196 Aquifer: Boyer  
 Altitude: 1030 feet MP is the top of 5-inch pipe 3.40 feet above lsd

|                 |       |              |       |                  |       |
|-----------------|-------|--------------|-------|------------------|-------|
| June 3, 1983... | 12.12 | Sep. 7.....  | 13.42 | Jan. 12, 1984... | 11.98 |
| July 6.....     | 9.53  | Oct. 4.....  | 13.17 | Feb. 7.....      | 12.67 |
| Aug. 2.....     | 11.48 | Nov. 8.....  | 12.72 | Mar. 6.....      | 11.09 |
| Aug. 16.....    | 13.08 | Dec. 16..... | 11.79 |                  |       |

Location: 80-31-06AAAD WC-114 Aquifer: Dakota  
 Altitude: 1150 feet MP is the top of 2-inch pipe 2.10 feet above lsd

|                  |         |              |         |                  |         |
|------------------|---------|--------------|---------|------------------|---------|
| Aug. 23, 1982... | >100.00 | Mar. 9.....  | >100.00 | Oct. 3.....      | >100.00 |
| Sep. 2.....      | >100.00 | Apr. 11..... | >100.00 | Nov. 7.....      | >100.00 |
| Oct. 6.....      | >100.00 | May 3.....   | >100.00 | Dec. 8.....      | >100.00 |
| Nov. 5.....      | >100.00 | June 7.....  | >100.00 | Jan. 10, 1984... | >100.00 |
| Dec. 9.....      | >100.00 | July 1.....  | >100.00 | Feb. 9.....      | >100.00 |
| Jan. 4, 1983...  | >100.00 | Aug. 3.....  | >100.00 | Mar. 6.....      | >100.00 |
| Feb. 9.....      | >100.00 | Sep. 6.....  | >100.00 |                  |         |

Location: 80-33-12ACCC WC-90 Aquifer: Dakota  
 Altitude: 1170 feet MP is the top of 2-inch pipe 2.20 feet above lsd

|                  |       |              |       |                  |       |
|------------------|-------|--------------|-------|------------------|-------|
| July 22, 1982... | 10.51 | Feb. 9.....  | 10.77 | Sep. 6.....      | 9.89  |
| Aug. 2.....      | 10.27 | Mar. 9.....  | 9.30  | Oct. 3.....      | 10.27 |
| Sep. 2.....      | 10.60 | Apr. 11..... | 7.91  | Nov. 7.....      | 10.34 |
| Oct. 6.....      | 10.85 | May 4.....   | 7.42  | Dec. 8.....      | 10.02 |
| Nov. 5.....      | 11.00 | June 7.....  | 8.08  | Jan. 10, 1984... | 10.40 |
| Dec. 9.....      | 10.84 | July 1.....  | 8.00  | Feb. 9.....      | 9.95  |
| Jan. 4, 1983...  | 10.83 | Aug. 3.....  | 9.06  | Mar. 6.....      | 9.55  |

Table 3. Water levels in selected wells--Continued.

Depth to water, in feet below land surface datum

Location: 80-38-30ACCC      WC-221      Aquifer: West Nishnabotna  
 Altitude: 1220 feet      MP is the top of 2-inch pipe 2.30 feet above lsd

| DATE             | WATER LEVEL | DATE             | WATER LEVEL | DATE        | WATER LEVEL |
|------------------|-------------|------------------|-------------|-------------|-------------|
| June 16, 1983... | 22.54       | Oct. 3.....      | 25.41       | Feb. 6..... | 24.23       |
| July 7.....      | 23.80       | Nov. 8.....      | 25.35       | Mar. 6..... | 24.49       |
| Aug. 2.....      | 24.76       | Dec. 13.....     | 24.82       |             |             |
| Sep. 6.....      | 25.43       | Jan. 10, 1984... | 24.58       |             |             |

Location: 80-38-33AABB      WC-216      Aquifer: West Nishnabotna  
 Altitude: 1225 feet      MP is the top of 2-inch pipe 2.10 feet above lsd

|                  |       |             |       |                  |       |
|------------------|-------|-------------|-------|------------------|-------|
| June 15, 1983... | 16.23 | Sep. 6..... | 19.93 | Jan. 10, 1984... | 23.00 |
| July 7.....      | 16.16 | Oct. 3..... | 21.40 | Feb. 6.....      | 23.18 |
| Aug. 2.....      | 17.84 | Nov. 8..... | 22.28 | Mar. 6.....      | 20.02 |

Location: 80-39-06AADC      WC-10      Aquifer: Dakota  
 Altitude: 1305 feet      MP is the top of 2-inch pipe 2.60 feet above lsd

|                  |       |                 |       |                  |       |
|------------------|-------|-----------------|-------|------------------|-------|
| June 26, 1981... | 94.45 | Sep. 1.....     | 97.88 | July 5.....      | 97.10 |
| July 28.....     | 93.87 | Oct. 7.....     | 96.76 | Aug. 2.....      | 97.48 |
| Sep. 24.....     | 97.61 | Nov. 1.....     | 96.43 | Sep. 6.....      | 97.91 |
| Nov. 3.....      | 98.02 | Dec. 2.....     | 96.36 | Oct. 3.....      | 96.02 |
| Feb. 4, 1982...  | 99.85 | Jan. 4, 1983... | 96.29 | Nov. 8.....      | 95.67 |
| Apr. 6.....      | 97.41 | Feb. 8.....     | 96.40 | Dec. 8.....      | 94.94 |
| May 6.....       | 97.41 | Mar. 10.....    | 96.53 | Jan. 10, 1984... | 95.20 |
| June 7.....      | 97.44 | Apr. 12.....    | 95.30 | Feb. 6.....      | 94.88 |
| July 2.....      | 97.46 | May 2.....      | 96.27 | Mar. 7.....      | 95.07 |
| Aug. 4.....      | 97.99 | June 2.....     | 96.43 |                  |       |

Location: 80-42-27CCBA      WC-192      Aquifer: Boyer  
 Altitude: 1050 feet      MP is the top of 2-inch pipe 1.80 feet above lsd

|                 |       |                  |       |             |       |
|-----------------|-------|------------------|-------|-------------|-------|
| June 1, 1983... | 9.57  | Oct. 4.....      | 12.86 | Feb. 7..... | 12.10 |
| July 6.....     | 9.61  | Nov. 8.....      | 12.62 | Mar. 6..... | 11.04 |
| Aug. 2.....     | 11.21 | Dec. 13.....     | 12.26 |             |       |
| Sep. 7.....     | 12.61 | Jan. 11, 1984... | 12.20 |             |       |

Location: 80-42-28DBCD      WC-37      Aquifer: Boyer  
 Altitude: 1060 feet      MP is the top of 2-inch pipe 3.00 feet above lsd

|                 |       |                 |       |                  |       |
|-----------------|-------|-----------------|-------|------------------|-------|
| May 18, 1982... | 20.62 | Jan. 3, 1983... | 18.24 | Sep. 7.....      | 17.49 |
| June 3.....     | 18.50 | Feb. 8.....     | 18.47 | Oct. 4.....      | 18.69 |
| July 7.....     | 18.78 | Mar. 10.....    | 15.39 | Nov. 8.....      | 18.70 |
| Aug. 3.....     | 20.04 | Apr. 12.....    | 13.75 | Dec. 13.....     | 18.55 |
| Sep. 9.....     | 20.69 | May 2.....      | 14.07 | Jan. 11, 1984... | 18.66 |
| Oct. 7.....     | 18.93 | June 1.....     | 15.12 | Feb. 7.....      | 18.50 |
| Nov. 1.....     | 18.83 | July 6.....     | 16.39 | Mar. 6.....      | 16.84 |
| Dec. 2.....     | 18.35 | Aug. 2.....     | 16.78 |                  |       |

Location: 80-42-34ABBB      WC-191      Aquifer: Boyer  
 Altitude: 1045 feet      MP is the top of 2-inch pipe 2.30 feet above lsd

|                 |      |              |      |                  |      |
|-----------------|------|--------------|------|------------------|------|
| May 27, 1983... | 5.35 | Sep. 7.....  | 6.85 | Jan. 11, 1984... | 4.94 |
| June 1.....     | 5.40 | Oct. 4.....  | 6.34 | Feb. 7.....      | 5.85 |
| July 6.....     | 5.71 | Nov. 8.....  | 5.79 | Mar. 6.....      | 5.07 |
| Aug. 2.....     | 6.09 | Dec. 13..... | 5.86 |                  |      |

Table 3. Water levels in selected wells--Continued.

Depth to water, in feet below land surface datum

Location: 80-42-35BDCC WC-193 Aquifer: Basal Pleistocene  
 Altitude: 1140 feet MP is the top of 2-inch pipe 1.70 feet above lsd

| DATE            | WATER LEVEL | DATE             | WATER LEVEL | DATE        | WATER LEVEL |
|-----------------|-------------|------------------|-------------|-------------|-------------|
| June 1, 1983... | 54.55       | Oct. 4.....      | 54.11       | Feb. 7..... | 53.94       |
| July 6.....     | 53.69       | Nov. 8.....      | 53.97       | Mar. 6..... | 52.77       |
| Aug. 2.....     | 53.76       | Dec. 13.....     | 53.88       |             |             |
| Sep. 7.....     | 54.01       | Jan. 11, 1984... | 53.98       |             |             |

Location: 80-44-04BBDA WC-184 Aquifer: Soldier  
 Altitude: 1039 feet MP is the top of 2-inch pipe 3.10 feet above lsd

|                 |      |             |      |                  |      |
|-----------------|------|-------------|------|------------------|------|
| May 24, 1983... | 2.49 | Sep. 7..... | 5.68 | Jan. 11, 1984... | 4.57 |
| June 2.....     | 3.11 | Oct. 4..... | 6.13 | Feb. 7.....      | 5.03 |
| July 6.....     | 4.59 | Nov. 7..... | 4.97 | Mar. 7.....      | 4.12 |
| Aug. 2.....     | 4.51 | Dec. 6..... | 4.90 |                  |      |

Location: 80-44-09ABBB WC-183 Aquifer: Soldier  
 Altitude: 1070 feet MP is the top of 2-inch pipe 2.05 feet above lsd

|                 |       |             |       |                  |       |
|-----------------|-------|-------------|-------|------------------|-------|
| May 23, 1983... | 37.71 | Sep. 7..... | 39.93 | Jan. 11, 1984... | 40.23 |
| June 2.....     | 38.17 | Oct. 4..... | 41.06 | Feb. 7.....      | 39.98 |
| July 6.....     | 38.40 | Nov. 7..... | 40.64 | Mar. 7.....      | 38.61 |
| Aug. 2.....     | 39.53 | Dec. 6..... | 40.22 |                  |       |

Location: 81-31-22CCCC WC-105 Aquifer: Dakota  
 Altitude: 1190 feet MP is the top of 2-inch pipe 2.10 feet above lsd

|                  |       |              |       |                  |       |
|------------------|-------|--------------|-------|------------------|-------|
| Aug. 12, 1982... | 68.39 | Mar. 9.....  | 68.12 | Oct. 3.....      | 65.11 |
| Sep. 2.....      | 68.39 | Apr. 11..... | 68.10 | Nov. 7.....      | 64.37 |
| Oct. 8.....      | 66.50 | May 4.....   | 68.69 | Dec. 8.....      | 64.55 |
| Nov. 5.....      | 68.96 | June 7.....  | 68.51 | Jan. 10, 1984... | 64.94 |
| Dec. 9.....      | 69.88 | July 1.....  | 66.37 | Feb. 9.....      | 64.39 |
| Jan. 4, 1983...  | 68.21 | Aug. 3.....  | 65.33 | Mar. 6.....      | 64.61 |
| Feb. 9.....      | 68.34 | Sep. 6.....  | 65.06 |                  |       |

Location: 81-31-32CBCC WC-106 Aquifer: Middle Raccoon  
 Altitude: 1090 feet MP is the top of 2-inch pipe 2.30 feet above lsd

|                  |       |              |       |                  |       |
|------------------|-------|--------------|-------|------------------|-------|
| Aug. 13, 1982... | 35.15 | Mar. 9.....  | 32.26 | Oct. 3.....      | 35.36 |
| Sep. 2.....      | 35.59 | Apr. 11..... | 32.42 | Nov. 7.....      | 34.96 |
| Oct. 6.....      | 35.92 | May 4.....   | 31.08 | Dec. 8.....      | 33.89 |
| Nov. 5.....      | 35.87 | June 7.....  | 31.21 | Jan. 10, 1984... | 34.17 |
| Dec. 9.....      | 35.13 | July 1.....  | 30.33 | Feb. 9.....      | 34.06 |
| Jan. 4, 1983...  | 34.10 | Aug. 3.....  | 33.49 | Mar. 6.....      | 33.30 |
| Feb. 9.....      | 34.36 | Sep. 6.....  | 34.94 |                  |       |

Location: 81-33-26DDDD WC-93 Aquifer: Dakota  
 Altitude: 1205 feet MP is the top of 2-inch pipe 2.20 feet above lsd

|                  |       |              |       |                  |       |
|------------------|-------|--------------|-------|------------------|-------|
| July 27, 1982... | 40.70 | Feb. 9.....  | 40.89 | Sep. 6.....      | 39.37 |
| Aug. 2.....      | 40.72 | Mar. 9.....  | 40.69 | Oct. 3.....      | 39.63 |
| Sep. 2.....      | 40.82 | Apr. 11..... | 40.33 | Nov. 7.....      | 39.84 |
| Oct. 6.....      | 40.91 | May 4.....   | 39.92 | Dec. 8.....      | 39.00 |
| Nov. 5.....      | 40.93 | June 7.....  | 38.52 | Jan. 10, 1984... | 40.12 |
| Dec. 9.....      | 40.97 | July 1.....  | 39.23 | Feb. 9.....      | 40.18 |
| Jan. 3, 1983...  | 40.98 | Aug. 3.....  | 39.29 | Mar. 6.....      | 39.93 |

Table 3. Water levels in selected wells--Continued.

Depth to water, in feet below land surface datum

Location: 81-33-35ABBC      WC-94      Aquifer: South Raccoon  
 Altitude: 1150 feet      MP is the top of 2-inch pipe 2.10 feet above lsd

| DATE             | WATER LEVEL | DATE         | WATER LEVEL | DATE             | WATER LEVEL |
|------------------|-------------|--------------|-------------|------------------|-------------|
| July 27, 1982... | 15.13       | Feb. 9.....  | 14.83       | Sep. 6.....      | 14.42       |
| Aug. 1.....      | 15.21       | Mar. 9.....  | 14.21       | Oct. 3.....      | 14.92       |
| Sep. 2.....      | 15.41       | Apr. 11..... | 13.31       | Nov. 7.....      | 14.99       |
| Oct. 6.....      | 15.66       | May 4.....   | 13.16       | Dec. 8.....      | 14.75       |
| Nov. 5.....      | 15.72       | June 7.....  | 13.92       | Jan. 10, 1984... | 14.83       |
| Dec. 9.....      | 15.35       | July 1.....  | 12.80       | Feb. 9.....      | 14.78       |
| Jan. 4, 1983...  | 14.95       | Aug. 3.....  | 14.22       | Mar. 6.....      | 14.70       |

Location: 81-36-12CBCA      WC-18      Aquifer: Dakota  
 Altitude: 1393 feet      MP is the top of 2-inch pipe 2.50 feet above lsd

|                  |        |                 |        |                 |        |
|------------------|--------|-----------------|--------|-----------------|--------|
| Aug. 19, 1981... | 166.90 | Oct. 7.....     | 165.40 | Aug. 2.....     | 164.89 |
| Sep. 24.....     | 165.80 | Nov. 4.....     | 165.12 | Sep. 6.....     | 165.04 |
| Nov. 3.....      | 165.79 | Dec. 10.....    | 165.39 | Oct. 3.....     | 165.72 |
| Feb. 1, 1982...  | 165.68 | Jan. 4, 1983... | 165.15 | Nov. 7.....     | 164.70 |
| Apr. 6.....      | 165.72 | Feb. 8.....     | 165.21 | Dec. 7.....     | 160.69 |
| May 6.....       | 165.52 | Mar. 9.....     | 164.91 | Jan. 9, 1984... | 164.37 |
| June 7.....      | 165.48 | Apr. 11.....    | 164.67 | Feb. 8.....     | 164.23 |
| July 2.....      | 165.47 | May 3.....      | 164.73 | Mar. 5.....     | 164.38 |
| Aug. 3.....      | 165.50 | June 7.....     | 164.61 |                 |        |
| Sep. 1.....      | 165.49 | July 7.....     | 164.69 |                 |        |

Location: 81-38-21ADAD      WC-222      Aquifer: Fremont  
 Altitude: 1370 feet      MP is the top of 2-inch pipe 2.90 feet above lsd

|                 |        |                  |        |             |        |
|-----------------|--------|------------------|--------|-------------|--------|
| July 1, 1983... | 253.10 | Oct. 3.....      | 209.75 | Feb. 6..... | 209.25 |
| July 7.....     | 251.71 | Nov. 8.....      | 209.61 | Mar. 6..... | 209.02 |
| Aug. 2.....     | 209.70 | Dec. 0.....      | 209.14 |             |        |
| Sep. 6.....     | 209.91 | Jan. 10, 1984... | 209.43 |             |        |

Location: 81-41-03ACCC      WC-189      Aquifer: Boyer  
 Altitude: 1095 feet      MP is the top of 2-inch pipe 2.20 feet above lsd

|                 |       |             |       |                  |       |
|-----------------|-------|-------------|-------|------------------|-------|
| May 26, 1983... | 11.54 | Sep. 7..... | 14.11 | Jan. 10, 1984... | 14.16 |
| June 2.....     | 11.95 | Oct. 4..... | 14.28 | Feb. 6.....      | 13.70 |
| July 5.....     | 11.61 | Nov. 8..... | 14.09 | Mar. 7.....      | 13.26 |
| Aug. 2.....     | 13.26 | Dec. 8..... | 13.85 |                  |       |

Location: 81-41-03CDBB      WC-190      Aquifer: Boyer  
 Altitude: 1090 feet      MP is the top of 2-inch pipe 2.30 feet above lsd

|                 |      |             |       |                  |       |
|-----------------|------|-------------|-------|------------------|-------|
| May 26, 1983... | 8.30 | Sep. 7..... | 10.96 | Jan. 10, 1984... | 10.85 |
| June 1.....     | 8.70 | Oct. 4..... | 11.36 | Feb. 6.....      | 10.65 |
| July 6.....     | 8.38 | Nov. 8..... | 11.07 | Mar. 7.....      | 10.05 |
| Aug. 2.....     | 9.94 | Dec. 8..... | 10.84 |                  |       |

Location: 81-41-17ABAA      WC-11      Aquifer: Dakota  
 Altitude: 1135 feet      MP is the top of 2-inch pipe 2.55 feet above lsd

|                  |       |                 |       |                  |       |
|------------------|-------|-----------------|-------|------------------|-------|
| June 26, 1981... | 72.45 | Oct. 7.....     | 70.37 | Aug. 2.....      | 67.90 |
| July 28.....     | 71.92 | Nov. 1.....     | 70.40 | Sep. 7.....      | 67.34 |
| Nov. 3.....      | 72.43 | Dec. 2.....     | 69.97 | Oct. 4.....      | 69.14 |
| Jan. 13, 1982... | 72.19 | Jan. 3, 1983... | 69.38 | Nov. 8.....      | 69.74 |
| Apr. 6.....      | 71.40 | Feb. 8.....     | 69.47 | Dec. 13.....     | 69.63 |
| May 7.....       | 71.41 | Mar. 10.....    | 66.99 | Jan. 11, 1984... | 69.71 |
| June 3.....      | 69.55 | Apr. 12.....    | 66.47 | Feb. 6.....      | 69.79 |
| July 2.....      | 70.22 | May 3.....      | 65.77 | Mar. 7.....      | 69.82 |
| Aug. 3.....      | 70.16 | June 2.....     | 66.75 |                  |       |
| Sep. 9.....      | 70.94 | July 6.....     | 66.73 |                  |       |



Table 3. Water levels in selected wells--Continued.

Depth to water, in feet below land surface datum

Location: 81-41-31BDDD WC-53 Aquifer: Boyer  
 Altitude: 1065 feet MP is the top of 2-inch pipe 1.90 feet above lsd

| DATE            | WATER LEVEL | DATE         | WATER LEVEL | DATE             | WATER LEVEL |
|-----------------|-------------|--------------|-------------|------------------|-------------|
| June 4, 1982... | 8.49        | Feb. 8.....  | 8.84        | Oct. 4.....      | 9.70        |
| July 7.....     | 8.82        | Mar. 10..... | 5.14        | Nov. 8.....      | 9.73        |
| Aug. 3.....     | 9.69        | Apr. 12..... | 4.93        | Dec. 13.....     | 9.45        |
| Sep. 9.....     | 10.40       | May 3.....   | 4.61        | Jan. 11, 1984... | 9.35        |
| Oct. 7.....     | 8.76        | June 2.....  | 6.62        | Feb. 7.....      | 9.24        |
| Nov. 1.....     | 9.38        | July 6.....  | 6.57        | Mar. 7.....      | 8.48        |
| Dec. 2.....     | 9.30        | Aug. 2.....  | 8.23        |                  |             |
| Jan. 3, 1983... | 7.84        | Sep. 7.....  | 9.42        |                  |             |

Location: 81-41-33CAAA WC-52 Aquifer: Dakota  
 Altitude: 1182 feet MP is the top of 2-inch pipe 2.90 feet above lsd

|                 |       |              |       |                  |       |
|-----------------|-------|--------------|-------|------------------|-------|
| June 4, 1982... | 85.03 | Feb. 8.....  | 81.59 | Oct. 4.....      | 78.79 |
| July 7.....     | 84.94 | Mar. 10..... | 80.08 | Nov. 8.....      | 78.30 |
| Aug. 4.....     | 84.30 | Apr. 12..... | 78.49 | Dec. 13.....     | 78.47 |
| Sep. 9.....     | 84.40 | May 3.....   | 77.23 | Jan. 11, 1984... | 78.65 |
| Oct. 7.....     | 83.71 | June 2.....  | 76.92 | Feb. 7.....      | 78.92 |
| Nov. 1.....     | 83.57 | July 6.....  | 77.17 | Mar. 7.....      | 78.28 |
| Dec. 2.....     | 82.96 | Aug. 2.....  | 77.32 |                  |       |
| Jan. 3, 1983... | 82.88 | Sep. 7.....  | 77.96 |                  |       |

Location: 81-44-01ABAB WC-177 Aquifer: Soldier  
 Altitude: 1065 feet MP is the top of 2-inch pipe 1.80 feet above lsd

|                 |      |             |       |                  |      |
|-----------------|------|-------------|-------|------------------|------|
| May 18, 1983... | 7.92 | Sep. 7..... | 10.92 | Jan. 11, 1984... | 9.37 |
| June 2.....     | 8.63 | Oct. 4..... | 10.39 | Feb. 7.....      | 9.42 |
| July 6.....     | 8.53 | Nov. 7..... | 9.36  | Mar. 7.....      | 8.37 |
| Aug. 2.....     | 9.71 | Dec. 6..... | 8.98  |                  |      |

Location: 82-29-18CBAA WC-115 Aquifer: North Raccoon  
 Altitude: 965 feet MP is the top of 2-inch pipe 1.45 feet above lsd

|                  |       |              |       |                  |       |
|------------------|-------|--------------|-------|------------------|-------|
| Aug. 23, 1982... | 18.88 | Mar. 11..... | 10.01 | Oct. 4.....      | 19.64 |
| Sep. 2.....      | 19.34 | Apr. 13..... | 10.17 | Nov. 8.....      | 20.25 |
| Oct. 8.....      | 17.73 | May 4.....   | 10.77 | Dec. 8.....      | 16.62 |
| Nov. 5.....      | 17.28 | June 3.....  | 12.53 | Jan. 10, 1984... | 17.05 |
| Dec. 9.....      | 16.73 | July 5.....  | 7.84  | Feb. 9.....      | 17.70 |
| Jan. 5, 1983...  | 15.86 | Aug. 1.....  | 13.15 | Mar. 5.....      | 14.32 |
| Feb. 9.....      | 16.83 | Sep. 8.....  | 17.94 |                  |       |

Location: 82-29-18DBAA WC-117 Aquifer: Basal Pleistocene  
 Altitude: 1005 feet MP is the top of 2-inch pipe 1.85 feet above lsd

|                  |       |              |       |                  |       |
|------------------|-------|--------------|-------|------------------|-------|
| Aug. 25, 1982... | 37.37 | Mar. 11..... | 34.89 | Oct. 5.....      | 36.55 |
| Sep. 2.....      | 37.23 | Apr. 13..... | 33.40 | Nov. 8.....      | 36.24 |
| Oct. 8.....      | 37.63 | May 4.....   | 33.61 | Dec. 8.....      | 35.16 |
| Nov. 5.....      | 37.72 | June 3.....  | 33.81 | Jan. 10, 1984... | 35.70 |
| Dec. 9.....      | 37.63 | July 5.....  | 32.64 | Feb. 9.....      | 35.63 |
| Jan. 5, 1983...  | 36.55 | Aug. 1.....  | 34.46 | Mar. 5.....      | 34.33 |
| Feb. 9.....      | 36.43 | Sep. 8.....  | 36.16 |                  |       |

Location: 82-31-10AAAA WC-235 Aquifer: Dakota  
 Altitude: 1108 feet MP is the top of 2-inch pipe 2.00 feet above lsd

|                 |       |                  |       |             |       |
|-----------------|-------|------------------|-------|-------------|-------|
| Sep. 8, 1983... | 14.03 | Dec. 8.....      | 13.49 | Mar. 5..... | 14.43 |
| Oct. 5.....     | 14.17 | Jan. 10, 1984... | 13.58 |             |       |
| Nov. 8.....     | 13.90 | Feb. 9.....      | 13.49 |             |       |

Table 3. Water levels in selected wells--Continued.

Depth to water, in feet below land surface datum

Location: 82-34-02ABBB WC-149 Aquifer: Middle Raccoon  
 Altitude: 1170 feet MP is the top of 2-inch pipe 3.20 feet above lsd

| DATE             | WATER LEVEL | DATE          | WATER LEVEL | DATE            | WATER LEVEL |
|------------------|-------------|---------------|-------------|-----------------|-------------|
| Sep. 29, 1982... | 7.62        | Apr. 13... .. | 0.98        | Nov. 8.....     | 6.89        |
| Oct. 6.....      | 7.63        | May 4.....    | 0.71        | Dec. 8.....     | 6.25        |
| Nov. 5.....      | 7.66        | June 7.....   | 0.85        | Jan. 9, 1984... | 6.28        |
| Dec. 9.....      | 7.83        | July 5.....   | 1.81        | Feb. 8.....     | 6.14        |
| Jan. 5, 1983...  | 7.10        | Aug. 3.....   | 4.30        | Mar. 6.....     | 4.67        |
| Feb. 9.....      | 6.91        | Sep. 6.....   | 6.22        |                 |             |
| Mar. 11.....     | 3.38        | Oct. 5.....   | 6.90        |                 |             |

Location: 82-38-23AAAA WC-225 Aquifer: Fremont  
 Altitude: 1320 feet MP is the top of 2-inch pipe 3.40 feet above lsd

|                  |        |             |        |                 |        |
|------------------|--------|-------------|--------|-----------------|--------|
| July 11, 1983... | 158.49 | Oct. 3..... | 159.67 | Jan. 9, 1984... | 159.20 |
| Aug. 2.....      | 159.42 | Nov. 7..... | 158.27 | Feb. 9.....     | 159.09 |
| Sep. 6.....      | 160.92 | Dec. 7..... | 158.34 | Mar. 5.....     | 160.13 |

Location: 82-39-15CBAB WC-12 Aquifer: Dakota  
 Altitude: 1250 feet MP is the top of 2-inch pipe 4.40 feet above lsd

|                  |       |                 |       |                  |       |
|------------------|-------|-----------------|-------|------------------|-------|
| July 28, 1981... | 39.19 | Oct. 7.....     | 40.55 | Aug. 2.....      | 40.64 |
| Sep. 23.....     | 38.76 | Nov. 1.....     | 40.55 | Sep. 7.....      | 40.99 |
| Nov. 3.....      | 39.64 | Dec. 2.....     | 40.47 | Oct. 3.....      | 41.36 |
| Feb. 4, 1982...  | 39.94 | Jan. 4, 1983... | 40.40 | Nov. 8.....      | 40.75 |
| Apr. 6.....      | 40.22 | Feb. 8.....     | 40.40 | Dec. 8.....      | 40.55 |
| May 6.....       | 39.86 | Mar. 10.....    | 40.44 | Jan. 10, 1984... | 40.58 |
| June 7.....      | 39.97 | Apr. 11.....    | 40.21 | Feb. 6.....      | 40.53 |
| July 2.....      | 40.04 | May 3.....      | 40.09 | Mar. 6.....      | 40.65 |
| Aug. 3.....      | 40.45 | June 2.....     | 40.22 |                  |       |
| Sep. 9.....      | 40.61 | July 5.....     | 40.27 |                  |       |

Location: 82-40-17AABB WC-9 Aquifer: Dakota  
 Altitude: 1150 feet MP is the top of 2-inch pipe 2.50 feet above lsd

|                  |       |                 |       |                  |       |
|------------------|-------|-----------------|-------|------------------|-------|
| June 11, 1981... | 43.46 | Aug. 3.....     | 41.77 | June 2.....      | 39.61 |
| June 26.....     | 43.60 | Sep. 9.....     | 42.33 | July 5.....      | 39.15 |
| July 28.....     | 43.02 | Oct. 7.....     | 41.55 | Aug. 2.....      | 40.43 |
| Sep. 23.....     | 43.62 | Nov. 1.....     | 41.73 | Sep. 7.....      | 41.32 |
| Nov. 3.....      | 43.52 | Dec. 2.....     | 41.60 | Oct. 4.....      | 39.47 |
| Jan. 13, 1982... | 43.22 | Jan. 3, 1983... | 41.17 | Nov. 8.....      | 41.54 |
| Apr. 6.....      | 42.83 | Feb. 8.....     | 40.86 | Dec. 8.....      | 41.24 |
| May 7.....       | 42.50 | Mar. 10.....    | 39.34 | Jan. 10, 1984... | 41.15 |
| June 4.....      | 40.84 | Apr. 11.....    | 39.06 | Feb. 6.....      | 41.06 |
| July 2.....      | 40.65 | May 3.....      | 38.15 | Mar. 6.....      | 41.13 |

Location: 82-40-17ABBC WC-188 Aquifer: Boyer  
 Altitude: 1122 feet MP is the top of 2-inch pipe 1.90 feet above lsd

|                 |       |             |       |                  |       |
|-----------------|-------|-------------|-------|------------------|-------|
| May 26, 1983... | 22.41 | Sep. 7..... | 24.21 | Jan. 10, 1984... | 24.45 |
| June 2.....     | 22.74 | Oct. 4..... | 24.80 | Feb. 6.....      | 24.44 |
| July 5.....     | 22.27 | Nov. 8..... | 24.92 | Mar. 6.....      | 24.06 |
| Aug. 2.....     | 23.75 | Dec. 8..... | 24.56 |                  |       |

Table 3. Water levels in selected wells--Continued.

Depth to water, in feet below land surface datum

Location: 82-42-14ADCA      WC-4      Aquifer: Dakota  
 Altitude: 1340 feet      MP is the top of 2-inch pipe 2.02 feet above lsd

| DATE            | WATER LEVEL | DATE            | WATER LEVEL | DATE             | WATER LEVEL |
|-----------------|-------------|-----------------|-------------|------------------|-------------|
| May 6, 1981...  | 245.04      | Aug. 11.....    | 244.52      | July 5.....      | 242.86      |
| May 19.....     | 244.81      | Sep. 9.....     | 244.49      | Aug. 2.....      | 243.20      |
| June 10.....    | 245.07      | Oct. 7.....     | 243.91      | Sep. 8.....      | 244.29      |
| June 26.....    | 246.00      | Nov. 1.....     | 243.86      | Oct. 4.....      | 243.94      |
| July 28.....    | 246.69      | Dec. 10.....    | 244.40      | Nov. 8.....      | 243.63      |
| Nov. 3.....     | 246.13      | Jan. 3, 1983... | 244.21      | Dec. 8.....      | 241.73      |
| Feb. 5, 1982... | 245.93      | Feb. 8.....     | 243.94      | Jan. 10, 1984... | 242.71      |
| Apr. 7.....     | 245.22      | Mar. 10.....    | 243.79      | Feb. 6.....      | 244.76      |
| May 6.....      | 245.48      | Apr. 12.....    | 243.10      | Mar. 7.....      | 243.51      |
| June 3.....     | 244.27      | May 3.....      | 242.91      |                  |             |
| July 6.....     | 244.19      | June 2.....     | 242.82      |                  |             |

Location: 83-31-04ADDB      WC-120      Aquifer: Dakota  
 Altitude: 1000 feet      MP is the top of 2-inch pipe 2.10 feet above lsd

|                 |       |              |       |                  |       |
|-----------------|-------|--------------|-------|------------------|-------|
| Sep. 1, 1982... | 18.41 | Apr. 13..... | 9.45  | Nov. 8.....      | 16.00 |
| Oct. 8.....     | 15.29 | May 4.....   | 10.51 | Dec. 8.....      | 15.81 |
| Nov. 5.....     | 16.16 | June 3.....  | 14.38 | Jan. 10, 1984... | 16.79 |
| Dec. 9.....     | 16.00 | July 5.....  | 6.39  | Feb. 9.....      | 17.13 |
| Jan. 5, 1983... | 15.16 | Aug. 3.....  | 15.89 | Mar. 5.....      | 15.18 |
| Feb. 9.....     | 16.58 | Sep. 7.....  | 18.06 |                  |       |
| Mar. 11.....    | 8.43  | Oct. 5.....  | 17.80 |                  |       |

Location: 83-31-10AABB      WC-121      Aquifer: North Raccoon  
 Altitude: 1012 feet      MP is the top of 2-inch pipe 1.50 feet above lsd

|                  |        |              |       |                  |        |
|------------------|--------|--------------|-------|------------------|--------|
| Aug. 31, 1982... | 9.80   | Mar. 11..... | 8.59  | Oct. 5.....      | 12.37  |
| Sep. 2.....      | 10.90  | Apr. 13..... | 6.19  | Nov. 8.....      | 12.42  |
| Oct. 8.....      | >17.00 | May 4.....   | 6.62  | Dec. 7.....      | >17.00 |
| Nov. 2.....      | >17.00 | June 3.....  | 7.65  | Jan. 10, 1984... | 11.14  |
| Dec. 9.....      | >17.00 | July 5.....  | 8.43  | Feb. 9.....      | 11.59  |
| Jan. 5, 1983...  | 12.23  | Aug. 3.....  | 9.17  | Mar. 5.....      | 9.04   |
| Feb. 9.....      | 11.98  | Sep. 8.....  | 11.93 |                  |        |

Location: 83-32-04ACCC      WC-228      Aquifer: Dakota  
 Altitude: 1202 feet      MP is the top of 2-inch pipe 2.10 feet above lsd

|                  |        |             |        |                 |        |
|------------------|--------|-------------|--------|-----------------|--------|
| July 29, 1983... | 153.93 | Oct. 4..... | 152.77 | Dec. 7.....     | 153.67 |
| Sep. 8.....      | 153.72 | Nov. 8..... | 153.60 | Mar. 5, 1984... | 153.64 |

Location: 83-32-08BBBC      WC-229      Aquifer: Hardin Creek  
 Altitude: 1135 feet      MP is the top of 2-inch pipe 2.20 feet above lsd

|                 |       |                 |       |             |       |
|-----------------|-------|-----------------|-------|-------------|-------|
| Sep. 7, 1983... | 46.82 | Dec. 7.....     | 41.76 | Mar. 6..... | 41.10 |
| Oct. 5.....     | 43.46 | Jan. 9, 1984... | 41.29 |             |       |
| Nov. 8.....     | 42.19 | Feb. 9.....     | 41.12 |             |       |

Location: 83-38-04DABC      WC-63      Aquifer: Boyer  
 Altitude: 1220 feet      MP is the top of 2-inch pipe 2.00 feet above lsd

|                  |       |              |       |                 |      |
|------------------|-------|--------------|-------|-----------------|------|
| June 16, 1982... | 7.48  | Feb. 9.....  | 10.59 | Oct. 3.....     | 8.05 |
| July 6.....      | 8.11  | Mar. 11..... | 8.09  | Nov. 7.....     | 8.47 |
| Aug. 3.....      | 8.80  | Apr. 12..... | 6.78  | Dec. 6.....     | 8.84 |
| Sep. 9.....      | 9.46  | May 4.....   | 6.16  | Jan. 9, 1984... | 9.24 |
| Oct. 7.....      | 9.84  | June 3.....  | 6.46  | Feb. 8.....     | 9.48 |
| Nov. 2.....      | 10.24 | July 1.....  | 6.04  | Mar. 5.....     | 8.72 |
| Dec. 2.....      | 10.44 | Aug. 2.....  | 7.03  |                 |      |
| Jan. 4, 1983...  | 10.50 | Sep. 7.....  | 7.80  |                 |      |

Table 3. Water levels in selected wells--Continued.

Depth to water, in feet below land surface datum

Location: 83-42-17ACDD WC-176 Aquifer: Basal Pleistocene  
 Altitude: 1160 feet MP is the top of 2-inch pipe 2.20 feet above lsd

| DATE            | WATER LEVEL | DATE        | WATER LEVEL | DATE             | WATER LEVEL |
|-----------------|-------------|-------------|-------------|------------------|-------------|
| May 19, 1983... | 60.42       | Sep. 7..... | 64.09       | Jan. 10, 1984... | 60.53       |
| June 2.....     | 60.35       | Oct. 4..... | 62.10       | Feb. 6.....      | 60.35       |
| July 5.....     | 60.92       | Nov. 7..... | 61.25       | Mar. 7.....      | 59.96       |
| Aug. 2.....     | 61.96       | Dec. 8..... | 60.43       |                  |             |

Location: 83-42-17CABB WC-173 Aquifer: Soldier  
 Altitude: 1140 feet MP is the top of 2-inch pipe 1.80 feet above lsd

| DATE            | WATER LEVEL | DATE        | WATER LEVEL | DATE             | WATER LEVEL |
|-----------------|-------------|-------------|-------------|------------------|-------------|
| May 12, 1983... | 16.01       | Sep. 7..... | 18.61       | Jan. 10, 1984... | 18.14       |
| June 2.....     | 17.43       | Oct. 4..... | 18.66       | Feb. 6.....      | 17.62       |
| July 5.....     | 17.11       | Nov. 7..... | 18.61       | Mar. 7.....      | 18.29       |
| Aug. 2.....     | 18.09       | Dec. 8..... | 18.16       |                  |             |

Location: 83-43-04CBCB WC-5 Aquifer: Dakota  
 Altitude: 1235 feet MP is the top of 2-inch pipe 2.53 feet above lsd

| DATE            | WATER LEVEL | DATE            | WATER LEVEL | DATE         | WATER LEVEL |
|-----------------|-------------|-----------------|-------------|--------------|-------------|
| May 6, 1981...  | 189.01      | June 9.....     | 188.73      | Mar. 10..... | 187.28      |
| May 19.....     | 188.92      | July 6.....     | 188.27      | Apr. 12..... | 187.16      |
| June 10.....    | 187.55      | Aug. 4.....     | 187.65      | May 2.....   | 186.07      |
| June 25.....    | 188.59      | Sep. 9.....     | 187.75      | June 2.....  | 185.90      |
| July 28.....    | 189.59      | Oct. 7.....     | 187.27      | July 5.....  | 186.20      |
| Nov. 3.....     | 189.88      | Nov. 1.....     | 187.22      | Aug. 1.....  | 186.39      |
| Feb. 2, 1982... | 189.96      | Dec. 10.....    | 187.75      | Sep. 8.....  | 186.99      |
| Apr. 7.....     | 189.00      | Jan. 3, 1983... | 187.70      | Oct. 4.....  | 186.66      |
| May 6.....      | 188.99      | Feb. 8.....     | 187.33      | Nov. 9.....  | 186.73      |

Location: 84-29-16CBAB WC-233 Aquifer: Beaver  
 Altitude: 1075 feet MP is the top of 2-inch pipe 1.80 feet above lsd

| DATE            | WATER LEVEL | DATE             | WATER LEVEL | DATE        | WATER LEVEL |
|-----------------|-------------|------------------|-------------|-------------|-------------|
| Aug. 5, 1983... | 40.69       | Nov. 8.....      | 40.16       | Feb. 9..... | 39.72       |
| Sep. 8.....     | 41.18       | Dec. 8.....      | 39.41       | Mar. 5..... | 38.68       |
| Oct. 5.....     | 40.86       | Jan. 10, 1984... | 39.08       |             |             |

Location: 84-32-08ACDB WC-124 Aquifer: Dakota and Pennsylvanian  
 Altitude: 1070 feet MP is the top of 2-inch pipe 1.55 feet above lsd

| DATE            | WATER LEVEL | DATE         | WATER LEVEL | DATE            | WATER LEVEL |
|-----------------|-------------|--------------|-------------|-----------------|-------------|
| Sep. 2, 1982... | 37.37       | Apr. 13..... | 34.58       | Nov. 8.....     | 37.74       |
| Oct. 8.....     | 38.47       | May 4.....   | 34.35       | Dec. 7.....     | 37.25       |
| Nov. 5.....     | 38.08       | June 3.....  | 34.52       | Jan. 9, 1984... | 37.81       |
| Dec. 9.....     | 37.92       | July 5.....  | 33.36       | Feb. 9.....     | 37.94       |
| Jan. 5, 1983... | 37.62       | Aug. 3.....  | 35.12       | Mar. 5.....     | 37.67       |
| Feb. 9.....     | 38.09       | Sep. 8.....  | 36.89       |                 |             |
| Mar. 11.....    | 35.48       | Oct. 5.....  | 37.66       |                 |             |

Location: 84-32-08BDCA WC-126 Aquifer: North Raccoon  
 Altitude: 1040 feet MP is the top of 2-inch pipe 1.00 feet above lsd

| DATE            | WATER LEVEL | DATE         | WATER LEVEL | DATE            | WATER LEVEL |
|-----------------|-------------|--------------|-------------|-----------------|-------------|
| Sep. 8, 1982... | 14.86       | Apr. 13..... | 6.77        | Nov. 8.....     | 12.60       |
| Oct. 8.....     | 11.45       | May 4.....   | 6.15        | Dec. 7.....     | 13.04       |
| Nov. 5.....     | 13.06       | June 3.....  | 12.19       | Jan. 9, 1984... | 13.39       |
| Dec. 9.....     | 13.20       | July 5.....  | 5.71        | Feb. 9.....     | 13.56       |
| Jan. 5, 1983... | 12.37       | Aug. 3.....  | 13.44       | Mar. 5.....     | 11.89       |
| Feb. 9.....     | 13.61       | Sep. 8.....  | 14.68       |                 |             |
| Mar. 11.....    | 6.50        | Oct. 5.....  | 14.40       |                 |             |

Table 3. Water levels in selected wells--Continued.

Depth to water, in feet below land surface datum

Location: 84-33-02BDBA WC-132 Aquifer: Dakota  
 Altitude: 1110 feet MP is the top of 2-inch pipe 2.00 feet above lsd

| DATE            | WATER LEVEL | DATE         | WATER LEVEL | DATE            | WATER LEVEL |
|-----------------|-------------|--------------|-------------|-----------------|-------------|
| Sep. 9, 1982... | 54.40       | Apr. 13..... | 53.91       | Oct. 5.....     | 51.78       |
| Oct. 8.....     | 54.58       | May 4.....   | 53.14       | Nov. 8.....     | 52.22       |
| Nov. 5.....     | 54.72       | June 3.....  | 52.29       | Dec. 7.....     | 52.14       |
| Dec. 9.....     | 54.57       | July 5.....  | 51.99       | Jan. 9, 1984... | 52.25       |
| Jan. 5, 1983... | 54.74       | Aug. 3.....  | 51.56       | Feb. 9.....     | 52.30       |
| Mar. 11.....    | 54.44       | Sep. 8.....  | 51.95       | Mar. 5.....     | 52.00       |

Location: 84-33-03AADC WC-129 Aquifer: Hardin Creek  
 Altitude: 1069 feet MP is the top of 2-inch pipe 1.30 feet above lsd

| DATE            | WATER LEVEL | DATE         | WATER LEVEL | DATE            | WATER LEVEL |
|-----------------|-------------|--------------|-------------|-----------------|-------------|
| Sep. 8, 1982... | 12.71       | Apr. 13..... | 9.58        | Nov. 8.....     | 10.37       |
| Oct. 8.....     | 11.95       | May 4.....   | 9.39        | Dec. 7.....     | 10.06       |
| Nov. 5.....     | 11.87       | June 3.....  | 10.23       | Jan. 9, 1984... | 10.49       |
| Dec. 9.....     | 11.85       | July 5.....  | 8.93        | Feb. 9.....     | 10.70       |
| Jan. 5, 1983... | 11.60       | Aug. 3.....  | 11.18       | Mar. 5.....     | 9.89        |
| Feb. 9.....     | 11.95       | Sep. 8.....  | 11.12       |                 |             |
| Mar. 11.....    | 10.33       | Oct. 5.....  | 10.77       |                 |             |

Location: 84-33-03CADA WC-131 Aquifer: North Raccoon Terrace  
 Altitude: 1090 feet MP is the top of 2-inch pipe 2.31 feet above lsd

| DATE            | WATER LEVEL | DATE         | WATER LEVEL | DATE            | WATER LEVEL |
|-----------------|-------------|--------------|-------------|-----------------|-------------|
| Sep. 9, 1982... | 9.67        | Mar. 11..... | 9.13        | Sep. 8.....     | 9.66        |
| Oct. 7.....     | 10.17       | Apr. 13..... | 8.37        | Oct. 5.....     | 9.11        |
| Nov. 5.....     | 9.97        | May 4.....   | 7.84        | Nov. 8.....     | 10.51       |
| Dec. 9.....     | 10.77       | June 3.....  | 8.19        | Dec. 7.....     | 9.92        |
| Jan. 5, 1983... | 10.57       | July 5.....  | 7.39        | Jan. 9, 1984... | 10.09       |
| Feb. 9.....     | 10.47       | Aug. 3.....  | 8.58        | Feb. 9.....     | 10.21       |

Location: 84-34-34BCDC WC-148 Aquifer: Dakota  
 Altitude: 1225 feet MP is the top of 2-inch pipe 2.40 feet above lsd

| DATE             | WATER LEVEL | DATE         | WATER LEVEL | DATE            | WATER LEVEL |
|------------------|-------------|--------------|-------------|-----------------|-------------|
| Sep. 27, 1982... | 10.96       | Apr. 13..... | 15.84       | Oct. 5.....     | 19.26       |
| Oct. 6.....      | 20.50       | May 4.....   | 15.56       | Nov. 8.....     | 18.03       |
| Nov. 5.....      | 20.50       | June 3.....  | 16.84       | Dec. 8.....     | 17.27       |
| Dec. 9.....      | 19.67       | July 5.....  | 15.64       | Mar. 6, 1984... | 16.64       |
| Jan. 5, 1983...  | 19.17       | Aug. 3.....  | 17.58       |                 |             |
| Mar. 10.....     | 17.79       | Sep. 8.....  | 19.49       |                 |             |

Location: 84-34-35DAAA WC-146 Aquifer: Middle Raccoon and Pleistocene  
 Altitude: 1185 feet MP is the top of 2-inch pipe 2.75 feet above lsd

| DATE             | WATER LEVEL | DATE         | WATER LEVEL | DATE            | WATER LEVEL |
|------------------|-------------|--------------|-------------|-----------------|-------------|
| Sep. 27, 1982... | 6.58        | Apr. 13..... | 2.24        | Nov. 8.....     | 5.77        |
| Oct. 6.....      | 6.31        | May 4.....   | 1.76        | Dec. 8.....     | 3.73        |
| Nov. 5.....      | 6.51        | June 3.....  | 3.55        | Jan. 9, 1984... | 4.27        |
| Dec. 9.....      | 5.15        | July 5.....  | 2.24        | Feb. 8.....     | 4.29        |
| Jan. 5, 1983...  | 3.97        | Aug. 3.....  | 4.18        | Mar. 6.....     | 3.47        |
| Feb. 9.....      | 4.36        | Sep. 6.....  | 6.36        |                 |             |
| Mar. 11.....     | 2.61        | Oct. 5.....  | 6.10        |                 |             |

Location: 84-35-08BAAB WC-141 Aquifer: Middle Raccoon  
 Altitude: 1265 feet MP is the top of 2-inch pipe 3.10 feet above lsd

| DATE             | WATER LEVEL | DATE         | WATER LEVEL | DATE            | WATER LEVEL |
|------------------|-------------|--------------|-------------|-----------------|-------------|
| Sep. 20, 1982... | 5.16        | Apr. 13..... | 2.35        | Nov. 8.....     | 5.50        |
| Oct. 7.....      | 5.16        | May 4.....   | 2.15        | Dec. 7.....     | 5.15        |
| Nov. 4.....      | 4.88        | June 3.....  | 3.74        | Jan. 9, 1984... | 5.26        |
| Dec. 7.....      | 4.88        | July 5.....  | 2.85        | Feb. 8.....     | 6.59        |
| Jan. 5, 1983...  | 4.51        | Aug. 1.....  | 4.38        | Mar. 5.....     | 4.50        |
| Feb. 9.....      | 4.61        | Sep. 7.....  | 5.09        |                 |             |
| Mar. 11.....     | 2.88        | Oct. 5.....  | 7.42        |                 |             |

Table 3. Water levels in selected wells--Continued.

Depth to water, in feet below land surface datum

Location: 84-37-08BCCB WC-226 Aquifer: Fremont  
 Altitude: 1380 feet MP is the top of 2-inch pipe 1.65 feet above lsd

| DATE             | WATER LEVEL | DATE            | WATER LEVEL | DATE        | WATER LEVEL |
|------------------|-------------|-----------------|-------------|-------------|-------------|
| July 13, 1983... | 158.58      | Oct. 3.....     | 212.32      | Feb. 8..... | 211.20      |
| July 22.....     | 156.37      | Nov. 8.....     | 211.16      | Mar. 5..... | 211.03      |
| Aug. 1.....      | 211.29      | Dec. 8.....     | 211.09      |             |             |
| Sep. 7.....      | 211.56      | Jan. 9, 1984... | 209.40      |             |             |

Location: 84-39-24CCAA WC-57 Aquifer: Boyer Terrace  
 Altitude: 1245 feet MP is the top of 2-inch pipe 2.25 feet above lsd

| DATE            | WATER LEVEL | DATE         | WATER LEVEL | DATE            | WATER LEVEL |
|-----------------|-------------|--------------|-------------|-----------------|-------------|
| July 6, 1982... | 42.08       | Mar. 10..... | 42.27       | Oct. 3.....     | 41.80       |
| Aug. 4.....     | 42.20       | Apr. 12..... | 42.22       | Nov. 8.....     | 41.55       |
| Sep. 9.....     | 41.94       | May 5.....   | 42.32       | Dec. 7.....     | 41.64       |
| Nov. 2.....     | 42.74       | June 3.....  | 41.49       | Jan. 9, 1984... | 41.62       |
| Dec. 2.....     | 42.23       | July 5.....  | 41.49       | Feb. 8.....     | 41.69       |
| Jan. 4, 1983... | 42.24       | Aug. 2.....  | 41.50       | Mar. 5.....     | 41.69       |
| Feb. 9.....     | 41.99       | Sep. 7.....  | 41.56       |                 |             |

Location: 84-42-15AABB WC-170 Aquifer: Soldier  
 Altitude: 1170 feet MP is the top of 2-inch pipe 2.15 feet above lsd

| DATE            | WATER LEVEL | DATE        | WATER LEVEL | DATE             | WATER LEVEL |
|-----------------|-------------|-------------|-------------|------------------|-------------|
| May 10, 1983... | 20.56       | Sep. 7..... | 21.85       | Jan. 10, 1984... | 21.50       |
| June 2.....     | 21.26       | Oct. 4..... | 22.22       | Feb. 6.....      | 21.57       |
| July 5.....     | 20.72       | Nov. 7..... | 21.96       | Mar. 7.....      | 21.53       |
| Aug. 1.....     | 21.44       | Dec. 8..... | 21.56       |                  |             |

Location: 84-43-04ABAA WC-163 Aquifer: Maple  
 Altitude: 1090 feet MP is the top of 2-inch pipe 2.40 feet above lsd

| DATE           | WATER LEVEL | DATE        | WATER LEVEL | DATE             | WATER LEVEL |
|----------------|-------------|-------------|-------------|------------------|-------------|
| May 5, 1983... | 6.90        | Sep. 7..... | 10.66       | Jan. 11, 1984... | 13.26       |
| June 2.....    | 8.83        | Oct. 4..... | 12.57       | Feb. 7.....      | 13.24       |
| July 5.....    | 7.82        | Nov. 9..... | 14.13       | Mar. 7.....      | 12.36       |
| Aug. 1.....    | 9.71        | Dec. 7..... | 13.28       |                  |             |

Location: 84-43-04CCBA WC-164 Aquifer: Maple  
 Altitude: 1085 feet MP is the top of 2-inch pipe 2.20 feet above lsd

| DATE           | WATER LEVEL | DATE        | WATER LEVEL | DATE             | WATER LEVEL |
|----------------|-------------|-------------|-------------|------------------|-------------|
| May 5, 1983... | 12.69       | Sep. 7..... | 22.05       | Jan. 11, 1984... | 18.62       |
| June 2.....    | 15.41       | Oct. 4..... | 24.33       | Feb. 7.....      | 18.37       |
| July 5.....    | 13.04       | Nov. 9..... | 25.31       | Mar. 7.....      | 15.58       |
| Aug. 1.....    | 15.99       | Dec. 7..... | 21.50       |                  |             |

Location: 84-44-23DABC WC-168 Aquifer: Maple Terrace  
 Altitude: 1140 feet MP is the top of 2-inch pipe 3.25 feet above lsd

| DATE            | WATER LEVEL | DATE             | WATER LEVEL | DATE        | WATER LEVEL |
|-----------------|-------------|------------------|-------------|-------------|-------------|
| May 10, 1983... | 92.50       | Sep. 7.....      | 91.34       | Feb. 7..... | 89.00       |
| June 2.....     | 91.38       | Oct. 4.....      | 91.41       | Mar. 7..... | 88.79       |
| July 5.....     | 90.75       | Nov. 9.....      | 91.77       |             |             |
| Aug. 1.....     | 90.86       | Jan. 11, 1984... | 90.47       |             |             |

Location: 84-44-24DCAD WC-166 Aquifer: Maple Terrace  
 Altitude: 1105 feet MP is the top of 2-inch pipe 2.10 feet above lsd

| DATE            | WATER LEVEL | DATE        | WATER LEVEL | DATE             | WATER LEVEL |
|-----------------|-------------|-------------|-------------|------------------|-------------|
| May 10, 1983... | 19.56       | Sep. 7..... | 21.14       | Jan. 11, 1984... | 20.76       |
| June 2.....     | 19.92       | Oct. 4..... | 21.76       | Feb. 7.....      | 20.66       |
| July 5.....     | 19.95       | Nov. 9..... | 20.83       | Mar. 7.....      | 20.38       |
| Aug. 1.....     | 19.36       | Dec. 6..... | 20.77       |                  |             |

Table 3. Water levels in selected wells--Continued.

Depth to water, in feet below land surface datum

Location: 85-29-19BAAA WC-231 Aquifer: Beaver Channel  
 Altitude: 1091 feet MP is the top of 2-inch pipe 2.60 feet above lsd

| DATE            | WATER LEVEL | DATE             | WATER LEVEL | DATE        | WATER LEVEL |
|-----------------|-------------|------------------|-------------|-------------|-------------|
| Aug. 5, 1983... | 33.68       | Nov. 8.....      | 30.66       | Feb. 9..... | 30.36       |
| Sep. 8.....     | 30.88       | Dec. 8.....      | 30.57       | Mar. 5..... | 30.37       |
| Oct. 5.....     | 30.90       | Jan. 10, 1984... | 30.65       |             |             |

Location: 85-29-32DDDD WC-232 Aquifer: Beaver Channel  
 Altitude: 1091 feet MP is the top of 2-inch pipe 2.50 feet above lsd

|                 |       |                  |       |             |       |
|-----------------|-------|------------------|-------|-------------|-------|
| Aug. 5, 1983... | 39.36 | Nov. 8.....      | 39.40 | Feb. 9..... | 38.79 |
| Sep. 8.....     | 39.63 | Dec. 8.....      | 39.12 | Mar. 5..... | 38.79 |
| Oct. 5.....     | 39.64 | Jan. 10, 1984... | 39.05 |             |       |

Location: 85-33-07ABBA WC-133 Aquifer: North Raccoon  
 Altitude: 1090 feet MP is the top of 2-inch pipe 1.90 feet above lsd

|                  |      |              |      |                 |      |
|------------------|------|--------------|------|-----------------|------|
| Sep. 13, 1982... | 6.87 | Apr. 13..... | 1.13 | Nov. 8.....     | 6.68 |
| Oct. 8.....      | 6.58 | May 4.....   | 1.99 | Dec. 7.....     | 5.96 |
| Nov. 4.....      | 5.56 | June 3.....  | 3.81 | Jan. 9, 1984... | 6.44 |
| Dec. 9.....      | 6.02 | July 5.....  | 0.68 | Feb. 9.....     | 6.65 |
| Jan. 5, 1983...  | 5.71 | Aug. 1.....  | 4.21 | Mar. 5.....     | 4.65 |
| Feb. 9.....      | 5.91 | Sep. 8.....  | 5.40 |                 |      |
| Mar. 11.....     | 1.51 | Oct. 5.....  | 7.98 |                 |      |

Location: 85-38-12DCBA WC-14 Aquifer: Fremont Channel  
 Altitude: 1225 feet MP is the top of 2-inch pipe 3.70 feet above lsd

|                  |       |                 |       |                 |       |
|------------------|-------|-----------------|-------|-----------------|-------|
| July 28, 1981... | 64.61 | Oct. 7.....     | 64.26 | Aug. 1.....     | 63.68 |
| Sep. 22.....     | 64.86 | Nov. 2.....     | 64.14 | Sep. 7.....     | 63.91 |
| Nov. 3.....      | 64.68 | Dec. 2.....     | 63.90 | Oct. 4.....     | 64.41 |
| Feb. 5, 1982...  | 64.55 | Jan. 5, 1983... | 63.78 | Nov. 8.....     | 63.74 |
| Apr. 6.....      | 64.50 | Feb. 8.....     | 63.69 | Dec. 7.....     | 63.39 |
| May 6.....       | 64.35 | Mar. 10.....    | 63.74 | Jan. 9, 1984... | 63.48 |
| June 9.....      | 64.17 | Apr. 12.....    | 63.36 | Feb. 8.....     | 64.04 |
| July 6.....      | 64.10 | May 4.....      | 63.35 | Mar. 5.....     | 63.51 |
| Aug. 5.....      | 64.37 | June 3.....     | 63.16 |                 |       |
| Sep. 8.....      | 64.44 | July 5.....     | 63.33 |                 |       |

Location: 85-39-16ADDD WC-7A Aquifer: Dakota  
 Altitude: 1370 feet MP is the top of 5-inch pipe 3.14 feet above lsd

|                  |        |                 |        |                 |        |
|------------------|--------|-----------------|--------|-----------------|--------|
| June 10, 1981... | 238.35 | Sep. 8.....     | 234.34 | July 5.....     | 233.49 |
| June 25.....     | 238.26 | Oct. 7.....     | 233.95 | Aug. 1.....     | 234.15 |
| July 28.....     | 236.80 | Nov. 1.....     | 234.07 | Sep. 7.....     | 234.87 |
| Nov. 3.....      | 235.43 | Dec. 10.....    | 234.83 | Oct. 4.....     | 236.01 |
| Feb. 5, 1982...  | 235.40 | Jan. 3, 1983... | 234.71 | Nov. 8.....     | 234.01 |
| Apr. 6.....      | 235.34 | Feb. 8.....     | 234.55 | Dec. 7.....     | 233.60 |
| May 6.....       | 235.22 | Mar. 10.....    | 236.24 | Jan. 9, 1984... | 233.48 |
| June 9.....      | 234.40 | Apr. 12.....    | 233.99 | Feb. 8.....     | 233.64 |
| July 6.....      | 234.05 | May 4.....      | 233.67 | Mar. 5, 1994... | 233.63 |
| Aug. 5.....      | 234.27 | June 3.....     | 233.83 |                 |        |

Table 3. Water levels in selected wells--Continued.

Depth to water, in feet below land surface datum

Location: 85-41-13CCCC WC-6 Aquifer: Basal Pleistocene and Dakota  
 Altitude: 1375 feet MP is the top of 2-inch pipe 3.49 feet above lsd

| DATE            | WATER LEVEL | DATE            | WATER LEVEL | DATE            | WATER LEVEL |
|-----------------|-------------|-----------------|-------------|-----------------|-------------|
| May 19, 1981... | 247.69      | Aug. 4.....     | 247.68      | June 3.....     | 246.30      |
| June 10.....    | 247.79      | Sep. 8.....     | 248.67      | July 5.....     | 246.48      |
| June 25.....    | 245.42      | Oct. 7.....     | 247.23      | Aug. 1.....     | 246.54      |
| July 28.....    | 244.23      | Nov. 1.....     | 247.26      | Sep. 8.....     | 246.75      |
| Nov. 3.....     | 248.81      | Dec. 10.....    | 247.97      | Oct. 4.....     | 248.60      |
| Feb. 5, 1982... | 249.05      | Jan. 3, 1983... | 247.97      | Nov. 8.....     | 246.34      |
| Apr. 7.....     | 248.88      | Feb. 8.....     | 247.82      | Dec. 6.....     | 245.91      |
| May 6.....      | 248.77      | Mar. 10.....    | 247.33      | Jan. 9, 1984... | 246.00      |
| June 9.....     | 248.57      | Apr. 12.....    | 246.64      | Feb. 8.....     | 245.91      |
| July 6.....     | 248.46      | May 4.....      | 246.50      | Mar. 5.....     | 245.87      |

Location: 85-44-16CDAA WC-155 Aquifer: Dakota  
 Altitude: 1060 feet MP is the top of 2-inch pipe 2.25 feet above lsd

|                  |       |              |       |                  |       |
|------------------|-------|--------------|-------|------------------|-------|
| Oct. 18, 1982... | 13.85 | Apr. 12..... | 7.93  | Oct. 4.....      | 13.81 |
| Nov. 2.....      | 13.92 | May 2.....   | 8.36  | Nov. 7.....      | 13.81 |
| Dec. 2.....      | 13.50 | June 2.....  | 10.54 | Dec. 7.....      | 13.24 |
| Jan. 3, 1983...  | 12.88 | July 5.....  | 7.57  | Jan. 11, 1984... | 13.74 |
| Feb. 8.....      | 13.16 | Aug. 1.....  | 11.38 | Feb. 7.....      | 13.91 |
| Mar. 10.....     | 8.48  | Sep. 7.....  | 13.34 | Mar. 7.....      | 12.44 |

Location: 85-44-16DCDD WC-156 Aquifer: Little Sioux  
 Altitude: 1060 feet MP is the top of 2-inch pipe 2.50 feet above lsd

|                  |       |              |       |                  |       |
|------------------|-------|--------------|-------|------------------|-------|
| Oct. 18, 1982... | 10.48 | Apr. 12..... | 4.82  | Oct. 4.....      | 11.97 |
| Nov. 2.....      | 11.41 | May 2.....   | 5.51  | Nov. 7.....      | 11.72 |
| Dec. 2.....      | 11.04 | June 2.....  | 8.53  | Dec. 7.....      | 10.82 |
| Jan. 3, 1983...  | 10.26 | July 5.....  | 4.37  | Jan. 11, 1984... | 11.50 |
| Feb. 8.....      | 10.54 | Aug. 1.....  | 9.48  | Feb. 7.....      | 11.66 |
| Mar. 10.....     | 3.92  | Sep. 7.....  | 11.49 | Mar. 7.....      | 10.11 |

Location: 85-44-17DCAA WC-158 Aquifer: Dakota  
 Altitude: 1110 feet MP is the top of 2-inch pipe 2.70 feet above lsd

|                  |       |              |       |                  |       |
|------------------|-------|--------------|-------|------------------|-------|
| Oct. 19, 1982... | 55.50 | Apr. 12..... | 52.28 | Oct. 4.....      | 53.01 |
| Nov. 2.....      | 55.43 | May 2.....   | 51.80 | Nov. 7.....      | 53.29 |
| Dec. 2.....      | 55.08 | June 2.....  | 51.36 | Dec. 7.....      | 53.46 |
| Jan. 3, 1983...  | 54.71 | July 5.....  | 50.85 | Jan. 11, 1984... | 53.60 |
| Feb. 8.....      | 54.68 | Aug. 1.....  | 51.43 | Feb. 7.....      | 53.90 |
| Mar. 10.....     | 53.67 | Sep. 7.....  | 52.57 | Mar. 7.....      | 53.16 |

Location: 85-44-22ADAA WC-8 Aquifer: Dakota  
 Altitude: 1120 feet MP is the top of 2-inch pipe 3.24 feet above lsd

|                  |       |                 |       |                  |       |
|------------------|-------|-----------------|-------|------------------|-------|
| June 10, 1981... | 67.47 | Aug. 4.....     | 66.07 | June 2.....      | 61.59 |
| June 25.....     | 67.44 | Sep. 8.....     | 66.54 | July 5.....      | 60.83 |
| July 28.....     | 67.62 | Oct. 7.....     | 65.91 | Aug. 1.....      | 61.86 |
| Sep. 22.....     | 68.08 | Nov. 1.....     | 65.68 | Sep. 7.....      | 63.14 |
| Nov. 3.....      | 68.16 | Dec. 2.....     | 65.35 | Oct. 4.....      | 62.62 |
| Feb. 2, 1982...  | 68.31 | Jan. 3, 1983... | 65.03 | Nov. 7.....      | 63.82 |
| Apr. 6.....      | 67.14 | Feb. 8.....     | 64.93 | Dec. 7.....      | 63.77 |
| May 6.....       | 67.28 | Mar. 10.....    | 62.95 | Jan. 11, 1984... | 63.87 |
| June 9.....      | 66.78 | Apr. 12.....    | 62.22 | Feb. 7.....      | 63.88 |
| July 6.....      | 66.64 | May 2.....      | 61.40 | Mar. 7.....      | 62.92 |



Table 4. Chemical analyses of ground-water in observation wells and selected municipalities.

[Chemical analyses are grouped according to aquifers]

| Aquifer Units                          | Agency Analyzing Code  |
|--|--|
| -----                                  | -----  |
| 111, Alluvium                          | EPA, U.S. Environmental Protection Agency  |
| 112, Pleistocene                       | UHL, University Hygienic Laboratory  |
| 217, Dakota                            |  |
| ANCL, Anthon Aquifer                   |  |
| BGLC, Bagley Aquifer                   |  |
| BLPC, Basal Pleistocene Aquifer        | pH, Temperature and Specific Conductance   |
| BRRV, Boyer Aquifer                    | -----  |
| BVCL, Beaver Aquifer                   | Values shown were at the well at the time the water was sampled, except for specific conductance values followed by *. * indicates specific conductance was measured by the analyzing lab. |
| DKOT, Dakota Aquifer                   |  |
| DKPV, Dakota and Pennsylvania Aquifers |  |
| ENRV, East Nishnabotna Aquifer         |  |
| FMCL, Fremont Aquifer                  |  |
| HCKC, Hardin Creek Aquifer             |  |
| LSRV, Little Sioux Aquifer             |  |
| MPRV, Maple Aquifer                    |  |
| MRRV, Middle Raccoon Aquifer           |  |
| MRVT, Maple Terrace Aquifer            |  |
| NRRV, North Raccoon Aquifer            |  |
| PLSC, Pleistocene Aquifer              |  |
| SDRV, Soldier Aquifer                  |  |
| SRRV, South Raccoon Aquifer            |  |
| WRND, West Nishnabotna Aquifer         |  |

Table 4. Chemical analyses of ground-water in observation wells and selected municipalities--Continued.

| STATION ID      | AQUIFER UNIT | DATE OF SAMPLE | LOCATION     | COMPLETION DATE | WELL NAME AND NUMBER | COUNTY   | DEPTH OF WELL, TOTAL (FEET) | AGENCY ANALYZING SAMPLE |
|-----------------|--------------|----------------|--------------|-----------------|----------------------|----------|-----------------------------|-------------------------|
| 413958094544501 | 217DKOT      | 81-08-05       | 07935W10CABB | 1981            | IGS & USGS WC #17    | AUDUBON  | 210                         | UHL                     |
| 414514094381601 | 217DKOT      | 82-07-28       | 08033W12ACCC | 1982            | IGS & USGS WC #90    | GUTHRIE  | 81                          | UHL                     |
| 414624095252301 | 217DKOT      | 81-06-11       | 08039W06AADC | 1981            | IGS & USGS WC #10    | SHELBY   | 370                         | UHL                     |
| 414500095420002 | 217DKOT      | 82-03-02       | 08042W14AACC | 1936            | WOODBINE NO 1        | HARRISON | 92                          | EPA                     |
| 414821094271301 | 217DKOT      | 82-08-12       | 08131W22CCCC | 1982            | IGS & USGS WC #105   | GUTHRIE  | 153                         | UHL                     |
| 414728094385301 | 217DKOT      | 82-07-27       | 08133W26DDDD | 1982            | IGS & USGS WC #93    | GUTHRIE  | 75                          | UHL                     |
| 415023094593801 | 217DKOT      | 81-08-19       | 08136W12CBCA | 1981            | IGS & USGS WC #18    | AUDUBON  | 315                         | UHL                     |
| 414709095251901 | 217DKOT      | 82-03-03       | 08139W32CBBB | 1981            | EARLING NO 7         | SHELBY   | 470                         | EPA                     |
| 415003095382301 | 217DKOT      | 81-06-18       | 08141W17ABAA | 1981            | IGS & USGS WC #11    | HARRISON | 166                         | UHL                     |
| 414700095373001 | 217DKOT      | 82-08-03       | 08141W33CAAA | 1982            | IGS & USGS WC #52    | HARRISON | 155                         | UHL                     |

| DATE OF SAMPLE | PH (STANDARD UNITS) | TEMPERATURE (DEG C) | SPE-CIFIC CON-DUCTANCE (UMHOS) | SOLIDS, RESIDUE AT 105 DEG. C, DIS-SOLVED (MG/L) | ALKA-LINITY LAB (MG/L AS CACO3) | HARD-NESS (MG/L AS CACO3) | IRON, DIS-SOLVED (UG/L AS FE) | SILICA, DIS-SOLVED (MG/L AS SIO2) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) | SODIUM AD-SORP-TION RATIO (SAR) | SODIUM, DIS-SOLVED (MG/L AS NA) | CALCIUM DIS-SOLVED (MG/L AS CA) |
|----------------|---------------------|---------------------|--------------------------------|--|---------------------------------|---------------------------|-------------------------------|-----------------------------------|------------------------------------|---------------------------------|---------------------------------|---------------------------------|
| 31-08-05       | --                  | --                  | 3600*                          | 3460   | 287                             | 1600                      | 240                           | 19                                | 17                                 | 4.1                             | 360                             | 380                             |
| 32-07-28       | 7.4                 | 12.0                | 291                            | 184  | 144                             | 150                       | 110                           | 19                                | .3                                 | .2                              | 5.6                             | 42                              |
| 31-06-11       | --                  | --                  | 3400*                          | 3160   | 204                             | 1200                      | 160                           | 20                                | 11                                 | 5.4                             | 410                             | 330                             |
| 32-03-02       | 7.2                 | 11.3                | 722*                           | 476  | 340                             | 460                       | <50                           | 13                                | --                                 | .4                              | 21                              | 120                             |
| 32-08-12       | 7.1                 | 17.0                | 597                            | 333  | 313                             | 320                       | 1000                          | 24                                | 1.7                                | .2                              | 6.6                             | 82                              |
| 32-07-27       | 8.0                 | 13.0                | 400*                           | 340  | 158                             | 190                       | 7400                          | 31                                | 1.8                                | .2                              | 5.4                             | 56                              |
| 81-08-19       | --                  | --                  | 3700*                          | 3550   | 345                             | 1600                      | 10                            | 18                                | 11                                 | 4.5                             | 400                             | 430                             |
| 82-03-03       | 7.6                 | 12.3                | 3710*                          | 3170   | 213                             | 1500                      | 1000                          | 9.8                               | --                                 | 4.4                             | 380                             | 400                             |
| 81-06-18       | --                  | --                  | 2500*                          | 2250   | 234                             | 960                       | 30                            | 34                                | 10                                 | 3.2                             | 220                             | 250                             |
| 82-08-03       | 7.5                 | 22.0                | 550                            | 342  | 307                             | 310                       | 610                           | 27                                | 3.5                                | .2                              | 9.5                             | 84                              |

| DATE OF SAMPLE | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) | MANGA-NESE, DIS-SOLVED (UG/L AS MN) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) | SULFATE DIS-SOLVED (MG/L AS SO4) | ARSENIC DIS-SOLVED (UG/L AS AS) | BARIUM, DIS-SOLVED (UG/L AS BA) | CADMIUM DIS-SOLVED (UG/L AS CD) | CHRO-MIUM, DIS-SOLVED (UG/L AS CR) | COPPER, DIS-SOLVED (UG/L AS CU) | LEAD, DIS-SOLVED (UG/L AS PB) |
|----------------|-------------------------------------|-------------------------------------|---|-----------------------------------|------------------------------------|----------------------------------|---------------------------------|---------------------------------|---------------------------------|------------------------------------|---------------------------------|-------------------------------|
| 81-08-05       | 150                                 | 3600                                | .07                                       | .20                               | 10                                 | 2000                             | 10                              | 200                             | <1                              | <10                                | <10                             | 80                            |
| 82-07-28       | 10                                  | 10                                  | 2.2                                       | .30                               | 1.5                                | 6.4                              | <10                             | 100                             | <1                              | <10                                | <10                             | <10                           |
| 81-06-11       | 86                                  | 750                                 | .05                                       | .20                               | 17                                 | 1700                             | <10                             | <100                            | <1                              | <10                                | <10                             | <10                           |
| 82-03-02       | 38                                  | 130                                 | 5.1                                       | .28                               | 14                                 | 69                               | <50                             | 210                             | <2                              | <5                                 | <2                              | <50                           |
| 82-08-12       | 28                                  | 20                                  | .47                                       | .40                               | 1.5                                | 6.2                              | <10                             | 100                             | <1                              | <10                                | <10                             | <10                           |
| 82-07-27       | 12                                  | 230                                 | 3.2                                       | .30                               | 4.5                                | 27                               | <10                             | 200                             | <1                              | <10                                | 200                             | <10                           |
| 81-08-19       | 130                                 | 580                                 | <.02                                      | .10                               | 22                                 | 2000                             | <10                             | 200                             | <1                              | <10                                | 20                              | <10                           |
| 82-03-03       | 110                                 | 750                                 | <.04                                      | .17                               | 16                                 | 1700                             | <50                             | 16                              | <2                              | <5                                 | <2                              | <50                           |
| 81-06-18       | 82                                  | 1500                                | 1.6                                       | .20                               | 20                                 | 1100                             | <10                             | 100                             | <1                              | <10                                | <10                             | <10                           |
| 82-08-03       | 25                                  | 40                                  | 1.9                                       | .20                               | 1.0                                | 7.8                              | <10                             | 300                             | <1                              | <10                                | <10                             | <10                           |

| DATE OF SAMPLE | MERCURY DIS-SOLVED (UG/L AS HG) | SELE-NIUM, DIS-SOLVED (UG/L AS SE) | SILVER, DIS-SOLVED (UG/L AS AG) | ZINC, DIS-SOLVED (UG/L AS ZN) | ALUM-INUM, DIS-SOLVED (UG/L AS AL) | GROSS ALPHA, DIS-SOLVED (PCI/L) | RADIUM 226, DIS-SOLVED (PCI/L) | RADIUM 228, DIS-SOLVED (PCI/L) | GROSS BETA, DIS-SOLVED (PCI/L AS CS-137) |
|----------------|---------------------------------|------------------------------------|---------------------------------|-------------------------------|------------------------------------|---------------------------------|--------------------------------|--------------------------------|--|
| 81-08-05       | <1.0                            | <10                                | <10                             | 40                            | --                                 | 8.8                             | 1.0                            | 3.9                            | 30                                       |
| 82-07-28       | <1.0                            | <10                                | <10                             | <10                           | --                                 | <.1                             | --                             | --                             | 1.0                                      |
| 81-06-11       | <1.0                            | <10                                | <10                             | <10                           | --                                 | 6.3                             | .4                             | --                             | <.5                                      |
| 82-03-02       | <.1                             | 8                                  | <5                              | <20                           | <100                               | 3.1                             | .4                             | 2.4                            | 5.0                                      |
| 82-08-12       | <1.0                            | <10                                | <10                             | 10                            | --                                 | 1.4                             | --                             | --                             | 4.0                                      |
| 82-07-27       | <1.0                            | <10                                | <10                             | 120                           | --                                 | 1.7                             | --                             | --                             | 6.0                                      |
| 81-08-19       | <1.0                            | <10                                | <10                             | 20                            | --                                 | 22                              | .9                             | 1.8                            | 24                                       |
| 82-03-03       | <.1                             | <5                                 | <5                              | 240                           | <300                               | 1.0                             | --                             | --                             | 20                                       |
| 81-06-18       | <1.0                            | <10                                | <10                             | --                            | --                                 | 7.5                             | .6                             | <.6                            | 12                                       |
| 82-08-03       | <1.0                            | <10                                | <10                             | 130                           | --                                 | 2.3                             | .2                             | .7                             | 6.0                                      |

Table 4. Chemical analyses of ground-water in observation wells and selected municipalities--Continued.

| STATION ID      | AQUIFER UNIT                       | DATE OF SAMPLE                     | LOCATION                                 | COMPLETION DATE                                  | WELL NAME AND NUMBER              | COUNTY                           | DEPTH OF WELL, TOTAL (FEET)     | AGENCY ANALYZING SAMPLE           |  |                                   |                                 |                                 |
|-----------------|------------------------------------|------------------------------------|--|--|-----------------------------------|----------------------------------|---------------------------------|-----------------------------------|--|-----------------------------------|---------------------------------|---------------------------------|
| 415608094260701 | 217DKOT                            | 83-08-10                           | 08231W10AAAA                             | 1983   | IGS & USGS WC #235                |                                  |                                 |                                   |  |                                   |                                 |                                 |
| 415151094403501 | 217DKOT                            | 82-03-01                           | 08233W34DCCB                             | 1944   | COON RAPIDS #3                    | GREENE                           | 125                             | UHL                               |  |                                   |                                 |                                 |
| 415451095224701 | 217DKOT                            | 81-06-25                           | 08239W15CBAB                             | 1981   | IGS & USGS WC #12                 | CARROLL                          | 126                             | EPA                               |  |                                   |                                 |                                 |
| 415514095312001 | 217DKOT                            | 81-06-05                           | 08240W17AABB                             | 1981   | IGS & USGS WC #9                  | CRAWFORD                         | 285                             | UHL                               |  |                                   |                                 |                                 |
| 420146094272301 | 217DKOT                            | 82-08-30                           | 08331W04ADDB                             | 1982   | IGS & USGS WC #120                | CRAWFORD                         | 141                             | UHL                               |  |                                   |                                 |                                 |
| 420149094344701 | 217DKOT                            | 83-07-28                           | 08332W04ACCC                             | 1983   | IGS & USGS WC #228                | GREENE                           | 51                              | UHL                               |  |                                   |                                 |                                 |
| 420139095515701 | 217DKOT                            | 81-05-05                           | 08343W04CBCB                             | 1981   | IGS & USGS WC #5                  | GREENE                           | 240                             | UHL                               |  |                                   |                                 |                                 |
| 420705094394501 | 217DKOT                            | 82-09-10                           | 08433W02BDBA                             | 1982   | IGS & USGS WC #132                | MONONA                           | 315                             | UHL                               |  |                                   |                                 |                                 |
| 420331094440101 | 217DKOT                            | 82-04-21                           | 08433W30ACBB                             | 1978   | GLIDDEN NO 6                      | CARROLL                          | 76                              | UHL                               |  |                                   |                                 |                                 |
| 420233094475901 | 217DKOT                            | 82-09-28                           | 08434W34BCDC                             | 1982   | IGS & USGS WC #148                | CARROLL                          | 183                             | EPA                               |  |                                   |                                 |                                 |
|                 |                                    |                                    |  |  |                                   | CARROLL                          | 99                              | UHL                               |  |                                   |                                 |                                 |
| DATE OF SAMPLE  | PH (STANDARD UNITS)                | TEMPERATURE (DEG C)                | SPECIFIC CONDUCTANCE (UMHOS)             | SOLIDS, RESIDUE AT 105 DEG. C, DIS-SOLVED (MG/L) | ALKALINITY LAB (MG/L AS CACO3)    | HARDNESS (MG/L AS CACO3)         | IRON, DIS-SOLVED (UG/L AS FE)   | SILICA, DIS-SOLVED (MG/L AS SIO2) | POTASSIUM, DIS-SOLVED (MG/L AS K)        | SODIUM AD-SORPTION RATIO (SAR)    | SODIUM, DIS-SOLVED (MG/L AS NA) | CALCIUM DIS-SOLVED (MG/L AS CA) |
| 83-08-10        | 7.4                                | 12.0                               | 812                                      | 449  | 469                               | 440                              | 3400                            | 22                                | 4.1                                      | .6                                | 26                              | 120                             |
| 82-03-01        | 7.1                                | 11.0                               | 483*                                     | 304  | 175                               | 230                              | <50                             | 10                                | --                                       | .5                                | 18                              | 64                              |
| 81-06-25        | --                                 | --                                 | 3600*                                    | 3350   | 197                               | 1200                             | 80                              | 14                                | 15                                       | 5.0                               | 390                             | 350                             |
| 81-06-05        | --                                 | --                                 | 530*                                     | 324  | 271                               | 290                              | 530                             | 31                                | 3.2                                      | .5                                | 17                              | 82                              |
| 82-08-30        | 7.2                                | 13.0                               | 670*                                     | 415  | 280                               | 360                              | 240                             | 25                                | 1.5                                      | .1                                | 4.9                             | 92                              |
| 83-07-28        | 7.8                                | 22.0                               | 700                                      | 472  | 414                               | 360                              | 3100                            | 20                                | 6.9                                      | .6                                | 24                              | 95                              |
| 81-05-05        | --                                 | --                                 | 870*                                     | 612  | 305                               | 236                              | 20                              | 14                                | 11                                       | 3.3                               | 110                             | 61                              |
| 82-09-10        | --                                 | 25.0                               | 860                                      | 555  | 305                               | 450                              | 2000                            | 34                                | 3.4                                      | .2                                | 9.0                             | 120                             |
| 82-04-21        | 7.0                                | 11.0                               | 912*                                     | 524  | 364                               | 440                              | <50                             | 9.5                               | 4.0                                      | .5                                | 24                              | 120                             |
| 82-09-28        | 7.5                                | 11.0                               | 630                                      | 420  | 289                               | 350                              | 680                             | 27                                | 2.7                                      | .2                                | 8.8                             | 92                              |
| DATE OF SAMPLE  | MAGNESIUM, DIS-SOLVED (MG/L AS MG) | MANGANESE, DIS-SOLVED (UG/L AS MN) | NITROGEN, NO2+NO3 DIS-SOLVED (MG/L AS N) | FLUORIDE, DIS-SOLVED (MG/L AS F)                 | CHLORIDE, DIS-SOLVED (MG/L AS CL) | SULFATE DIS-SOLVED (MG/L AS SO4) | ARSENIC DIS-SOLVED (UG/L AS AS) | BARIUM, DIS-SOLVED (UG/L AS BA)   | CADMIUM DIS-SOLVED (UG/L AS CD)          | CHROMIUM, DIS-SOLVED (UG/L AS CR) | COPPER, DIS-SOLVED (UG/L AS CU) | LEAD, DIS-SOLVED (UG/L AS PB)   |
| 83-08-10        | 34                                 | 610                                | .05                                      | .30  | .5                                | 28                               | <10                             | 200                               | <1                                       | <10                               | <10                             | <10                             |
| 82-03-01        | 18                                 | 47                                 | 3.8                                      | .27  | 6.0                               | 27                               | <50                             | 200                               | <2                                       | <5                                | 9                               | <50                             |
| 81-06-25        | 90                                 | 830                                | .14                                      | .20  | 22                                | 1900                             | <10                             | <100                              | <1                                       | <10                               | <10                             | <10                             |
| 81-06-05        | 20                                 | 40                                 | .02                                      | .40  | 1.0                               | 48                               | <10                             | 200                               | <1                                       | <10                               | <10                             | <10                             |
| 82-08-30        | 32                                 | 90                                 | .05                                      | .20  | 11                                | 75                               | <10                             | 200                               | <1                                       | <10                               | <10                             | <10                             |
| 83-07-28        | 30                                 | 220                                | .23                                      | .40  | .5                                | 27                               | <10                             | 800                               | <1                                       | <10                               | <10                             | <10                             |
| 81-05-05        | 19                                 | 70                                 | <.02                                     | .70  | 8.0                               | 150                              | <10                             | 100                               | <1                                       | <10                               | <10                             | <10                             |
| 82-09-10        | 37                                 | 60                                 | 23                                       | .20  | 26                                | 47                               | <10                             | 200                               | <1                                       | <10                               | <10                             | <10                             |
| 82-04-21        | 33                                 | 1300                               | 1.4                                      | .36  | 2.0                               | 60                               | <5                              | 150                               | <2                                       | <5                                | <10                             | <50                             |
| 82-09-28        | 30                                 | 500                                | <.02                                     | .45  | 4.0                               | 80                               | <10                             | 200                               | <1                                       | <10                               | <10                             | <10                             |
| DATE OF SAMPLE  | MERCURY DIS-SOLVED (UG/L AS HG)    | SELENIUM, DIS-SOLVED (UG/L AS SE)  | SILVER, DIS-SOLVED (UG/L AS AG)          | ZINC, DIS-SOLVED (UG/L AS ZN)                    | ALUMINUM, DIS-SOLVED (UG/L AS AL) | GROSS ALPHA, DIS-SOLVED (PCI/L)  | RADIUM 226, DIS-SOLVED (PCI/L)  | RADIUM 228, DIS-SOLVED (PCI/L)    | GROSS BETA, DIS-SOLVED (PCI/L AS CS-137) |                                   |                                 |                                 |
| 83-08-10        | <1.0                               | <10                                | <10                                      | 10   | --                                | 3.8                              | 3.0                             | 1.9                               | 8.0                                      |                                   |                                 |                                 |
| 82-03-01        | .1                                 | <5                                 | <5                                       | <20  | <100                              | 2.4                              | .4                              | .7                                | 3.0                                      |                                   |                                 |                                 |
| 81-06-25        | <1.0                               | <10                                | <10                                      | <10  | --                                | 6.6                              | .4                              | <.6                               | 26                                       |                                   |                                 |                                 |
| 81-06-05        | <1.0                               | <10                                | <10                                      | <10  | --                                | 2.1                              | --                              | --                                | 5.0                                      |                                   |                                 |                                 |
| 82-08-30        | <1.0                               | <10                                | <10                                      | <10  | --                                | 8.5                              | 4.0                             | 1.2                               | 8.0                                      |                                   |                                 |                                 |
| 83-07-28        | <1.0                               | <10                                | <10                                      | <70  | --                                | 2.3                              | --                              | --                                | 6.0                                      |                                   |                                 |                                 |
| 81-05-05        | <1.0                               | <10                                | <10                                      | <10  | --                                | 1.8                              | --                              | --                                | 11                                       |                                   |                                 |                                 |
| 82-09-10        | <1.0                               | <10                                | <10                                      | 80   | --                                | 1.1                              | --                              | --                                | 1.0                                      |                                   |                                 |                                 |
| 82-04-21        | <.1                                | <5                                 | <5                                       | <20  | <20                               | 1.4                              | --                              | --                                | 1.0                                      |                                   |                                 |                                 |
| 82-09-28        | <1.0                               | <10                                | <10                                      | <10  | --                                | 2.3                              | --                              | --                                | 4.0                                      |                                   |                                 |                                 |

Table 4. Chemical analyses of ground-water in observation wells and selected municipalities--Continued.

| STATION ID      | AQUIFER UNIT | DATE OF SAMPLE | LOCATION      | COMPLETION DATE | WELL NAME AND NUMBER | COUNTY  | DEPTH OF WELL, TOTAL (FEET) | AGENCY ANALYZING SAMPLE |
|-----------------|--------------|----------------|---------------|-----------------|----------------------|---------|-----------------------------|-------------------------|
| 420316094515801 | 217DKOT      | 82-04-19       | 08435W25DACB  | 1957            | CARROLL NO 11        | CARROLL | 189                         | EPA                     |
| 421103094412201 | 217DKOT      | 82-04-21       | 08533W09DDAB  | 1954            | LANESBORO #2         | CARROLL | 134                         | EPA                     |
| 420733094465301 | 217DKOT      | 82-04-21       | 08534W35CCCB  | 1956            | LIDDERDALE NO 2      | CARROLL | 240                         | EPA                     |
| 421058094582701 | 217DKOT      | 82-04-20       | 08535W07CCCC  | 1942            | BREDA #2             | CARROLL | 349                         | EPA                     |
| 421018095582001 | 217DKOT      | 82-10-19       | 08544W16CDA A | 1982            | IGS & USGS WC #155   | MONONA  | 77                          | UHL                     |
| 421018095591301 | 217DKOT      | 82-10-19       | 08544W17DCA A | 1982            | IGS & USGS WC #158   | MONONA  | 135                         | UHL                     |
| 420952095563401 | 217DKOT      | 81-06-03       | 08544W22ADAA  | 1981            | IGS & USGS WC #8     | MONONA  | 210                         | UHL                     |
| 420603094355101 | 217DKPV      | 82-09-02       | 08432W08ACDB  | 1982            | IGS & USGS WC #124   | GREENE  | 129                         | UHL                     |

| DATE OF SAMPLE | PH (STANDARD UNITS) | TEMPERATURE (DEG C) | SPE-CIFIC CONDUCTANCE (UMHOS) | SOLIDS, RESIDUE AT 105 DEG. C, DIS-SOLVED (MG/L) | ALKA-LINITY LAB (MG/L AS CACO3) | HARD-NESS AS CACO3 (MG/L) | IRON, DIS-SOLVED (UG/L AS FE) | SILICA, DIS-SOLVED (MG/L AS SIO2) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) | SODIUM AD-SORPTION RATIO (SAR) | SODIUM, DIS-SOLVED (MG/L AS NA) | CALCIUM DIS-SOLVED (MG/L AS CA) |
|----------------|---------------------|---------------------|-------------------------------|--|---------------------------------|---------------------------|-------------------------------|-----------------------------------|------------------------------------|--------------------------------|---------------------------------|---------------------------------|
| 82-04-19       | 7.4                 | 11.0                | 693*                          | 408  | 263                             | 340                       | 55                            | 11                                | 7.0                                | .2                             | 10                              | 95                              |
| 82-04-21       | 7.0                 | 12.0                | 681*                          | 476  | 308                             | 340                       | 10800                         | 13                                | 6.0                                | .2                             | 10                              | 91                              |
| 82-04-21       | 7.1                 | 11.0                | 720*                          | 398  | 323                             | 370                       | <50                           | 10                                | 4.0                                | .3                             | 11                              | 100                             |
| 82-04-20       | 7.2                 | 11.5                | 1830                          | 1480   | 276                             | 840                       | 320                           | 12                                | 10                                 | 1.7                            | 110                             | 210                             |
| 82-10-19       | --                  | 10.0                | 688                           | 405  | 386                             | 380                       | 20                            | 26                                | 5.5                                | .2                             | 8.8                             | 93                              |
| 82-10-19       | --                  | 11.0                | 657                           | 399  | 382                             | 380                       | 1100                          | 28                                | 4.8                                | .2                             | 7.8                             | 91                              |
| 81-06-03       | --                  | --                  | 1120*                         | 764  | 360                             | 470                       | 60                            | 20                                | 9.4                                | 1.8                            | 86                              | 130                             |
| 82-09-02       | 7.4                 | 11.0                | 680*                          | 375  | 364                             | 350                       | 2400                          | 25                                | 4.2                                | .5                             | 19                              | 92                              |

| DATE OF SAMPLE | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) | MANGA-NESE, DIS-SOLVED (UG/L AS MN) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) | SULFATE DIS-SOLVED (MG/L AS SO4) | ARSENIC DIS-SOLVED (UG/L AS AS) | BARIUM, DIS-SOLVED (UG/L AS BA) | CADMIUM DIS-SOLVED (UG/L AS CD) | CHRO-MIUM, DIS-SOLVED (UG/L AS CR) | COPPER, DIS-SOLVED (UG/L AS CU) | LEAD, DIS-SOLVED (UG/L AS PB) |
|----------------|-------------------------------------|-------------------------------------|---|-----------------------------------|------------------------------------|----------------------------------|---------------------------------|---------------------------------|---------------------------------|------------------------------------|---------------------------------|-------------------------------|
| 82-04-19       | 26                                  | 500                                 | <.05                                      | .32                               | 2.0                                | 52                               | <5                              | 200                             | <2                              | <5                                 | <10                             | <50                           |
| 82-04-21       | 27                                  | 120                                 | .08                                       | .33                               | <1.0                               | 6.0                              | 120                             | 420                             | 3                               | <5                                 | <10                             | <50                           |
| 82-04-21       | 28                                  | 410                                 | .33                                       | .31                               | <1.0                               | 12                               | <5                              | 280                             | <2                              | <5                                 | <10                             | <50                           |
| 82-04-20       | 76                                  | 1200                                | .02                                       | .32                               | 6.0                                | 580                              | <5                              | 13                              | <2                              | <5                                 | <10                             | <50                           |
| 82-10-19       | 36                                  | 360                                 | .11                                       | .30                               | 1.5                                | 23                               | <10                             | 200                             | <1                              | <10                                | <10                             | <10                           |
| 82-10-19       | 37                                  | 60                                  | .14                                       | .30                               | 1.0                                | 16                               | <10                             | 200                             | <1                              | <10                                | <10                             | <10                           |
| 81-06-03       | 35                                  | 90                                  | 2.9                                       | .40                               | <.5                                | 250                              | <10                             | <100                            | <1                              | <10                                | <10                             | <10                           |
| 82-09-02       | 29                                  | 180                                 | <.02                                      | .30                               | <.5                                | 14                               | 50                              | 300                             | <1                              | <10                                | <10                             | <10                           |

| DATE OF SAMPLE | MERCURY DIS-SOLVED (UG/L AS HG) | SELE-NIUM, DIS-SOLVED (UG/L AS SE) | SILVER, DIS-SOLVED (UG/L AS AG) | ZINC, DIS-SOLVED (UG/L AS ZN) | ALUM-INUM, DIS-SOLVED (UG/L AS AL) | GROSS ALPHA, DIS-SOLVED (PCI/L) | RADIUM 226, DIS-SOLVED (PCI/L) | RADIUM 228, DIS-SOLVED (PCI/L) | GROSS BETA, DIS-SOLVED AS CS-137) |
|----------------|---------------------------------|------------------------------------|---------------------------------|-------------------------------|------------------------------------|---------------------------------|--------------------------------|--------------------------------|-----------------------------------|
| 82-04-19       | <.1                             | <5                                 | <5                              | <20                           | <20                                | 2.3                             | 2.3                            | 1.8                            | 5.0                               |
| 82-04-21       | <.1                             | <5                                 | <5                              | <20                           | <20                                | 1.1                             | --                             | --                             | 4.0                               |
| 82-04-21       | <.1                             | <5                                 | <5                              | <20                           | <20                                | 9.7                             | 5.5                            | 2.9                            | 9.0                               |
| 82-04-20       | .1                              | <5                                 | <5                              | <20                           | <20                                | 5.5                             | 1.0                            | 1.2                            | 15                                |
| 82-10-19       | <1.0                            | <10                                | <10                             | <10                           | --                                 | 7.2                             | 1.8                            | 1.9                            | 7.0                               |
| 82-10-19       | <1.0                            | <10                                | <10                             | <10                           | --                                 | 2.8                             | --                             | --                             | 4.0                               |
| 81-06-03       | <1.0                            | <10                                | <10                             | <10                           | --                                 | 2.7                             | --                             | --                             | 22                                |
| 82-09-02       | <1.0                            | <10                                | <10                             | <10                           | --                                 | 4.8                             | 2.0                            | 2.0                            | 9.0                               |

Table 4. Chemical analyses of ground-water in observation wells and selected municipalities--Continued.

| STATION ID      | AQUIFER UNIT | DATE OF SAMPLE | LOCATION     | COMPLETION DATE | WELL NAME AND NUMBER | COUNTY   | DEPTH OF WELL, TOTAL (FEET) | AGENCY ANALYZING SAMPLE |
|-----------------|--------------|----------------|--------------|-----------------|----------------------|----------|-----------------------------|-------------------------|
| 413524095490601 | 111BRRV      | 82-05-10       | 07843W05BCDD | 1982            | IGS & USGS WC #32    | HARRISON | 51                          | UHL                     |
| 413320095533401 | 111BRRV      | 82-09-14       | 07844W15CBAD | 1954            | MISSOURI VALLEY NO 2 | HARRISON | 100                         | EPA                     |
| 413836095465502 | 111BRRV      | 83-06-03       | 07942W19BADC | 1983            | IGS & USGS WC #196   | HARRISON | 49                          | UHL                     |
| 413819095471101 | 111BRRV      | 82-03-02       | 07942W19CBAB | 1979            | LOGAN NO 7           | HARRISON | 52                          | EPA                     |
| 414226095435002 | 111BRRV      | 83-06-01       | 08042W27CCBA | 1983            | IGS & USGS WC #192   | HARRISON | 40                          | UHL                     |
| 414228095442301 | 111BRRV      | 82-05-18       | 08042W28DBCD | 1982            | IGS & USGS WC #37    | HARRISON | 52                          | UHL                     |
| 414213095431602 | 111BRRV      | 83-05-27       | 08042W34ABBB | 1983            | IGS & USGS WC #191   | HARRISON | 37                          | UHL                     |
| 415109095363201 | 111BRRV      | 83-05-26       | 08141W03CDBB | 1983            | IGS & USGS WC #190   | HARRISON | 40                          | UHL                     |
| 415124095361501 | 111BRRV      | 83-05-26       | 08141W03ACCC | 1983            | IGS & USGS WC #189   | HARRISON | 46                          | UHL                     |
| 415118095361501 | 111BRRV      | 82-03-02       | 08141W03DBBD | 1925            | DUNLAP NO 1          | HARRISON | 85                          | EPA                     |

| DATE OF SAMPLE | PH (STANDARD UNITS) | TEMPERATURE (DEG C) | SPECIFIC CONDUCTANCE (UMHOS) | SOLIDS, RESIDUE AT 105 DEG. C, DIS-SOLVED (MG/L) | ALKALINITY LAB (MG/L AS CACO3) | HARDNESS (MG/L AS CACO3) | IRON, DIS-SOLVED (UG/L AS FE) | SILICA, DIS-SOLVED (MG/L AS SIO2) | POTASSIUM, DIS-SOLVED (MG/L AS K) | SODIUM ADSORPTION RATIO (SAR) | SODIUM, DIS-SOLVED (MG/L AS NA) | CALCIUM, DIS-SOLVED (MG/L AS CA) |
|----------------|---------------------|---------------------|------------------------------|--|--------------------------------|--------------------------|-------------------------------|-----------------------------------|-----------------------------------|-------------------------------|---------------------------------|----------------------------------|
| 82-05-10       | 7.5                 | 13.5                | 693                          | 422  | 372                            | 360                      | 1300                          | 14                                | 3.6                               | .7                            | 29                              | 88                               |
| 82-09-14       | 7.0                 | 13.0                | 985                          | 690  | 407                            | 500                      | 620                           | 11                                | 8.0                               | .6                            | 32                              | 130                              |
| 83-06-03       | 7.2                 | 15.0                | 819                          | 465  | 407                            | 420                      | 1400                          | 26                                | 5.1                               | .5                            | 22                              | 110                              |
| 82-03-02       | 7.2                 | 11.7                | 925                          | 552  | 355                            | 460                      | 4200                          | 13                                | --                                | 1.0                           | 49                              | 120                              |
| 83-06-01       | 7.3                 | 12.0                | 591                          | 350  | 301                            | 300                      | 5000                          | 30                                | 3.6                               | .3                            | 13                              | 76                               |
| 82-05-18       | 7.4                 | 17.0                | 1000*                        | 619  | 390                            | 520                      | 260                           | 12                                | 4.8                               | .5                            | 23                              | 130                              |
| 83-05-27       | 7.0                 | 12.0                | 668                          | 389  | 327                            | 340                      | 360                           | 22                                | 4.4                               | .3                            | 12                              | 86                               |
| 83-05-26       | 7.2                 | 13.0                | 1035                         | 689  | 329                            | 460                      | 490                           | 25                                | 4.8                               | .6                            | 31                              | 120                              |
| 83-05-26       | 7.2                 | 14.0                | 1137                         | 729  | 404                            | 570                      | 1100                          | 24                                | 5.1                               | .5                            | 28                              | 150                              |
| 82-03-02       | 7.3                 | 12.5                | 767*                         | 614  | 357                            | 520                      | <50                           | 13                                | --                                | .4                            | 22                              | 140                              |

| DATE OF SAMPLE | MAGNESIUM, DIS-SOLVED (MG/L AS MG) | MANGANESE, DIS-SOLVED (UG/L AS MN) | NITROGEN, NO2+NO3 DIS-SOLVED (MG/L AS N) | FLUORIDE, DIS-SOLVED (MG/L AS F) | CHLORIDE, DIS-SOLVED (MG/L AS CL) | SULFATE, DIS-SOLVED (MG/L AS SO4) | ARSENIC, DIS-SOLVED (UG/L AS AS) | BARIUM, DIS-SOLVED (UG/L AS BA) | CADMIUM, DIS-SOLVED (UG/L AS CD) | CHROMIUM, DIS-SOLVED (UG/L AS CR) | COPPER, DIS-SOLVED (UG/L AS CU) | LEAD, DIS-SOLVED (UG/L AS PB) |
|----------------|------------------------------------|------------------------------------|--|----------------------------------|-----------------------------------|-----------------------------------|----------------------------------|---------------------------------|----------------------------------|-----------------------------------|---------------------------------|-------------------------------|
| 82-05-10       | 33                                 | 280                                | .11                                      | .30                              | 2.0                               | 28                                | <10                              | 100                             | <1                               | <10                               | <10                             | <10                           |
| 82-09-14       | 45                                 | 230                                | .92                                      | .27                              | 37                                | 100                               | <50                              | 170                             | <2                               | <5                                | <10                             | <50                           |
| 83-06-03       | 36                                 | 2000                               | <.02                                     | .30                              | 8.0                               | 52                                | <10                              | 400                             | <1                               | <10                               | <10                             | <10                           |
| 82-03-02       | 37                                 | 2100                               | 1.3                                      | .22                              | 33                                | 93                                | <50                              | 120                             | <2                               | <5                                | <2                              | <50                           |
| 83-06-01       | 27                                 | 2200                               | <.02                                     | .30                              | 2.0                               | 31                                | <10                              | 400                             | <1                               | <10                               | <10                             | <10                           |
| 82-05-18       | 47                                 | 40                                 | 11                                       | .20                              | 15                                | 92                                | <10                              | 200                             | <1                               | <10                               | <10                             | <10                           |
| 83-05-27       | 30                                 | 540                                | 2.0                                      | .20                              | 2.5                               | 30                                | <10                              | 500                             | <1                               | <10                               | <10                             | <10                           |
| 83-05-26       | 40                                 | 210                                | 7.0                                      | .20                              | 35                                | 160                               | <10                              | 200                             | <1                               | <10                               | <10                             | <10                           |
| 83-05-26       | 48                                 | 840                                | .25                                      | .20                              | 74                                | 130                               | <10                              | 300                             | <1                               | <10                               | <10                             | <10                           |
| 82-03-02       | 42                                 | 87                                 | 13                                       | .28                              | 27                                | 62                                | <50                              | 160                             | <2                               | <5                                | 6                               | <50                           |

| DATE OF SAMPLE | MERCURY, DIS-SOLVED (UG/L AS HG) | SELENIUM, DIS-SOLVED (UG/L AS SE) | SILVER, DIS-SOLVED (UG/L AS AG) | ZINC, DIS-SOLVED (UG/L AS ZN) | ALUMINUM, DIS-SOLVED (UG/L AS AL) | GROSS ALPHA, DIS-SOLVED (PCI/L) | RADIUM 226, DIS-SOLVED (PCI/L) | RADIUM 228, DIS-SOLVED (PCI/L) | GROSS BETA, DIS-SOLVED (PCI/L AS CS-137) |
|----------------|----------------------------------|-----------------------------------|---------------------------------|-------------------------------|-----------------------------------|---------------------------------|--------------------------------|--------------------------------|--|
| 82-05-10       | <1.0                             | <10                               | <10                             | <10                           | --                                | 6.9                             | .4                             | <.4                            | 4.0                                      |
| 82-09-14       | .1                               | <50                               | <5                              | <20                           | 100                               | 5.4                             | .1                             | 1.1                            | 6.0                                      |
| 83-06-03       | <1.0                             | <10                               | <10                             | <10                           | --                                | 4.7                             | .3                             | .6                             | 6.2                                      |
| 82-03-02       | <.1                              | 5                                 | <5                              | <20                           | <100                              | 7.7                             | .2                             | 1.5                            | 9.0                                      |
| 83-06-01       | <1.0                             | <10                               | <10                             | <10                           | --                                | <.2                             | --                             | --                             | 4.0                                      |
| 82-05-18       | <1.0                             | <10                               | <10                             | <10                           | --                                | 19                              | .1                             | .6                             | 3.0                                      |
| 83-05-27       | <1.0                             | 10                                | <10                             | <10                           | --                                | 4.2                             | .9                             | .8                             | 3.5                                      |
| 83-05-26       | <1.0                             | <10                               | <10                             | <10                           | --                                | 7.7                             | .5                             | .8                             | 6.2                                      |
| 83-05-26       | <1.0                             | <10                               | <10                             | 10                            | --                                | 13                              | 1.1                            | 1.0                            | 13                                       |
| 82-03-02       | .1                               | <5                                | <5                              | <20                           | <200                              | 4.1                             | .8                             | 2.4                            | 10                                       |

Table 4. Chemical analyses of ground-water in observation wells and selected municipalities--Continued.

| STATION ID      | AQUIFER UNIT | DATE OF SAMPLE | LOCATION     | COMPLETION DATE |                    | COUNTY   | DEPTH OF WELL, TOTAL (FEET) | AGENCY ANALYZING SAMPLE |
|-----------------|--------------|----------------|--------------|-----------------|--------------------|----------|-----------------------------|-------------------------|
|                 |              |                |              | WELL NAME       | AND NUMBER         |          |                             |                         |
| 414702095395101 | 111BRRV      | 82-06-04       | 08141W31BDDD | 1982            | IGS & USGS WC #53  | HARRISON | 30                          | UHL                     |
| 415538095294502 | 111BRRV      | 82-03-02       | 08240W10CBAB | 1932            | DOW CITY NO 1      | CRAWFORD | 81                          | EPA                     |
| 415512095313801 | 111BRRV      | 83-05-26       | 08240W17ABBC | 1983            | IGS & USGS WC #188 | CRAWFORD | 46                          | UHL                     |
| 420147095161301 | 111BRRV      | 82-06-16       | 08338W04DABC | 1982            | IGS & USGS WC #63  | CRAWFORD | 29                          | UHL                     |
| 420106095220101 | 111BRRV      | 82-03-04       | 08339W10ADBC | 1972            | DENISON NO 6       | CRAWFORD | 71                          | EPA                     |
| 420438095055201 | 111BRRV      | 82-03-03       | 08437W24ABDB | 1967            | WESTSIDE NO 4      | CRAWFORD | 45                          | EPA                     |
| 420328095122401 | 111BRRV      | 82-03-03       | 08437W30CBBB | 1962            | VAIL NO 2          | CRAWFORD | 32                          | EPA                     |
| 420554095185401 | 111BRRV      | 82-03-03       | 08438W07CADC | 1976            | DELOIT NO 1        | CRAWFORD | 65                          | EPA                     |
| 413537094532701 | 111ENRV      | 82-04-20       | 07835W04BCBD | 1969            | EXIRA NO 11        | AUDUBON  | 60                          | EPA                     |
| 413234094552401 | 111ENRV      | 82-04-20       | 07835W19BCDB | 1976            | BRAYTON            | AUDUBON  | 42                          | EPA                     |

| DATE OF SAMPLE | PH (STANDARD UNITS) | TEMPERATURE (DEG C) | SPE-CIFIC CONDUCTANCE (UMHOS) | SOLIDS, RESIDUE AT 105 DEG. C, DIS-SOLVED (MG/L) | ALKA-LINITY LAB (MG/L AS CACO3) | HARD-NESS (MG/L AS CACO3) | IRON, DIS-SOLVED (UG/L AS FE) | SILICA, DIS-SOLVED (MG/L AS SIO2) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) | SODIUM AD-SORPTION RATIO (SAR) | SODIUM, DIS-SOLVED (MG/L AS NA) | CALCIUM DIS-SOLVED (MG/L AS CA) |
|----------------|---------------------|---------------------|-------------------------------|--|---------------------------------|---------------------------|-------------------------------|-----------------------------------|------------------------------------|--------------------------------|---------------------------------|---------------------------------|
| 2-06-04        | 7.5                 | 13.0                | 895                           | 621  | 295                             | 390                       | 140                           | 29                                | 4.8                                | 1.4                            | 61                              | 100                             |
| 2-03-02        | 7.3                 | 11.3                | 740                           | 444  | 310                             | 430                       | <50                           | 11                                | --                                 | .3                             | 14                              | 120                             |
| 3-05-26        | 7.1                 | 12.0                | 772                           | 445  | 313                             | 380                       | 540                           | 27                                | 4.4                                | .2                             | 9.4                             | 99                              |
| 2-06-16        | 7.2                 | 13.0                | 1300*                         | 1000   | 216                             | 570                       | 60                            | 12                                | <.1                                | .2                             | 13                              | 160                             |
| 2-03-04        | 7.3                 | 10.0                | 1055                          | 740  | 334                             | 580                       | 8700                          | 14                                | --                                 | .6                             | 32                              | 170                             |
| 2-03-03        | 7.2                 | 10.5                | 1086                          | 948  | 329                             | 680                       | <50                           | 10                                | --                                 | .5                             | 26                              | 200                             |
| 2-03-03        | 7.2                 | 11.0                | 869*                          | 572  | 283                             | 520                       | 62                            | 9.9                               | --                                 | .3                             | 16                              | 150                             |
| 2-03-03        | 7.4                 | 11.0                | 603                           | 424  | 264                             | 330                       | 120                           | 11                                | --                                 | .2                             | 10                              | 88                              |
| 2-04-20        | 6.8                 | 9.0                 | 927*                          | 612  | 233                             | 380                       | <50                           | 6.8                               | 6.0                                | .5                             | 20                              | 110                             |
| 2-04-20        | 6.9                 | 12.0                | 917                           | 706  | 266                             | 450                       | 8600                          | 9.4                               | <2.0                               | .5                             | 24                              | 120                             |

| DATE OF SAMPLE | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) | MANGA-NESE, DIS-SOLVED (UG/L AS MN) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) | SULFATE DIS-SOLVED (MG/L AS SO4) | ARSENIC DIS-SOLVED (UG/L AS AS) | BARIUM, DIS-SOLVED (UG/L AS BA) | CADMIUM DIS-SOLVED (UG/L AS CD) | CHRO-MIUM, DIS-SOLVED (UG/L AS CR) | COPPER, DIS-SOLVED (UG/L AS CU) | LEAD, DIS-SOLVED (UG/L AS PB) |
|----------------|-------------------------------------|-------------------------------------|---|-----------------------------------|------------------------------------|----------------------------------|---------------------------------|---------------------------------|---------------------------------|------------------------------------|---------------------------------|-------------------------------|
| 2-06-04        | 34                                  | 20                                  | 7.0                                       | .40                               | 6.0                                | 170                              | <10                             | <100                            | <1                              | <10                                | <10                             | <10                           |
| 2-03-02        | 34                                  | 240                                 | 1.1                                       | .29                               | 13                                 | 75                               | <50                             | 200                             | <2                              | <5                                 | 4                               | <50                           |
| 3-05-26        | 33                                  | 230                                 | 1.7                                       | .30                               | 9.0                                | 71                               | <10                             | 300                             | <1                              | <10                                | <10                             | <10                           |
| 2-06-16        | 42                                  | 40                                  | 54  | .20                               | 110                                | 31                               | <10                             | 1000                            | <1                              | <10                                | 10                              | <10                           |
| 2-03-04        | 36                                  | 1400                                | <.04                                      | .23                               | 69                                 | 120                              | <50                             | 270                             | <2                              | <5                                 | <2                              | <50                           |
| 2-03-03        | 44                                  | 130                                 | 13  | .24                               | 53                                 | 170                              | <50                             | 100                             | <2                              | <5                                 | <2                              | <50                           |
| 2-03-03        | 35                                  | 320                                 | 2.0                                       | .28                               | 24                                 | 120                              | <50                             | 210                             | <2                              | <5                                 | 3                               | <50                           |
| 2-03-03        | 27                                  | 94                                  | 1.7                                       | .31                               | 6.0                                | 50                               | <50                             | 210                             | <2                              | <5                                 | <2                              | <50                           |
| 2-04-20        | 23                                  | 1200                                | 3.6                                       | .26                               | 44                                 | 91                               | <5                              | 220                             | <2                              | <5                                 | <10                             | <50                           |
| 2-04-20        | 37                                  | 1100                                | .15                                       | .31                               | 57                                 | 110                              | <5                              | 340                             | 3                               | <5                                 | <10                             | <50                           |

| DATE OF SAMPLE | MERCURY DIS-SOLVED (UG/L AS HG) | SELE-NIUM, DIS-SOLVED (UG/L AS SE) | SILVER, DIS-SOLVED (UG/L AS AG) | ZINC, DIS-SOLVED (UG/L AS ZN) | ALUM-INUM, DIS-SOLVED (UG/L AS AL) | GROSS ALPHA, DIS-SOLVED (PCI/L) | RADIUM 226, DIS-SOLVED (PCI/L) | RADIUM 228, DIS-SOLVED (PCI/L) | GROSS BETA, DIS-SOLVED AS CS-137) |
|----------------|---------------------------------|------------------------------------|---------------------------------|-------------------------------|------------------------------------|---------------------------------|--------------------------------|--------------------------------|-----------------------------------|
| 82-06-04       | <1.0                            | <10                                | <10                             | 10                            | --                                 | .4                              | --                             | --                             | 7.0                               |
| 82-03-02       | .2                              | 5                                  | <5                              | <20                           | <100                               | 3.5                             | .2                             | .6                             | 5.0                               |
| 83-05-26       | <1.0                            | <10                                | <10                             | <10                           | --                                 | .4                              | --                             | --                             | 3.0                               |
| 82-06-16       | <1.0                            | <10                                | <10                             | 10                            | --                                 | 1.4                             | --                             | --                             | 4.0                               |
| 82-03-04       | <.1                             | <5                                 | <5                              | <20                           | <100                               | 2.4                             | .5                             | .7                             | 6.0                               |
| 82-03-03       | .5                              | <5                                 | <5                              | <20                           | <200                               | 7.5                             | .2                             | 1.6                            | 4.0                               |
| 82-03-03       | .2                              | <5                                 | <5                              | <20                           | <100                               | 2.5                             | .3                             | <.5                            | 8.0                               |
| 82-03-03       | .1                              | <5                                 | <5                              | <20                           | <100                               | 1.0                             | --                             | --                             | 3.0                               |
| 82-04-20       | 3.1                             | <5                                 | <5                              | <20                           | <20                                | 4.8                             | .5                             | <.5                            | 2.0                               |
| 82-04-20       | <.1                             | <5                                 | <5                              | <20                           | <20                                | 2.5                             | .6                             | <.5                            | 1.0                               |

Table 4. Chemical analyses of ground-water in observation wells and selected municipalities--Continued.

| STATION ID      | AQUIFER UNIT                        | DATE OF SAMPLE                      | LOCATION                                  | COMPLETION DATE                                  | WELL NAME AND NUMBER               | COUNTY                           | DEPTH OF WELL, TOTAL (FEET)     | AGENCY ANALYZING SAMPLE           |  |                                    |                                 |                                 |
|-----------------|-------------------------------------|-------------------------------------|---|--|------------------------------------|----------------------------------|---------------------------------|-----------------------------------|--|------------------------------------|---------------------------------|---------------------------------|
| 413041094555401 | 111ENRV                             | 82-06-23                            | 07836W36DABB                              | 1982   | IGS & USGS WC #71                  | AUDUBON                          |                                 |                                   |  |                                    |                                 |                                 |
| 413843094541701 | 111ENRV                             | 82-07-08                            | 07935W15DCDD                              | 1982   | IGS & USGS WC #75                  | AUDUBON                          | 39                              | UHL                               |  |                                    |                                 |                                 |
| 414216094532301 | 111ENRV                             | 82-04-20                            | 08035W26CDDA                              | 1977   | AUDUBON TOWN WELL #19              | AUDUBON                          | 30                              | EPA                               |  |                                    |                                 |                                 |
| 421006095580301 | 111LSRV                             | 82-10-19                            | 08544W16DCDD                              | 1982   | IGS & USGS WC #156                 | AUDUBON                          | 30                              | EPA                               |  |                                    |                                 |                                 |
| 420730095510701 | 111MPRV                             | 83-05-04                            | 08443W04ABAA                              | 1983   | IGS & USGS WC #163                 | MONONA                           | 40                              | UHL                               |  |                                    |                                 |                                 |
| 420649095515001 | 111MPRV                             | 83-05-05                            | 08443W04CCBA                              | 1983   | IGS & USGS WC #164                 | MONONA                           | 58                              | UHL                               |  |                                    |                                 |                                 |
| 420419095545701 | 111MPRV                             | 82-03-02                            | 08444W24CAAC                              |  | CASTANA NO 1 WEST WELL             | MONONA                           | 50                              | UHL                               |  |                                    |                                 |                                 |
| 420950095480201 | 111MPRV                             | 82-03-02                            | 08543W24BAAA                              | 1964   | MAPLETON NO 4 (AIRPORT)            | MONONA                           | 58                              | EPA                               |  |                                    |                                 |                                 |
| 414652094293301 | 111MRRV                             | 82-08-13                            | 08131W32CBCC                              | 1982   | IGS & USGS WC #106                 | MONONA                           | 72                              | EPA                               |  |                                    |                                 |                                 |
| 415659094460601 | 111MRRV                             | 82-09-29                            | 08234W02AABB                              | 1982   | IGS & USGS WC #152                 | GUTHRIE CARROLL                  | 51                              | UHL                               |  |                                    |                                 |                                 |
|                 |                                     |                                     |   |  |                                    |                                  | 31                              | UHL                               |  |                                    |                                 |                                 |
| DATE OF SAMPLE  | PH (STANDARD UNITS)                 | TEMPERATURE (DEG C)                 | SPE-CIFIC CON-DUCT-ANCE (UMHOS)           | SOLIDS, RESIDUE AT 105 DEG. C, DIS-SOLVED (MG/L) | ALKA-LINITY LAB (MG/L AS CACO3)    | HARD-NESS (MG/L AS CACO3)        | IRON, DIS-SOLVED (UG/L AS FE)   | SILICA, DIS-SOLVED (MG/L AS SIO2) | POTAS-SIUM, DIS-SOLVED (MG/L AS K)       | SODIUM AD-SORP-TION RATIO (SAR)    | SODIUM, DIS-SOLVED (MG/L AS NA) | CALCIUM DIS-SOLVED (MG/L AS CA) |
| 82-06-23        | 6.9                                 | 13.0                                | 890*                                      | 612  | 226                                | 440                              | 650                             | 15                                | 1.7                                      | .6                                 | 30                              | 120                             |
| 82-07-08        | 7.3                                 | 11.0                                | 810                                       | 525  | 257                                | 450                              | 2000                            | 6.1                               | 2.0                                      | .3                                 | 13                              | 130                             |
| 82-04-20        | 6.7                                 | 10.0                                | 657*                                      | 452  | 221                                | 290                              | 76                              | 10                                | --                                       | 1.8                                | 66                              | 86                              |
| 82-10-19        | --                                  | 10.0                                | 510                                       | 306  | 256                                | 270                              | <10                             | 21                                | .9                                       | .2                                 | 8.5                             | 74                              |
| 83-05-04        | 7.5                                 | 12.0                                | 1297                                      | 964  | 281                                | 440                              | 1100                            | 27                                | 9.5                                      | 3.4                                | 160                             | 120                             |
| 83-05-05        | 7.2                                 | 12.0                                | 838                                       | 533  | 389                                | 430                              | 650                             | 26                                | 4.8                                      | .4                                 | 18                              | 110                             |
| 82-03-02        | 7.4                                 | 10.0                                | 959*                                      | 586  | 308                                | 510                              | 220                             | 11                                | --                                       | .3                                 | 15                              | 140                             |
| 82-03-02        | 7.6                                 | 11.0                                | 805                                       | 516  | 284                                | 420                              | <50                             | 13                                | --                                       | .6                                 | 26                              | 110                             |
| 82-08-13        | 8.0                                 | 12.0                                | 500                                       | 283  | 297                                | 280                              | 10                              | 19                                | 3.5                                      | .2                                 | 6.6                             | 71                              |
| 82-09-29        | 7.1                                 | 14.0                                | 637                                       | 460  | 304                                | 330                              | 1100                            | 24                                | 4.3                                      | .6                                 | 24                              | 91                              |
| DATE OF SAMPLE  | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) | MANGA-NESE, DIS-SOLVED (UG/L AS MN) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) | FLUO-RIDE, DIS-SOLVED (MG/L AS F)                | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) | SULFATE DIS-SOLVED (MG/L AS SO4) | ARSENIC DIS-SOLVED (UG/L AS AS) | BARIUM, DIS-SOLVED (UG/L AS BA)   | CADMIUM DIS-SOLVED (UG/L AS CD)          | CHRO-MIUM, DIS-SOLVED (UG/L AS CR) | COPPER, DIS-SOLVED (UG/L AS CU) | LEAD, DIS-SOLVED (UG/L AS PB)   |
| 82-06-23        | 33                                  | 390                                 | 6.6                                       | .20  | 31                                 | 190                              | <10                             | <100                              | <1                                       | <10                                | <10                             | <10                             |
| 82-07-08        | 30                                  | 1600                                | .86                                       | .20  | 36                                 | 130                              | <10                             | 100                               | <1                                       | <10                                | <10                             | <10                             |
| 82-04-20        | 18                                  | 600                                 | .20                                       | .21  | 12                                 | 32                               | <5                              | 150                               | <2                                       | <5                                 | <10                             | <50                             |
| 82-10-19        | 21                                  | 420                                 | 1.6                                       | .40  | 1.5                                | 27                               | <10                             | <100                              | <1                                       | <10                                | <10                             | <10                             |
| 83-05-04        | 34                                  | 180                                 | .07                                       | .40  | 20                                 | 460                              | <10                             | 100                               | <1                                       | <10                                | <10                             | <10                             |
| 83-05-05        | 37                                  | 70                                  | 2.5                                       | .30  | 6.0                                | 8.0                              | <10                             | 300                               | <2                                       | <10                                | <10                             | <10                             |
| 82-03-02        | 39                                  | 1800                                | 8.6                                       | .31  | 19                                 | 87                               | <50                             | 400                               | <2                                       | <5                                 | 5                               | <50                             |
| 82-03-02        | 35                                  | <2                                  | 9.6                                       | .30  | 16                                 | 71                               | <50                             | 160                               | <2                                       | <5                                 | 4                               | <50                             |
| 82-08-13        | 25                                  | 10                                  | .57                                       | .40  | 2.5                                | 1.8                              | <10                             | 400                               | <1                                       | <10                                | 10                              | 20                              |
| 82-09-29        | 26                                  | 620                                 | 1.2                                       | .40  | 2.0                                | 58                               | 90                              | 300                               | <1                                       | <10                                | <10                             | <10                             |
| DATE OF SAMPLE  | MERCURY DIS-SOLVED (UG/L AS HG)     | SELE-NIUM, DIS-SOLVED (UG/L AS SE)  | SILVER, DIS-SOLVED (UG/L AS AG)           | ZINC, DIS-SOLVED (UG/L AS ZN)                    | ALUM-INUM, DIS-SOLVED (UG/L AS AL) | GROSS ALPHA, DIS-SOLVED (PCI/L)  | RADIUM 226, DIS-SOLVED (PCI/L)  | RADIUM 228, DIS-SOLVED (PCI/L)    | GROSS BETA, DIS-SOLVED (PCI/L AS CS-137) |                                    |                                 |                                 |
| 82-06-23        | <1.0                                | <10                                 | <10                                       | <10  | --                                 | 1.1                              | --                              | --                                | 3.0                                      |                                    |                                 |                                 |
| 82-07-08        | <1.0                                | <10                                 | <10                                       | <10  | --                                 | 12                               | .2                              | .7                                | 7.0                                      |                                    |                                 |                                 |
| 82-04-20        | <.1                                 | <5                                  | <5  | <20  | 25                                 | 6.9                              | .1                              | <.5                               | 10                                       |                                    |                                 |                                 |
| 82-10-19        | <1.0                                | <10                                 | <10                                       | <10  | --                                 | 2.2                              | --                              | --                                | 3.0                                      |                                    |                                 |                                 |
| 83-05-04        | <1.0                                | <10                                 | <10                                       | 20   | --                                 | 1.3                              | --                              | --                                | 10                                       |                                    |                                 |                                 |
| 83-05-05        | <1.0                                | 10                                  | <10                                       | 10   | --                                 | 2.5                              | --                              | --                                | 5.0                                      |                                    |                                 |                                 |
| 82-03-02        | <.1                                 | <5                                  | <5  | 22   | <100                               | 2.5                              | .4                              | <.5                               | 7.0                                      |                                    |                                 |                                 |
| 82-03-02        | <.1                                 | <5                                  | <5  | <20  | <100                               | 2.4                              | .1                              | .7                                | 4.0                                      |                                    |                                 |                                 |
| 82-08-13        | <1.0                                | <10                                 | <10                                       | 50   | --                                 | 6.1                              | .3                              | <.5                               | 5.0                                      |                                    |                                 |                                 |
| 82-09-29        | 2.0                                 | <10                                 | <10                                       | <10  | --                                 | 8.0                              | .3                              | 1.2                               | 4.0                                      |                                    |                                 |                                 |

Table 4. Chemical analyses of ground-water in observation wells and selected municipalities--Continued.

| STATION ID      | AQUIFER UNIT | DATE OF SAMPLE | LOCATION     | COMPLETION DATE | WELL NAME AND NUMBER | COUNTY   | DEPTH OF WELL, TOTAL (FEET) | AGENCY ANALYZING SAMPLE |
|-----------------|--------------|----------------|--------------|-----------------|----------------------|----------|-----------------------------|-------------------------|
| 415658094462601 | 111MRRV      | 82-09-28       | 08234W02ABBB | 1982            | IGS & USGS WC #149   | CARROLL  | 105                         | UHL                     |
| 420626094565301 | 111MRRV      | 82-09-21       | 08435W08BAAB | 1982            | IGS & USGS WC #141   | CARROLL  | 48                          | UHL                     |
| 420406095543301 | 111MRVT      | 83-05-06       | 08444W24DCAD | 1983            | IGS & USGS WC #166   | MONONA   | 71                          | UHL                     |
| 415448094163401 | 111NRRV      | 82-08-24       | 08229W18CBAA | 1982            | IGS & USGS WC #115   | GREENE   | 30                          | UHL                     |
| 420606094361301 | 111NRRV      | 82-09-02       | 08432W08BDCA | 1982            | IGS & USGS WC #126   | GREENE   | 28                          | UHL                     |
| 421143094440201 | 111NRRV      | 82-09-15       | 08533W07ABBA | 1982            | IGS & USGS WC #133   | CARROLL  | 25                          | UHL                     |
| 414627095584101 | 111SDRV      | 83-05-24       | 08044W04BBDA | 1983            | IGS & USGS WC #184   | HARRISON | 73                          | UHL                     |
| 414538095581901 | 111SDRV      | 83-05-24       | 08044W09ABBB | 1983            | IGS & USGS WC #183   | HARRISON | 96                          | UHL                     |
| 415148095545001 | 111SDRV      | 83-05-18       | 08144W01ABAB | 1983            | IGS & USGS WC #177   | HARRISON | 58                          | UHL                     |
| 415003095552401 | 111SDRV      | 82-09-15       | 08144W13BBBB | 1929            | PISGAH NO 1          | HARRISON | 103                         | EPA                     |

| DATE OF SAMPLE | PH (STANDARD UNITS) | TEMPERATURE (DEG C) | SPE-CIFIC CONDUCTANCE (UMHOS) | SOLIDS, RESIDUE AT 105 DEG. C, DIS-SOLVED (MG/L) | ALKA-LINITY LAB (MG/L AS CACO3) | HARD-NESS (MG/L AS CACO3) | IRON, DIS-SOLVED (UG/L AS FE) | SILICA, DIS-SOLVED (MG/L AS SIO2) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) | SODIUM AD-SORPTION RATIO (SAR) | SODIUM, DIS-SOLVED (MG/L AS NA) | CALCIUM, DIS-SOLVED (MG/L AS CA) |
|----------------|---------------------|---------------------|-------------------------------|--|---------------------------------|---------------------------|-------------------------------|-----------------------------------|------------------------------------|--------------------------------|---------------------------------|----------------------------------|
| 82-09-28       | 7.2                 | 11.0                | 805                           | 449  | 420                             | 320                       | 8000                          | 36                                | 8.7                                | .8                             | 33                              | 85                               |
| 82-09-21       | 7.4                 | 10.0                | 577                           | 361  | 290                             | 300                       | 4200                          | 35                                | 3.6                                | .3                             | 10                              | 82                               |
| 83-05-06       | 8.0                 | 13.0                | 652                           | 404  | 370                             | 330                       | 1100                          | 24                                | 6.0                                | .4                             | 16                              | 89                               |
| 82-08-24       | 7.1                 | 15.0                | 680*                          | 441  | 264                             | 360                       | 30                            | 22                                | 1.6                                | .1                             | 5.2                             | 100                              |
| 82-09-02       | 7.2                 | 12.0                | 830*                          | 510  | 399                             | 460                       | 3300                          | 27                                | 2.7                                | .2                             | 11                              | 120                              |
| 82-09-15       | 7.6                 | 12.0                | 1100*                         | 729  | 423                             | 500                       | 190                           | 27                                | 5.5                                | 1.0                            | 52                              | 130                              |
| 83-05-24       | 7.1                 | 12.0                | 746                           | 416  | 387                             | 360                       | 3200                          | 26                                | 4.9                                | .3                             | 12                              | 95                               |
| 83-05-24       | 7.0                 | 14.0                | 710*                          | 462  | 381                             | 350                       | 3300                          | 34                                | 2.4                                | .4                             | 16                              | 110                              |
| 83-05-18       | 7.4                 | 11.0                | 811                           | 483  | 462                             | 420                       | 7200                          | 30                                | 4.7                                | .3                             | 12                              | 99                               |
| 82-09-15       | 7.0                 | 12.0                | 675                           | 470  | 361                             | 350                       | <50                           | 12                                | 8.0                                | .4                             | 15                              | 86                               |

| DATE OF SAMPLE | MAGNESIUM, DIS-SOLVED (MG/L AS MG) | MANGANESE, DIS-SOLVED (UG/L AS MN) | NITROGEN, NO2+NO3 DIS-SOLVED (MG/L AS N) | FLUORIDE, DIS-SOLVED (MG/L AS F) | CHLORIDE, DIS-SOLVED (MG/L AS CL) | SULFATE DIS-SOLVED (MG/L AS SO4) | ARSENIC DIS-SOLVED (UG/L AS AS) | BARIUM, DIS-SOLVED (UG/L AS BA) | CADMIUM DIS-SOLVED (UG/L AS CD) | CHROMIUM, DIS-SOLVED (UG/L AS CR) | COPPER, DIS-SOLVED (UG/L AS CU) | LEAD, DIS-SOLVED (UG/L AS PB) |
|----------------|------------------------------------|------------------------------------|--|----------------------------------|-----------------------------------|----------------------------------|---------------------------------|---------------------------------|---------------------------------|-----------------------------------|---------------------------------|-------------------------------|
| 82-09-28       | 25                                 | 120                                | <.02                                     | .20                              | 1.5                               | 7.2                              | 20                              | 1500                            | <1                              | <10                               | <10                             | <10                           |
| 82-09-21       | 24                                 | 80                                 | .16                                      | .20                              | 2.0                               | 32                               | 10                              | 400                             | <1                              | <10                               | <10                             | <10                           |
| 83-05-06       | 26                                 | 1100                               | .25                                      | .30                              | 1.5                               | 7.5                              | <10                             | 400                             | <1                              | <10                               | 10                              | <10                           |
| 82-08-24       | 26                                 | 20                                 | .23                                      | .20                              | 6.5                               | 80                               | <10                             | <100                            | <1                              | <10                               | <10                             | <10                           |
| 82-09-02       | 39                                 | 2100                               | <.02                                     | .20                              | 20                                | 39                               | <10                             | 400                             | <1                              | <10                               | <10                             | <10                           |
| 82-09-15       | 43                                 | 60                                 | 3.2                                      | .20                              | 4.0                               | 170                              | <10                             | 100                             | <1                              | <10                               | <10                             | <10                           |
| 83-05-24       | 30                                 | 660                                | <.02                                     | .20                              | <.5                               | 14                               | <10                             | 400                             | <1                              | <10                               | <10                             | <10                           |
| 83-05-24       | 18                                 | 2400                               | .72                                      | .30                              | .5                                | 8.2                              | <10                             | 400                             | <1                              | <10                               | <10                             | <10                           |
| 83-05-18       | 43                                 | 960                                | <.02                                     | .30                              | 2.5                               | 3.0                              | 10                              | 600                             | <1                              | <10                               | <10                             | <10                           |
| 82-09-15       | 32                                 | <2                                 | .23                                      | .26                              | <1.0                              | 14                               | <50                             | 220                             | <2                              | <5                                | <10                             | <50                           |

| DATE OF SAMPLE | MERCURY DIS-SOLVED (UG/L AS HG) | SELENIUM, DIS-SOLVED (UG/L AS SE) | SILVER, DIS-SOLVED (UG/L AS AG) | ZINC, DIS-SOLVED (UG/L AS ZN) | ALUMINUM, DIS-SOLVED (UG/L AS AL) | GROSS ALPHA, DIS-SOLVED (PCI/L) | RADIUM 226, DIS-SOLVED (PCI/L) | RADIUM 228, DIS-SOLVED (PCI/L) | GROSS BETA, DIS-SOLVED (PCI/L AS CS-137) |
|----------------|---------------------------------|-----------------------------------|---------------------------------|-------------------------------|-----------------------------------|---------------------------------|--------------------------------|--------------------------------|--|
| 82-09-28       | 3.0                             | <10                               | <10                             | <10                           | --                                | 2.3                             | --                             | --                             | 9.0                                      |
| 82-09-21       | <1.0                            | <10                               | <10                             | <10                           | --                                | 2.5                             | --                             | --                             | 1.0                                      |
| 83-05-06       | <1.0                            | <10                               | <10                             | <10                           | --                                | .4                              | --                             | --                             | 5.0                                      |
| 82-08-24       | <1.0                            | <10                               | <10                             | <10                           | --                                | 1.3                             | --                             | --                             | 1.0                                      |
| 82-09-02       | <1.0                            | <10                               | <10                             | <10                           | --                                | 1.1                             | --                             | --                             | 2.0                                      |
| 82-09-15       | <1.0                            | <10                               | <10                             | 10                            | --                                | .4                              | --                             | --                             | 6.0                                      |
| 83-05-24       | <1.0                            | <10                               | <10                             | <10                           | --                                | <.1                             | --                             | --                             | 5.0                                      |
| 83-05-24       | <1.0                            | <10                               | <10                             | 30                            | --                                | .7                              | --                             | --                             | 11                                       |
| 83-05-18       | <1.0                            | <10                               | <10                             | <10                           | --                                | .5                              | --                             | --                             | 4.0                                      |
| 82-09-15       | .2                              | <50                               | <5                              | <20                           | 62                                | 3.5                             | .4                             | .9                             | 7.0                                      |



Table 4. Chemical analyses of ground-water in observation wells and selected municipalities--Continued.

| STATION ID      | AQUIFER UNIT | DATE OF SAMPLE | LOCATION      | COMPLETION DATE | WELL NAME AND NUMBER     | COUNTY   | DEPTH OF WELL, TOTAL (FEET) | AGENCY ANALYZING SAMPLE |
|-----------------|--------------|----------------|---------------|-----------------|--------------------------|----------|-----------------------------|-------------------------|
| 415518095510001 | 111SDRV      | 82-03-02       | 08243W09DDDCD |                 | MOORHEAD NO 2 -WEST WELL | MONONA   | 76                          | EPA                     |
| 420004095454801 | 111SDRV      | 83-05-12       | 08342W17CABB  | 1983            | IGS & USGS WC #173       | MONONA   | 37                          | UHL                     |
| 420421095351801 | 111SDRV      | 82-03-02       | 08441W23CABA  | 1955            | CHARTER OAK NO 5         | CRAWFORD | 47                          | EPA                     |
| 420544095425201 | 111SDRV      | 83-05-11       | 08442W15AABB  | 1983            | IGS & USGS WC #170       | MONONA   | 47                          | UHL                     |
| 420241095422001 | 111SDRV      | 82-03-02       | 08442W35CABB  | 1974            | UTE NO 3                 | MONONA   | 59                          | EPA                     |
| 420736095342401 | 111SDRV      | 82-03-03       | 08541W36CCBC  | 1931            | RICKETTS NO 2 (MAIN)     | CRAWFORD | 30                          | EPA                     |
| 413547094202401 | 111SRRV      | 82-08-02       | 07830W06AACA  | 1982            | IGS & USGS WC #86        | GUTHRIE  | 22                          | UHL                     |
| 414110094260501 | 111SRRV      | 83-08-18       | 07931W23BBBB  | 1982            | IGS & USGS WC #85        | GUTHRIE  | 27                          | UHL                     |
| 414728094392401 | 111SRRV      | 82-07-26       | 08133W35ABBC  | 1982            | IGS & USGS WC #94        | GUTHRIE  | 35                          | UHL                     |
| 415435094492801 | 111SRRV      | 82-04-19       | 08234W17DDBA  | 1969            | DEDHAM NO 4              | CARROLL  | 45                          | EPA                     |

| DATE OF SAMPLE | PH (STANDARD UNITS) | TEMPERATURE (DEG C) | SPE-CIFIC CONDUCTANCE (UMHOS) | SOLIDS, RESIDUE AT 105 DEG. C, DIS-SOLVED (MG/L) | ALKA-LINITY LAB (MG/L AS CACO3) | HARD-NESS (MG/L AS CACO3) | IRON, DIS-SOLVED (UG/L AS FE) | SILICA, DIS-SOLVED (MG/L AS SIO2) | POTAS-SIUM, DIS-SOLVED (MG/L AS K) | SODIUM AD-SORP-TION RATIO (SAR) | SODIUM, DIS-SOLVED (MG/L AS NA) | CALCIU DIS-SOLVE (MG/L AS CA) |
|----------------|---------------------|---------------------|-------------------------------|--|---------------------------------|---------------------------|-------------------------------|-----------------------------------|------------------------------------|---------------------------------|---------------------------------|-------------------------------|
| 82-03-02       | 7.4                 | 11.0                | 805                           | 532  | 333                             | 440                       | <50                           | 13                                | --                                 | .4                              | 19                              | 110                           |
| 83-05-12       | 7.0                 | 12.0                | 940*                          | 600  | 417                             | 490                       | 2000                          | 27                                | 5.2                                | .2                              | 10                              | 130                           |
| 82-03-02       | 7.4                 | 10.0                | 965                           | 652  | 390                             | 580                       | 10000                         | 14                                | --                                 | .3                              | 18                              | 160                           |
| 83-05-11       | 7.1                 | 12.0                | 786                           | 482  | 301                             | 390                       | 330                           | 28                                | 3.6                                | .2                              | 8.0                             | 100                           |
| 82-03-02       | 6.9                 | 11.0                | 940                           | 616  | 373                             | 540                       | 350                           | 11                                | --                                 | .3                              | 14                              | 150                           |
| 82-03-03       | 7.3                 | 11.0                | 780                           | 478  | 328                             | 460                       | <50                           | 11                                | --                                 | .3                              | 16                              | 120                           |
| 82-08-02       | 7.5                 | 13.0                | 330*                          | 246  | 124                             | 150                       | 13000                         | 43                                | 2.0                                | .4                              | 9.7                             | 43                            |
| 83-08-18       | 7.0                 | 20.0                | 300*                          | 156  | 117                             | 120                       | 14000                         | 25                                | <.1                                | .5                              | 13                              | 32                            |
| 82-07-26       | 7.1                 | 13.0                | 356                           | 238  | 168                             | 170                       | 2000                          | 25                                | .9                                 | .3                              | 7.8                             | 50                            |
| 82-04-19       | 7.2                 | 11.0                | 693*                          | 390  | 243                             | 350                       | <50                           | 9.8                               | <2.0                               | .3                              | 11                              | 100                           |

| DATE OF SAMPLE | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) | MANGA-NESE, DIS-SOLVED (UG/L AS MN) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) | FLUO-RIDE, DIS-SOLVED (MG/L AS F) | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) | SULFATE DIS-SOLVED (MG/L AS SO4) | ARSENIC DIS-SOLVED (UG/L AS AS) | BARIUM, DIS-SOLVED (UG/L AS BA) | CADMIUM DIS-SOLVED (UG/L AS CD) | CHRO-MIUM, DIS-SOLVED (UG/L AS CR) | COPPER, DIS-SOLVED (UG/L AS CU) | LEAD, DIS-SOLVE (UG/L AS PB) |
|----------------|-------------------------------------|-------------------------------------|---|-----------------------------------|------------------------------------|----------------------------------|---------------------------------|---------------------------------|---------------------------------|------------------------------------|---------------------------------|------------------------------|
| 82-03-02       | 40                                  | 92                                  | 7.1                                       | .30                               | 21                                 | 32                               | <50                             | 360                             | <2                              | <5                                 | 8                               | <5                           |
| 83-05-12       | 40                                  | 1700                                | <.02                                      | .20                               | 6.0                                | 100                              | <10                             | 700                             | <1                              | <10                                | <10                             | <1                           |
| 82-03-02       | 42                                  | 1500                                | .23                                       | .25                               | 20                                 | 95                               | <50                             | 650                             | <2                              | <5                                 | <2                              | <5                           |
| 83-05-11       | 34                                  | 30                                  | 15  | .30                               | 18                                 | 45                               | <10                             | 700                             | <1                              | <10                                | <10                             | <1                           |
| 82-03-02       | 41                                  | 330                                 | 5.3                                       | .23                               | 15                                 | 66                               | <50                             | 470                             | <2                              | <5                                 | <2                              | <5                           |
| 82-03-03       | 38                                  | 370                                 | 2.7                                       | .38                               | 23                                 | 65                               | <50                             | 260                             | <2                              | <5                                 | <2                              | <5                           |
| 82-08-02       | 9.9                                 | 1200                                | .72                                       | .20                               | 5.0                                | 29                               | <10                             | 200                             | <1                              | <10                                | <10                             | <1                           |
| 83-08-18       | 9.9                                 | 830                                 | .05                                       | .20                               | 5.0                                | 26                               | <10                             | 200                             | <1                              | <10                                | <10                             | <1                           |
| 82-07-26       | 12                                  | 340                                 | 2.3                                       | .30                               | 3.5                                | 20                               | <10                             | 200                             | <1                              | <10                                | <10                             | <1                           |
| 82-04-19       | 24                                  | 94                                  | 1.4                                       | .24                               | 13                                 | 47                               | <5                              | 260                             | <2                              | <5                                 | <10                             | <5                           |

| DATE OF SAMPLE | MERCURY DIS-SOLVED (UG/L AS HG) | SELE-NIUM, DIS-SOLVED (UG/L AS SE) | SILVER, DIS-SOLVED (UG/L AS AG) | ZINC, DIS-SOLVED (UG/L AS ZN) | ALUM-INUM, DIS-SOLVED (UG/L AS AL) | GROSS ALPHA, DIS-SOLVED (PCI/L) | RADIUM 226, DIS-SOLVED (PCI/L) | RADIUM 228, DIS-SOLVED (PCI/L) | GROSS BETA, DIS-SOLVED (PCI/L AS CS-137) |
|----------------|---------------------------------|------------------------------------|---------------------------------|-------------------------------|------------------------------------|---------------------------------|--------------------------------|--------------------------------|--|
| 82-03-02       | .1                              | 7                                  | <5                              | <20                           | <100                               | 2.9                             | .1                             | .6                             | 8.0                                      |
| 83-05-12       | <1.0                            | <10                                | <10                             | 10                            | --                                 | 2.8                             | --                             | --                             | 6.0                                      |
| 82-03-02       | .1                              | <5                                 | <5                              | <20                           | <100                               | 1.6                             | --                             | --                             | 4.0                                      |
| 83-05-11       | <1.0                            | <10                                | <10                             | <10                           | --                                 | 2.1                             | --                             | --                             | 2.0                                      |
| 82-03-02       | <.1                             | <5                                 | <5                              | <20                           | <100                               | 4.4                             | .4                             | 1.0                            | 5.0                                      |
| 82-03-03       | <.1                             | 8                                  | <5                              | <20                           | <100                               | 15                              | .4                             | <.5                            | 11                                       |
| 82-08-02       | <1.0                            | <10                                | <10                             | 20                            | --                                 | .6                              | --                             | --                             | 5.0                                      |
| 83-08-18       | <1.0                            | <10                                | <10                             | 10                            | --                                 | <.1                             | --                             | --                             | 2.0                                      |
| 82-07-26       | <1.0                            | <10                                | <10                             | <10                           | --                                 | 2.0                             | .1                             | .4                             | 2.0                                      |
| 82-04-19       | <.1                             | 14                                 | <5                              | <20                           | <20                                | --                              | --                             | --                             | --                                       |

Table 4. Chemical analyses of ground-water in observation wells and selected municipalities--Continued.

| STATION ID      | AQUIFER UNIT | DATE OF SAMPLE | LOCATION     | COMPLETION DATE | WELL NAME AND NUMBER | COUNTY  | DEPTH OF WELL, TOTAL (FEET) | AGENCY ANALYZING SAMPLE |
|-----------------|--------------|----------------|--------------|-----------------|----------------------|---------|-----------------------------|-------------------------|
| 413442095193101 | 111WNRV      | 83-06-07       | 07839W10BBBA | 1983            | IGS & USGS WC #200   | SHELBY  | 44                          | UHL                     |
| 413325095171801 | 111WNRV      | 83-06-09       | 07839W13BCCC | 1983            | IGS & USGS WC #204   | SHELBY  | 36                          | UHL                     |
| 413031095204901 | 111WNRV      | 83-06-08       | 07839W32DDAA | 1983            | IGS & USGS WC #197   | SHELBY  | 24                          | UHL                     |
| 413824095185801 | 111WNRV      | 82-03-03       | 07938W19BDDB | 1966            | HARLAN NO 16         | SHELBY  | 35                          | EPA                     |
| 413752095141401 | 111WNRV      | 83-06-13       | 07938W23DCCC | 1983            | IGS & USGS WC #208   | SHELBY  | 39                          | UHL                     |
| 414238095185101 | 111WNRV      | 83-06-30       | 08038W30ACCC | 1983            | IGS & USGS WC #221   | SHELBY  | 38                          | UHL                     |
| 414211095161701 | 111WNRV      | 83-06-15       | 08038W33AABB | 1983            | IGS & USGS WC #216   | SHELBY  | 41                          | UHL                     |
| 414724095124001 | 111WNRV      | 82-09-13       | 08138W36AAAB | 1969            | IRWIN NO 4           | SHELBY  | 41                          | EPA                     |
| 414932095201801 | 111WNRV      | 82-03-03       | 08139W13CACB |                 | DEFIANCE NO 2        | SHELBY  | 42                          | EPA                     |
| 415432095041401 | 111WNRV      | 82-04-20       | 08236W17CCAC | 1926            | MANNING NO 2         | CARROLL | 30                          | EPA                     |

| DATE OF SAMPLE | PH (STANDARD UNITS) | TEMPERATURE (DEG C) | SPECIFIC CONDUCTANCE (UMHOS) | SOLIDS, RESIDUE AT 105 DEG. C, DIS-SOLVED (MG/L) | ALKALINITY LAB (MG/L AS CACO3) | HARDNESS (MG/L AS CACO3) | IRON, DIS-SOLVED (UG/L AS FE) | SILICA, DIS-SOLVED (MG/L AS SIO2) | POTASSIUM, DIS-SOLVED (MG/L AS K) | SODIUM ADSORPTION RATIO (SAR) | SODIUM, DIS-SOLVED (MG/L AS NA) | CALCIUM DIS-SOLVED (MG/L AS CA) |
|----------------|---------------------|---------------------|------------------------------|--|--------------------------------|--------------------------|-------------------------------|-----------------------------------|-----------------------------------|-------------------------------|---------------------------------|---------------------------------|
| 83-06-07       | 6.9                 | 12.0                | 592                          | 391  | 242                            | 310                      | 2000                          | 21                                | 4.7                               | .2                            | 9.3                             | 86                              |
| 83-06-09       | 7.0                 | 15.0                | 640*                         | 374  | 321                            | 340                      | 440                           | 22                                | 4.5                               | .2                            | 10                              | 93                              |
| 83-06-08       | 6.9                 | 12.0                | 500*                         | 316  | 207                            | 260                      | 2500                          | 18                                | 1.7                               | .2                            | 6.9                             | 83                              |
| 82-03-03       | 7.2                 | 11.0                | 762*                         | 522  | 305                            | 480                      | 4800                          | 7.6                               | --                                | .6                            | 30                              | 140                             |
| 83-06-13       | 7.5                 | 14.0                | 565                          | 344  | 274                            | 320                      | 890                           | 13                                | 3.9                               | .2                            | 8.8                             | 85                              |
| 83-06-30       | 7.1                 | 20.0                | 803                          | 534  | 414                            | 440                      | 2800                          | 27                                | 1.6                               | .2                            | 11                              | 110                             |
| 83-06-15       | 7.2                 | 14.0                | 544                          | 325  | 252                            | 300                      | 170                           | 19                                | 4.1                               | .2                            | 8.1                             | 80                              |
| 82-09-13       | 7.0                 | 11.0                | 814                          | 590  | 319                            | 420                      | <50                           | 11                                | 4.0                               | .4                            | 19                              | 120                             |
| 82-03-03       | 7.3                 | 11.7                | 915                          | 668  | 327                            | 560                      | 3200                          | 14                                | --                                | .3                            | 16                              | 150                             |
| 82-04-20       | 7.3                 | 10.5                | 911                          | 654  | 283                            | 490                      | 130                           | 11                                | 3.0                               | .2                            | 9.0                             | 140                             |

| DATE OF SAMPLE | MAGNESIUM, DIS-SOLVED (MG/L AS MG) | MANGANESE, DIS-SOLVED (UG/L AS MN) | NITROGEN, NO2+NO3 DIS-SOLVED (MG/L AS N) | FLUORIDE, DIS-SOLVED (MG/L AS F) | CHLORIDE, DIS-SOLVED (MG/L AS CL) | SULFATE DIS-SOLVED (MG/L AS SO4) | ARSENIC DIS-SOLVED (UG/L AS AS) | BARIUM, DIS-SOLVED (UG/L AS BA) | CADMIUM DIS-SOLVED (UG/L AS CD) | CHROMIUM, DIS-SOLVED (UG/L AS CR) | COPPER, DIS-SOLVED (UG/L AS CU) | LEAD, DIS-SOLVED (UG/L AS PB) |
|----------------|------------------------------------|------------------------------------|--|----------------------------------|-----------------------------------|----------------------------------|---------------------------------|---------------------------------|---------------------------------|-----------------------------------|---------------------------------|-------------------------------|
| 83-06-07       | 23                                 | 700                                | <.02                                     | .30                              | 4.5                               | 88                               | <10                             | 300                             | <1                              | <10                               | <10                             | <10                           |
| 83-06-09       | 26                                 | 460                                | .20                                      | .30                              | 2.0                               | 36                               | <10                             | 300                             | <1                              | <10                               | <10                             | <10                           |
| 83-06-08       | 13                                 | 950                                | <.02                                     | .20                              | 1.5                               | 58                               | <10                             | 200                             | <1                              | <10                               | <10                             | <10                           |
| 82-03-03       | 32                                 | 1700                               | .07                                      | .21                              | 34                                | 120                              | <50                             | 90                              | <2                              | <5                                | <2                              | <50                           |
| 83-06-13       | 25                                 | 520                                | .05                                      | .30                              | 4.0                               | 48                               | <10                             | 200                             | <1                              | <10                               | <10                             | <10                           |
| 83-06-30       | 39                                 | 980                                | .09                                      | .20                              | 5.5                               | 28                               | <10                             | 500                             | <1                              | <10                               | <10                             | <10                           |
| 83-06-15       | 24                                 | 60                                 | 3.6                                      | .30                              | 6.0                               | 30                               | <10                             | 200                             | 1                               | <10                               | <10                             | <10                           |
| 82-09-13       | 32                                 | 180                                | 3.4                                      | .25                              | 24                                | 78                               | <50                             | 420                             | <2                              | <5                                | <10                             | <50                           |
| 82-03-03       | 45                                 | 840                                | <.04                                     | .31                              | 25                                | 130                              | <50                             | 310                             | <2                              | <5                                | <2                              | <50                           |
| 82-04-20       | 35                                 | 260                                | 3.7                                      | .26                              | 41                                | 220                              | <5                              | 160                             | <2                              | <5                                | <10                             | <50                           |

| DATE OF SAMPLE | MERCURY DIS-SOLVED (UG/L AS HG) | SELENIUM, DIS-SOLVED (UG/L AS SE) | SILVER, DIS-SOLVED (UG/L AS AG) | ZINC, DIS-SOLVED (UG/L AS ZN) | ALUMINUM, DIS-SOLVED (UG/L AS AL) | GROSS ALPHA, DIS-SOLVED (PCI/L) | RADIUM 226, DIS-SOLVED (PCI/L) | RADIUM 228, DIS-SOLVED (PCI/L) | GROSS BETA, DIS-SOLVED (PCI/L AS CS-137) |
|----------------|---------------------------------|-----------------------------------|---------------------------------|-------------------------------|-----------------------------------|---------------------------------|--------------------------------|--------------------------------|--|
| 83-06-07       | <1.0                            | <10                               | <10                             | <10                           | --                                | .9                              | --                             | --                             | <.5                                      |
| 83-06-09       | <1.0                            | <10                               | <10                             | <10                           | --                                | .4                              | --                             | --                             | <.5                                      |
| 83-06-08       | <1.0                            | <10                               | <10                             | <10                           | --                                | .3                              | --                             | --                             | <.5                                      |
| 82-03-03       | <.1                             | <5                                | <5                              | <20                           | <100                              | 6.0                             | .3                             | 1.3                            | 13                                       |
| 83-06-13       | <1.0                            | <10                               | <10                             | <10                           | --                                | 2.6                             | --                             | --                             | 2.0                                      |
| 83-06-30       | <1.0                            | <10                               | <10                             | 300                           | --                                | 1.5                             | --                             | --                             | 5.0                                      |
| 83-06-15       | <1.0                            | <10                               | <10                             | 140                           | --                                | 2.0                             | --                             | --                             | <.3                                      |
| 82-09-13       | <.1                             | <50                               | <5                              | <20                           | 75                                | <.2                             | --                             | --                             | 3.0                                      |
| 82-03-03       | .1                              | <5                                | <5                              | 130                           | <200                              | .5                              | --                             | --                             | 5.0                                      |
| 82-04-20       | .1                              | <5                                | <5                              | <20                           | <20                               | 4.1                             | .1                             | .6                             | 2.0                                      |

Table 4. Chemical analyses of ground-water in observation wells and selected municipalities--Continued.

| STATION ID      | AQUIFER UNIT | DATE OF SAMPLE | LOCATION     | COMPLETION DATE | WELL NAME AND NUMBER  | COUNTY   | DEPTH OF WELL, TOTAL (FEET) | AGENCY ANALYZING SAMPLE |
|-----------------|--------------|----------------|--------------|-----------------|-----------------------|----------|-----------------------------|-------------------------|
| 415343095134901 | 111WNRV      | 82-04-20       | 08238W26ADDB | 1932            | MANILLA NO 1          | CRAWFORD | 85                          | EPA                     |
| 420423095351801 | 112ANCL      | 82-03-02       | 08441W23CCAD | 1953            | CHARTER OAK NO 4-DEEP | CRAWFORD | 207                         | EPA                     |
| 415034094254801 | 112BGLC      | 82-03-01       | 08131W11BDCA | 1898            | TOWN OF BAGLEY        | GUTHRIE  | 95                          | EPA                     |
| 413024095353901 | 112BLPC      | 82-11-04       | 07841W31DDDD | 1981            | IGS & USGS WC #27     | HARRISON | 129                         | UHL                     |
| 414149095422401 | 112BLPC      | 83-06-01       | 08042W35BDCC | 1983            | IGS & USGS WC #193    | HARRISON | 118                         | UHL                     |
| 415550094115101 | 112BLPC      | 82-04-22       | 08229W11BDBC | 1951            | RIPPEY NO 1           | GREENE   | 135                         | EPA                     |
| 415449094155601 | 112BLPC      | 82-08-26       | 08229W18DBAA | 1982            | IGS & USGS WC #117    | GREENE   | 75                          | UHL                     |
| 420004095451501 | 112BLPC      | 83-05-16       | 08342W17ACDD | 1983            | IGS & USGS WC #176    | MONONA   | 161                         | UHL                     |
| 420919094281201 | 112BLPC      | 82-04-22       | 08531W21CCAA |                 | CHURDAN NO 1          | GREENE   | 160                         | EPA                     |
| 421003095272801 | 112BLPC      | 82-03-03       | 08540W13CCCC | 1935            | SCHLESWIG NO 4 (WEST) | CRAWFORD | 348                         | EPA                     |

| DATE OF SAMPLE | PH (STANDARD UNITS) | TEMPERATURE (DEG C) | SPECIFIC CONDUCTANCE (UMHOS) | SOLIDS, RESIDUE AT 105 DEG. C, DIS-SOLVED (MG/L) | ALKALINITY LAB (MG/L AS CACO3) | HARDNESS (MG/L AS CACO3) | IRON, DIS-SOLVED (UG/L AS FE) | SILICA, DIS-SOLVED (MG/L AS SIO2) | POTASSIUM, DIS-SOLVED (MG/L AS K) | SODIUM AD-SORPTION RATIO (SAR) | SODIUM, DIS-SOLVED (MG/L AS NA) | CALCIUM, DIS-SOLVED (MG/L AS CA) |
|----------------|---------------------|---------------------|------------------------------|--|--------------------------------|--------------------------|-------------------------------|-----------------------------------|-----------------------------------|--------------------------------|---------------------------------|----------------------------------|
| 82-04-20       | 7.3                 | 11.5                | 737                          | 504  | 284                            | 410                      | 1400                          | 14                                | 3.0                               | .3                             | 12                              | 120                              |
| 82-03-02       | 7.5                 | 10.0                | 3280                         | 3140   | 195                            | 1600                     | 280                           | 24                                | --                                | 3.2                            | 290                             | 440                              |
| 82-03-01       | 7.2                 | 11.9                | 608                          | 340  | 276                            | 340                      | 93                            | 6.7                               | --                                | .3                             | 11                              | 91                               |
| 82-11-04       | --                  | 9.0                 | 917                          | 574  | 380                            | 350                      | 70                            | 16                                | 5.1                               | 2.1                            | 85                              | 93                               |
| 83-06-01       | 7.2                 | 15.0                | 721                          | 388  | 330                            | 360                      | 120                           | 28                                | 4.1                               | .4                             | 17                              | 98                               |
| 82-04-22       | 7.6                 | 11.0                | 765                          | 460  | 379                            | 390                      | 2300                          | 13                                | 6.0                               | .5                             | 20                              | 100                              |
| 82-08-26       | 7.6                 | 15.0                | 900*                         | 515  | 502                            | 440                      | 20                            | 23                                | 5.1                               | .9                             | 42                              | 110                              |
| 83-05-16       | 8.2                 | 14.0                | 1463                         | 1200   | 336                            | 630                      | 2900                          | 35                                | 11                                | 2.5                            | 140                             | 170                              |
| 82-04-22       | 7.6                 | 10.5                | 1420                         | 972  | 541                            | 620                      | 5400                          | 17                                | 11                                | 1.4                            | 80                              | 150                              |
| 82-03-03       | 7.5                 | 12.0                | 2470*                        | 2170   | 232                            | 1100                     | 1600                          | 12                                | --                                | 2.7                            | 200                             | 300                              |

| DATE OF SAMPLE | MAGNESIUM, DIS-SOLVED (MG/L AS MG) | MANGANESE, DIS-SOLVED (UG/L AS MN) | NITROGEN, NO2+NO3 DIS-SOLVED (MG/L AS N) | FLUORIDE, DIS-SOLVED (MG/L AS F) | CHLORIDE, DIS-SOLVED (MG/L AS CL) | SULFATE DIS-SOLVED (MG/L AS SO4) | ARSENIC DIS-SOLVED (UG/L AS AS) | BARIUM, DIS-SOLVED (UG/L AS BA) | CADMIUM DIS-SOLVED (UG/L AS CD) | CHROMIUM, DIS-SOLVED (UG/L AS CR) | COPPER, DIS-SOLVED (UG/L AS CU) | LEAD, DIS-SOLVED (UG/L AS PB) |
|----------------|------------------------------------|------------------------------------|--|----------------------------------|-----------------------------------|----------------------------------|---------------------------------|---------------------------------|---------------------------------|-----------------------------------|---------------------------------|-------------------------------|
| 82-04-20       | 30                                 | 320                                | .47                                      | .34                              | 9.0                               | 95                               | <5                              | 160                             | <2                              | <5                                | <10                             | <50                           |
| 82-03-02       | 130                                | 2000                               | <.04                                     | .25                              | 23                                | 1600                             | <50                             | 11                              | <2                              | <5                                | <2                              | <50                           |
| 82-03-01       | 28                                 | 1300                               | 2.5                                      | .29                              | 5.0                               | 21                               | <50                             | 240                             | <2                              | <5                                | <2                              | <50                           |
| 82-11-04       | 28                                 | 110                                | 1.6                                      | .20                              | 3.5                               | 120                              | 10                              | 100                             | <1                              | <10                               | 10                              | <10                           |
| 83-06-01       | 27                                 | 60                                 | <.02                                     | .30                              | .5                                | 42                               | <10                             | 200                             | <1                              | <10                               | <10                             | <10                           |
| 82-04-22       | 33                                 | 390                                | .02                                      | .44                              | <1.0                              | 11                               | <5                              | 710                             | <2                              | <5                                | <10                             | <50                           |
| 82-08-26       | 39                                 | 260                                | .07                                      | .30                              | 1.0                               | 5.5                              | <10                             | 300                             | <1                              | <10                               | <10                             | <10                           |
| 83-05-16       | 50                                 | 860                                | <.02                                     | .30                              | 4.0                               | 600                              | <10                             | 400                             | <1                              | <10                               | 20                              | 20                            |
| 82-04-22       | 62                                 | 80                                 | .10                                      | .24                              | <1.0                              | 200                              | 54                              | 120                             | <2                              | <5                                | <10                             | <50                           |
| 82-03-03       | 91                                 | 850                                | 2.4                                      | .28                              | 23                                | 930                              | <50                             | 65                              | <2                              | <5                                | <2                              | <50                           |

| DATE OF SAMPLE | MERCURY DIS-SOLVED (UG/L AS HG) | SELENIUM, DIS-SOLVED (UG/L AS SE) | SILVER, DIS-SOLVED (UG/L AS AG) | ZINC, DIS-SOLVED (UG/L AS ZN) | ALUMINUM, DIS-SOLVED (UG/L AS AL) | GROSS ALPHA, DIS-SOLVED (PCI/L) | RADIUM 226, DIS-SOLVED (PCI/L) | RADIUM 228, DIS-SOLVED (PCI/L) | GROSS BETA, DIS-SOLVED AS (PCI/L CS-137) |
|----------------|---------------------------------|-----------------------------------|---------------------------------|-------------------------------|-----------------------------------|---------------------------------|--------------------------------|--------------------------------|--|
| 82-04-20       | .1                              | <5                                | <5                              | <20                           | <20                               | 3.6                             | 1.1                            | 1.0                            | <.5                                      |
| 82-03-02       | .1                              | <5                                | <5                              | 130                           | <300                              | 4.8                             | .1                             | 1.0                            | 3.0                                      |
| 82-03-01       | <.1                             | <5                                | <5                              | <20                           | <100                              | 8.2                             | .9                             | .9                             | 9.0                                      |
| 82-11-04       | <1.0                            | <10                               | <10                             | 1100                          | --                                | 2.1                             | --                             | --                             | 5.0                                      |
| 83-06-01       | <1.0                            | <10                               | <10                             | 30                            | --                                | 1.5                             | --                             | --                             | 3.7                                      |
| 82-04-22       | .1                              | <5                                | <5                              | <20                           | <20                               | 2.4                             | 2.1                            | .7                             | 1.0                                      |
| 82-08-26       | <1.0                            | <10                               | <10                             | <10                           | --                                | 2.3                             | .7                             | 2.0                            | 4.0                                      |
| 83-05-16       | <1.0                            | <10                               | <10                             | 120                           | --                                | 1.8                             | --                             | --                             | 9.0                                      |
| 82-04-22       | <.1                             | <5                                | <5                              | <20                           | <20                               | 1.1                             | --                             | --                             | 11                                       |
| 82-03-03       | .1                              | <5                                | <5                              | 94                            | <200                              | 1.1                             | --                             | --                             | 11                                       |

Table 4. Chemical analyses of ground-water in observation wells and selected municipalities--Continued.

| STATION ID      | AQUIFER UNIT | DATE OF SAMPLE | LOCATION     | COMPLETION DATE | WELL NAME AND NUMBER | COUNTY   | DEPTH OF WELL, TOTAL (FEET) | AGENCY ANALYZING SAMPLE |
|-----------------|--------------|----------------|--------------|-----------------|----------------------|----------|-----------------------------|-------------------------|
| 420632094143001 | 112BVCL      | 82-09-16       | 08429W04CCBB | 1980            | DANA NO 1            | GREENE   | 186                         | EPA                     |
| 420507094141901 | 112BVCL      | 83-08-05       | 08429W16CBAB | 1983            | IGS & USGS WC #233   | GREENE   | 181                         | UHL                     |
| 420958094162201 | 112BVCL      | 83-08-05       | 08529W19BAAA | 1983            | IGS & USGS WC #231   | GREENE   | 221                         | UHL                     |
| 420723094143201 | 112BVCL      | 83-08-04       | 08529W32DDDD | 1983            | IGS & USGS WC #232   | GREENE   | 171                         | UHL                     |
| 413359095182701 | 112FMCL      | 83-07-21       | 07839W11CCBC | 1983            | IGS & USGS WC #227   | SHELBY   | 541                         | UHL                     |
| 415424095134001 | 112FMCL      | 83-07-11       | 08238W23AAAA | 1983            | IGS & USGS WC #225   | CRAWFORD | 470                         | UHL                     |
| 420608095111701 | 112FMCL      | 83-07-21       | 08437W08BCCB | 1983            | IGS & USGS WC #226   | CRAWFORD | 541                         | UHL                     |
| 421106095125501 | 112FMCL      | 81-07-10       | 08538W12DCBA | 1981            | IGS & USGS WC #14    | CRAWFORD | 315                         | UHL                     |
| 420047094223901 | 112HCCK      | 82-03-01       | 08330W07DADA | 1953            | JEFFERSON TOWN NO 4  | GREENE   | 156                         | EPA                     |
| 420116094363401 | 112HCCK      | 83-08-09       | 08332W08BBBC | 1983            | IGS & USGS WC #229   | GREENE   | 181                         | UHL                     |

| DATE OF SAMPLE | PH (STANDARD UNITS) | TEMPERATURE (DEG C) | SPECIFIC CONDUCTANCE (UMHOS) | SOLIDS, RESIDUE AT 105 DEG. C, DIS-SOLVED (MG/L) | ALKALINITY LAB (MG/L AS CACO3) | HARDNESS (MG/L AS CACO3) | IRON, DIS-SOLVED (UG/L AS FE) | SILICA, DIS-SOLVED (MG/L AS SIO2) | POTASSIUM, DIS-SOLVED (MG/L AS K) | SODIUM AD-SORPTION RATIO (SAR) | SODIUM, DIS-SOLVED (MG/L AS NA) | CALCIUM, DIS-SOLVED (MG/L AS CA) |
|----------------|---------------------|---------------------|------------------------------|--|--------------------------------|--------------------------|-------------------------------|-----------------------------------|-----------------------------------|--------------------------------|---------------------------------|----------------------------------|
| 82-09-16       | 7.3                 | 11.0                | 860                          | 550  | 368                            | 410                      | 5300                          | 15                                | 11                                | .7                             | 32                              | 110                              |
| 83-08-05       | 7.3                 | 11.5                | 1270                         | 1020   | 357                            | 280                      | 5600                          | 11                                | 7.3                               | 2.5                            | 93                              | 68                               |
| 83-08-05       | 7.5                 | 12.0                | 1165                         | 760  | 574                            | 510                      | 6600                          | 21                                | 7.2                               | 1.7                            | 85                              | 120                              |
| 83-08-04       | 7.6                 | 15.0                | 1060                         | 816  | 613                            | 460                      | 6300                          | 38                                | 7.3                               | 2.0                            | 95                              | 120                              |
| 83-07-21       | 8.0                 | 14.0                | 3375                         | 2820   | 212                            | 860                      | 5900                          | 23                                | 14                                | 8.1                            | 530                             | 220                              |
| 83-07-11       | 7.7                 | 13.0                | 2900*                        | 2440   | 215                            | 850                      | 50                            | 19                                | 14                                | 6.2                            | 400                             | 220                              |
| 83-07-21       | 8.1                 | 14.0                | 2900*                        | 3540   | 199                            | 920                      | 4900                          | 19                                | 16                                | 5.9                            | 400                             | 240                              |
| 81-07-10       | --                  | --                  | 3100*                        | 2810   | 176                            | 1100                     | 820                           | 20                                | 17                                | 4.4                            | 330                             | 300                              |
| 82-03-01       | 7.4                 | 11.8                | 1145                         | 740  | 358                            | 510                      | 8100                          | 13                                | --                                | 1.5                            | 77                              | 140                              |
| 83-08-09       | 7.3                 | 12.0                | 671                          | 350  | 379                            | 320                      | 6800                          | 29                                | 5.5                               | .5                             | 21                              | 86                               |

| DATE OF SAMPLE | MAGNESIUM, DIS-SOLVED (MG/L AS MG) | MANGANESE, DIS-SOLVED (UG/L AS MN) | NITROGEN, NO2+NO3 DIS-SOLVED (MG/L AS N) | FLUORIDE, DIS-SOLVED (MG/L AS F) | CHLORIDE, DIS-SOLVED (MG/L AS CL) | SULFATE, DIS-SOLVED (MG/L AS SO4) | ARSENIC, DIS-SOLVED (UG/L AS AS) | BARIUM, DIS-SOLVED (UG/L AS BA) | CADMIUM, DIS-SOLVED (UG/L AS CD) | CHROMIUM, DIS-SOLVED (UG/L AS CR) | COPPER, DIS-SOLVED (UG/L AS CU) | LEAD, DIS-SOLVED (UG/L AS PB) |
|----------------|------------------------------------|------------------------------------|--|----------------------------------|-----------------------------------|-----------------------------------|----------------------------------|---------------------------------|----------------------------------|-----------------------------------|---------------------------------|-------------------------------|
| 82-09-16       | 33                                 | 170                                | <.04                                     | .32                              | 6.0                               | 100                               | <50                              | 190                             | <2                               | <5                                | <10                             | <50                           |
| 83-08-05       | 27                                 | 90                                 | .07                                      | 1.5                              | 120                               | 460                               | <10                              | 400                             | <1                               | <10                               | <10                             | <10                           |
| 83-08-05       | 50                                 | 70                                 | .16                                      | .30                              | 2.5                               | 110                               | <10                              | 200                             | <1                               | <10                               | <10                             | <10                           |
| 83-08-04       | 40                                 | 270                                | .16                                      | .40                              | 2.5                               | 32                                | <10                              | 700                             | <1                               | <10                               | <10                             | <10                           |
| 83-07-21       | 76                                 | 270                                | .02                                      | .20                              | 22                                | 1800                              | <10                              | <100                            | <1                               | <10                               | <10                             | <10                           |
| 83-07-11       | 74                                 | 130                                | .05                                      | .20                              | 18                                | 1400                              | <10                              | <100                            | <1                               | <10                               | <10                             | <10                           |
| 83-07-21       | 79                                 | 150                                | .05                                      | .30                              | 18                                | 1600                              | <10                              | <100                            | <1                               | <10                               | <10                             | <10                           |
| 81-07-10       | 91                                 | 160                                | .05                                      | .20                              | 24                                | 1600                              | 10                               | <100                            | <1                               | <10                               | <10                             | <10                           |
| 82-03-01       | 41                                 | 130                                | <.04                                     | .22                              | 110                               | 70                                | <50                              | 850                             | <2                               | <5                                | <2                              | <50                           |
| 83-08-09       | 26                                 | 460                                | .09                                      | .30                              | .5                                | 4.0                               | <10                              | 600                             | <1                               | <10                               | <10                             | <10                           |

| DATE OF SAMPLE | MERCURY, DIS-SOLVED (UG/L AS HG) | SELENIUM, DIS-SOLVED (UG/L AS SE) | SILVER, DIS-SOLVED (UG/L AS AG) | ZINC, DIS-SOLVED (UG/L AS ZN) | ALUMINUM, DIS-SOLVED (UG/L AS AL) | GROSS ALPHA, DIS-SOLVED (PCI/L) | RADIUM 226, DIS-SOLVED (PCI/L) | RADIUM 228, DIS-SOLVED (PCI/L) | GROSS BETA, DIS-SOLVED (PCI/L AS CS-137) |
|----------------|----------------------------------|-----------------------------------|---------------------------------|-------------------------------|-----------------------------------|---------------------------------|--------------------------------|--------------------------------|--|
| 82-09-16       | <.1                              | <50                               | <5                              | 30                            | 57                                | <.2                             | --                             | --                             | 5.0                                      |
| 83-08-05       | <1.0                             | <10                               | <10                             | 10                            | --                                | 1.4                             | --                             | --                             | 3.0                                      |
| 83-08-05       | <1.0                             | <10                               | <10                             | <10                           | --                                | 1.7                             | --                             | --                             | 3.0                                      |
| 83-08-04       | <1.0                             | <10                               | <10                             | 70                            | --                                | 1.3                             | --                             | --                             | 6.0                                      |
| 83-07-21       | 1.0                              | <10                               | <10                             | 30                            | --                                | 4.2                             | .5                             | <.5                            | 8.0                                      |
| 83-07-11       | <1.0                             | <10                               | <10                             | <10                           | --                                | <.1                             | --                             | --                             | 11                                       |
| 83-07-21       | <1.0                             | <10                               | <10                             | 50                            | --                                | 3.7                             | .4                             | 1.3                            | 13                                       |
| 81-07-10       | <1.0                             | <10                               | <10                             | 40                            | --                                | <.2                             | --                             | --                             | 9.0                                      |
| 82-03-01       | <.1                              | <5                                | <5                              | <20                           | <100                              | .1                              | --                             | --                             | 1.0                                      |
| 83-08-09       | <1.0                             | <10                               | <10                             | 80                            | --                                | .6                              | --                             | --                             | 4.0                                      |

Table 4. Chemical analyses of ground-water in observation wells and selected monitoring wells--Continued.

| STATION ID      | AQUIFER UNIT                        | DATE OF SAMPLE                      | LOCATION                                  | COMPLETION DATE                                  | WELL NAME AND NUMBER               | COUNTY                           | DEPTH OF WELL, TOTAL (FEET)     | AGENCY ANALYZING SAMPLE           |  |                                    |                                 |                                  |
|-----------------|-------------------------------------|-------------------------------------|---|--|------------------------------------|----------------------------------|---------------------------------|-----------------------------------|--|------------------------------------|---------------------------------|----------------------------------|
| 420104094324401 | 112HCKC                             | 82-04-20                            | 08332W11BDBC                              |  | SCRANTON NO 3                      | GREENE                           | 209                             | EPA                               |  |                                    |                                 |                                  |
| 420706094400901 | 112HCKC                             | 82-09-08                            | 08433W03AADC                              | 1982   | IGS & USGS WC #129                 | CARROLL                          | 77                              | UHL                               |  |                                    |                                 |                                  |
| 420230094380601 | 112HCKC                             | 82-09-15                            | 08433W36DBAB                              |  | RALSTON #1                         | CARROLL                          | 160                             | EPA                               |  |                                    |                                 |                                  |
| 420643094403701 | 112PLSC                             | 82-09-10                            | 08433W03CADA                              | 1982   | IGS & USGS WC #131                 | CARROLL                          | 15                              | UHL                               |  |                                    |                                 |                                  |
| 413223094150801 | 217DKOT                             | 83-08-15                            | 07830W24CAAB                              | 1983   | IGS & USGS WC #238                 | GUTHRIE                          | 72                              | UHL                               |  |                                    |                                 |                                  |
| 413248094314301 | 217DKOT                             | 83-08-17                            | 07832W21AAAA                              | 1983   | IGS & USGS WC #239                 | GUTHRIE                          | 135                             | UHL                               |  |                                    |                                 |                                  |
| 413044094565601 | 217DKOT                             | 82-07-08                            | 07836W35ADCC                              | 1982   | IGS & USGS WC #69                  | AUDUBON                          | 115                             | UHL                               |  |                                    |                                 |                                  |
| 413255095070401 | 217DKOT                             | 81-07-30                            | 07837W17DDDD                              | 1981   | IGS & USGS WC #16                  | SHELBY                           | 181                             | UHL                               |  |                                    |                                 |                                  |
| 413523095483101 | 217DKOT                             | 82-05-13                            | 07843W05ACDD                              | 1982   | IGS & USGS WC #33                  | HARRISON                         | 179                             | UHL                               |  |                                    |                                 |                                  |
| 414035094302501 | 217DKOT                             | 82-04-19                            | 07931W06CDBC                              | 1929   | GUTHRIE CENTER NO 1                | GUTHRIE                          | 62                              | EPA                               |  |                                    |                                 |                                  |
| DATE OF SAMPLE  | PH (STANDARD UNITS)                 | TEMPERATURE (DEG C)                 | SPE-CIFIC CONDUCTANCE (UMHOS)             | SOLIDS, RESIDUE AT 105 DEG. C, DIS-SOLVED (MG/L) | ALKA-LINITY LAB (MG/L AS CACO3)    | HARD-NESS (MG/L AS CACO3)        | IRON, DIS-SOLVED (UG/L AS FE)   | SILICA, DIS-SOLVED (MG/L AS SIO2) | POTAS-SIUM, DIS-SOLVED (MG/L AS K)       | SODIUM AD-SORPTION RATIO (SAR)     | SODIUM, DIS-SOLVED (MG/L AS NA) | CALCIUM, DIS-SOLVED (MG/L AS CA) |
| 2-04-20         | 7.8                                 | 11.0                                | 679                                       | 426  | 301                                | 340                              | 5000                            | 8.6                               | 4.0                                      | .5                                 | 19                              | 84                               |
| 2-09-08         | --                                  | 11.0                                | 600                                       | 458  | 329                                | 330                              | 1400                            | 32                                | 4.4                                      | .2                                 | 9.9                             | 84                               |
| 2-09-15         | 7.3                                 | 11.5                                | 640                                       | 550  | 334                                | 310                              | 2800                            | 15                                | 8.0                                      | .5                                 | 18                              | 85                               |
| 2-09-10         | --                                  | 12.0                                | 681                                       | 534  | 200                                | 290                              | 80                              | 23                                | 1.8                                      | .0                                 | 3.2                             | 80                               |
| 3-08-15         | 7.4                                 | 19.0                                | 1500*                                     | 1010   | 430                                | 510                              | 550                             | 17                                | 6.8                                      | 3.6                                | 180                             | 120                              |
| 3-08-17         | 7.2                                 | 23.0                                | 3100*                                     | 2790   | 414                                | 1400                             | 1800                            | 19                                | 10                                       | 3.8                                | 310                             | 360                              |
| 2-07-08         | 7.2                                 | 25.0                                | 351                                       | 444  | 136                                | 170                              | 4800                            | 12                                | 2.5                                      | .2                                 | 7.1                             | 45                               |
| 1-07-30         | --                                  | --                                  | 520*                                      | 248  | 275                                | 260                              | 80                              | 24                                | 2.3                                      | .4                                 | 15                              | 72                               |
| 2-05-13         | --                                  | 14.0                                | 644                                       | 373  | 347                                | 340                              | 460                             | 13                                | 3.3                                      | .4                                 | 15                              | 89                               |
| 2-04-19         | 6.9                                 | 13.0                                | 526*                                      | 320  | 115                                | 220                              | 400                             | 10                                | 3.0                                      | .4                                 | 12                              | 62                               |
| DATE OF SAMPLE  | MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) | MANGA-NESE, DIS-SOLVED (UG/L AS MN) | NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) | FLUO-RIDE, DIS-SOLVED (MG/L AS F)                | CHLO-RIDE, DIS-SOLVED (MG/L AS CL) | SULFATE DIS-SOLVED (MG/L AS SO4) | ARSENIC DIS-SOLVED (UG/L AS AS) | BARIUM, DIS-SOLVED (UG/L AS BA)   | CADMIUM DIS-SOLVED (UG/L AS CD)          | CHRO-MIUM, DIS-SOLVED (UG/L AS CR) | COPPER, DIS-SOLVED (UG/L AS CU) | LEAD, DIS-SOLVED (UG/L AS PB)    |
| 2-04-20         | 32                                  | 130                                 | .02                                       | .33  | <1.0                               | 34                               | 75                              | 400                               | <2                                       | <5                                 | <10                             | <50                              |
| 2-09-08         | 28                                  | 110                                 | .02                                       | .40  | 6.0                                | 24                               | <10                             | 600                               | <1                                       | <10                                | <10                             | <10                              |
| 2-09-15         | 24                                  | 240                                 | .09                                       | .35  | <1.0                               | 11                               | <50                             | 200                               | <2                                       | <5                                 | <10                             | <50                              |
| 2-09-10         | 23                                  | 10                                  | 15  | .20  | 31                                 | 14                               | <10                             | 100                               | <1                                       | <10                                | <10                             | <10                              |
| 33-08-15        | 52                                  | 760                                 | .09                                       | .60  | 7.0                                | 400                              | <10                             | <100                              | <1                                       | <10                                | <10                             | <10                              |
| 33-08-17        | 110                                 | 1400                                | .02                                       | .40  | 16                                 | 1500                             | <10                             | <100                              | <1                                       | <10                                | <10                             | <10                              |
| 2-07-08         | 14                                  | 80                                  | 4.5                                       | .30  | 3.0                                | 25                               | <10                             | <100                              | <1                                       | <10                                | <10                             | 10                               |
| 31-07-30        | 19                                  | 510                                 | .07                                       | .30  | 1.0                                | 13                               | 30                              | 400                               | <1                                       | <10                                | <10                             | <10                              |
| 2-05-13         | 28                                  | 70                                  | .02                                       | .20  | 1.0                                | 15                               | <10                             | <100                              | <1                                       | <10                                | 10                              | <10                              |
| 2-04-19         | 16                                  | 340                                 | 5.2                                       | .19  | 11                                 | 88                               | <5                              | 75                                | <2                                       | <5                                 | <10                             | <50                              |
| DATE OF SAMPLE  | MERCURY DIS-SOLVED (UG/L AS HG)     | SELE-NIUM, DIS-SOLVED (UG/L AS SE)  | SILVER, DIS-SOLVED (UG/L AS AG)           | ZINC, DIS-SOLVED (UG/L AS ZN)                    | ALUM-INUM, DIS-SOLVED (UG/L AS AL) | GROSS ALPHA, DIS-SOLVED (PCI/L)  | RADIUM 226, DIS-SOLVED (PCI/L)  | RADIUM 228, DIS-SOLVED (PCI/L)    | GROSS BETA, DIS-SOLVED (PCI/L AS CS-137) |                                    |                                 |                                  |
| 82-04-20        | <.1                                 | <5                                  | <5  | <20  | <20                                | 2.4                              | 2.4                             | 1.5                               | 7.0                                      |                                    |                                 |                                  |
| 82-09-08        | <1.0                                | <10                                 | <10                                       | <10  | --                                 | 3.0                              | 1.2                             | 2.9                               | 4.0                                      |                                    |                                 |                                  |
| 82-09-15        | .1                                  | <50                                 | <5  | <20  | 42                                 | <.2                              | --                              | --                                | <.5                                      |                                    |                                 |                                  |
| 82-09-10        | <1.0                                | <10                                 | <10                                       | <10  | --                                 | 1.0                              | --                              | --                                | <.5                                      |                                    |                                 |                                  |
| 83-08-15        | <1.0                                | <10                                 | <10                                       | 140  | --                                 | 2.6                              | --                              | --                                | 6.0                                      |                                    |                                 |                                  |
| 83-08-17        | <1.0                                | <10                                 | <10                                       | 130  | --                                 | 9.3                              | .9                              | .9                                | 13                                       |                                    |                                 |                                  |
| 82-07-08        | <1.0                                | <10                                 | <10                                       | 470  | --                                 | 1.6                              | --                              | --                                | 13                                       |                                    |                                 |                                  |
| 81-07-30        | <1.0                                | <10                                 | <10                                       | <10  | --                                 | 1.1                              | --                              | --                                | 2.0                                      |                                    |                                 |                                  |
| 82-05-13        | <1.0                                | <10                                 | <10                                       | 20   | --                                 | 3.8                              | .5                              | .6                                | 4.0                                      |                                    |                                 |                                  |
| 82-04-19        | .1                                  | <5                                  | <5  | <20  | <20                                | 1.5                              | --                              | --                                | 1.0                                      |                                    |                                 |                                  |

