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Ground - Water Data  
For  
**The South Bismarck Area**  
Burleigh County,  
North Dakota  
By  
Steve W. Pusc

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North Dakota Ground Water Studies  
Number - 90 - Part I  
North Dakota State Water Commission



GROUND-WATER DATA  
FOR  
THE SOUTH BISMARCK AREA,  
BURLEIGH COUNTY,  
NORTH DAKOTA  
  
NORTH DAKOTA GROUND-WATER  
STUDIES NUMBER 90 - PART I

By

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## INTRODUCTION

The investigation of the geohydrology in the South Bismarck area, Burleigh County, North Dakota (Figure 1) was made cooperatively by the North Dakota State Water Commission and Burleigh County Water Resources District. Results of the investigation are presented in two parts. Part I is a compilation of the ground-water data and Part II is an interpretive report describing the geohydrology of the South Bismarck area. Part I (this report) makes available geologic and hydrologic data collected during the investigation and functions as a reference for Part II.

### Purpose

The purpose of the investigation was to better understand the geohydrology of the South Bismarck area. The general objective of the study was to collect the necessary data which identifies hydrologic events that cause the greatest change in water level elevation. Specific objectives were to:

- 1) Describe and interpret the geohydrologic framework of the South Bismarck area.
- 2) Evaluate the interrelationships between the ground water and surface water systems in the area.
- 3) Evaluate the impact that precipitation, evapotranspiration, irrigation pumping, and Missouri River stage have on the water table.

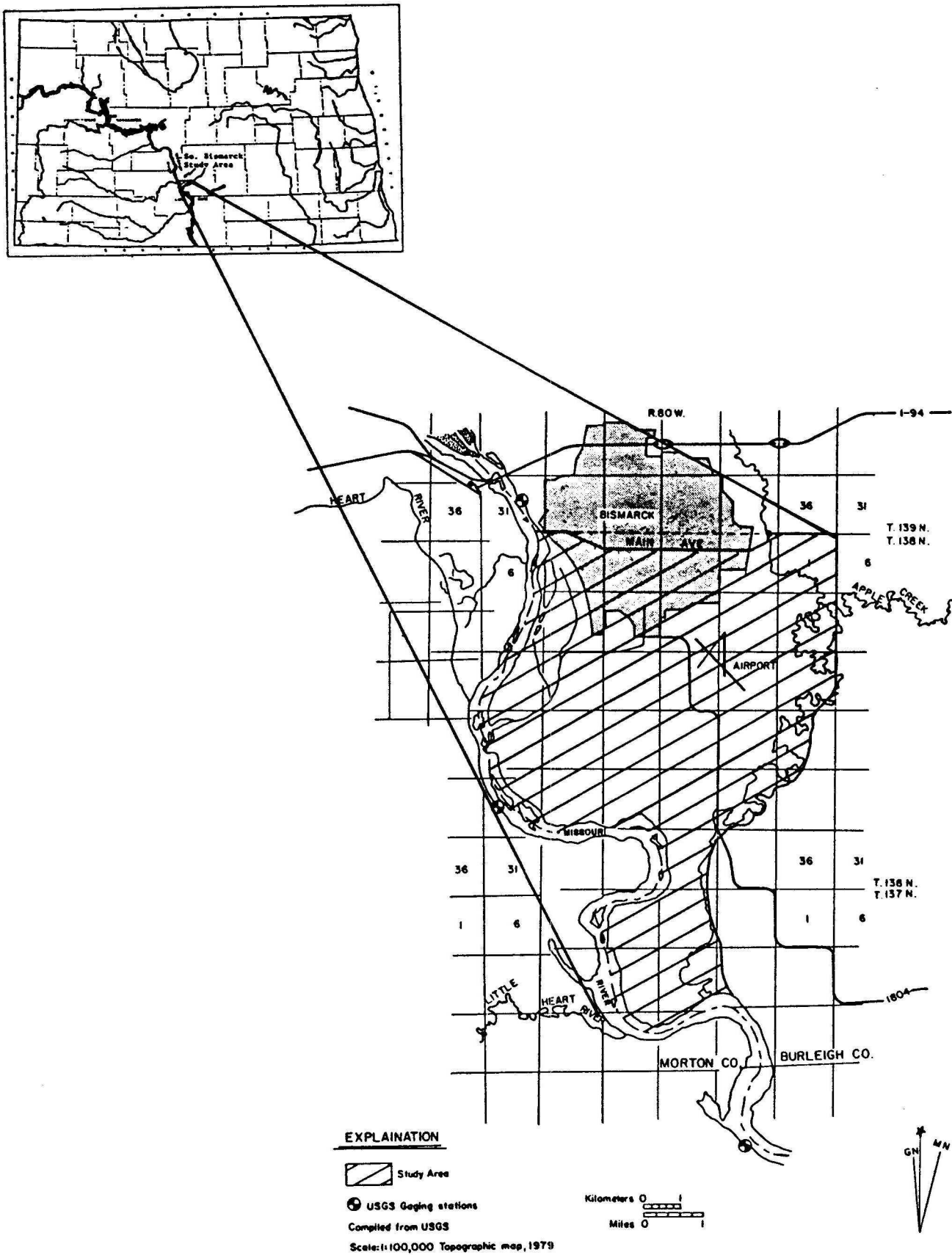


Figure 1. Location of the South Bismarck Study Area  
 Burleigh County, North Dakota

- 4) Construct a map of the study area illustrating the range of depth to water recorded in the study area.
- 5) Produce a series of representative water level contour maps illustrating the configuration of the water table at various times of the year.
- 6) Evaluate the chemical quality of the ground water.

#### Well-Numbering System

Wells and test holes listed in Table 1 are numbered according to a system based on the location in the public land classification of the United States Bureau of Land Management (Fig. 2). The first numeral denotes the township north of a base line, the second numeral denotes the range west of the fifth principal meridian, and the third numeral denotes the section in which the well is located. Letters A, B, C, and D designate, respectively, the northeast, northwest, southwest, and southeast quarter section, quarter-quarter section, and quarter-quarter-quarter section (10 acre tract). For example, well 138-80-15CDD is in the SE $\frac{1}{4}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$  Section 15, Township 138 North, Range 80 West (Fig. 2). Consecutive terminal numerals are added if more than one well is located in a 10-acre tract. The location of wells and test holes in the South Bismarck study area is presented on Plate 1 (in pocket).

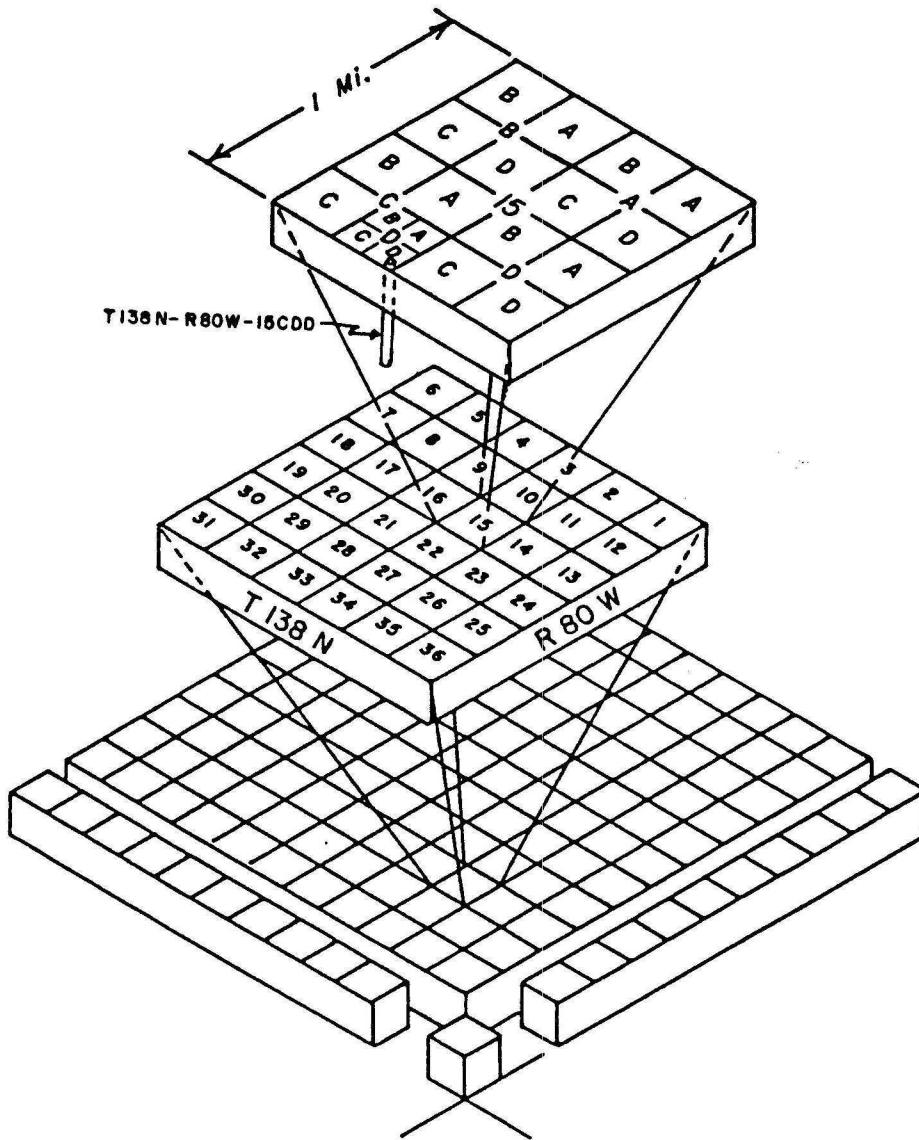


FIG. 2 WELL NUMBERING SYSTEM

### Acknowledgements

The collection of data for this report was made possible by the cooperation of residents and officials of Burleigh County who furnished essential information on wells, allowed the drilling of test holes on their property and permitted water level measurements and the collection of water samples. Particular recognition is due to the following personnel of the North Dakota State Water Commission: C. E. Naplin, L. L. Froelich, A. E. Comeskey, A. R. Wanek, R. B. Shaver, Lewis Knutson, G. J. Calheim, and K. K. Kunz for drilling and logging test holes and contributions to the understanding of the stratigraphy; G. O. Muri for chemical analyses of water samples; K. J. Logan for supervising field work and working on the initial phases of the study; and M.H. Hove for compiling the water level files. Special thanks are due the various well drillers and drilling companies that furnished drillers' logs and other information in this report.

#### EXPLANATION OF TABLES AND METHODS OF DATA COLLECTION

The data in this report came from two main sources: (1) data published in the report entitled "Geology and Ground-Water Resources of Burleigh County, North Dakota, Part II, Basic Data" by P. G. Randich. Because Randich, 1965 is out of print, data from this report pertinent to South Bismarck area are also included in Table 1; and (2) data collected by the State Water Commission between the years 1979 and 1984.



Data collected as part of this study consists of the following:

(1) geologic and hydrologic records of wells and test holes; (2) water level measurements in observation wells; (3) lithologic logs of test holes and wells, and (4) chemical analyses of the ground water. Geophysical logs were run in most of the test holes drilled by the State Water Commission. Those logs are not included in this report. However, copies are available for inspection in the office of the State Water Commission.

#### Records of Test Holes and Wells

Records of selected test holes and wells are presented in Table 1. Many test holes were converted to observation wells for periodic water level measurements and water quality sampling. At some sites, two or three observation wells were drilled in order to obtain water levels and water samples from various depths within the same aquifer or, from several aquifers. Observation wells were constructed of 1½ inch plastic casing with 3 or 6 foot screens. The observation wells were developed by backwashing and subsequently pumping (air lift) a minimum of 10 hours for development before the measurement of water levels and collection of water samples.

#### Logs of Test Holes and Wells

Logs collected from water well drillers, pertinent logs from Randich, 1965, and logs of test holes drilled as part of this study are included in Table 1. Minor changes in word order have been made on some of

the drillers' logs. However, geologic interpretations shown on commercial and private logs are those of the drillers. Grain size determination for the U. S. Geological Survey and North Dakota State Water Commission test holes refer to the Wentworth (1922) size scale. Color descriptions were determined by comparing fresh samples with the Geological Society of America's rock color chart (1963).

#### Water Levels in Selected Wells

Listed in Table 2 are the monthly and intermittent water levels in selected wells, in feet below or (+) above land surface. Water level measurements began in 1961 (Randich 1965). The bulk of the water level data presented in Table 2 were collected by the North Dakota State Water Commission from November 1979 to July 1983.

Listed in Table 3 are observation wells that are monitored by the U. S. Geological Survey. Included in this group are three wells that are monitored continuously. Water level data from wells listed in Table 3 can be obtained from the U. S. Geological Survey, Water Resources Division, Bismarck, North Dakota.

#### Water Quality

Water quality data from the South Bismarck area are listed in Table 4. Pertinent water quality data from Randich 1965 are also included. Water for samples was collected from privately owned wells by using the existing pumps and from North Dakota State Water Commission observation

wells by airlift. Generally enough water was pumped to clear the well column and plumbing, then separate raw and filtered samples were collected in polyethylene bottles. For those metals considered unstable, a separate sample was filtered and acidified (nitric acid) before transport to the laboratory. Most of the samples were analyzed by the State Water Commission. Methods of analyses were generally those described by Brown and others (1970). The results are expressed in milligrams per liter (mg/l) or parts per million.

#### SELECTED REFERENCES

- Ackerman, D.J., 1977, Ground-water basic data for Morton County, North Dakota: North Dakota State Water Commission County Ground-Water Studies 27 - Part II and North Dakota Geological Survey Bulletin 72, Part II, 592 p.
- Brown, E., Skougstad, M.W., and Fishman, M.J., 1970, Methods for collection and analyses 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.
- Geological Society of America , 1963, Rock color chart: New York Geological Society of America.
- Groenewold, G.H., 1980, Geologic and hydrogeologic conditions affecting land use in the Bismarck-Mandan area: North Dakota Geological Survey, Report of Investigation No. 70, 42 p.
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- U. S. Geological Survey, 1961-1983, Water level records from selected wells in Burleigh County, Records on File: U. S. Geological Survey, Water Resources Division, Bismarck, North Dakota
- Wentworth, C. K., 1922, A scale of grade and class terms for clastic sediments: Journal of Geology, V. 30, p. 377-392.

TABLE 1 Records and Geologic Logs of Test Holes and Wells

Explanation

Owner

NDSWC 11264, North Dakota State Water Commission Test Hole Number 11264

USGS 2058, United States Geological Survey Test Hole Number 2058

CORPS PX-78-10, United States Army Corps of Engineers Test Hole Number PX-78-10

NDGS 17, North Dakota Geological Survey Test Hole Number 17

Elevation

1630(T), Elevation obtained from USGS 7.5 minute quads

1628.2, Elevation surveyed in

Use of Well

D, domestic; I, irrigation; N, industrial; U, unused; O, observation well for water levels; PS, public supply; T, test hole

Comments

C, chemical analysis in Table 4; E-log, electric log available from NDSWC; R, continuous water level recorder installed

## 137-80-3ABA

Number: NDSWC 11264 Date Drilled: 05/07/80  
 Elevation (ft. NGVD): 1629.5 Depth (ft): 40  
 Well Completion Use: T, O  
 Diameter (inches): 1½  
 Screened interval (ft): 24-30 Comments:

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil	0 - 1
	Silt, dark yellow brown, oxidized, slightly calcareous, moderately cohesive	1 -18
	Silt, greenish gray, unoxidized, clayey, calcareous	18 -22
	Sand, very fine gravel, well sorted, rounded, interbedded with small layers of clay	22 -33
Hell Creek	Sandstone, fine grained, well sorted and rounded, slightly glauconitic, very argillaceous, non-calcareous, moderately indurated	33 -40

## 137-80-3ABB

Number: USGS 1852 Date Drilled: 1960  
 Elevation (ft. NGVD): 1625 (T) Depth (ft): 84  
 Well Completion : None Use: T  
 Diameter (inches):  
 Screened interval (ft): Comments:

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Roadfill, gravel, sand and clay	0 - 10
	Sand, medium gray, very fine to fine, clayey	10 - 21
	Sand, dark-gray, fine to medium, rounded, lignite fragments	21 - 42
Hell Creek	Sandstone, greenish-gray, very fine to fine-grained, clay, greenish-gray, silty, interbedded	42 - 63
	Sandstone, light-greenish-gray, fine to medium-grained, glauconitic (?)	63 - 74
	Sandstone, greenish-gray, glauconitic (?); shale, brownish-gray, silty, lignitic	74 - 79
	Sandstone, greenish-gray, very fine to fine-grained, silty to clayey,	79 - 84

137-80-3ABCD

Number: NDSWC 11138                      Date Drilled: 10/8/79  
 Elevation (ft. NGVD): 1628.93              Depth (ft): 40  
 Well Completion                              Use: T, O  
     Diameter (inches): 1½  
     Screened interval (ft): 32-35              Comments: C

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil	0 - 1
	Clay, brownish-gray, unoxidized, silty, sandy	1 - 7
	Sand, fine grained, well sorted, subangular to subrounded, 60% quartz, 20% shale, 20% carbonates, decreasing shale and increasing lignite concentration with depth	7 -34
	Sand, medium to coarse grained, some gravel, interbedded with clay	34 -40

137-80-3BBCD

Number: NDSWC 11139                      Date Drilled: 10/08/79  
 Elevation (ft. NGVD): 1630.27              Depth (ft): 100  
 Well Completion                              Use: T, O  
     Diameter (inches): 1½  
     Screened interval (ft): 48-51              Comments: C, E-log

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil	0 - 1
	Clay, yellow-brown, oxidized, silty, sandy	1 -13
	Clay, olive gray, silty, sandy	13 -26
	Sand, greenish-gray, fine grained, well sorted, subangular to subrounded, 80% quartz, 20% carbonate, 10% lignite	26 -50
	Gravel, sandy	50 -54
Hell Creek	Shale, greenish gray, silty	54 -81
	Shale, brown, calcareous, well indurated	81 -86
	Shale, greenish-gray, sandy, silty	86 -93
	Sandstone, fine grained, well sorted, greenish-gray	93 -100







137-80-9CABD

Number: NDSWC 11164                      Date Drilled: 10/15/79  
 Elevation (ft. NGVD): 1627.74              Depth (ft): 140  
 Well Completion                              Use: T, O  
     Diameter (inches): 1½  
     Screened interval (ft): 98-101          Comments: E-log

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil	0 - 1
	Clay, yellow brown, oxidized, silty	1 - 8
	Clay, olive gray, silty	8 -10
	Sand, fine grained, well sorted, subangular to subrounded, 50% quartz, 30% carbonates, 20% lignite	10 -48
	Sand and gravel, coarse sand to gravel, poorly sorted, subrounded, to rounded, 40% carbonates, 10% lignites, 20% quartz, clay from 54-56 feet	48 -74
	Clay, olive gray	74 -80
	Gravel, coarse sand and gravel, medium sorting, subrounded to rounded, 40% carbonates, 40% igneous, 20% lignite	80 -124
Hell Creek	Shale, dark brown, carbonaceous, silty, sandy, interbedded with siltstone, greenish gray, sandy, slightly carbonaceous and sandstone, very fine grained, well sorted, greenish gray, rounded, carbonaceous	124 -140

137-80-9DBDA

Number: NDSWC 11165                      Date Drilled: 10/15/79  
 Elevation (ft. NGVD): 1626.73              Depth (ft): 40  
 Well Completion                              Use: T, O  
     Diameter (inches): 1½  
     Screened interval (ft): 37-40          Comments:

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil	0 - 1
	Clay, yellow brown, oxidized, silty	1 -10
	Clay, olive gray, silty, unoxidized	10 -16
	Sand, fine grained, well sorted, subangular to rounded, 70% quartz, 15% carbonates, 15% lignite	16 -40

137-80-10BBBB

Number: NDSWC 11162                      Date Drilled: 10/15/79  
 Elevation (ft. NGVD): 1627.26              Depth (ft): 120  
 Well Completion                              Use: T, O  
     Diameter (inches): 1½  
     Screened interval (ft): 93-96              Comments: C, E-log

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil	0 - 1
	Clay, yellow brown, oxidized	1 - 8
	Clay, olive gray, silty, unoxidized	8 -20
	Sand, fine grained, well sorted, subangular to subrounded, 80% quartz, 10% carbonate, 10% lignite	20 -43
	Sand, fine to medium, poorly sorted, subangular to rounded, 70% quartz, 20% carbonate, 10% lignite, pebble size fragments of lignite	43 -90
	Sand, medium to coarse to gravelly, poorly sorted, subangular to rounded, 50% carbonate, 40% quartz, 10% lignite, sand becomes coarser with depth	90 -104
Hell Creek	Sandstone, very fine grained, well sorted, rounded, mixed with greenish gray clay	104-120

137-80-10BCBD

Number: NDSWC 11160                      Date Drilled: 10/12/79  
 Elevation (ft. NGVD): 1625.12              Depth (ft): 60  
 Well Completion                              Use: T, O  
     Diameter (inches): 1½  
     Screened interval (ft): 55-58              Comments:

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil	0 - 1
	Clay, yellow brown, oxidized, silty	1 - 9
	Clay, olive gray, silty, unoxidized	9 -23
	Sand, fine grained, well sorted, subrounded to rounded, 85% quartz, 10% lignite, 5% carbonates	23 -60



138-80-1DCC

Number: USGS Auger Hole 1                      Date Drilled: 08/11/62  
 Elevation (ft. NGVD): 1640 (T)                  Depth (ft): 97  
 Well Completion: None                              Use: T  
 Diameter (inches):  
 Screened interval (ft):                              Comments:

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Glacial drift		
	Clay, brownish-gray, plastic, sand, very fine, silty	0 - 12
	Clay, bluish-gray, plastic, silty, sand, very fine	12 - 26
	Clay, dark-greenish-gray, smooth, plastic, cohesive	26 - 47
	Clay, olive-gray, sand, very fine, silty	47 - 52
	Sand, fine to medium, clayey	52 - 84
	Gravel, very coarse, sand, fine to coarse (rough drilling)	84 - 92
	Clay, olive-gray, smooth	92 - 97

138-80-2BBC

Number: USGS 2058                                  Date Drilled: 09/07/62  
 Elevation (ft. NGVD): 1677.9                      Depth (ft): 84  
 Well Completion                                      Use: T, O  
 Diameter (inches): 1½  
 Screened interval (ft): ?                              Comments: E-log

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Glacial drift		
	Topsoil, brown, sandy	0 - 2
	Clay, very dark-yellowish-brown, silty and sandy, oxidized, calcareous	2 - 11
	Sand, dark-yellowish-brown, sub-rounded, to rounded, well-sorted, oxidized	11 - 31
	Clay, olive-gray, silty, with very fine sand, smooth, plastic, micaceous, calcareous	31 - 47
Hell Creek		
	Clay, light-olive gray to light-greenish-gray, some lignite, very micaceous, smooth, cohesive	47 - 84

## 138-80-2CCC

Number: USGS 2057

Date Drilled: 09/05/62

Elevation (ft. NGVD): 1668.5,

Depth (ft): 174

Well Completion                      Randich 1965  
1658.7 NDSWC

Use: T, O

Diameter (inches): 1½

Screened interval (ft): 139-142

Comments: C, E-log, USGS measured water  
level quarterly since 1962

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Glacial drift	Topsoil, brownish-black, sandy	0 - 1
	Sand, brown, oxidized, fine to medium, some coarse, subrounded, well sorted, calcareous	1 -15
	Clay, moderate-olive-brown, silty smooth, plastic, highly calcareous	15 -19
	Clay, light-olive-gray, silty, with very fine sand, lignite chips, soft, highly-calcareous	19 -41
	Clay, light-olive-gray, silty, smooth, very plastic, highly calcareous	41 -46
	Gravel, fine to coarse; sand, coarse	46 -48
	Clay, light-olive-gray, silty, smooth, very plastic, highly calcareous	48 -56
	Gravel, fine to coarse, predominantly limestone, sand, coarse	56 -60
	Clay, light-olive-gray, silty, smooth, soft, plastic, calcareous	60 -90
	Clay, light-olive-gray, sandy, cohesive, micaceous, calcareous	90 -114
	Clay, light-olive-gray, silty; till, silty, calcareous	114 -129
	Gravel, fine to coarse, subrounded to rounded, well sorted	129 -147
	Gravel, very coarse; pebbles, cobbles and small boulders	147 -170
Hell Creek	Clay, brownish-black, silty, very micaceous, small particles of lignite, noncalcareous; contains orange scoria specks	170 -174

## 138-80-2DDD

Number: NDSWC 11116                      Date Drilled: 10/03/79  
 Elevation (ft. NGVD): 1664 (T)              Depth (ft): 40  
 Well Completion                      Use: T, O  
 Diameter (inches): 1½  
 Screened interval (ft): 37-40              Comments: Note, well installed in clay

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
	Topsoil	0 - 1
	Sand, fine grained, well sorted, subangular to subrounded, 80% quartz, 10% carbonates, 10% lignites, oxidized	1 - 6
	Clay, silty, yellow brown, oxidized	6 -23
	Clay, olive gray, silty, unoxidized	23 -40

138-80-2DDD<sub>1</sub>(West)

Number: NDSWC 11227                      Date Drilled: 04/18/80  
 Elevation (ft. NGVD): 1661.55              Depth (ft): 117  
 Well Completion                      Use: T, O  
 Diameter (inches): 1½  
 Screened interval (ft): 109-112              Comments: E-log, C

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium?	Topsoil	0 - 1
	Sand, medium to coarse, subangular to rounded, oxidized	1 - 4
	Clay, yellowish brown, oxidized, silty, calcareous, moderately cohesive and plastic, 12-17 feet, much siltier and easier drilling	4 -18
	Silt, medium gray to brownish gray, oxidized stringers, clayey, calcareous, moderately cohesive and plastic	18 -24
	Clay, medium gray to brownish gray, unoxidized, slightly silty, moderately to very cohesive, very plastic, calcareous (easy drilling)	24 -77
	Gravel, fine to medium, angular, poorly sorted, abundant carbonate flakes, lignite chunks (taking water)	77 -80
	Clay, brownish gray, unoxidized, moderately cohesive and plastic, from 86 feet on, small lenses of detrital lignite (sand washing from above)	80 -98
	Clay and sand (taking water) interbedded clay, sand and gravel lenses, sand is fine to medium, rounded to angular, gravel, fine to medium, carbonate flakes, some detrital lignite (tough drilling at 111 feet)	98 -114
	Rocks and gravel, rough drilling, poor sample	114 -117

138-80-2DDD<sub>2</sub> (East)

Number: NDSWC 11260                      Date Drilled: 05/05/80  
 Elevation (ft. NGVD): 1661.58              Depth (ft): 90  
 Well Completion                              Use: T, O  
   Diameter (inches): 1½  
   Screened interval (ft): 76-79              Comments: C, E-log

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Outwash, terrace		
	Topsoil	0 - 1
	Clay, moderately yellow brown, oxidized, noncalcareous, very silty, pebbly, slightly cohesive (till)	1 -24
	Clay, olive gray, unoxidized, very silty, slightly calcareous, moderately cohesive, very plastic	24 -76
	Gravel, medium to coarse, medium sorting, predominantly medium gravel, subrounded to rounded	76 -80
	Clay, as above	80- 90

138-80-3CAD<sub>1</sub>(West)  
 Log by Soil Testing Services

Number: Corps PZ-78-13                      Date Drilled: 09/13/78  
 Elevation (ft. NGVD): 1669.6              Depth (ft): 50  
 Well Completion                              Use: T, O  
   Diameter (inches): ?  
   Screened interval (ft): 45-50              Comments: C, USGS measures monthly

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Outwash, terrace		
	Topsoil	0 - 1
	Sand, fine red-brown to brown, silty, moist	1 - 8
	Sand, fine to medium, silty, black, slightly organic, saturated	8 -15
	Sand, fine, silty, brown to gray, trace of clay, saturated	15 -25
	Silt, brown sandy, mixed with gravel and cobbles, saturated	25 -40
	Shale, gray	40 -50

138-80-3CAD<sub>2</sub>  
Log by Soil Testing Services

Number: Corps PZ-78-13A                      Date Drilled: 02/12/79  
 Elevation (ft. NGVD): 1670 (T)              Depth (ft): 52  
 Well Completion                              Use: T, O  
   Diameter (inches): ?  
   Screened interval (ft): 33-38              Comments:

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Outwash, terrace		
	Topsoil	0 - 1
	Sand, fine, red-brown to silty, moist	1 - 8
	Sand, fine to medium, black, slightly organic, saturated	8 -15
	Sand, fine, silty, brown to gray, trace of clay, saturated	15 -22
	Silt, sandy, brown, mixed with gravel and cobbles, saturated	22 -43
	Shale, gray	43 -52

138-80-3 CAD<sub>2</sub>(East)

Number: NDSWC 11500                      Date Drilled: 12/07/80  
 Elevation (ft. NGVD): 1671.1              Depth (ft): 113  
 Well Completion                              Use: T, O  
   Diameter (inches): 1½  
   Screened interval (ft): 105-111              Comments: Well screened in bedrock sands, plugged 9/03/82, E-log

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Terrace, outwash		
	Topsoil	0 - 1
	Sand, very fine to coarse grained, poorly sorted, subrounded, 30% quartz, 40% silicates, 30% carbonates	1 -23
	Clay, dark yellowish brown, cohesive, plastic, oxidized	23 -28
	Clay, olive gray, cohesive, plastic, unoxidized	28 -42
	Silt, olive gray, argillaceous, some fine grained sand (shale)	42 -92
Hell Creek		
	Sand, very fine to fine grained, silty, argillaceous, moderate brown	92 -102
	Sand, fine grained, quartzose, argillaceous	102 -106
	Sand, fine grained, as above, quartzose, slightly argillaceous, olive gray, to greenish tint	106 -111
	Clay, moderate brown, sandy, silty	111 -113



138-80-3DCC  
Log by Water Supply, Inc.

Number: Montana-Dakota Utilities      Date Drilled: 3/23/83  
 Elevation (ft. NGVD): 1670 (T)      Depth (ft): 160  
 Well Completion      Use: T  
 Diameter (inches): 1½  
 Screened interval (ft): 125-145      Comments:

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
	Topsoil	0 - 1
	Clay, yellowish brown, silty	1 - 3
	Sand, fine, medium to coarse	3 -17
	Clay, silty, yellowish-brown	17 -26
	Clay, silty, olive gray with layers of sandy clay	26 -35
	Sand, fine, bluish gray	35- 37
	Clay, silty, olive gray with layers of sandy clay	37 -53
	Clay, silty, olive gray	53 -59
	Sand, fine, bluish-gray, with gravel	59 -62
	Rock	62 -63
	Clay, silty, medium gray	63 -64
	Sand, fine bluish-gray	64 -72
	Clay, silty, olive gray	72 -75
	Sand, fine to medium bluish-gray	75 -79
	Coal	79 -80
	Clay, sandy, silty, olive gray	80 -90
	Sand, fine bluish-gray	90 -93
	Clay, silty, olive gray	93-105
	Sand, fine bluish-gray	105-110
	Clay, silty, olive gray	110-113
	Gravel, sand and clay	113-119
	Sand, fine to medium, bluish-gray	119-134
	Sand, fine, medium to coarse, 10% gravel, little coal	134-139
	Gravel, fine to coarse, some rocks	139-145
Hell Creek?	Clay, sandy, bluish-gray	145-150
	Clay, silty, medium to brownish-gray	150-160

138-80-4DDBAC

Number: NDSWC 11167                      Date Drilled: 10/16/79  
 Elevation (ft. NGVD): 1635.12              Depth (ft): 100  
 Well Completion                              Use: T, O  
     Diameter (inches): 1½  
     Screened interval (ft): 82-85              Comments: C, E-log

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil	0 - 1
	Gravel, coarse sand to gravel; poorly sorted, oxidized	1 - 2
	Clay, yellow brown, oxidized, silty	2 -13
	Silt, yellow brown, oxidized	13 -22
	Sand, very fine,grained, well sorted, subangular to rounded, 80% quartz, 10% carbonate, 10% lignite	22 -55
	Clay, olive gray, very silty	55--58
	Gravel,	58 -61
	Clay, olive gray, very silty, sandy	61 -70
	Clay, olive gray, interbedded with gravel and lignite	70 -82
	Gravel, medium to coarse, medium sorting, subangular to rounded, 50% carbonate, 10% quartz, 10% lignite, 10% siltstone, 20% igneous	82-100

138-80-5ADD<sub>1</sub>(South)  
 Log by Soil Testing Services

Number: Corps PX-78-3                      Date Drilled: 09/07/78  
 Elevation (ft. NGVD): 1636.3              Depth (ft): 40  
 Well Completion                              Use: T, O  
     Diameter (inches):  
     Screened interval (ft): 35-40              Comments: USGS measures monthly

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Sand, fine, brown, silty, moist	0 - 7
	Sand, very fine, silty, clayey, brown, saturated	7 -24
	Sand, fine to medium, medium dark brown, trace of silt, saturated	24 -40

138-80-5ADD<sub>2</sub>(North)

Number: NDSWC 11498

Date Drilled: 12/15/80

Elevation (ft. NGVD): 1637.0

Depth (ft): 127

Well Completion

Use: T, O

Diameter (inches): 1½

Screened interval (ft): 98-101

Comments: E-log

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil	0 - 1
	Clay, dark yellowish brown, moderately cohesive, oxidized	1 -18
	Clay, dark greenish-gray, slightly cohesive, silty, unoxidized	18 -23
	Sand, medium grained, moderately well sorted, subrounded, 50% quartz, 45% silicate, 5% very coarse grained lignite	23 -41
	Sand, as above, coarser, generally very coarse, some gravel with medium to very coarse sand	41 -48
	Clay, dark greenish-gray, moderately cohesive	48 -58
	Sand, as above	58 -61
	Gravel and sand, 60% gravel, 40% sand, sand is subrounded, coarse to medium grained, pebble size gravels, 50% silicates, 20% carbonates, 20% quartz, 5% shale, 10% lignite (taking water, caving, used 9 bags of bentonite from 60-100 feet)	61-100
	Gravel, sandy, very coarse, rough drilling, poor return 7 more bags of bentonite from 100-127 feet	100-127

138-80-5DCBD

Number: NDSWC 11121                      Date Drilled: 10/03/79  
 Elevation (ft. NGVD): 1637.52              Depth (ft): 140  
 Well Completion                              Use: T, O  
     Diameter (inches): 1½  
     Screened interval (ft): 90-93              Comments: E-log

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil	0 - 1
	Clay, yellow brown, oxidized	1 -18
	Sand, very fine grained, well sorted, subangular to subrounded, oxidized from 18-21 feet, 90% quartz, 10% lignite, sands become coarser with depth	18 -47
	Gravel, coarse sand and gravel, poorly sorted subangular to subrounded, 50% quartz, 50% carbonates, sands and gravels become coarser with depth	47 -52
	Clay, olive green	52 -55
	Gravel, coarse, poorly sorted, subangular to subrounded, layers of clay from 55-58, carbonates 50% igneous, minor amounts of quartz and lignite	55-100
	Clay, olive green	100-106
	Gravel, poorly sorted, composition as above	106-110
	Hell Creek	Sandstone, fine grained, greenish gray, glauconitic, silty

138-80-8ABA<sub>1</sub>

Number: NDSWC 2906

Date Drilled: 04/16/68

Elevation (ft. NGVD): 1631.7

Depth (ft): 120

Well Completion

Use: T, O

Diameter (inches): 1½

Screened interval (ft): 55-60

Comments: C, E-log, measured monthly  
by USGS

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil, very sandy, silty, brownish black	0 - 1
	Clay, very silty and sandy, moderate yellowish brown, plastic, moderately cohesive, lamination, oxidized, some lignite (detrital)	1 - 9
	Clay, very silty sandy, olive-gray, moderately cohesive, plastic to semi-plastic, laminations, some detrital lignite chips	9 -18
	Sand, fine to coarse grained, angular to rounded, well sorted, mostly quartz, some limestone, dolostone, granitics, shale, and lignite (not caving or taking water)	18 -52
	Gravel, sandy, 45-55% coarse to very coarse, angular to rounded sand, gravel is fine to medium, angular to rounded, fair sorting, mostly limestone and dolostone with some granitics, quartzite, shale, sandstone and lignite, a few clay lenses (taking water mixed 2 mud)	52 -64
	Clay, very silty, sandy, gravelly, olive gray to dark greenish-gray, gravel and sand occur as lenses, moderately cohesive, semi-plastic, calcareous, a few detrital lignite chips	64 -80
	Sand, gravelly, medium to very coarse, sand, subangular to rounded, fair sorting, approximately 30-50% fine to medium, angular to subrounded gravel, few clay lenses	80 -85
	Clay, extremely silty sandy, olive gray, laminated, silty to moderately cohesive, semi-plastic, very calcareous	85-110
	Sandstone, very silty, greenish-gray, consolidated, fine to medium grained, slightly calcareous to non calcareous	110-120
Hell Creek		

138-80-8ABA<sub>2</sub>

Number: NDSWC 2906A

Date Drilled: 03/26/73

Elevation (ft. NGVD): 1631.6

Depth (ft): 30

Well Completion

Use: T, O

Diameter (inches): 1½

Screened interval (ft): 20.5-26.5

Comments: C, measured monthly by USGS

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil	0 - 1
	Clay, silty, yellowish-brown, oxidized	1 - 9
	Clay, silty, olive gray, unoxidized	9 - 19
	Sand, fine to coarse	19 - 30

138-80-8BBAA

Number: NDSWC 11122

Date Drilled: 10/03/79

Elevation (ft. NGVD): 1636.25

Depth (ft): 40

Well Completion

Use: T, O

Diameter (inches): 1½

Screened interval (ft): 37-40

Comments:

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil	0 - 1
	Sand, fine grained, well sorted, subrounded, oxidized, 80% quartz, 10% carbonates, 10% lignites	1 - 7
	Clay, yellow brown, oxidized	7 - 9
	Sand, fine grained, well sorted, subangular to subrounded, 80% quartz, 10% carbonates, 10% lignites unoxidized	9 - 40

Number: NDSWC 11123

Date Drilled: 10/03/79

Elevation (ft. NGVD): 1629.73

Depth (ft): 40

## Well Completion

Use: T, O

Diameter (inches): 1½

Screened interval (ft): 37-40

Comments:

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil	0 - 1
	Clay, yellow brown, oxidized	1 - 6
	Sand, fine grained, well sorted, subrounded, 70% quartz, 20% carbonates, 10% lignite	6 -28
	Clay, olive green, unoxidized	28 -29
	Sand, fine grained, well sorted, subangular to subrounded, 80% quartz, 10% carbonate, 10% lignite	29 -40

138-80-8BDA<sub>1</sub>

Number: Golf Course Test Hole #3

Date Drilled: 03/01/67

Elevation (ft. NGVD): 1630 (T)

Depth (ft): 110

## Well Completion

Use: T, O

Diameter (inches): 1½

Screened interval (ft): 78-98

Comments: C, E-log

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>	
Alluvium	Topsoil	0 - 1	
	Silt, clayey to sandy, yellowish gray, soft, slightly cohesive	1 - 6	
	Sand, medium, well sorted, subrounded, quartzose and lignitic, brownish gray (Drills easy)	6 -20	
	Silt, clayey to sandy, black, oily, slightly cohesive, some sand	20 -30	
	Sand, medium to coarse, well sorted, subrounded, clean, highly lignitic	30 -40	
	Sand, as above, interbedded	40 -50	
	Gravel, fine to coarse, sandy, brown, interbedded, mostly sedimentary, few igneous	50 -60	
	Gravel, as above, sandy	60 -70	
	Sand, medium to very coarse, with lenses of gravel, taking water	70-105	
	Hell Creek	Shale, silty, yellowish gray to greenish gray, moderately soft, cohesive, very tight	105-110

138-80-8BDA<sub>2</sub>

Number: Golf Course Irrigation      Date Drilled:  
          Well #1  
Elevation (ft. NGVD): 1630 (T)      Depth (ft):  
Well Completion      Use: I  
  Diameter (inches):  
  Screened interval (ft):      Comments:

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
No log available, see log for 138-80-8BDA <sub>1</sub>		

138-80-8BDB

Number: Golf Course Irrigation      Date Drilled:  
          Well #2  
Elevation (ft. NGVD): 1630 (T)      Depth (ft):  
Well Completion      Use: I  
  Diameter (inches):  
  Screened interval (ft):      Comments:

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
No Log Available		



138-80-8BDC

Number: Golf Course Test Hole #2      Date Drilled: 02/28/67  
 Elevation (ft. NGVD): 1630 (T)      Depth (ft): 110  
 Well Completion      Use: T, O  
 Diameter (inches): 1½  
 Screened interval (ft): 78-98      Comments: C, E-log

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil, very fine sandy loam, brown, with decayed vegetation	0 - 1
	Silt, mixed with very fine sand, dusky yellow soft, slightly to non-cohesive (drills easy)	1 -10
	Sand, fine to medium, well sorted, subrounded, brownish gray	10 -40
	Sand, medium, greenish-gray, very well sorted, subrounded, abundant wood fragments	
	Sand, as above fine to coarse, interbedded	40 -50
	Gravel, fine to coarse, sandy, moderately sorted, brownish, encountered black clay from 58-60 feet	50-60
	Sand, coarse, interbedded with medium sand through medium gravel, drills easy, hardly any clay	60 -98
Hell Creek	Clay, sandy, light greenish gray, moderately soft, cohesive, gritty, tight	98-110

138-80-8BDD

Number: Golf Course Test Hole #1      Date Drilled: 02/27/67  
 Elevation (ft. NGVD): 1630 (T)      Depth (ft): 100  
 Well Completion      Use: T, O  
   Diameter (inches): 1½  
   Screened interval (ft): 78-98      Comments: C, E-log

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil, sandy loam, brownish gray	0 - 2
	Clay, silty, light olive gray, soft, moderately plastic, smooth	2 - 3
	Sand, fine to medium, very well sorted, except for occasional pebble size lignite fragments, drills easy	3 -42
	Clay, olive gray to olive black, silty, cohesive, some sand	42 -44
	Gravel, fine to coarse, brownish, moderately well sorted, composition, mostly brown limestone and shale, lots of lignite, some igneous and white limestone, occasional fragment of scoria and sandstone, clay lenses in upper section	44 -50
	Gravel, as above, mostly coarse, rough drilling, some clay lenses	50 -60
	Gravel, numerous clay lenses	60 -70
	Gravel and sand interbedded with soft sandy clay and smooth clay; drills easy except for caving cobbles	70 -80
	Sand, medium to coarse, gravelly near bottom	80 -90
	Sand, as above, some clay and gravel	90 -96
Hell Creek?	Clay, very sandy (fine), light greenish-gray with bluish tint, soft to moderately soft, cohesive, drills tight	96-100

138-80-8CBBC

Number: NDSWC 11125                      Date Drilled: 10/04/79  
 Elevation (ft. NGVD): 1630.94              Depth (ft): 40  
 Well Completion                              Use: T, O  
 Diameter (inches): 1½  
 Screened interval (ft): 37-40              Comments:

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil	0 - 1
	Clay, yellow brown, oxidized	1 - 7
	Sand, fine grained, oxidized, well sorted, subangular to subrounded, 75% quartz, 15% lignite, 15% carbonates	7 - 8
	Sand, as above, unoxidized	8 -40

138-80-8CBCD

Number: NDSWC 11124                      Date Drilled: 10/04/79  
 Elevation (ft. NGVD): 1630.56              Depth (ft): 120  
 Well Completion                              Use: T, O  
 Diameter (inches): 1½  
 Screened interval (ft): 80-83              Comments: C, E-log, behind archery range

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil	0 - 1
	Clay, yellow, brown, oxidized	1 - 8
	Clay, olive green, unoxidized	8 -10
	Sand, fine grained, well sorted, subangular to subrounded, unoxidized, 60% quartz, 30% lignite, 10% carbonates from 53 on, becomes coarser	10 -52
	Sand, gravelly, subangular to subrounded, poorly sorted, 33% quartz, 33% carbonate, 33% igneous. Becomes increasingly coarser with depth	52--92
Hell Creek	Shale, greenish gray, silty, sandy, very slow drilling	92-120

138-80-8DCCA

Number: Private well

Date Drilled:

Elevation (ft. NGVD): 1635.8

Depth (ft):

Well Completion

Use:

Diameter (inches): 2"

Screened interval (ft):

Comments:

Formation

Material

Depth Interval

No Log Available

138-80-8DDD

Number: USGS 1863                      Date Drilled: 11/17/60  
 Elevation (ft. NGVD): 1635 (T)        Depth (ft): 168  
 Well Completion: None                  Use: T  
 Diameter (inches):                      Comments: E-log  
 Screened interval (ft):

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Glacial drift	Topsoil, black	0 - 1
	Clay, brown, silty, to sandy	1 -15
	Sand, brown, fine to medium, clayey and silty	15 -21
	Sand, brown, fine to medium clay, brownish-gray, interbedded scattered lignite fragments	21 -32
	Sand, brown, fine to very coarse, clayey, rounded, abundant lignite	32 -36
	Sand, brown, medium to very coarse, abundant lignite fragments	36 -42
	Sand, brown, fine to very coarse, gravelly, poorly-sorted, lignite fragments	42 -58
	Gravel, fine to medium, sand, brown, medium to very coarse, clay, interbedded, silty	58 -63
	Gravel, fine to very coarse, sand, very coarse, abundant lignite fragments	63-105
	Sand, medium to very coarse, gravel, medium abundant lignite fragments	105-114
Hell Creek	Sandstone, light-greenish-gray, fine to very fine-grained, clayey, carbonaceous, abundant glauconite grains	114-126
	Sandstone, light-greenish-gray, very fine to fine-grained, very shaley, glauconitic	126-136
	Shale, greenish-gray, silty to sandy; siltstone, greenish-gray, glauconitic	136-152
	Shale, brown, carbonaceous	152-162
	Shale, brownish-gray, silty and sandy, glauconite (?) grains	162-168





138-80-9DCBA

Number: Wachter

Date Drilled:

Elevation (ft. NGVD): 1633.8

Depth (ft):

Well Completion

Use: T, O

Diameter (inches): 2

Screened interval (ft):

Comments: NDSWC obs. well

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
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No Log Available

138-80-10AAADA

Number: NDSWC 11147

Date Drilled: 10/10/79

Elevation (ft. NGVD): 1665.64

Depth (ft): 140

Well Completion

Use: T, O

Diameter (inches): 1½

Screened interval (ft): 109-112

Comments: C, in county shop yard

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
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Alluvium

	topsoil	0 - 1
	Sand and gravel, oxidized, fine to gravel, poorly sorted, subangular to subrounded, 60% quartz, 30% carbonate, 10% lignite	1 -11
	Sand, fine grained, well sorted, subangular to subrounded, 70% quartz, 20% carbonate, 10% lignite oxidized	11 -17
	Clay, olive gray, unoxidized, interbedded with thin layers of sand	17 -71
	Clay, olive gray	71 -81
	Sand, fine grained, well sorted, subangular to subrounded, 80% quartz, 10% carbonate, 10% lignite	81 -86
	Clay, olive gray	86-102
	Sand, very fine grained, well sorted, subrounded, 85% quartz, 15% lignite	102-112
	Clay, olive gray, silty	112-133

Hell Creek

	Shale, greenish gray, silty, carbonaceous, interbedded with limestone?, also, sandstone, fine grained, greenish gray, well sorted, subrounded to rounded, silty	133-140
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138-80-10CDAD<sub>1</sub>(South)

Number: NDSWC 11166

Date Drilled: 10/16/79

Elevation (ft. NGVD): 1649.77

Depth (ft): 80

Well Completion

Use: T, O

Diameter (inches): 1½

Screened interval (ft): 77-80

Comments: C

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil	0 - 1
	Sand, medium to coarse,grained, medium sorting, oxidized, 60% quartz, 20% igneous, 20% siltstone, subrounded to rounded	1 - 8
	Gravel, coarse,to pebbles, medium sorting, subrounded to rounded, oxidized, 50% carbonates, 50% igneous	8 -13
	Clay, olive gray, silty, sandy	13 -50
	Sand, coarse to gravelly, poorly sorted, subangular to rounded, 50% carbonates, 50% quartz	50 -54
	Clay, olive gray, silty sandy	54 -61
	Sand, very fine to fine grained, well sorted, subrounded,to rounded, 90% quartz, 10% lignite	61 -80

138-80-10CDAD<sub>2</sub>(North)

Number: NDSWC 11228                      Date Drilled: 10/16/79  
 Elevation (ft. NGVD): 1649.70              Depth (ft): 60  
 Well Completion                              Use: T, O  
     Diameter (inches): 1½  
     Screened interval (ft): 51-54              Comments: C, E-log

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium, terrace	Topsoil	0 - 1
	Sand, fine grained, subrounded to rounded, well sorted, oxidized, 10% lignite	1 - 8
	Gravel, fine to coarse, subangular to rounded, oxidized, poorly sorted	8 -12
	Sand, very fine grained, dark yellow brown, oxidized, well sorted, silty and very clayey (cohesive)	12 -22
	Clay, medium gray, brownish gray, unoxidized, silty, slightly calcareous, moderately cohesive, lenses of sand	22 -51
	Sand and gravel, medium sand to fine gravel, poorly sorted, predominantly medium to coarse sand, subangular to rounded	51 -54
	Clay, silty, olive gray, as above	54 -60

138-80-11ABB  
Log by Zachmeier Drilling

Number: Dakota Sand & Gravel #1      Date Drilled: 09/12/78  
Elevation (ft. NGVD): 1668 (T)      Depth (ft): 180  
Well Completion      Use: I  
Diameter (inches): 4  
Screened interval (ft): 140-180      Comments: Tested at 310 gpm,

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
	Topsoil	0 - 1
	Clay	1 -105
	Sand and gravel	105 -165
	Clay	165 -180

138-80-11DAA

Number: NDSWC 2643      Date Drilled: 05/18/67  
Elevation (ft. NGVD): 1667.0      Depth (ft): 155  
Well Completion      Use: T, O  
Diameter (inches): 1½  
Screened interval (ft): 134-148      Comments: C, USGS measures quarterly since 1967

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
	Sand, fine to coarse	0 - 9
	Clay, silty, yellowish-brown, with coal fragments	9 -17
	Clay, sandy, silty, olive gray with coal fragments	17 -54
	Sand, fine to medium	54 -56
	Clay, silty, olive gray	56 -58
	Sand, fine to coarse, with coal fragments	58 -71
	Clay, sandy, silty, light gray to bluish-gray	71 -78
	Sand, fine to coarse, lots of coal	78-100
	Coal	100-102
	Sand, fine to coarse, lots of coal	102-145
	Gravel, fine to medium (taking lots of water)	145-155

138-80-11DDD

Number: USGS 1858                      Date Drilled: 11/02/60  
 Elevation (ft. NGVD): 1667 (T)        Depth (ft): 84  
 Well Completion: None                  Use: T  
     Diameter (inches):  
     Screened interval (ft):            Comments: E-log

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Glacial drift	Sand, brown, fine to medium, carbonaceous	1 - 10
	Clay, buff, cohesive	10 - 21
	Clay, brown, silty to sandy	21 - 31
Hell Creek	Shale, light-gray, silty	31 -47
	Shale, yellowish-brown, and gray, silty	47 -52
	Shale, medium-gray, silty	52 -63
	Sandstone, light-gray, very fine to fine-grained, silty, friable, scattered glauconitic grains	63 -78
	Shale, light to medium-gray, silty, sandstone, light-gray, friable	78 -84

138-80-12BBC

Number: USGS #1859                      Date Drilled: 11/03/60  
 Elevation (ft. NGVD): 1664 (T)        Depth (ft): 115  
 Well Completion: None                  Use: T  
     Diameter (inches):  
     Screened interval (ft):            Comments: E-log

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Glacial drift	Sand, dark brown, fine to medium	0 - 5
	Clay, light brown, silty	5 -10
	Clay, brownish-gray, silty to sandy	10 -21
	Clay, light to medium-gray, silty	21 -42
	Gravel, coarse; sand, very coarse	42 -43
	Clay, medium-gray, silty	43 -63
	Sand, gray, fine to medium	63 -67
	Clay, gray, silty, lignite fragments	67 -74
	Clay, medium-gray, silty and sandy	74 -94
	Gravel, medium to very coarse, lignite fragments (lost circulation)	94-115

138-80-13BCB

Number: NDSWC 2642                      Date Drilled: 05/18/67  
 Elevation (ft. NGVD): 1656 (T)              Depth (ft): 100  
 Well Completion: None                      Use: T  
 Diameter (inches):  
 Screened interval (ft):                      Comments:

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
	Sand, fine to medium	0 - 9
	Sand, fine to coarse	9 -13.5
	Clay, sandy, silty, yellowish brown oxidized	13.5-29
	Clay, sandy, silty, olive gray	29 -35
	Sand, fine to medium	35 -44
	Clay, sandy, silty, olive gray	44 -55
	Sand, fine to medium	55 -58
	Clay, sandy, silty, olive gray	58 -58.5
	Sand, fine to medium to coarse	58.5-67
Hell Creek?	Clay, sandy, silty, light bluish-gray to medium gray	67-100

138-80-13BDB<sub>1</sub>  
 Log by Empire Drilling

Number: Thom, test hole                      Date Drilled: 09/31/65  
 Elevation (ft. NGVD): 1655 (T)              Depth (ft): 90  
 Well Completion                              Use: T, O  
 Diameter (inches): 2.5  
 Screened interval (ft): 77-87              Comments:

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
	Topsoil	0 - 2
	Sand	2 -18
	Till, oxidized	18 -31
	Sand, fine	31 -38
	Clay	38 -49
	Sand, medium	49 -57
	Clay	57 -65
	Gravel and sand	65 -87
	Shale	87 -90

138-80-13BDB<sub>2</sub>

Number: Thom Irrigation Well #1      Date Drilled:  
 Elevation (ft. NGVD): 1655 (T)      Depth (ft): ?  
 Well Completion      Use: I  
 Diameter (inches):  
 Screened interval (ft):      Comments: C

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
	None Available, See Log for 138-80-13BDB <sub>1</sub>	

138-80-13CCC

Number: USGS 1857      Date Drilled: 10/31/60  
 Elevation (ft. NGVD): 1641 (T)      Depth (ft): 493  
 Well Completion: None      Use: T  
 Diameter (inches):  
 Screened interval (ft):      Comments: E-log

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Glacial drift	Topsoil, brown, sandy and clayey	0 - 5
	Sand, brown, fine to medium clayey	5 -10
	Sand, brown, fine to medium, poorly sorted	10 -21
	Sand, medium-gray, very fine to fine, silty to clayey; clay, medium-gray, silty and sandy; interbedded	21 -42
	Sand, medium-gray, very fine to fine, silty to clayey; clay, medium-gray, silty and sandy; interbedded; lignite fragments	42 -78
	Sand, medium-gray, fine to coarse, gravelly, abundant lignite	78 -84
Hell Creek	Shale, light-greenish-gray, silty, and sandy; sandstone, light-brown, indurated	84 -99
	Sandstone, bluish-gray, silty and clayey, friable	99-105
	Shale, bluish-gray, silty, and sandy	105-115
	Shale, bluish-gray, silty; shale, brownish-gray, silty; interbedded	115-121
	Sandstone, bluish-gray, very fine to fine-grained, silty and clayey, friable	121-126
	Sandstone, bluish-gray, very fine to fine-grained, silty, friable; shale, dark-greenish-gray, silty; interbedded	126-141
	Sandstone, dark-greenish-gray, very fine to fine-grained, friable, silty and clayey, abundant glauconite grains	141-147

138-80-13CCC Cont.

Number: USGS 1857                      Date Drilled:  
 Elevation (ft. NGVD):                  Depth (ft):  
 Well Completion                      Use:  
 Diameter (inches):  
 Screened interval (ft):                  Comments:

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Fox Hills	Shale, dark-brown, carbonaceous	147-166
	Sandstone, dark-greenish-gray, very fine to fine-grained, friable, glauconitic (?)	166-168
	Shale, brownish-gray, silty, carbonaceous	168-173
	Shale, medium-gray, silty; sandstone, medium-gray, silty and clayey, interbedded	173-231
	Shale, medium-gray, silty, carbonaceous streaks	231-278
	Sandstone, dark-greenish-gray, friable, abundant glauconite, shaley, scattered carbonized wood fragments	278-294
	Sandstone, dark-greenish-gray, friable, very abundant glauconite, carbonized wood fragments	294-315
	Sandstone, dark-greenish-gray, very fine to fine-grained, friable, abundant glauconite; shale, grayish-green; interbedded	315-393
	Sandstone, dark-greenish-gray, very fine to fine-grained, friable, silty and clayey, very abundant glauconite	393-399
	Sandstone, dark-greenish-gray, very fine to fine-grained, silty and clayey, very abundant glauconite; shale, greenish-gray, black carbonaceous specks	399-421
	Shale, dark-gray, silty; sandstone, greenish-gray, interbedded	421-441
Pierre Shale	Shale, grayish-black, silty in part	441-493

138-80-14ADAA

Number: NDSWC 11117 Date Drilled: 10/03/79  
 Elevation (ft. NGVD): 1649.32 Depth (ft): 40  
 Well Completion Use: T, O  
 Diameter (inches): 1½  
 Screened interval (ft): 35-38 Comments: C

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
	Topsoil	0 - 1
	Sand, fine grained, well sorted, subrounded, 70% quartz, 20% carbonate, 10% shale, oxidized	1 -11
	Clay, yellow brown, oxidized, silty	11 -24
	Clay, olive green to brown, unoxidized, silty	24 -32
	Sand, interbedded with clay, sand, fine grained well sorted, 90% quartz, 10% carbonate and lignite, clay, olive green to brown, silty	32 -40

138-80-15BBB

Log by Soil Testing Services

Number: Corps PZ-78-12 Date Drilled: 09/12/78  
 Elevation (ft. NGVD): 1658.8 top of MP Depth (ft): 80  
 Well Completion Use: T, O  
 Diameter (inches): ?  
 Screened interval (ft): 75-80 Comments:

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
	Sand, fine to coarse, gravelly, silty, brown, (moist)	0 - 8
	Sand, brown, gravelly, fine to coarse (moist)	8 -16
	Clay, brown, silty and sandy	16 -29
	Sand, dark brown, silty, trace of clay (saturated)	29 -35
	Sand, gray, very fine, clayey (saturated)	35 -70
	Shale	70 -80



138-80-15BBD  
Log by Soil Conservation Service

Number: Ft. Lincoln Nursery  
Irrigation Well #2  
Elevation (ft. NGVD): 1567.8

Date Drilled: 1958  
Depth (ft): 129

Well Completion  
Diameter (inches): 17  
Screened interval (ft):

Use: I  
Comments: C

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
	Topsoil	0 - 3
	Sand and gravel	3 -16
	Very fine sand	16 -26
	Boulder	26 -27
	Clay	27 -37
	Clay	37 -47
	Clay	47 -57
	Clay	57 -60
	Fine and medium sand	60 -62
	Very fine sand	62 -67
	Very fine sand	67 -68
	Boulder	68 -69
	Fine sand	69 -77
	Lignite and gray clay	77 -87
	Lignite	87 -93
	Lignite and fine and medium sand	93 -97
	Lignite and medium sand	97-107
	Lignite and medium sand	107-117
	Lignite and sand	117-129
	Boulders (ended hole)	129-129

138-80-15CAA<sub>1</sub>(South)

Number: NDSWC 11230A                      Date Drilled: 04/23/80  
 Elevation (ft. NGVD): 1656.5              Depth (ft): 160  
 Well Completion                              Use: T, O  
     Diameter (inches): 1½  
     Screened interval (ft): 138-141      Comments: C, E-log

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
	Topsoil	0 - 1
	Silt, clayey, calcareous, slightly oxidized	1 - 4
	Sand, and gravel, coarse sand to medium gravel, predominantly gravel, subangular to rounded, oxidized	4 -13
	Clay, grayish orange, oxidized, calcareous, moderately cohesive and plastic	13 -32
	Silt, brownish gray, slightly calcareous, unoxidized, very clayey, slightly cohesive	32 -52
	Sand, fine grained, well sorted, subrounded to rounded, predominantly quartz, 20% shale	52 -55
	Clay, brownish gray, calcareous, silty, moderately cohesive, and plastic, interbedded with fine sand from 84-86, taking water, some detrital lignite	55 -88
	Sand, fine to medium, predominantly medium subrounded to rounded, 30 gravel size detrital lignite, taking water, become coarser with depth	88-100
	Sand, coarse to fine gravel, predominantly coarse sand, rounded, medium sorting, up to 40% detrital lignite, predominantly quartz, with remainder shale, carbonate become coarser with depth (taking water)	100-145
Hell Creek	Sandstone and shale, interbedded, sandstone is fine grained, well sorted, rounded, argillaceous, non-calcareous, dark gray, slightly carbonaceous, shale is light brown to gray, silty, sandy, non-calcareous, slightly carbonaceous	145-160



## 138-80-15CCCC

Number: NDSWC 11148                      Date Drilled: 10/10/79  
 Elevation (ft. NGVD): 1633.45              Depth (ft): 120  
 Well Completion                              Use: T, O  
     Diameter (inches): 1½  
     Screened interval (ft): 88-91              Comments: C

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil	0 - 1
	Clay, yellow brown, oxidized	1 -17
	Clay, olive gray, unoxidized	17 -20
	Sand, fine grained, well sorted, subrounded to rounded, 90% quartz, 10% lignite	20 -32
	Sand, fine to coarse, poorly sorted, subangular to subrounded, 80% quartz, 10% carbonates, 10% lignite	32 -48
	Sand and gravel, coarse sand to gravel, poorly sorted, subangular to rounded, 40% igneous, 30% carbonate, 20% quartz, 10 lignite	48 -56
	Clay, olive gray	56 -57
	Sand and gravel, as above	57 -61
	Sand, fine to coarse, poorly sorted, subangular to rounded, 60% quartz, 20% carbonates, 10% shale, 10% lignite	61 -79
	Gravel, fine to medium, well sorted, subrounded to rounded, 40% igneous, 40% carbonate, 20% quartz (from 102-110 becomes finer with lenses of lignite)	79-110
Hell Creek	Siltstone, brownish gray, sandy, slightly carbonaceous	110-120



138-80-15CDD

Number: Fort Lincoln Irrigation      Date Drilled:  
           Well #3  
 Elevation (ft. NGVD): 1660 (T)      Depth (ft): ?  
 Well Completion                      Use: I  
     Diameter (inches): ?  
     Screened interval (ft): ?              Comments:

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
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No Log Available

138-80-15CDD<sub>2</sub>

Number: USGS 1956A                      Date Drilled: 10/02/61  
 Elevation (ft. NGVD): 1658 (T)      Depth (ft): 21  
 Well Completion                      Use: T, O  
     Diameter (inches): ?  
     Screened interval (ft): ?              Comments: Measured monthly by USGS

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
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	Topsoil, black	0 - 2
	Clay, yellow, silty	2 - 7
	Gravel, fine to coarse with sand layers	7 -21

138-80-15DAB  
Log by Water Supply, Inc.

Number: Bismarck Airport Test                      Date Drilled: 05/11/82  
           Hole #1  
 Elevation (ft. NGVD): 1650 (T)                      Depth (ft): 125  
 Well Completion    Use: T, O, I  
     Diameter (inches): 2  
     Screened interval (ft): 115-120                      Comments:

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
	Topsoil	0 - 2
	Sand, fine, medium to coarse, 10% gravel	2 - 8
	Clay, silty, yellowish brown	8 - 17
	Clay, silty, olive gray	17 - 19
	Clay, silty, olive gray, with small sand layers	19 - 27
	Clay, silty, olive gray	27 - 37
	Clay, hard olive gray	37 - 39
	Sand, fine	39 - 44
	Clay, silty, olive gray	44 - 46
	Sand	46 - 49
	Clay, silty, olive gray	49 - 57
	Sand, fine	57 - 62
	Clay, silty, olive-gray with sand layers	62 - 79
	Sand, fine to medium with lots of coal	79 - 83
	Coal, slack with sand and clay layers	83 - 87
	Clay, coal and sand	87 - 97
	Gravel, fine, medium to coarse 40% sand with lots of coal	97-102
	Gravel, clay, sand and coal	102-106
	Gravel, fine to coarse, 40% sand, a little coal	106-120
	Clay, silty, medium gray to brownish gray (bedrock?)	120-125

138-80-15DBB<sub>1</sub>  
Log by Water Supply, Inc.

Number: Bismarck Airport Test      Date Drilled: 05/12/82  
           Hole #3  
 Elevation (ft. NGVD): 1650 (T)      Depth (ft): 150  
 Well Completion                      Use: T, O, I  
   Diameter (inches): 2  
   Screened interval (ft): 115-120      Comments:

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
	Topsoil, silty, black	0 - 1
	Clay, silty, yellowish brown	1 - 3
	Gravel, fine, medium to coarse, 30% sand	3 -10
	Clay, silty, yellowish-brown	10 -30
	Clay, silty, olive gray	30 -33
	Sand, fine	33 -35
	Clay, silty, olive gray	35 -49
	Sand, fine to medium with a little coal	49 -71
	Sand, fine medium to coarse	71 -85
	Clay, silty, olive gray	85 -97
	Gravel, fine, medium to coarse 35% sand with a little coal	97-121
	Coal slack, with gravel layers	121-123
	Sand, fine, medium to coarse 20% gravel	123-139
	Gravel, coal, clay, rocks	139-142
	Clay, silty, brownish gray to bluish gray (bedrock?)	142-150

138-80-15DBB<sub>2</sub>  
Log by Water Supply, Inc.

Number: Bismarck Airport Test      Date Drilled: 05/13/82  
           Hole #4  
 Elevation (ft. NGVD): 1650 (T)      Depth (ft): 130  
 Well Completion                      Use: T, O, I  
   Diameter (inches): 6  
   Screened interval (ft): 109-119      Comments: Tested at 92 gpm

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
	Topsoil, silty, black	0 - 1
	Clay, silty, yellowish brown	1 - 3
	Gravel, fine, medium to coarse about 30% sand	3 -17
	Clay, silty, yellowish brown	17 -22
	Clay, silty, olive gray	22--31
	Sand, fine	31 -32
	Clay, silty, olive gray	32 -49
	Sand, fine to medium with a little coal	49 -76
	Clay, silty, olive gray	76 -81
	Sand, fine, medium to coarse	81 -86
	Clay, silty, olive gray, with sand layers	86 -97
	Sand, fine, medium to coarse with a little coal	97-102
	Gravel, fine, medium to coarse 50% sand	102-123
	Sand, fine, medium to coarse	123-130





138-80-16DCCA<sub>1</sub>(South)

Number: NDSWC 11260                      Date Drilled: 05/05/80  
 Elevation (ft. NGVD): 1631.90              Depth (ft): 140  
 Well Completion                              Use: T, O  
     Diameter (inches): 1½  
     Screened interval (ft): 93-96              Comments: C, E-log

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil, very sandy	0 - 1
	Clay, dark yellowish brown, oxidized, slightly calcareous, silty, moderately cohesive	1 -18
	Silt, brownish gray, unoxidized, slightly calcareous	18 -22
	Sand, medium to coarse, predominantly medium well sorted, subrounded to rounded (taking water)	22 -49
	Gravel, fine to coarse, predominantly medium, poorly sorted, subrounded to rounded, some lignite	49 -72
	Clay, poor sample	72 -76
	Gravel, coarse sand to medium gravel, poorly sorted, subrounded to rounded, 15% angular lignite, taking water, becomes coarser with depth	76-113
	Hell Creek	Sandstone, very fine grained, well sorted, rounded, argillaceous, noncalcareous, slightly glauconitic, carbonaceous

138-80-16DCCA<sub>2</sub>(North)

Number: NDSWC 11231                      Date Drilled: 04/23/80  
 Elevation (ft. NGVD): 1631.90              Depth (ft): 60  
 Well Completion                              Use: T, O  
   Diameter (inches): 1½  
   Screened interval (ft): 56-59              Comments: C

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil	0 - 1
	Clay, dark yellowish brown, slightly calcareous, silty, moderately cohesive and plastic, oxidized	1 -12
	Clay, medium gray, slightly calcareous, silty, moderately cohesive and plastic, unoxidized	12 -28
	Sand, very fine grained, well sorted, subrounded to rounded, unoxidized, predominantly quartz with 10% lignite, section becomes coarser with depth (taking water)	28-49
	Gravel, fine to medium, medium sorting sub-rounded to rounded, some detrital lignite	49 -60

138-80-17ACA

Number: USGS Auger Hole 22                      Date Drilled:  
 Elevation (ft. NGVD): 1637.2                      Depth (ft): 72  
 Well Completion                                      Use: T, O  
   Diameter (inches): ?  
   Screened interval (ft): ?                      Comments:

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil, pale-yellowish-brown, clay	0 - 4
	Clay, moderate-yellowish-brown, sand, fine to medium silty	4 -19
	Sand, moderate-yellowish-brown, fine to medium lignite fragments	19 -34
	Sand, olive-gray, fine to medium, lignite fragments	34 -66
	Gravel, fine to coarse, sand, fine to very coarse	66 -72

138-80-17ACB<sub>1</sub>  
Log by Schnell, Inc.

Number: John Peterson Irrigation      Date Drilled: 1961  
Well #1  
Elevation (ft. NGVD): 1638.1      Depth (ft): 90  
Well Completion      Use: I, O  
Diameter (inches): 17  
Screened interval (ft): 76-88      Comments: C, Pumping test available,  
Randich, 1966

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
	Topsoil	0 - 3
	Brown sandy soil	3 -13
	Fine sand	13 -40
	Sand and coal (stratified)	40 -53
	Blue clay	53 -58
	Gravel	58 -89
	Clay (Fort Union (?) Group)	89 -90

138-80-17ACB<sub>2</sub>

Number: USGS Auger Hole 21      Date Drilled: 10/22/62  
Elevation (ft. NGVD): 1637.5      Depth (ft): 67  
Well Completion      Use: T, O  
Diameter (inches): ?  
Screened interval (ft): ?      Comments:

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil, pale-yellowish-brown, clayey to silty	0 - 4
	Clay, moderate-yellowish-brown, silty	4 -20
	Sand, moderate-yellowish-brown, fine to medium lignite fragments	20 -38
	Sand, light-olive gray, fine to medium, clayey, lignite fragments	38 -51
	Gravel, medium, sandy, lignite fragments	51 -53
	Clay, light-olive gray; sand, fine to medium	53 -59
	Gravel, fine to very coarse; sand, fine to very coarse	59 -67

138-80-17ACCC

Number: NDSWC 11149

Date Drilled: 10/10/79

Elevation (ft. NGVD): 1633.88

Depth (ft): 120

Well Completion

Use: T, O

Diameter (inches): 1½

Screened interval (ft): 78-81

Comments:

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil	0 - 1
	Clay, yellow brown, oxidized	1 -16
	Clay, olive gray, unoxidized, silty	16 -23
	Sand, fine grained, well sorted, subrounded, 70% quartz, 20% lignite, 10% carbonate	23 -64
	Gravel, medium to coarse, subrounded to rounded, medium sorting, 50% carbonates, 40% igneous, 10% quartz	64 -93
	Sand, interbedded with lignite	93-106
Hell Creek	Shale, greenish gray	106-120





138-80-17CDD<sub>2</sub>

Number: NDSWC 2907-A                      Date Drilled: 03/26/73  
 Elevation (ft. NGVD): 1637.7              Depth (ft): 40  
 Well Completion                              Use: T, O  
   Diameter (inches): 1½  
   Screened interval (ft): 27.3-33.3      Comments: C, measured monthly by USGS

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil	0 - 1
	Clay, yellowish-brown, silty, oxidized	1 - 8
	Clay, olive gray, silty, unoxidized	8 -20
	Sand, fine to medium	20 -40

138-80-17DBAB

Number: NDSWC 11150                      Date Drilled: 10/10/79  
 Elevation (ft. NGVD): 1633.42              Depth (ft): 40  
 Well Completion                              Use: T, O  
   Diameter (inches): 1½  
   Screened interval (ft): 37-40          Comments: C

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil	0 - 1
	Clay, yellow brown, oxidized	1 -14
	Clay, olive gray, silty, unoxidized	14 -22
	Sand, fine grained, well sorted, subangular to subrounded, 80% quartz, 10% carbonates, 10% lignites	22 -40



138-80-18AACD

Number: NDSWC 11154                      Date Drilled: 10/11/79  
 Elevation (ft. NGVD): 1633.45              Depth (ft): 40  
 Well Completion                              Use: T, O  
 Diameter (inches): 1½  
 Screened interval (ft): 34-37              Comments:

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil, light brown, sandy	0 - 1
	Clay, yellow brown, silty, oxidized	1 -10
	Sand, fine grained, well sorted, angular to rounded, 80% quartz, 10% carbonate, 10% lignite, oxidized	10 -13
	Clay, olive gray	13 -22
	Sand, fine grained, well sorted, angular to rounded, 60% quartz, 30% lignite, 10% carbonate, unoxidized	22 -36
	Clay, olive gray	36 -40

138-80-18CBDD

Number: NDSWC 11153                      Date Drilled: 10/11/79  
 Elevation (ft. NGVD): 1628.24              Depth (ft): 60  
 Well Completion                              Use: T, O  
 Diameter (inches): 1½  
 Screened interval (ft): 48-51              Comments: C

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil	0 - 1
	Clay, yellow brown, oxidized	1 - 4
	Sand, fine grained, well sorted, oxidized, subangular to rounded, 70% quartz, 20% lignite, 10% carbonate	4 - 9
	Sand, fine grained, well sorted, unoxidized, subangular to rounded, 70% quartz, 20% lignite, 10% carbonate	9 -26
	Gravel, mediumgrained, well sorted, angular to rounded, 50% carbonate, 40% igneous, 10% quartz	26 -53
	Clay, olive gray, silty, sandy	53 -60



## 138-80-19DAA

Number: Corps PX-78-6

Date Drilled: 09/07/78

Elevation (ft. NGVD): 1632.4 top  
of MP

Depth (ft): 40

Well Completion

Use: T, O

Diameter (inches): 1½

Screened interval (ft): 35-40

Comments: C, measured monthly by USGS

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Silt, brown to dark brown, trace of clay and gravel (roots)	0 - 10
	Sand, very fine, gray-brown, silty, trace of clay, saturated	10 - 20
	Sand, brown, very fine, trace of silt, saturated	20 - 25
	Sand, fine to medium, brown and gray brown, trace of silt, saturated	25 - 37
	Sand, black and dark gray, slightly organic, silty, trace of coal, saturated	37 - 40

## 138-80-19DBADA

Number: NDSWC 11146

Date Drilled: 10/09/79

Elevation (ft. NGVD): 1628.48

Depth (ft): 140

Well Completion

Use: T, O

Diameter (inches): 1½

Screened interval (ft): 98-101

Comments: C

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil	0 - 1
	Clay, yellow brown, oxidized	1 -10
	Clay, olive gray, unoxidized	10 -20
	Sand, gravelly, sand is fine grained, well sorted, subangular to subrounded, 60% quartz, 20% carbonate, 10% shale, 10% detrital lignite, Gravel is subangular to subrounded 20% quartz, 40% carbonate, 40% igneous	20 -68
	Clay, medium gray, silty	68 -89
	Gravel, coarse sand and gravel, poorly sorted, subangular to subrounded, 30% detrital lignite, 30% carbonate, 40% quartz	89 -95
	Gravel and cobbles, coarse, subrounded to rounded, 50% igneous, 30% shale and carbonates, 20% quartz	95-121
	Hell Creek	Shale, medium gray, very poor sample return

138-80-19DCC<sub>1</sub>(East)

Number: NDSWC 11265A                      Date Drilled: 05/08/80  
 Elevation (ft. NGVD): 1634.0              Depth (ft): 140  
 Well Completion                              Use: T, O  
     Diameter (inches): 1½  
     Screened interval (ft): 83-86          Comments: C, E-log

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil	0 - 1
	Sand, very fine grained, well sorted, rounded, slightly clayey (oxidized)	1 - 8
	Silt, dark yellow brown, very clayey, moderately to slightly cohesive, noncalcareous (oxidized)	8 -18
	Silt, brownish gray, unoxidized, non-calcareous, clayey, moderately cohesive	18 -20
	Sand, fine grained well sorted, rounded, unoxidized, 75% quartz, 10% carbonates, 15% lignite; small interbeds of clay	20 -69
	Gravel, fine gravel, well sorted, 50% quartz, 50% carbonaceous	69 -72
	Clay, light brownish gray, non calcareous, very silty and sandy	72 -76
	Clay and gravel, interbedded, lots of lignite	76-104
	Gravel, coarse sand to medium gravel, poorly sorted, angular to rounded, 50% carbonate, 20% quartz, 20% shale, 10% lignite	104-109
	Hell Creek	Shale, medium brown, carbonaceous, slightly silty, poorly to moderately indurated, noncalcareous

138-80-19DCC<sub>2</sub>(West)

Number: NDSWC 11265B

Date Drilled: 05/08/80

Elevation (ft. NGVD): 1633.5

Depth (ft): 40

Well Completion

Use: T, O

Diameter (inches): 1½

Screened interval (ft): 33-36

Comments: C

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil	0 - 1
	Clay, yellowish-brown, silty, oxidized	1 -17
	Clay, gray, silty, sandy	17 -22
	Sand, fine	22 -40

138-80-19DD

Log by Farmers Supply Co.

Number: ND State Prison  
Farm Irrigation Well #2  
Elevation (ft. NGVD): 1630 (T)

Date Drilled: 11/11/77

Depth (ft): 120

Well Completion

Use: I, D

Diameter (inches): 8 5/8

Screened interval (ft): 95-115

Comments: C, pumped 80 gpm

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Sand	0 - 5
	Clay, yellow, sandy	5 -15
	Sand, fine, gray	15 -21
	Sand, coarse	21 -94
	Gravel, coarse	94-120

138-80-20AAA  
Log by Gary Huber

Number: Gary Huber

Date Drilled: 1969

Elevation (ft. NGVD): 1635 (T)

Depth (ft): 230

Well Completion

Use: D

Diameter (inches): 4

Screened interval (ft): 230?

Comments: Left open end, bedrock well?

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Clay, brown	0 -14
	Clay, blue	14 -16
	Sand	16 -43
	Silt, blue, clayey	43 -75
	Gravel, with lignite	75 -85
	Sand, coarse	85-121
	Gravel, with lignite	121-137
	Clay, green	137-138
	Sand, coarse	138-157
	Clay, green	157-159
Gravel	159-165	
Hell Creek?	Shale, blue	165-185
	Sand, blue	185-195
	Shale, blue	195-201
	Sandstone, blue	201-230

138-80-20BBBA

Number: NDSWC 11152

Date Drilled: 10/11/79

Elevation (ft. NGVD): 1634.04

Depth (ft): 90

Well Completion

Use: T, O

Diameter (inches): 1½

Screened interval (ft): 68-71

Comments:

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil	0 - 1
	Clay, yellow brown, oxidized	1 - 4
	Sand, fine grained, well sorted, subangular to rounded, 85% quartz, 10% lignite, 5% carbonate, oxidized	4 -24
	Sand, fine grained, well sorted, subangular to rounded, 80% quartz, 10% carbonate, 10% lignite, unoxidized	24 -44
	Gravel, medium to coarse, medium sorting, subangular to rounded, 50% carbonate, 40% igneous, 10% quartz	44 -73
	Clay, olive gray	73 -78
	Gravel, medium to coarse, medium sorting, subrounded	78 -79
Hell Creek	Sandstone, very fine grained, olive gray, well sorted and rounded, silty, carbonaceous	79 -90

## 138-80-20DCCC

Number: NDSWC 11141                      Date Drilled: 10/09/79  
 Elevation (ft. NGVD): 1629.91              Depth (ft): 140  
 Well Completion                              Use: T, O  
   Diameter (inches): 1½  
   Screened interval (ft): 78-81              Comments: E-log

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil	0 - 1
	Clay, yellow brown, silty, sandy, oxidized	1 -10
	Clay, olive gray, silty, sandy	10 -22
	Sand, fine to medium grained, well sorted, subangular to subrounded, 70% quartz, 20% detrital shale, and lignite, 10% carbonate with small layers of clay	22 -48
	Sand and gravel, fine sand to gravel, poorly sorted, subangular to subrounded, 20% quartz, 30% igneous, 30% carbonates, 20% shale	48 -62
	Gravel, coarse to pebbles, subrounded to round, 50% igneous, 40% carbonates and detrital slate, 10% quartz, lenses of detrital lignite	62 -96
	Clay, silty sandy, olive gray, interbedded with sands and gravel	96-130
Hell Creek	Shale, greenish gray, silty, interbedded bentonite	130-140

138-80-21ABC  
 Log by Midwest Valley, Inc.

Number: Wachter Irrigation Well              Date Drilled: 05/15/72  
 Elevation (ft. NGVD): 1630 (T)              Depth (ft): 100  
 Well Completion                              Use: I  
   Diameter (inches): 16  
   Screened interval (ft): 100 slot              Comments: Pumps 800 gpm  
   from 50-56 and 82-96

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil	0 - 1
	Clay, dirty	1 -15
	Sand, fine, gray	15 -40
	Sand, fine, gray, with gravel	40 -50
	Gravel, coarse, very sorted	50 -56
	Sand and gravel, dirty	56 -79
	Sand, fine, gray	79 -81
	Sand and gravel, gray	81 -98
	Sand, fine, silty	98-100



138-80-21CCC

Number: USGS 1854 Date Drilled: 10/27/60  
 Elevation (ft. NGVD): 1631(T) Depth (ft): 147  
 Well Completion: None Use: T  
 Diameter (inches): Screened interval (ft): Comments: E-log

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil, black	0 - 1
	Clay, buff, silty and sandy	1 -21
	Clay, brownish-gray, silty	21 -27
	Sand, light-brown, very fine to fine	27 -32
	Sand, light-brown, fine to medium, clayey, lignite fragments	32 -49
	Gravel, medium to very coarse, lignite fragments	49 -61
	Gravel, medium sandy, abundant lignite fragments	61-124
Hell Creek	Sandstone, medium-gray, very fine to fine-grained, friable, shale, greenish-gray to dark brown, lignitic	124-142
	Sandstone, greenish-gray, fine-grained, friable, clayey and silty, glauconitic (?)	142-147

138-80-22AAC  
 Log by Burgess Co.

Number: D. McDonald Irrigation Date Drilled: 10/60  
 Well #1  
 Elevation (ft. NGVD): 1660.9 Depth (ft): 131  
 Well Completion Use: I  
 Diameter (inches): 17  
 Screened interval (ft): 99-131 Comments: C, see Randich 1966 for pumping test

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
	Topsoil and clay	0 - 2
	Sand	2 - 6
	Gravel	6 -18
	Clay and gravel mixed	18 -28
	Clay	28 -39
	Sandy clay	39 -74
	Sand	74 -76
	Sandy clay	76 -84
	Fine sand with lignite and clay layers	84 -93
	Medium sand with lignite	93 -98
	Rice gravel	98-118
	Coarse gravel with lignite layers	118-131



138-80-22ABD<sub>2</sub>

Number: USGS 1957

Date Drilled: 10/04/61

Elevation (ft. NGVD): 1659.4

Depth (ft): 157.5

Well Completion

Use: T, O

Diameter (inches): 1½

Screened interval (ft): 127.5-157.5 Comments: C, E-log

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Glacial drift	Topsoil, black	0 - 1
	Sand, very fine to coarse, silty to clayey, oxidized	1 - 4
	Gravel, fine to coarse, sandy, unsorted, rounded, oxidized	4 -20
	Sand, fine to very coarse, well sorted, angular, oxidized	20 -25
	Clay, yellowish-brown, sandy, cohesive, lignite fragments	25 -32
	Clay, light-olive-gray, very silty to sandy, cohesive, lignite fragments	32 -62
	Clay, light-olive-gray, silty to sandy, cohesive; sand, fine; interbedded, lignite fragments	62 -90
	Sand, fine to medium, well-sorted, angular to subrounded, lignite fragments	90 -94
	Sand, fine to medium well sorted; clay, olive-gray, cohesive, interbedded	94-100
	Gravel, fine to coarse, sandy, unsorted, angular to rounded, lignite fragments	100-152
	Hell Creek	Clay, light-olive-gray, silty to sandy, indurated

138-80-22CDCC

Number: NDSWC 11145                      Date Drilled: 10/09/79  
 Elevation (ft. NGVD): 1623.87              Depth (ft): 80  
 Well Completion                      Use: T, O  
     Diameter (inches): 1½  
     Screened interval (ft): 60-63              Comments: C

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil	0 - 1
	Clay, yellow brown, very tight and cohesive, oxidized	1 -12
	Clay, olive gray, unoxidized	12 -21
	Sand, fine grained, well sorted, subangular to subrounded, 80% quartz, 10% carbonates, 10% lignite	21 -80

138-80-22DCCC

Number: NDSWC 11137                      Date Drilled: 10/08/79  
 Elevation (ft. NGVD): 1653.25              Depth (ft): 80  
 Well Completion                      Use: T, O  
     Diameter (inches): 1½  
     Screened interval (ft): 77-80              Comments: C, well screened in bedrock, observation well destroyed

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
	Topsoil	0 - 1
	Sand, fine grained, subangular to subrounded, well sorted, oxidized, 90% quartz, 10% lignite	1 - 3
	Gravel, fine grained sand to gravel, poorly sorted, subangular to subrounded, oxidized, 70% quartz, 15% carbonate, 15% igneous	3 -22
	Clay, yellow brown, oxidized, silty	22 -43
Hell Creek	Sandstone, very fine grained, greenish-gray, silty, interbedded with lignite and gray silty clay	43- 80

138-80-23ADAD

Number: NDSWC 11118

Date Drilled: 10/03/79

Elevation (ft. NGVD): 1648.04

Depth (ft): 80

Well Completion

Use:

Diameter (inches): 1½

Screened interval (ft): 60-63

Comments: C, observation well destroyed,  
E-log

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
	Topsoil	0 - 1
	Sand, fine grained, well sorted, oxidized, subrounded, 60% quartz, 30% carbonate, 10% lignite	1 - 5
	Clay, yellow brown, oxidized, silty	5 - 9
	Clay, olive green, unoxidized, silty, becomes less silty with depth	9 -35
	Sand, fine grained, unoxidized, well sorted, subrounded, 90% quartz, 10% carbonate and lignite,	35 -40
	Clay, olive green, silty	40 -51
	Sand, fine grained, well sorted, subrounded, unoxidized, 90% quartz, 10% carbonate and lignite	51 -66
	Clay, olive green, silty	66 -67
	Sand, fine grained, well sorted, sub- rounded, 80% quartz, 20% lignite	67 -76
	Clay, olive green, silty	76 -80

138-80-23ADCD<sub>1</sub>(West)

Number: NDSWC 11119                      Date Drilled: 10/03/79  
 Elevation (ft. NGVD): 1648.50              Depth (ft): 100  
 Well Completion                      Use: T, O  
     Diameter (inches): 1½  
     Screened interval (ft): 84-87              Comments: C, E-log

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
	Topsoil	0 - 1
	Sand, fine grained, well sorted, subrounded, oxidized, 70% quartz, 20% carbonate, 10% lignite, lignite content increases at bottom	1 -14
	Clay, olive green, silty, unoxidized	13 -32
	Sand, fine grained, unoxidized, well sorted, subrounded, 70% quartz, 20% carbonate, 10% lignite	32 -46
	Clay, olive green, unoxidized, silty	46 -52
	Sand, fine grained, well sorted, subrounded	52 -56
	Clay, olive green, silty, unoxidized	56 -58
	Sand, fine grained, well sorted, subrounded, 80% quartz, 10% carbonate, 10% lignite	58 -84
	Gravel, well sorted, subrounded, unoxidized, 33% quartz, 33% igneous, 33% carbonate, some coarse sand	84 -92
Hell Creek	Sandstone, very fine, gray, greenish-gray	92-100

138-80-23ADCD<sub>2</sub>(East)

Number: NDSWC 11229                      Date Drilled: 04/23/80  
 Elevation (ft. NGVD): 1648.25              Depth (ft): 100  
 Well Completion                      Use: T, O  
     Diameter (inches): 1½  
     Screened interval (ft): 44-47              Comments: C, E-log

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
	Topsoil	0 - 1
	Sand, fine grained, very well sorted, subrounded, to rounded, slightly oxidized, predominantly quartz	1 -16
	Lignite, detrital	16 -17
	Clay, brownish-gray, slightly silty, slightly calcareous, mildly cohesive	17 -36
	Sand, fine grained, very well sorted, subangular to rounded, 15% detrital lignite, 85% quartz	36 -48
	Clay, brownish-gray, silty, slightly calcareous, moderately cohesive and plastic, easy drilling, from 63 feet on, becomes more silty	48 -81
	Sand, fine to coarse, predominantly coarse, medium sorting, subrounded to rounded, becomes coarser with depth, to fine to medium gravel, rounded, predominantly quartz (taking water)	81 -93
Hell Creek	Sandstone, fine grained, light brownish-gray, noncalcareous, well sorted, rounded, argillaceous, slightly carbonaceous	93-100

## 138-80-23BABAA

Number: NDSWC 11130                      Date Drilled: 10/05/79  
 Elevation (ft. NGVD): 1649.35              Depth (ft): 60  
 Well Completion                              Use: T, O  
   Diameter (inches): 1½  
   Screened interval (ft): 42-45              Comments: E-log

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
	Topsoil	0 - 1
	Sand, fine grained, well sorted, subrounded, 80% quartz, 10% carbonate, 10% lignite, oxidized	1 -16
	Sand, fine grained, composition, as above, unoxidized	16 -20
	Clay, olive green, unoxidized	20 -42
	Sand, very fine grained, well sorted, subangular	42 -49
	Clay, olive green	49 -56
	Sand, very fine to fine	56 -60

## 138-80-23BABBA

Number: NDSWC 11131                      Date Drilled: 10/05/79  
 Elevation (ft. NGVD): 1652.12              Depth (ft): 50  
 Well Completion                              Use: T, O  
   Diameter (inches): 1½  
   Screened interval (ft): 42-45              Comments: E-log

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
	Topsoil	0 - 1
	Sand, fine grained, well sorted, subrounded, 80% quartz, 10% carbonates, 10% lignites, oxidized	1 -18
	Sand, as above, unoxidized	18 -22
	Clay, olive green, unoxidized	22 -27
	Sand, very fine grained, well sorted, subangular to subrounded, unoxidized, 80% quartz, 10% lignite, 10% carbonate	27 -50



138-80-23BCDC

Number: NDSWC 11120                      Date Drilled: 10/03/79  
 Elevation (ft. NGVD): 1653.82              Depth (ft): 110  
 Well Completion                              Use: T, O  
   Diameter (inches): 1½  
   Screened interval (ft): 90-93              Comments: E-log

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
	Topsoil	0 - 1
	Gravel, fine sand to gravel, poorly sorted, oxidized, subrounded, 50% quartz, 25% carbonates, 25% igneous	1 - 6
	Clay, yellow brown, oxidized	6 -24
	Clay, olive green to gray, unoxidized	24 -34
	Sand, very fine grained, well sorted, subrounded, 95% quartz, 5% lignite	34 -52
	Clay, olive green, unoxidized	52 -54

138-80-23BDC  
 Log by Ben Hasz

Number: D. Solberg Irrigation              Date Drilled: 8/61  
           Well #1  
 Elevation (ft. NGVD): 1656.9              Depth (ft): 110  
 Well Completion                              Use: I  
   Diameter (inches): 15  
   Screened interval (ft): ?-110              Comments: C

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
	Topsoil	0 - 1
	Clay	1 - 5
	Sand	5 -13
	Yellow clay	13 -25
	Sand	25 -29
	Blue clay	29 -38
	Blue sand	38 -98
	Sand and gravel	98-102
	Boulders (gravel)	102-110

## 138-80-23CCC

Number: USGS 1855                      Date Drilled: 10/28/60  
 Elevation (ft. NGVD): 1651 (T)        Depth (ft): 273  
 Well Completion: None                    Use: T  
 Diameter (inches):  
 Screened interval (ft):                Comments: E-log

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
	Topsoil, black	0 - 1
	Sand, brown, fine to medium, gravelly	1 -16
	Clay, brown, silty and sandy	16 -20
	Clay, medium-gray, silty and sandy	20 -37
	Sand, medium-gray, very fine to medium, lignite fragments; clay, medium-gray; interbedded	37 -48
	Sand, medium-gray, very fine to medium	48 -57
	Clay, medium-gray; sand, fine to medium, lignite fragments	57 -67
	Sand, medium-gray, fine to medium; clay, medium-gray; interbedded	67 -93
	Lignite	93 -95
	Gravel, medium to coarse, clay, gray; interbedded; lignite fragments	95-105
Hell Creek	Shale, brownish-black, carbonaceous	105-106
	Sandstone, greenish-gray, very fine to fine-grained, silty and clayey, glauconitic (?), friable	106-115
	Shale, medium to brownish-gray, silty and sandy	115-126
	Sandstone, greenish-gray, very fine to fine-grained, glauconitic (?), carbonaceous streaks	126-142
	Sandstone, greenish-gray, very fine to fine-grained, glauconitic (?), friable; shale, greenish-gray, silty; interbedded	142-148



## 138-80-23CCDD

Number: NDSWC 11132                      Date Drilled: 10/05/79  
 Elevation (ft. NGVD): 1654.24              Depth (ft): 120  
 Well Completion                              Use: T, O  
     Diameter (inches): 1½  
     Screened interval (ft): 98-101          Comments: E, E-log

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
	Topsoil	0 - 1
	Sand and gravel, oxidized, poorly sorted, subangular to subrounded, 40% carbonate, 40% igneous, 20% quartz	1 - 9
	Clay, yellow brown, oxidized	9 -17
	Clay, olive green, unoxidized, layered with silt	17 -52
	Sand, fine grained, well sorted, subangular to subrounded, 80% quartz, 10% carbonate, 10% lignite	52 -64
	Clay, olive gray	64 -66
	Sand, fine grained, well sorted, subangular to subrounded, 80% quartz, 10% carbonate, 10% lignite (detrital)	66 -93
	Gravel, coarse sand to gravel, poorly sorted, subangular to subrounded, 50% igneous, 30% carbonate, 20% quartz	93-110
Hell Creek	Siltstone, brown, carbonaceous	110-120

138-80-24CAC<sub>1</sub>  
Log by Schnell, Inc.

Number: C.-P. Yegen Irrigation  
Well #1

Date Drilled: 9/60

Elevation (ft. NGVD): 1633.7

Depth (ft): 85

Well Completion

Use: I

Diameter (inches): 17

Screened interval (ft): ?-80

Comments: C, see Randich, 1965, for other  
Yegen test holes

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
	Topsoil	0 - 3
	Clay	3 -12
	Sandy clay	12 -17
	Fine sand	17 -24
	Blue clay with sandy clay layers	24 -65
	Sand and lignite	65 -66
	Sandy clay	66 -67
	Sand and lignite	67 -69
	Rice gravel and lignite	69 -72
	Coarse gravel	72 -80
	Sandy clay	80 -82
	Lignite	82 -83
	Sandy clay	83 -84
	Tough clay	84 -85

138-80-24DAA

Number: USGS Auger Hole #2

Date Drilled: 10/11/62

Elevation (ft. NGVD): 1680(T)

Depth (ft): 27

Well Completion: None

Use: T

Diameter (inches):

Screened interval (ft):

Comments:

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
	Sand, moderate-yellowish-brown, very fine to medium, lignite fragments	0 - 7
	Sand, dusky-brown, very fine to medium, gravelly	7 -10
	Sand, grayish-brown, fine to coarse, lignite fragments	10 -21
	Clay, light-olive-gray, plastic, smooth, cohesive	21 -27

138-80-25AAA

Number: NDSWC 12302                      Date Drilled: 03/22/83  
 Elevation (ft. NGVD): 1692 (T)              Depth (ft): 220  
 Well Completion                      Use: T, O  
     Diameter (inches): 1½  
     Screened interval (ft): 163-168      Comments: C, E-log

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
	Sand, very fine to very coarse, predominantly fine to medium, yellow stained, oxidized, lots of quartz and carbonates, lost circulation, taking water	0 -41
	Clay, silty, clayey silts, greenish-gray, tight, drills smooth, after 75 feet, more clayey, tighter, after 83 feet numerous thin (<½ ft.) lignite zones	41-104
	Sand, very fine to coarse, predominantly fine to medium, silty, very lignitic, lots of quartz and carbonates, some shield silicates, good sorting, taking water, caving slightly	104-162
	Sand (50-60%) and gravel, sand is very fine to very coarse, predominantly medium to coarse, subrounded to rounded, lignitic, lots of carbonates and shield silicates, drills as if stratified, taking water, becomes coarser with depth (coarse well rounded gravel 168-173 feet)	162-173
	Clay, sandy, silty, greenish-gray, some vitreous specks	173-191
	Sand and gravel, as above	191-202
Hell Creek?	Sand, slightly silty, slightly clayey, very fine to fine, green-gray speckled, moderately cohesive (good recovery)	202-220

138-80-25ABA

Number: NDSWC 12303                      Date Drilled: 03/24/83  
 Elevation (ft. NGVD): 1688 (T)              Depth (ft): 180  
 Well Completion                      Use: T, O  
     Diameter (inches): 1½  
     Screened interval (ft): 163-168      Comments: C, E-log

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
	Clay, sandy, silty, pale yellow brown, oxidized	0 -4
	Sand, very fine to very coarse, predominantly medium, silty, lots of quartz, carbonates, shield silicates, subrounded, to rounded, good sorting, yellow stained, oxidized (taking water)	4 -32
	Clay, slightly silty, cohesive, greasy, pale yellow, brown, oxidized	32 -35
	Clay, slightly silty, cohesive, greasy, greenish gray, occasional thin silt, sand zones, <½ - 1 foot thick (poor recovery)	35 -78
	Sand, silty, or sandy silt, sand is very fine to fine, (poor recovery), occasional thin clay zone, after 142 feet, sand more dominant, becomes coarser, predominantly medium sand, very lignitic	78-155
	Sand (90-95%) and gravel, sand very fine to very coarse, predominantly medium to coarse, subrounded to rounded, lots of quartz, carbonates, shield silicates, very lignitic (taking water)	155-170
Hell Creek?	Sequence of medium brown clays, silty cohesive and sands, very silty, slightly clayey, green gray, speckled, moderately cohesive (good recovery)	170-180

138-80-25BAB  
Log by Schnell, Inc.

Number: C. P. Yegen Irrigation Well #2	Date Drilled:
Elevation (ft. NGVD): 1630(T)	Depth (ft): 100
Well Completion	Use: I
Diameter (inches): 17	Comments: C
Screened interval (ft): -100	

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
	Topsoil	0 - 4
	Sand	4 - 9
	Clay	9 -17
	Sand	17 -28
	Clay	28 -61
	Fine sand, gray	61 -80
	Coarse sand and fine gravel	80 -93
	Coarse gravel	93 -98
	clay	98-100

138-80-25DAC  
Log by Schnell, Inc.

Number: C. P. Yegen Irrigation Well #3	Date Drilled: 1963
Elevation (ft. NGVD): 1730(T)	Depth (ft): 155
Well Completion	Use: I
Diameter (inches): ?	Comments: C, see Randich, 1965 for other
Screened interval (ft): ?	private test holes in Section 25

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
	Topsoil	0 - 2
	Brown sand	2 -16
	Blue sand and coal	16 -25
	Coal	25 -32
	Sand and coal	32 -46
	Sticky clay	46 -80
	Sandy clay with gravel and coal	80 -92
	Sticky clay	92-102
	Blue sand	102-104
	Coal	104-105
	Blue sand	105-106
	Coal	106-107
	Sand and coal	107-116
	Clay	116-117
	Silty clay	117-123
	Sand and coal	123-126
	Clay	126-142
	Sand and coal	142-155





138-80-27CDC

Number: USGS 1929

Date Drilled: 8/24/61

Elevation (ft. NGVD): 1627.9

Depth (ft): 52.5

Well Completion

Use: T, O

Diameter (inches): 1½

Screened interval (ft): ?

Comments: E-log

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Clay, dark-yellowish-brown, silty, cohesive, lignite fragments, oxidized, calcareous	0 -12
	Sand, very fine to fine, silty, poorly sorted, angular to rounded, lignite fragments, oxidized	12 -17
	Sand, very fine to fine, well-sorted, angular to rounded, lignite fragments	17 -26
	Sand, very fine to coarse, poorly-sorted, subangular to rounded, lignite fragments	26 -41
Hell Creek	Clay, greenish-gray to yellowish-orange, silty to sandy, indurated, snail shells, lignite fragments	41 -52½

## 138-80-27DBDC

Number: NDSWC 11126

Date Drilled: 10/04/79

Elevation (ft. NGVD): 1652.22

Depth (ft): 120

Well Completion

Use: T, O

Diameter (inches): 1½

Screened interval (ft): 110-116

Comments: C, E-log, well screened in  
bedrock

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
	Topsoil	0 - 1
	Clay, light brownish gray, oxidized, silty	1 - 5
	Gravel, sandy, oxidized, fine sand to gravel, poorly sorted, subangular to subrounded, 40% carbonates, 40% igneous, 20% quartz	5 -10
Hell Creek	Sandstone, fine grained, well sorted, yellow brown, oxidized, subangular to subrounded, silty, 100% quartz, noncalcareous, moderately indurated	10 -22
	Sandstone, light brownish gray, fine grained, well sorted, silty, subangular to subrounded, 100% quartz, interbedded with greenish gray shale, noncalcareous moderately indurated	22 -43
	Sandstone, greenish-gray, fine grained, well sorted, subangular to subrounded, silty, glauconitic, 95% quartz, 5% others, noncalcareous, moderately indurated	43 -70
	Shale, greenish-gray, sandy, carbonaceous, noncalcareous (slow drilling)	70 -80
	Sandstone, fine grained, greenish-gray, well sorted, subangular to subrounded, silty, glauconitic, carbonaceous streaks, noncalcareous, moderately indurated	80 -91
	Shale, brown to reddish brown, carbonaceous, silty, sandy, noncalcareous	91 -95
	Sandstone, very fine grained, silty, well sorted, subangular to subrounded, greenish gray, noncalcareous, glauconitic, moderately indurated, carbonaceous	95-120

## 138-80-27DCDC

Number: NDSWC 11127

Date Drilled: 10/04/79

Elevation (ft. NGVD): 1626.3

Depth (ft): 45

## Well Completion

Diameter (inches): 1½

Use: T, O

Screened interval (ft): 42-45

Comments: E-log, well screened in bedrock

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
	Topsoil	0 - 1
	Clay, yellow brown, oxidized	1 -12
	Clay, olive gray, unoxidized	12 -23
Hell Creek	Sandstone, greenish-gray, glauconitic, fine grained, well sorted, subangular to subrounded	23 -30
	Shale, brown, carbonaceous to greenish gray	30 -33
	Sandstone, very fine grained, greenish gray, carbonaceous	33 -36
	Shale, greenish-gray, carbonaceous	36 -40
	Sandstone, fine grained, greenish gray, carbonaceous	40 -45

## 138-80-27DDAA

Number: NDSWC 11128

Date Drilled: 10/04/79

Elevation (ft. NGVD): 1632.10

Depth (ft): 60

## Well Completion

Diameter (inches): 1½

Use: T, O

Screened interval (ft): 40-43

Comments:

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
	Topsoil	0 - 1
	Clay, yellow brown, oxidized	1 -13
	Sand, fine grained, well sorted, subrounded to subangular, 85% quartz, 10% lignite, 5% carbonate, oxidized	13 -22
	Sand, as above, unoxidized	22 -42
Hell Creek	Shale, greenish-gray, carbonaceous	42 -46
	Sandstone, greenish-gray, fine grained, glauconitic, silty, carbonaceous	46 -60

## 138-80-27DDA

Number: NDSWC 1856                      Date Drilled: 1960  
 Elevation (ft. NGVD): 1630 (T)              Depth (ft): 147  
 Well Completion : None                      Use: (T)  
 Diameter (inches):  
 Screened interval (ft):                      Comments: E-log

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil, dark-brown, sandy	0 - 5
	Clay, buff, silty to sandy	5 -21
	Clay, medium-gray, silty; sand, very fine to fine; interbedded	21 -43
Hell Creek	Shale, medium-gray, silty, carbonaceous	43 -47
	Shale, light-greenish-gray, silty and sandy, glauconitic (?)	47 -52
	Sandstone, greenish-gray, very fine to fine-grained, friable, silty and clayey	52 -63
	Shale, brownish-black, very carbonaceous	63 -68
	Shale, medium-gray, silty	68 -73
	Shale, light-greenish-gray, silty to sandy, glauconitic (?)	73 -78
	Shale, medium-gray, silty; sandstone, greenish-gray, friable; interbedded	78 -89
	Sandstone, light-greenish-gray, very fine to fine-grained, silty and clayey, friable, glauconitic	89-105
	Shale, brownish-gray, carbonaceous, lignite seams	105-121
	Sandstone, light-greenish-gray, very fine to fine-grained, silty and clayey	121-126
	Shale, medium-gray, silty; sandstone, dark-greenish-gray, friable, very glauconitic	126-131
	Sandstone, dark-greenish-gray, friable, very glauconitic	131-136
	Shale, brownish-gray, carbonaceous; lignite seams; interbedded	136-141
Fox Hills	Sandstone, light-greenish-gray, very fine to fine, silty and clayey, scattered glauconite grains	141-147

## 138-80-27DDBC

Number: NDSWC 11144                      Date Drilled: 10/09/79  
 Elevation (ft. NGVD): 1647.25              Depth (ft): 40  
 Well Completion                              Use: T, O  
   Diameter (inches): 1½  
   Screened interval (ft): 37-40              Comments: Well screened in bedrock

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
	Topsoil	0 - 1
	Gravel, coarse sand to gravel, oxidized, subangular to rounded, 50% quartz, 30% carbonate, 20% sandstone and shale	1 - 5
Hell Creek	Sandstone, very fine grained, oxidized, yellow gray, silty, well sorted, subangular to subrounded, 90% quartz, 10% igneous	5 -16
	Sandstone, as above, unoxidized	16 -22
	Shale, greenish-gray, silty, sandy	22 -24
	Sandstone, yellowish gray, very fine grained, subangular to subrounded, well sorted	24 -40

## 138-80-27DDCB

Number: NDSWC 11136                      Date Drilled: 10/08/79  
 Elevation (ft. NGVD): 1633.22              Depth (ft): 51  
 Well Completion                              Use: T, O  
   Diameter (inches): 1½  
   Screened interval (ft): 47-50              Comments: Well screened in bedrock

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
	Topsoil	0 - 1
	Clay, yellow brown, oxidized, slightly sandy	1 -21
	Silt, greenish-gray, sandy, clayey, unoxidized	21 -34
Hell Creek	Sandstone, very fine grained, silty, greenish, gray	34 -50
	Shale, brown, calcareous	50 -51

138-80-28AAA<sub>1</sub>(North)

Number: NDSWC 2905

Date Drilled:

Elevation (ft. NGVD): 1627.3

Depth (ft): 125

Well Completion

Use: T, O

Diameter (inches): 1½

Screened interval (ft): 97-100

Comments: C, measured monthly by USGS

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil, very sandy, silty, brownish black	0 - 1
	Clay, very silty, sandy, moderately yellowish-brown, slightly to moderately cohesive, slightly plastic, oxidized	1 - 6
	Sand, fine to medium, angular to subrounded, moderately well sorted, mostly quartz, some limestone, dolostone, shale, and lignite, oxidized to light brown color	6 -12
	Clay, very silty, sandy, olive gray with moderate yellowish-brown laminations, slightly cohesive, plastic to semi-plastic, very calcareous, a few detrital lignite chips	12 -18
	Sand, medium to very coarse, angular to subrounded, moderately well sorted, mostly quartz, and lignite, some dolostone and limestone, taking some water	18 -64
	Gravel, sandy, approximately 25-35% coarse to very coarse, angular to subrounded sand, gravel is fine to coarse, angular to rounded, fair sorting, mostly limestone and lignite, some chalcedony, scoria, shale, jasper and agate (rapidly taking water), interbedded with olive gray clay layers from 64-70 feet	64-122
Hell Creek	Siltstone, clayey, sandy, greenish-gray, slightly indurated, slightly calcareous	122-124
	Sandstone, clayey, dark greenish gray; consolidated, fine to medium grained, slightly calcareous to noncalcareous (drills hard)	124-125

138-80-28AAA<sub>2</sub>  
(20 feet south of 2905)

Number: NDSWC 2905A                      Date Drilled: 03/26/73  
Elevation (ft. NGVD): 1627.47              Depth (ft): 30  
Well Completion                              Use: T, O  
Diameter (inches): 1½  
Screened interval (ft): 22.5-25.5      Comments: C, measured monthly by USGS

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil	0 - 1
	Clay, yellowish brown, silty, oxidized	1 - 6
	Sand, fine to medium	6 -12
	Clay, silty, olive gray	12 -18
	Sand, fine to medium, unoxidized	18 -30

138-80-28AAA<sub>3</sub>  
(22 ft. south of 2905A)

Number: NDSWC 2905B                      Date Drilled: 03/26/73  
Elevation (ft. NGVD): 1627.42              Depth (ft): 18  
Well Completion                              Use: T, O  
Diameter (inches): 1½  
Screened interval (ft): 13.7-16.7      Comments: C, measured monthly by USGS

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil, silty, black	0 - 1
	Clay, yellowish brown, silty, oxidized	1 - 6
	Sand, fine to medium	6 -17
	Clay, silty, olive gray	17 -18





138-80-28BCAB

Number: NDSWC 11142                      Date Drilled: 10/09/79  
 Elevation (ft. NGVD): 1632.84              Depth (ft): 40  
 Well Completion                              Use: T, O  
     Diameter (inches): 1½  
     Screened interval (ft): 37-40              Comments: C

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil	0 - 1
	Clay, yellow brown, oxidized	1 -13
	Clay, olive green, unoxidized	13 -20
	Sand, fine grained, well sorted, sub- angular to rounded, 70% quartz, 20% detrital lignite, 10% carbonates	20 -40

138-80-28BDAB

Number: NDSWC 11135                      Date Drilled: 10/05/79  
 Elevation (ft. NGVD): 1630.84              Depth (ft): 40  
 Well Completion                              Use: T, O  
     Diameter (inches): 1½  
     Screened interval (ft): 37-40              Comments:

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil	0 - 1
	Clay, yellow brown, oxidized, silty	1 -11
	Clay, olive green, silty	11 -18
	Sand, fine grained, unoxidized, well sorted, subangular to subrounded, 80% quartz, 10% carbonate, 10% lignite	18 -40

138-80-28CABB

Number: NDSWC 11134                      Date Drilled: 10/05/79  
 Elevation (ft. NGVD): 1631.44              Depth (ft): 40  
 Well Completion                              Use: T, O  
   Diameter (inches): 1½  
   Screened interval (ft): 37-40            Comments:

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil	0 - 1
	Clay, yellow brown, oxidized, silty	1 -11
	Clay, olive green, silty	11 -18
	Sand, fine grained, unoxidized, well sorted, subangular to subrounded, 80% quartz, 10% carbonate, 10% lignite	18 -40

138-80-28DBDB

Number: NDSWC 11133                      Date Drilled: 10/05/79  
 Elevation (ft. NGVD): 1633.44              Depth (ft): 40  
 Well Completion                              Use: T, O  
   Diameter (inches): 1½  
   Screened interval (ft): 37-40            Comments:

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil	0 - 1
	Sand, very fine grained, well sorted, oxidized, subangular to subrounded, 90% quartz, 10% lignite	1 - 6
	Silt, oxidized, yellow brown	6 -13
	Silt, olive green, unoxidized	13 -22
	Sand, fine to medium, moderate sorting, subrounded to rounded, 80% quartz, 10% carbonate, 10% lignite (detrital)	22 -40

138-80-28DDAD

Number: NDSWC 11143                      Date Drilled: 10/09/79  
 Elevation (ft. NGVD): 1628.24              Depth (ft): 40  
 Well Completion                              Use: T, O  
   Diameter (inches): 1½  
   Screened interval (ft): 37-40              Comments: C

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil	0 - 1
	Clay, yellow brown, oxidized	1 -11
	Clay, olive green, unoxidized	11 -17
	Sand, fine to medium, well sorted, subangular to subrounded, 70% quartz, 20% detrital lignite, 10% carbonates	17 -40

138-80-29BAB

Number: USGS 1013                              Date Drilled: 1958  
 Elevation (ft. NGVD): 1633 (T)              Depth (ft): 70  
 Well Completion: None                        Use: T  
   Diameter (inches):  
   Screened interval (ft):                      Comments:

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Sand, fine, clayey	0 - 7
	Sand, fine to medium, lignite and wood fragments	7 -32
	Sand, fine to medium; gravel, fine; lignite and wood fragments	32 -52
	Clay, light gray	52 -57
	Sand, fine to medium silty	57 -61
	Gravel, medium to coarse	61 -70

138-80-29BAD  
Log by Schnell, Inc.

Number: Prison Farm Irrigation Well #1  
Date Drilled: 1961  
Elevation (ft. NGVD): 1630 (T)  
Depth (ft): 110  
Well Completion  
Diameter (inches): 17  
Screened interval (ft): ?-93  
Use: I  
Comments:

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
	Topsoil	0 - 4
	Sand	4 - 8
	Brown clay	8 -19
	Gray fine sand	19 -32
	Gray clay	32 -34
	Sand, medium, coal	34 -52
	Sand and clay layers (stratified)	52 -63
	Fine gravel	63 -70
	Medium and coarse gravel	70 -93
	Clay, sandy	93 -96
	Medium sand	96-106
	Clay	106-110

138-80-29BBB<sub>1</sub>

Number: USGS 1012  
Date Drilled: 1958  
Elevation (ft. NGVD): 1639 (T)  
Depth (ft): 130  
Well Completion : none  
Diameter (inches):  
Screened interval (ft):  
Use: T  
Comments:

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Clay, brown, sandy	0 - 2
	Clay, brown, smooth	2 - 8
	Sand, fine to coarse, lignite fragments	8 -90
	Gravel, fine to coarse, rounded	90-120
	Gravel, coarse, sandy; clay, gray	120-125
Hell Creek	Clay, light-gray; sandy, fine to coarse	125-130



138-80-29BCBC<sub>1</sub>(South)

Number: NDSWC 11266A                      Date Drilled: 05/08/80  
 Elevation (ft. NGVD): 1628.0              Depth (ft): 140  
 Well Completion                              Use: T, O  
 Diameter (inches): 1½  
 Screened interval (ft): 113-116          Comments: E-log

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil	0 - 1
	Silt, dark yellow brown, oxidized, calcareous, very clayey, moderately cohesive	1 - 8
	Silt, brownish gray, unoxidized, slightly clayey	8 -21
	Sand, very fine to fine, medium sorting, predominantly fine grained, rounded, lenses of detrital lignite, taking water, becomes coarser with depth, to medium gravel, medium sorting, rounded	21 -90
	Gravel, coarse grained, well sorted, subrounded, to rounded, 50% igneous, 50% carbonates (taking water)	90-126
Hell Creek	Sandstone, fine, well sorted, rounded, non-calcareous, slightly glauconitic, argillaceous, poorly to moderately indurated, interbedded with shale, medium brown, carbonaceous, non-calcareous, slightly silty, indurated	126-140

138-80-29BCBC<sub>2</sub>  
(North)

Number: NDSWC 11266B                      Date Drilled: 5/18/80  
 Elevation (ft. NGVD): 1628.1              Depth (ft): 40  
 Well Completion                              Use: T, O  
 Diameter (inches): 1½  
 Screened interval (ft): 37-40              Comments: E-log

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil	0 - 1
	Silt, clayey, sandy, oxidized, yellow brown	1 -12
	Silt, brownish-gray, unoxidized	12 -22
	Sand, gray, fine to medium	22 -60

138-80-29CDAC

Number: NDSWC 11159                      Date Drilled: 10/02/79  
 Elevation (ft. NGVD): 1627.87              Depth (ft): 140  
 Well Completion                              Use: T, O  
   Diameter (inches): 1½  
   Screened interval (ft): 98-101          Comments:

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil	0 - 1
	Sand, fine grained, well sorted, oxidized, subangular to rounded, 70% quartz, 20% lignite, 10% carbonate	1 - 7
	Sand, fine, well sorted, unoxidized, subangular to rounded, 70% quartz, 10% carbonate, 20% lignite	7 -47
	Gravel, fine to coarse, gravel, poorly sorted, subrounded to rounded, 40% igneous, 40% carbonates, 20% lignite, becomes coarser with depth (pebble size)	47-125
Hell Creek	Sandstone, greenish-gray, very fine grained, well sorted, silty, moderately indurated, slightly carbonaceous	125-140



138-80-29DADB

Number: NDSWC 11155                      Date Drilled: 10/11/79  
 Elevation (ft. NGVD): 1624.99              Depth (ft): 120  
 Well Completion                              Use: T, O  
   Diameter (inches): 1½  
   Screened interval (ft): 78-81              Comments:

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil	0 - 1
	Clay, yellow brown, oxidized	1 - 7
	Sand, fine grained, well sorted, angular to rounded, 80% quartz, 10% carbonate, 10% lignite	7 -34
	Clay, olive gray	34 -40
	Sand, medium to coarse, poorly sorted, subrounded to rounded, 40% shale, 40% carbonates, 20% quartz	40 -49
	Clay, olive gray	49 -59
	Gravel, sandy, coarse sand to coarse gravel, poorly sorted, subrounded to rounded, 50% carbonates, 30% igneous, 20% quartz, numerous lignite lenses	59-112
Hell Creek	Shale, dark gray, silty, sandy, carbonaceous	112-120

138-80-29DBDC

Number: NDSWC 11156                      Date Drilled: 10/11/79  
 Elevation (ft. NGVD): 1624.9              Depth (ft): 40  
 Well Completion                              Use: T, O  
   Diameter (inches): 1½  
   Screened interval (ft): 38-41              Comments:

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil	0 - 1
	Clay, yellow brown, oxidized, silty, sandy	1 - 6
	Clay, olive gray	6 -13
	Sand, fine to medium, well sorted, subangular to rounded, 80% quartz, 10% carbonates, 10% lignite	13 -40

## 138-80-29DCAB

Number: NDSWC 11157                      Date Drilled: 10/11/79  
 Elevation (ft. NGVD): 1626.2              Depth (ft): 40  
 Well Completion                              Use: T, O  
   Diameter (inches): 1½  
   Screened interval (ft): 37-40            Comments:

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil	0 - 1
	Clay, yellow brown, oxidized	1 - 3
	Sand, fine grained, well sorted, subangular to rounded, oxidized 50% quartz, 40% carbonates, 10% lignite	3 - 9
	Sand, fine grained, unoxidized, well sorted, subangular to rounded, 50% quartz, 40% carbonate, 10% lignite	9 -13
	Sand, as above, lignite and wood fragments	13 -40

## 138-80-34CDCB

Number: NDSWC 11140                      Date Drilled: 10/08/79  
 Elevation (ft. NGVD): 1631.84              Depth (ft): 110  
 Well Completion                              Use: T, O  
   Diameter (inches): 1½  
   Screened interval (ft): 70-73            Comments: C, E-log

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil	0 - 1
	Sand, fine grained, well sorted, brownish gray, subangular to subrounded, 85% quartz, 10% lignite, 5% carbonates, oxidized	1 -15
	Sand, as above, unoxidized	26 -84
	Clay, silty, with fine sand	84 -87
	Gravel, sandy, drills rough	87 -89
	Clay, sandy, silty	89 -91
Hell Creek	Shale, greenish-gray, silty, sandy	91-110

138-80-34DBBA

Number: NDSWC 11263

Date Drilled: 05/07/80

Elevation (ft. NGVD): 1628.15

Depth (ft): 60

Well Completion

Use: T, O

Diameter (inches): 1½

Screened interval (ft): 42-45

Comments: C, E-log, well screened in bedrock

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil	0 - 1
	Silt, dark yellowish brown, oxidized, calcareous, clayey, noncohesive, nonplastic	1 -10
	Clay, dark yellowish-brown, very silty, slightly calcareous	10 -14
	Silt, dark brownish-gray, unoxidized, calcareous, slightly clayey, non-cohesive, nonplastic	14 -35
Hell Creek	Sandstone, very fine grained, well sorted, subrounded to rounded, calcareous, slightly glauconitic, very argillaceous, dark green-gray, poorly indurated	35 -40
	Sandstone, fine, well sorted, rounded, very glauconitic, noncalcareous, slightly argillaceous, dark green-gray, poorly indurated	40 -47
	Shale, grayish-brown, noncalcareous, carbonaceous, slightly silty, moderately indurated	47 -60

138-80-34DDD  
Log by Jaskowiak, Inc.

Number: Mary College                      Date Drilled: 8/10/67  
Elevation (ft. NGVD): 1820 (T)              Depth (ft): 595  
Well Completion                              Use: p  
Diameter (inches): 6 & 8  
Screened interval (ft): Open End              Comments:

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
	Black dirt	0 - 1
	Clay, yellow	1 -33
	Sand, brown	33 -50
	Clay, gray	50-112
	Sand, blue	112-115
	Clay, gray	115-130
	Clay, dark gray	130-133
	Coal	133-135
	Clay, gray	135-138
	Clay, light gray	138-142
	Clay, dark gray	142-148
	Clay, sandy	148-180
	Clay, dark gray	180-182
	Clay, sandy	182-194
	Clay, brown	194-196
	Clay, gray	196-198
	Clay, dark gray	198-215
	Clay, light gray	215-245
	Clay, sandy	245-267
	Clay, brown	267-270
	Clay, dark gray	270-280
	Sand, blue	280-284
	Clay, brown	284-286
	Clay, gray	286-293
	Clay, sandy	293-300
	Clay, blue	300-327
	Clay, gray	327-345
	Clay, blue	345-355
	Clay, gray	355-470
	Clay, sandy	470-490
	Sandstone, gray	490-520
	Sand, blue	520-570
	Soft rock	570-575
	Sand, blue	575-595

139-80-32ACAB

Number: NDSWC 11499

Date Drilled: 12/16/80

Elevation (ft. NGVD): 1789.9

Depth (ft): 280

Well Completion

Use: T, O

Diameter (inches): 1½

Screened interval (ft): 271-280

Comments: Wouldn't pump, water level too low,  
well screened in bedrock, E-log

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Hell Creek?	Topsoil	0 - 1
	Siltstone, moderate brown, oxidized, poorly cemented	1 -10
	Sand, medium grained, moderately well sorted, rounded to subrounded, 70% quartz, 30% darker grains	10 -15
	Clay, dark yellowish-brown, moderately cohesive, consolidated, low water content, sandy, silty, oxidized	15 -32
	Clay, as above, dusky yellowish brown to olive black (reduced)	32 -36
	Sand, dark greenish-gray color, fine grained, moderately well sorted, subangular, quartzose with greenish and dark grains, slightly argillaceous	36 -42
	Silt, dusky yellowish brown to olive black, compacted, slightly argillaceous	42 -73
	Clay, medium dark gray, consolidated, low plasticity, slightly silty	73 -93
	Silt, very fine grained, sand, quartzose, dark greenish-gray color	93-110
	Clay, medium dark gray, consolidated, low plasticity, slightly silty	110-152
	Sand, fine grained, moderately well sorted, subrounded, quartzose with some clay or silty, dusky green color, slightly to moderately argillaceous, tight at 170 ft.	152-184
	Clay, dusky yellowish-brown to dark greenish gray, consolidated, low water content, low plasticity, from 215-221 grayish green, clay as above, from 233-234 sandstone, very fine grained	184-256
	Sandstone, fine to medium, subrounded, quartzose, slightly argillaceous, light and dark green, grains, some tan and dark gray grains, from 275-280, becomes coarser and less argillaceous	256-280

139-80-35DDD

Number: NDSWC 2060

Date Drilled: 09/07/62

Elevation (ft. NGVD): 1660.2

Depth (ft): 84

Well Completion

Use: T

Diameter (inches):

Screened interval (ft):

Comments: E-log

<u>Formation</u>	<u>Material</u>	<u>Depth Interval</u>
Alluvium	Topsoil, black clayey	0 - 1
	Clay, yellowish brown, silty	1 -11
	Clay, dark greenish gray, silty and sandy, calcareous	11 -17
Glacial Drift?	Gravel, fine to medium, rounded	17 -18
	Clay, dark-greenish-gray, sandy, soft, calcareous	18 -24
	Clay, olive gray, smooth, plastic, calcareous	24 -68
	Gravel, fine to medium, rounded	68 -70
Hell Creek	Clay, dark greenish gray, silty to sandy, micaceous	70 -84

TABLE 2. Water Levels in Selected Wells

Explanation

Depth to water, adjusted to feet (ft.) below or above (+) land surface

Elevation

1630(T) Elevation obtained from USGS 7.5 minute quads.

1628.2, Elevation surveyed in

Principal Aquifer

<u>Symbol</u>	<u>Name</u>
BIS	South Bismarck
APC	Apple Creek
SOO	Soo Channel
HCR	Hell Creek Formation

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

137-080-03ABA BIS. AQUIFER

WELL SCREENED FROM 24- 30 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1629.55

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

137-080-03ABCD BIS. AQUIFER

WELL SCREENED FROM 32- 35 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1628.9

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
05/19/80	8.21	1621.34	03/31/83	6.53	1623.02
06/06/80	9.10	1620.45	05/13/83	6.75	1622.80
06/25/80	10.18	1619.37	05/31/83	7.32	1622.23
07/18/80	11.10	1618.45			
08/01/80	11.41	1618.14			
08/14/80	11.69	1617.86			
09/05/80	11.57	1617.98			
09/19/80	11.68	1617.87			
10/03/80	11.69	1617.86			
10/17/80	11.21	1618.34			
11/03/80	11.09	1618.46			
12/12/80	10.95	1618.60			
12/30/80	10.57	1618.98			
01/09/81	10.24	1619.31			
01/19/81	8.78	1620.77			
02/12/81	7.10	1622.45			
03/04/81	6.89	1622.66			
03/31/81	7.68	1621.87			
04/30/81	8.42	1621.13			
05/28/81	9.12	1620.43			
07/01/81	10.35	1619.20			
07/24/81	10.64	1618.71			
08/18/81	11.46	1618.09			
09/24/81	12.11	1617.44			
10/07/81	12.00	1617.55			
12/04/81	11.80	1617.75			
12/31/81	9.39	1620.16			
02/18/82	4.83	1624.72			
03/26/82	5.32	1624.23			
04/23/82	5.75	1623.80			
05/14/82	6.53	1623.02			
06/11/82	6.55	1623.00			
07/07/82	7.97	1621.58			
08/06/82	9.50	1620.05			
09/03/82	10.42	1619.13			
10/04/82	11.09	1618.46			
10/29/82	10.22	1619.33			
12/02/82	9.97	1619.58			
12/30/82	8.50	1621.05			
01/04/83	7.65	1621.90			
01/28/83	7.12	1622.43			
02/10/83	6.19	1623.36			
02/25/83	5.94	1623.61			

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
11/20/79	9.40	1619.50	02/18/82	4.10	1624.80
12/14/79	10.41	1618.49	03/26/82	4.75	1624.15
12/19/79	8.38	1620.52	04/23/82	5.12	1623.78
12/27/79	7.56	1621.34	05/14/82	5.78	1623.12
01/03/80	7.62	1621.28	06/11/82	5.89	1623.01
01/11/80	6.97	1621.93	07/07/82	7.38	1621.52
01/17/80	6.40	1622.30	08/06/82	8.77	1620.13
01/29/80	4.48	1624.42	09/03/82	10.05	1618.85
02/08/80	4.22	1624.68	10/04/82	10.96	1617.94
02/29/80	4.63	1624.27	10/29/82	10.10	1618.80
03/11/80	4.46	1624.44	12/02/82	10.02	1618.88
03/26/80	5.22	1623.68	12/30/82	8.83	1620.07
04/02/80	5.57	1623.33	01/04/83	7.19	1621.71
04/18/80	5.85	1623.25	01/28/83	6.79	1622.11
04/21/80	5.93	1622.97	02/10/83	5.65	1623.25
05/02/80	6.24	1622.66	02/25/83	5.66	1623.24
05/19/80	7.00	1621.90	03/31/83	6.02	1622.88
06/06/80	8.06	1620.84	05/13/83	6.01	1622.89
06/25/80	9.08	1619.82	05/31/83	6.76	1622.14
07/18/80	10.31	1618.59			
08/01/80	10.71	1618.19			
08/14/80	11.13	1617.77			
09/05/80	11.03	1617.87			
09/19/80	11.18	1617.72			
10/03/80	11.18	1617.72			
10/17/80	10.88	1618.02			
11/03/80	10.64	1618.26			
12/10/80	10.56	1618.34			
12/30/80	10.43	1618.47			
01/09/81	10.39	1618.51			
01/19/81	8.15	1620.75			
02/12/81	6.29	1622.61			
03/04/81	6.31	1622.59			
03/31/81	6.74	1622.16			
04/30/81	7.45	1621.45			
05/28/81	8.21	1620.69			
07/01/81	9.45	1619.45			
07/24/81	10.35	1618.55			
08/18/81	11.03	1617.87			
09/18/81	11.59	1617.31			
10/07/81	11.55	1617.35			
12/04/81	11.39	1617.51			
12/31/81	10.25	1618.65			



NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

137-080-03BCCB BIS. AQUIFER

WELL SCREENED FROM 48- 51 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1630.2

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

137-080-03C8CC BIS. AQUIFER

WELL SCREENED FROM 37- 42 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1628.4

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DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
11/20/79	12.53	1617.67	05/14/82	8.86	1621.34
12/14/79	10.34	1619.86	06/11/82	8.70	1621.50
12/19/79	8.10	1622.10	08/06/82	10.52	1619.88
12/27/79	9.25	1620.95	09/03/82	11.17	1619.03
			10/04/82	12.07	1618.13
01/03/80	9.65	1620.55	10/29/82	11.00	1619.20
01/14/80	6.46	1623.74	12/02/82	9.35	1620.85
01/17/80	5.99	1624.21	12/30/82	7.14	1623.06
01/29/80	5.23	1624.97			
02/08/80	5.02	1625.18	01/04/83	7.01	1623.19
02/29/80	5.57	1624.63	01/28/83	7.40	1622.80
03/11/80	5.46	1624.74	02/09/83	5.94	1624.26
03/26/80	7.97	1622.23	02/25/83	6.89	1623.31
04/02/80	8.97	1621.23	03/31/83	8.89	1621.31
04/18/80	9.67	1620.53	05/13/83	9.74	1620.46
04/23/80	9.75	1620.45	05/31/83	10.42	1619.78
05/19/80	10.81	1619.39			
06/06/80	10.47	1619.73			
06/25/80	10.72	1619.48			
08/01/80	10.71	1619.49			
08/14/80	10.72	1619.48			
09/05/80	10.62	1619.58			
09/19/80	10.96	1619.24			
10/17/80	10.59	1619.61			
11/03/80	10.21	1619.99			
12/10/80	10.20	1620.00			
12/30/80	8.45	1621.75			
01/09/81	8.15	1622.05			
01/19/81	6.72	1623.48			
02/12/81	6.03	1624.17			
03/04/81	6.08	1624.12			
03/31/81	10.79	1619.41			
04/30/81	10.87	1619.33			
05/28/81	11.57	1618.63			
07/01/81	9.72	1620.48			
07/24/81	9.28	1620.92			
08/18/81	10.59	1619.61			
09/24/81	11.58	1618.62			
10/07/81	11.69	1618.51			
12/04/81	11.54	1618.66			
12/31/81	8.20	1622.00			
02/18/82	1.98	1628.22			
03/26/82	7.37	1622.83			
04/23/82	9.81	1620.59			

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
05/19/80	8.19	1620.21
06/25/80	9.09	1619.31
08/01/80	9.75	1618.65
08/14/80	10.00	1618.40
10/03/80	9.90	1618.50
10/17/80	9.77	1618.63
11/03/80	9.46	1618.94
12/12/80	9.07	1619.33
12/30/80	8.68	1619.72
01/09/81	8.37	1620.03
01/19/81	8.09	1620.31
02/12/81	7.52	1620.88
03/04/81	6.90	1621.50
03/31/81	7.30	1621.10
04/30/81	8.27	1620.13
05/28/81	8.61	1619.79
07/01/81	9.10	1619.30
07/24/81	9.29	1619.11
08/18/81	9.57	1618.83
09/24/81	11.17	1617.23
10/07/81	10.12	1618.28
12/04/81	10.39	1618.01
01/04/82	8.96	1619.44
02/18/82	6.35	1622.05
03/26/82	5.68	1622.72
04/23/82	5.33	1623.07
05/14/82	5.90	1622.50
06/11/82	5.85	1622.55
07/07/82	7.12	1621.28
08/06/82	8.36	1620.04
09/03/82	9.19	1619.21
10/04/82	10.14	1618.26
10/29/82	9.75	1618.65
12/02/82	8.83	1619.57
12/30/82	8.27	1620.13
01/04/83	8.11	1620.29
01/28/83	7.54	1620.86
02/10/83	7.08	1621.32
02/25/83	6.66	1621.74
03/31/83	5.90	1622.50
05/13/83	6.42	1621.98
05/31/83	6.81	1621.59

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

137-080-09CA6D BIS. AQUIFER

WELL SCREENED FROM 98-101 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1627.7

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

137-080-09DBDA BIS. AQUIFER

WELL SCREENED FROM 37- 40 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1626.7

III

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
11/16/79	12.23	1615.47	01/04/83	6.01	1621.69
12/14/79	8.31	1619.39	01/28/83	6.10	1621.60
12/20/79	5.62	1622.08	05/13/83	8.71	1618.99
12/27/79	7.99	1619.71	05/31/83	10.02	1617.68
01/03/80	8.32	1619.38			
01/14/80	4.66	1623.04			
01/29/80	3.60	1624.10			
02/08/80	3.35	1624.35			
02/29/80	4.12	1623.58			
03/11/80	4.24	1623.46			
03/26/80	7.50	1620.20			
05/19/80	10.44	1617.26			
06/06/80	9.58	1618.12			
06/25/80	10.62	1617.08			
07/18/80	8.16	1619.54			
08/01/80	9.47	1618.23			
08/14/80	9.39	1618.31			
09/05/80	9.31	1618.39			
09/19/80	9.78	1617.92			
10/03/80	9.89	1617.81			
11/03/80	8.92	1618.78			
12/12/80	8.53	1619.17			
12/30/80	6.45	1621.25			
01/09/81	6.27	1621.43			
01/19/81	4.84	1622.86			
02/12/81	4.09	1623.61			
03/31/81	10.62	1617.08			
05/27/81	11.04	1616.66			
07/01/81	8.18	1619.52			
07/24/81	7.71	1619.99			
08/18/81	9.51	1618.19			
09/24/81	10.34	1617.36			
10/07/81	10.73	1616.97			
12/04/81	10.39	1617.31			
01/04/82	4.91	1622.79			
07/07/82	8.82	1618.88			
08/06/82	9.51	1618.19			
09/02/82	10.08	1617.62			
10/04/82	11.09	1616.61			
10/29/82	9.97	1617.73			
12/02/82	8.16	1619.54			
12/30/82	6.15	1621.55			

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
11/16/79	10.85	1616.05	01/04/83	6.80	1619.90
12/14/79	10.06	1616.64	01/28/83	6.05	1620.65
12/20/79	8.12	1618.58	05/13/83	6.75	1619.95
12/27/79	7.46	1619.24	05/31/83	8.52	1618.18
01/03/80	7.92	1618.78			
01/14/80	6.07	1620.63			
01/29/80	3.61	1623.09			
02/08/80	3.54	1623.16			
02/29/80	3.90	1622.80			
03/11/80	3.62	1623.08			
03/26/80	4.42	1622.28			
05/19/80	8.37	1618.33			
06/06/80	8.90	1617.80			
06/25/80	9.27	1617.43			
07/18/80	8.85	1617.85			
08/01/80	9.15	1617.55			
08/14/80	9.30	1617.40			
09/05/80	9.02	1617.68			
09/19/80	9.18	1617.52			
09/03/80	9.20	1617.50			
11/03/80	8.64	1618.06			
12/12/80	8.31	1618.39			
12/30/80	7.45	1619.25			
01/09/81	7.05	1619.65			
01/19/81	6.19	1620.51			
02/12/81	5.24	1621.46			
03/31/81	7.54	1619.16			
04/30/81	8.93	1617.77			
05/27/81	9.53	1617.17			
07/01/81	8.50	1618.20			
07/24/81	8.05	1618.65			
08/18/81	8.82	1617.88			
09/24/81	9.78	1616.92			
10/07/81	9.61	1617.09			
12/04/81	10.13	1616.57			
01/04/82	6.60	1620.10			
07/07/82	8.03	1618.67			
08/06/82	8.65	1618.05			
09/03/82	9.47	1617.23			
10/04/82	10.14	1616.56			
10/29/82	9.32	1617.38			
12/02/82	7.65	1619.05			
12/30/82	6.85	1619.85			

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

137-080-10BBB BIS. AQUIFER

WELL SCREENED FROM 93- 96 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1627.26

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

137-080-10BCBD BIS. AQUIFER

WELL SCREENED FROM 55- 58 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1625.1

112

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
11/16/79	10.24	1617.02	02/18/82	5.14	1622.12
12/14/79	10.24	1617.02	03/25/82	4.60	1622.66
12/21/79	8.56	1618.70	04/23/82	4.54	1622.72
12/27/79	8.06	1619.20	05/14/82	5.15	1622.11
			06/11/82	5.24	1622.02
01/03/80	8.25	1619.01	07/07/82	7.64	1619.62
01/11/80	7.53	1619.73	08/06/82	9.29	1617.97
01/17/80	6.51	1620.75	09/03/82	10.33	1616.93
01/29/80	5.14	1622.12	10/04/82	10.78	1616.48
02/08/80	4.94	1622.32	10/29/82	10.00	1617.26
02/29/80	5.11	1622.15	12/02/82	8.95	1618.31
03/11/80	5.01	1622.25	12/30/82	8.23	1619.03
03/26/80	4.62	1622.64			
04/03/80	4.81	1622.45	01/04/83	8.07	1619.19
04/18/80	5.27	1621.99	01/28/83	7.60	1619.66
05/02/80	5.95	1621.31	02/09/83	6.59	1620.67
05/19/80	7.18	1620.08	02/25/83	5.90	1621.36
06/06/80	8.59	1618.67	03/31/83	5.47	1621.79
06/25/80	9.66	1617.60	05/13/83	5.39	1621.87
07/18/80	10.34	1616.92	05/31/83	6.60	1620.66
08/01/80	10.46	1616.80			
08/14/80	10.66	1616.60			
09/05/80	10.23	1617.03			
09/19/80	10.19	1617.07			
10/03/80	10.10	1617.16			
10/17/80	9.76	1617.50			
11/03/80	9.48	1617.78			
12/12/80	9.06	1618.20			
12/30/80	8.70	1618.56			
01/09/81	8.07	1619.19			
01/19/81	8.12	1619.14			
02/12/81	7.51	1619.75			
03/04/81	4.32	1622.94			
03/05/81	6.28	1620.98			
03/31/81	6.83	1620.43			
04/30/81	8.01	1619.25			
05/28/81	7.90	1619.36			
07/01/81	9.60	1617.66			
07/24/81	9.80	1617.46			
08/18/81	10.19	1617.07			
09/24/81	10.72	1616.54			
10/07/81	10.45	1616.81			
12/04/81	10.55	1616.71			
01/04/82	7.77	1619.49			

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
11/16/79	8.87	1616.23	01/28/83	5.63	1619.47
12/17/79	8.31	1616.79	01/28/83	5.33	1619.27
12/21/79	4.90	1620.20	02/25/83	3.20	1621.90
12/27/79	5.13	1619.97	05/13/83	4.10	1621.00
			05/31/83	5.37	1619.73
01/03/80	6.14	1618.96			
01/11/80	4.61	1620.49			
05/19/80	5.98	1619.12			
06/06/80	7.24	1617.86			
06/25/80	7.93	1617.17			
07/18/80	8.75	1616.35			
08/01/80	8.90	1616.20			
08/14/80	9.10	1616.00			
09/05/80	8.49	1616.61			
09/19/80	8.54	1616.56			
10/03/80	8.43	1616.67			
11/03/80	7.70	1617.40			
12/12/80	7.36	1617.74			
12/30/80	6.86	1618.24			
01/09/81	6.24	1618.86			
01/19/81	6.22	1618.88			
02/12/81	5.62	1619.48			
03/04/81	3.47	1621.63			
03/31/81	4.76	1620.34			
04/30/81	6.41	1618.69			
05/28/81	7.47	1617.63			
07/01/81	8.00	1617.10			
07/24/81	8.01	1617.09			
08/18/81	8.52	1616.58			
09/24/81	9.10	1616.00			
10/07/81	8.83	1616.27			
12/04/81	8.92	1616.18			
01/04/82	4.52	1620.58			
02/18/82	1.80	1623.30			
06/11/82	3.89	1621.21			
07/07/82	6.65	1618.45			
08/06/82	7.96	1617.14			
09/03/82	8.90	1616.20			
10/04/82	9.34	1615.76			
10/29/82	8.24	1616.86			
12/02/82	7.20	1617.90			
12/30/82	6.52	1618.58			
01/04/83	6.43	1618.67			

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

137-080-10DAA BIS. AQUIFER

WELL SCREENED FROM 57- 60 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1622.7

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
11/16/79	7.07	1615.63
12/14/79	6.02	1616.68
01/14/80	0.65	1622.05
05/19/80	5.42	1617.28
06/06/80	5.55	1617.15
06/25/80	6.30	1616.40
07/18/80	6.20	1616.50
08/01/80	6.75	1615.95
08/14/80	6.92	1615.78
09/05/80	6.33	1616.37
09/19/80	6.53	1616.17
10/03/80	6.52	1616.18
11/03/80	5.62	1617.08
12/12/80	5.25	1617.45
12/30/80	3.72	1618.98
01/09/81	3.26	1619.44
03/31/81	4.00	1618.70
04/30/81	5.21	1617.49
05/27/81	6.04	1616.66
07/01/81	5.70	1617.00
07/24/81	5.50	1617.20
08/18/81	6.02	1616.68
09/24/81	6.99	1615.71
10/07/81	6.95	1615.75
12/04/81	6.83	1615.87
07/07/82	4.71	1617.99
08/06/82	5.89	1616.81
09/02/82	6.93	1615.77
10/04/82	7.41	1615.29
12/02/82	4.73	1617.97
01/28/83	2.94	1619.76

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NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

137-080-10CCAA BIS. AQUIFER

WELL SCREENED FROM 57- 60 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1623.6

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
11/16/79	8.12	1615.48
12/14/79	7.04	1616.56
12/20/79	3.67	1619.93
12/27/79	4.22	1619.38
01/03/80	5.14	1618.46
01/14/80	2.16	1621.44
05/19/80	6.32	1617.28
06/06/80	6.61	1616.99
06/25/80	7.08	1616.52
07/18/80	6.31	1617.29
08/01/80	6.81	1616.79
08/14/80	6.76	1616.64
09/05/80	6.44	1617.16
09/19/80	6.80	1616.80
10/03/80	6.69	1616.71
11/03/80	6.11	1617.49
12/12/80	5.93	1617.67
12/30/80	4.04	1619.56
01/09/81	4.20	1619.40
01/19/81	2.97	1620.63
02/12/81	2.43	1621.17
03/31/81	4.95	1618.65
04/30/81	6.45	1617.15
05/27/81	7.18	1616.42
07/01/81	6.20	1617.40
07/24/81	5.47	1618.13
08/18/81	6.46	1617.14
09/24/81	7.47	1616.13
10/07/81	7.31	1616.29
12/04/81	7.61	1615.99
01/04/82	2.67	1620.93
07/07/82	5.95	1617.65
08/06/82	6.66	1616.94
09/03/82	7.29	1616.31
10/04/82	7.94	1615.66
10/29/82	6.57	1617.03
12/02/82	5.06	1618.54
12/30/82	3.35	1620.25
01/04/83	3.29	1620.31
01/28/83	3.40	1620.20
05/13/83	3.85	1619.75
05/31/83	5.36	1618.24

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-020001 UNN. AQUIFER

WELL SCREENED FROM 109-112 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1661.55  
WEST

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-020002 UNN. AQUIFER

WELL SCREENED FROM 76- 79 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1661.58  
EAST

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DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
05/29/80	24.00	1637.55	05/16/83	22.02	1639.53
06/06/80	24.02	1637.53	05/31/83	22.45	1639.10
06/25/80	24.55	1637.00	06/27/83	22.75	1638.80
07/18/80	24.83	1636.72			
08/01/80	24.67	1636.88			
08/18/80	24.35	1637.20			
09/08/80	23.91	1637.64			
09/18/80	24.18	1637.37			
10/03/80	23.68	1637.67			
10/17/80	23.60	1637.95			
11/03/80	23.56	1637.99			
12/12/80	23.45	1638.10			
12/31/80	23.37	1638.18			
01/09/81	23.31	1638.24			
01/19/81	23.40	1638.15			
02/12/81	23.44	1638.11			
03/04/81	23.29	1638.26			
03/31/81	23.19	1638.36			
04/30/81	23.50	1638.05			
05/29/81	23.95	1637.60			
07/02/81	24.33	1637.22			
07/24/81	24.23	1637.32			
08/18/81	24.25	1637.30			
10/07/81	23.97	1637.58			
12/04/81	23.93	1637.62			
01/04/82	23.57	1637.98			
02/19/82	22.53	1639.02			
03/25/82	23.30	1638.25			
04/23/82	22.18	1639.37			
05/14/82	22.35	1639.20			
06/11/82	22.60	1638.95			
07/07/82	22.84	1638.71			
08/05/82	23.59	1637.96			
09/03/82	23.62	1637.93			
10/04/82	23.67	1637.88			
10/29/82	23.02	1638.53			
12/02/82	22.82	1638.73			
12/30/82	22.89	1638.66			
01/04/83	22.92	1638.63			
01/28/83	22.92	1638.63			
02/10/83	23.00	1638.55			
02/25/83	22.86	1638.69			
03/31/83	22.23	1639.32			

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
05/02/80	24.83	1636.75	03/31/83	21.98	1639.60
05/20/80	23.80	1637.78	05/16/83	21.86	1639.72
06/06/80	23.84	1637.74	05/31/83	22.19	1639.39
06/25/80	24.30	1637.28	06/27/83	22.20	1639.38
07/18/80	24.64	1636.94			
08/01/80	24.44	1637.14			
08/18/80	24.18	1637.40			
09/08/80	23.72	1637.86			
09/18/80	23.90	1637.68			
10/03/80	23.70	1637.88			
10/17/80	23.40	1638.18			
11/03/80	23.36	1638.22			
12/12/80	23.24	1638.34			
12/31/80	23.14	1638.44			
01/09/81	23.08	1638.50			
01/19/81	23.23	1638.35			
02/12/81	23.26	1638.32			
03/04/81	23.14	1638.44			
03/31/81	23.03	1638.55			
04/30/81	23.31	1638.27			
05/29/81	23.76	1637.82			
07/02/81	24.14	1637.44			
07/24/81	23.90	1637.68			
08/18/81	24.02	1637.56			
10/07/81	23.75	1637.83			
12/04/81	23.70	1637.88			
01/04/82	23.36	1638.22			
02/19/82	22.32	1639.26			
03/25/82	23.09	1638.49			
04/23/82	21.95	1639.63			
05/14/82	22.04	1639.54			
06/11/82	22.28	1639.30			
07/07/82	22.58	1639.00			
08/05/82	23.29	1638.29			
09/03/82	23.40	1638.18			
10/04/82	23.45	1638.13			
10/29/82	22.78	1638.80			
12/02/82	22.59	1638.99			
12/30/82	22.65	1638.93			
01/04/83	22.58	1639.00			
01/28/83	21.70	1639.88			
02/10/83	22.76	1638.62			
02/25/83	22.64	1638.94			

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-03CAD1 UNN. AQUIFER

WELL SCREENED FROM 45- 50 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1669.60  
WEST

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
01/06/81	26.48	1643.12
01/09/81	26.47	1643.13
01/19/81	26.47	1643.13
02/11/81	26.48	1643.12
03/04/81	26.44	1643.16
03/31/81	26.42	1643.18
04/29/81	26.40	1643.20
05/26/81	26.38	1643.22
06/30/81	26.36	1643.24
07/23/81	26.37	1643.23
08/17/81	26.38	1643.22
09/14/81	26.34	1643.26
10/07/81	26.32	1643.28
11/06/81	26.21	1643.39
12/04/81	26.07	1643.53
12/30/81	25.97	1643.63
02/18/82	25.84	1643.76
03/25/82	25.68	1643.92
04/22/82	25.55	1644.05
05/14/82	25.40	1644.20
06/09/82	25.29	1644.31
07/06/82	25.20	1644.40
08/05/82	25.27	1644.33
09/03/82	25.22	1644.38
09/30/82	25.19	1644.41
10/29/82	25.10	1644.50
12/01/82	24.96	1644.64
12/30/82	24.63	1644.97
01/04/83	24.61	1644.99
01/28/83	24.42	1645.18
02/10/83	24.33	1645.27
02/25/83	24.27	1645.33
03/31/83	24.10	1645.50

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NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-03CAD2 UNN. AQUIFER

WELL SCREENED FROM 35- 38 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1670.0  
MIDDLE

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
01/04/83	24.61	1645.39
01/28/83	24.42	1645.58
02/10/83	24.33	1645.67
02/25/83	24.27	1645.73
03/31/83	24.10	1645.90

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-03CAD3 UNN. AQUIFER

WELL SCREENED FROM 105-111 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1671.10  
EAST

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
01/06/81	32.70	1638.40
01/09/81	32.71	1638.39
01/19/81	32.51	1638.59
02/11/81	32.38	1638.72
03/04/81	32.18	1638.92
03/31/81	32.39	1638.71
04/29/81	33.12	1637.98
05/26/81	33.60	1637.50
06/30/81	33.82	1637.28
07/06/81	33.99	1637.11
07/23/81	33.58	1637.52
08/17/81	33.46	1637.64
09/14/81	33.45	1637.65
10/07/81	33.44	1637.66
11/06/81	33.59	1637.51
12/04/81	33.59	1637.51
12/30/81	33.13	1637.97
02/18/82	32.23	1638.87
03/25/82	32.02	1639.08
04/22/82	32.07	1639.03
05/14/82	32.08	1639.02
06/09/82	31.95	1639.15
07/06/82	32.18	1638.92

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-04DDBAC BIS. AQUIFER

WELL SCREENED FROM 82- 85 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1635.1

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-05ADD1 BIS. AQUIFER

WELL SCREENED FROM 35- 40 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1636.30  
SOUTH WELL

911

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
11/20/79	10.72	1624.38	02/18/82	7.76	1627.34
12/14/79	10.69	1624.41	03/24/82	7.50	1627.60
12/21/79	9.89	1625.21	04/22/82	7.72	1627.38
12/27/79	10.04	1625.06	05/14/82	7.84	1627.26
			06/09/82	7.60	1627.50
01/03/80	9.98	1625.12	07/06/82	8.34	1626.76
01/10/80	9.27	1625.83	08/05/82	8.86	1626.24
01/17/80	8.94	1626.16	09/03/82	9.71	1625.39
01/29/80	8.46	1626.64	09/30/82	10.50	1624.60
02/07/80	8.24	1626.86	10/29/82	9.32	1625.78
02/29/80	8.11	1626.99	12/01/82	8.78	1626.32
03/11/80	7.72	1627.38	12/30/82	9.08	1626.02
03/26/80	7.88	1627.22			
04/02/80	8.22	1626.88	01/04/83	8.05	1627.05
04/18/80	8.45	1626.65	01/28/83	7.66	1627.44
04/21/80	8.46	1626.64	02/10/83	7.37	1627.73
05/02/80	8.89	1626.21	02/25/83	7.29	1627.81
05/19/80	9.37	1625.73	03/31/83	7.52	1627.58
06/06/80	9.79	1625.31	05/12/83	8.31	1626.79
06/25/80	10.10	1625.00	05/31/83	8.72	1626.38
07/18/80	10.11	1624.99			
08/01/80	10.08	1625.02			
08/14/80	10.05	1625.05			
09/05/80	9.62	1625.48			
09/18/80	9.95	1625.15			
10/03/80	9.96	1625.14			
10/17/80	9.77	1625.33			
11/03/80	9.65	1625.45			
12/09/80	9.70	1625.40			
12/29/80	8.95	1626.15			
01/09/81	8.76	1626.34			
01/19/81	8.25	1626.85			
02/11/81	8.09	1627.01			
03/04/81	8.01	1627.09			
03/31/81	8.77	1626.33			
04/29/81	9.49	1625.61			
05/26/81	9.94	1625.16			
06/30/81	9.81	1625.29			
07/23/81	9.03	1626.07			
08/17/81	9.23	1625.87			
09/14/81	9.92	1625.18			
10/07/81	10.06	1625.04			
11/06/81	10.55	1624.55			
12/04/81	10.65	1624.45			
12/30/81	10.31	1624.79			

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
01/06/81	9.83	1626.47
01/09/81	9.83	1626.47
01/19/81	9.26	1627.04
02/11/81	9.18	1627.12
03/04/81	9.15	1627.15
03/31/81	9.95	1626.35
04/29/81	10.74	1625.56
05/26/81	11.17	1625.13
06/30/81	10.97	1625.33
07/23/81	10.07	1626.23
08/17/81	10.34	1625.96
09/14/81	11.04	1625.26
10/07/81	11.22	1625.08
11/06/81	11.71	1624.59
12/04/81	12.15	1624.15
12/30/81	11.43	1624.87
02/18/82	8.85	1627.45
03/25/82	8.59	1627.71
04/22/82	8.84	1627.46
05/14/82	9.26	1627.04
06/09/82	8.65	1627.65
07/06/82	9.49	1626.81
08/05/82	10.15	1626.15
09/03/82	10.92	1625.38
09/30/82	11.65	1624.65
10/29/82	10.45	1625.85

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-05ADD2 BIS. AQUIFER

WELL SCREENED FROM 98-101 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1637.00  
NORTH WELL

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-05DCBD BIS. AQUIFER

WELL SCREENED FROM 90- 93 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1637.5

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DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
01/06/81	10.66	1626.34
01/09/81	10.62	1626.38
01/19/81	10.33	1626.67
02/11/81	9.99	1627.01
03/04/81	9.69	1627.31
03/31/81	9.99	1627.01
04/29/81	10.36	1626.64
05/26/81	10.61	1626.39
06/30/81	10.77	1626.23
07/23/81	10.76	1626.24
08/17/81	10.77	1626.23
09/14/81	10.81	1626.19
10/07/81	11.09	1625.91
11/06/81	11.49	1625.51
12/04/81	11.74	1625.26
12/30/81	11.86	1625.14
02/18/82	9.67	1627.33
03/25/82	9.47	1627.53
04/22/82	9.89	1627.11
05/14/82	10.27	1626.73
06/09/82	9.89	1627.11
07/06/82	10.23	1626.77
08/05/82	10.49	1626.51
09/03/82	10.90	1626.10
09/30/82	11.25	1625.75
10/29/82	11.02	1625.98
12/01/82	11.05	1625.95
12/30/82	11.04	1625.96
01/04/83	10.17	1626.83
01/28/83	9.76	1627.24
02/10/83	9.56	1627.44
02/25/83	9.23	1627.77
03/31/83	9.64	1627.36
05/12/83	10.34	1626.66
05/31/83	10.49	1626.51

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
11/15/79	12.97	1624.53	12/30/81	13.19	1624.31
12/14/79	13.80	1623.70	02/18/82	9.72	1627.78
12/21/79	12.37	1625.13	03/24/82	9.93	1627.57
12/27/79	12.74	1624.76	04/22/82	10.52	1626.98
01/03/80	12.82	1624.68	05/14/82	11.00	1626.50
01/10/80	11.76	1625.74	06/09/82	10.45	1627.05
01/17/80	11.14	1626.36	08/05/82	12.48	1625.02
01/29/80	10.67	1626.83	09/02/82	13.08	1624.42
02/07/80	10.41	1627.09	09/30/82	13.68	1623.82
02/29/80	10.32	1627.18	10/29/82	12.38	1625.12
03/11/80	9.98	1627.52	12/01/82	11.54	1625.96
03/26/80	10.59	1626.91	12/30/82	11.45	1626.05
04/02/80	11.00	1626.50	01/04/83	10.40	1627.10
04/18/80	11.34	1626.16	01/28/83	10.05	1627.45
05/02/80	12.00	1625.50	02/10/83	9.52	1627.98
05/19/80	12.71	1624.79	02/25/83	9.67	1627.83
06/06/80	12.07	1625.43	03/31/83	10.27	1627.23
06/25/80	13.51	1623.99	05/12/83	11.30	1626.20
07/18/80	13.32	1624.18	05/31/83	12.08	1625.42
08/01/80	13.42	1624.08			
08/14/80	13.33	1624.17			
09/05/80	12.90	1624.60			
09/18/80	13.21	1624.29			
09/26/80	13.18	1624.32			
09/26/80	13.06	1624.44			
10/03/80	13.07	1624.43			
10/17/80	12.67	1624.83			
11/03/80	12.59	1624.91			
12/09/80	12.54	1624.96			
12/29/80	12.22	1625.28			
01/09/81	11.02	1626.48			
01/19/81	10.48	1627.02			
02/11/81	9.77	1627.73			
03/04/81	10.61	1626.89			
03/31/81	11.65	1625.85			
04/29/81	12.53	1624.97			
05/26/81	13.02	1624.48			
06/30/81	12.87	1624.63			
07/23/81	12.02	1625.48			
08/17/81	12.43	1625.07			
09/14/81	13.19	1624.31			
10/07/81	13.84	1623.66			
11/06/81	13.66	1623.84			
12/04/81	13.62	1623.88			



NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-08BBAA BIS. AQUIFER

WELL SCREENED FROM 37- 40 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1636.2

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-08BCBA BIS. AQUIFER

WELL SCREENED FROM 37- 40 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1629.7  
2ND WELL

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
11/15/79	9.05	1627.15	12/04/81	12.79	1623.41
12/14/79	13.01	1623.19	12/30/81	11.35	1624.85
12/19/79	10.04	1626.16			
12/27/79	10.83	1625.37	02/18/82	6.78	1629.42
			03/25/82	8.85	1627.35
01/03/80	11.39	1624.81	04/22/82	9.77	1626.43
01/10/80	9.13	1627.07	05/14/82	10.23	1625.97
01/17/80	7.94	1628.26	06/09/82	10.08	1626.12
01/29/80	7.84	1628.36	07/06/82	11.39	1624.81
02/07/80	7.47	1628.73	08/05/82	11.78	1624.42
02/29/80	7.66	1628.54	09/03/82	12.59	1623.61
03/11/80	7.52	1628.68	09/30/82	12.94	1623.26
03/26/80	9.40	1626.80	10/29/82	11.66	1624.54
04/02/80	9.80	1626.40	12/01/82	10.13	1626.07
04/18/80	10.18	1626.02	12/30/82	8.98	1627.22
05/02/80	11.24	1624.96			
05/19/80	12.21	1623.99	01/04/83	6.97	1629.23
06/06/80	12.39	1623.81	01/28/83	8.23	1627.97
06/25/80	12.88	1623.32	02/09/83	7.01	1629.19
07/18/80	11.78	1624.42	02/25/83	8.40	1627.80
08/01/80	12.16	1624.02	03/31/83	9.54	1626.66
08/14/80	12.10	1624.10	05/12/83	10.87	1625.33
09/05/80	11.78	1624.42	05/31/83	11.97	1624.23
09/18/80	12.30	1623.90			
09/24/80	12.33	1623.87			
09/24/80	12.30	1623.90			
10/03/80	12.25	1623.95			
10/17/80	11.53	1624.67			
11/03/80	10.56	1625.64			
12/09/80	11.49	1624.71			
12/29/80	8.42	1627.78			
01/09/81	8.59	1627.61			
01/19/81	7.96	1628.24			
02/11/81	8.01	1628.19			
03/04/81	9.39	1626.81			
03/31/81	10.79	1625.41			
04/29/81	12.10	1624.10			
05/26/81	12.59	1623.61			
06/30/81	11.78	1624.42			
07/07/81	11.60	1624.60			
07/23/81	10.67	1625.53			
08/17/81	11.60	1624.60			
09/18/81	12.59	1623.61			
10/07/81	12.45	1623.75			
11/06/81	13.12	1623.08			

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
11/15/79	7.08	1622.62	09/03/82	6.08	1623.62
12/14/79	5.87	1623.83	09/30/82	6.50	1623.20
12/19/79	3.16	1626.54	10/29/82	5.41	1624.29
12/27/79	4.70	1625.00	12/01/82	3.59	1626.11
			12/30/82	1.87	1627.83
01/03/80	5.02	1624.68			
01/10/80	2.39	1627.31	01/28/83	1.48	1628.22
01/17/80	1.43	1628.27	02/09/83	0.50	1629.20
04/18/80	4.68	1625.02	02/25/83	1.55	1628.15
05/02/80	5.53	1624.17	03/31/83	3.38	1626.32
05/19/80	6.14	1623.56	05/12/83	5.02	1624.68
06/06/80	5.82	1623.88	05/31/83	6.09	1623.61
06/25/80	6.16	1623.54	07/11/83	7.64	1622.06
07/18/80	4.83	1624.87	07/21/83	7.75	1621.95
08/01/80	5.48	1624.22	08/21/83	5.16	1624.54
08/14/80	5.59	1624.11	09/19/83	5.57	1624.13
09/05/80	6.23	1623.47	10/14/83	6.74	1622.96
09/18/80	5.75	1623.95	11/18/83	6.49	1623.21
09/24/80	5.89	1623.81	12/28/83	1.16	1628.54
09/24/80	5.86	1623.84			
10/03/80	5.75	1623.95			
10/17/80	4.94	1624.76			
11/03/80	4.96	1624.74			
12/09/80	4.94	1624.76			
12/29/80	1.89	1627.81			
01/09/81	1.85	1627.85			
01/19/81	1.30	1628.40			
04/29/81	6.05	1623.65			
05/26/81	6.52	1623.18			
06/30/81	5.05	1624.65			
07/07/81	4.78	1624.92			
07/23/81	4.10	1625.60			
08/17/81	4.94	1624.76			
09/18/81	6.28	1623.42			
10/07/81	6.12	1623.58			
11/07/81	7.10	1622.60			
12/04/81	6.25	1623.45			
12/30/81	3.75	1625.95			
03/25/82	2.23	1627.47			
04/22/82	4.14	1625.56			
05/14/82	3.98	1625.72			
06/09/82	3.94	1625.76			
07/06/82	4.93	1624.77			
08/02/82	5.48	1624.22			

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-08CRBC BIS. AQUIFER

WELL SCREENED FROM 37- 40 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1630.9  
3RD WELL

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-08CRCD BIS. AQUIFER

WELL SCREENED FROM 80- 83 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1630.5  
ARCHERY

111

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
11/15/79	8.04	1622.86	12/30/81	4.47	1626.43
12/14/79	7.29	1623.61			
12/19/79	4.02	1626.88	02/18/82	1.25	1629.65
12/27/79	6.02	1624.88	03/25/82	3.75	1627.15
			04/22/82	5.60	1625.30
01/03/80	6.11	1624.79	05/14/82	5.13	1625.77
01/10/80	3.51	1627.39	06/09/82	5.18	1625.72
01/17/80	2.54	1628.36	07/06/82	5.93	1624.97
01/29/80	2.23	1628.67	08/02/82	6.52	1624.38
02/07/80	1.88	1629.02	09/03/82	7.10	1623.80
02/29/80	2.09	1628.81	09/30/82	7.56	1623.34
03/11/80	1.97	1628.93	10/29/82	6.60	1624.30
03/26/80	4.40	1626.50	12/01/82	4.77	1626.15
04/02/80	4.89	1626.01	12/30/82	3.05	1627.85
04/18/80	5.63	1625.27			
05/02/80	6.31	1624.59	01/04/83	1.45	1629.45
05/19/80	6.89	1624.01	01/28/83	2.79	1628.11
06/06/80	6.77	1624.13	02/09/83	1.64	1629.26
06/25/80	6.97	1623.93	02/25/83	2.91	1627.99
07/18/80	5.84	1625.06	03/31/83	4.51	1626.39
08/01/80	6.55	1624.35	05/12/83	6.00	1624.90
08/14/80	6.57	1624.33	05/31/83	6.80	1624.10
09/05/80	6.25	1624.65			
09/18/80	6.72	1624.18			
09/24/80	6.62	1624.08			
09/25/80	6.78	1624.12			
10/02/80	6.68	1624.22			
10/17/80	6.17	1624.73			
11/03/80	6.07	1624.83			
12/09/80	6.04	1624.86			
12/29/80	2.94	1627.96			
01/19/81	2.25	1628.65			
02/11/81	2.42	1628.48			
03/04/81	4.14	1626.76			
03/31/81	6.31	1624.59			
04/29/81	7.05	1623.85			
05/26/81	7.47	1623.43			
06/30/81	6.00	1624.90			
07/07/81	4.63	1626.27			
07/23/81	5.10	1625.80			
08/17/81	6.02	1624.88			
09/18/81	7.30	1623.60			
10/07/81	7.17	1623.73			
11/06/81	8.04	1622.86			
12/04/81	7.27	1623.63			

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
11/15/79	7.60	1622.90	12/04/81	7.09	1623.41
12/14/79	7.14	1623.36	12/30/81	5.28	1625.22
12/19/79	5.66	1624.84			
12/27/79	5.82	1624.68	02/18/82	1.75	1628.75
			03/25/82	3.01	1627.49
01/03/80	5.96	1624.54	04/22/82	4.42	1626.08
01/14/80	4.00	1626.50	05/14/82	4.77	1625.73
01/17/80	3.64	1626.86	06/09/82	4.70	1625.80
01/29/80	2.90	1627.60	07/06/82	5.82	1624.68
02/07/80	2.60	1627.90	08/05/82	6.38	1624.12
02/29/80	2.48	1628.02	09/03/82	7.05	1623.45
03/11/80	2.27	1628.23	09/30/82	7.39	1623.11
03/26/80	3.45	1627.05	10/29/82	6.33	1624.17
04/02/80	4.07	1626.43	12/01/82	4.82	1625.68
04/18/80	4.85	1625.65	12/30/82	4.14	1626.36
04/29/80	5.44	1625.06			
05/02/80	5.64	1624.86	01/04/83	2.73	1627.77
05/19/80	6.43	1624.07	01/28/83	2.80	1627.70
06/06/80	6.67	1623.83	02/09/83	2.14	1628.36
06/25/80	7.08	1623.42	02/25/83	2.47	1628.03
07/18/80	6.48	1624.02	03/31/83	3.77	1626.73
08/01/80	6.78	1623.72	05/12/83	5.24	1625.26
08/14/80	6.76	1623.74	05/31/83	6.20	1624.30
09/05/80	6.48	1624.02			
09/18/80	6.66	1623.84			
09/25/80	6.64	1623.86			
09/25/80	6.55	1623.95			
10/03/80	6.52	1623.98			
10/17/80	6.06	1624.44			
11/03/80	6.02	1624.48			
12/09/80	5.94	1624.56			
12/29/80	3.74	1626.76			
01/09/81	3.46	1627.04			
01/19/81	2.82	1627.68			
02/11/81	2.77	1627.73			
03/04/81	3.75	1626.75			
03/31/81	5.61	1624.89			
04/29/81	6.47	1624.03			
05/26/81	6.88	1623.62			
06/30/81	6.22	1624.28			
07/23/81	5.47	1625.03			
08/17/81	6.16	1624.34			
09/18/81	7.10	1623.40			
10/07/81	6.90	1623.60			
11/06/81	7.54	1622.96			

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-08DCCA BIS. AQUIFER

WELL SCREENED FROM - FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1635.8

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-09AAA2 BIS. AQUIFER

WELL SCREENED FROM 30- 36 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1635.00

120

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
01/05/81	10.57	1625.23
01/09/81	10.60	1625.12
01/19/81	10.28	1625.52
02/11/81	10.25	1625.53
03/04/81	9.66	1626.14
03/31/81	10.39	1625.41
04/29/81	11.18	1624.62
05/26/81	11.73	1624.07
06/30/81	12.03	1623.77
07/23/81	11.52	1624.28
08/17/81	11.80	1624.00
09/14/81	12.54	1623.26
10/07/81	12.22	1623.58
12/07/81	12.21	1623.59
12/31/81	12.09	1623.71
02/18/82	9.53	1626.27
06/07/82	8.60	1627.20
07/06/82	11.62	1624.18
08/05/82	10.66	1625.14
10/29/82	11.50	1624.30
12/01/82	10.69	1625.11
03/31/83	9.10	1626.70

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
01/05/81	8.83	1626.17
01/09/81	8.90	1626.10
01/19/81	8.77	1626.23
02/11/81	8.22	1626.78
03/04/81	8.05	1626.93
03/31/81	8.48	1626.52
04/29/81	8.98	1626.02
05/26/81	9.45	1625.35
06/30/81	9.50	1625.50
07/23/81	8.59	1626.41
08/17/81	8.88	1626.12
09/14/81	9.36	1625.64
10/07/81	9.59	1625.41
11/06/81	9.79	1625.01
12/04/81	10.12	1624.88
12/30/81	9.95	1625.05
02/18/82	8.03	1626.97
03/25/82	7.44	1627.56
04/22/82	7.37	1627.63
05/14/82	7.56	1627.44
06/09/82	6.78	1628.22
07/06/82	7.65	1627.35
08/05/82	8.43	1626.57
09/07/82	8.19	1626.81
09/30/82	9.81	1625.19
10/29/82	8.64	1626.36
12/01/82	8.57	1626.43
12/30/82	8.65	1626.33
01/04/83	8.20	1626.80
01/28/83	7.83	1627.17
02/10/83	7.65	1627.35
02/25/83	7.44	1627.56
03/31/83	7.25	1627.75
05/12/83	7.50	1627.50
05/31/83	7.95	1627.05

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-09CCCCD BIS. AQUIFER

WELL SCREENED FROM 37- 40 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1636.3  
DRAINAGE DITCH

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-09DCBA BIS. AQUIFER

WELL SCREENED FROM - FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1633.8  
DESTROYED

121

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
11/15/79	13.71	1622.59	02/18/82	10.40	1625.90
12/14/79	13.68	1622.62	03/26/82	10.18	1626.12
12/21/79	12.42	1623.88	04/22/82	11.22	1625.08
12/27/79	13.13	1623.17	05/14/82	11.31	1624.99
			06/11/82	11.26	1625.04
01/03/80	13.05	1623.25	07/06/82	12.04	1624.26
01/10/80	12.70	1623.60	08/05/82	12.65	1623.65
01/17/80	12.59	1623.91	09/03/82	13.14	1623.16
01/29/80	11.60	1624.50	09/30/82	13.48	1622.82
02/07/80	11.54	1624.76	10/29/82	12.75	1623.55
02/29/80	11.15	1625.15	12/01/82	11.91	1624.39
03/11/80	10.65	1625.65	12/30/82	10.83	1625.47
03/26/80	10.70	1625.60			
04/02/80	10.85	1625.45	01/04/83	10.44	1625.86
04/19/80	11.26	1625.04	01/28/83	10.50	1625.80
04/21/80	11.45	1624.85	02/10/83	9.70	1626.60
05/02/80	11.95	1624.35	02/25/83	10.17	1626.13
05/19/80	12.58	1623.72	03/31/83	10.80	1625.50
06/06/80	13.27	1623.03	05/16/83	11.85	1624.45
06/25/80	13.23	1623.07	05/31/83	12.10	1624.20
07/18/80	13.55	1622.75			
08/01/80	13.74	1622.56			
08/14/80	13.77	1622.53			
09/05/80	13.25	1623.05			
09/18/80	13.33	1622.97			
10/03/80	13.29	1623.01			
10/17/80	12.90	1623.40			
11/03/80	12.96	1623.34			
12/09/80	12.82	1623.48			
12/29/80	11.84	1624.46			
01/09/81	11.54	1624.76			
01/19/81	10.97	1625.33			
02/11/81	10.63	1625.67			
03/04/81	10.87	1625.43			
03/31/81	11.72	1624.58			
04/29/81	12.37	1623.93			
05/26/81	12.81	1623.49			
06/30/81	13.06	1623.22			
07/23/81	12.58	1623.72			
08/17/81	13.07	1623.23			
09/14/81	13.28	1623.02			
10/07/81	13.30	1623.00			
11/06/81	13.45	1622.85			
12/04/81	13.46	1622.84			
12/30/81	13.08	1623.22			

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
01/06/81	9.63	1624.17
01/09/81	9.53	1624.27
01/19/81	9.04	1624.76
02/11/81	8.69	1625.11
03/04/81	8.55	1625.25
03/31/81	9.10	1624.70
04/29/81	9.88	1623.92
05/26/81	10.42	1623.38

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-10AAADA UNN. AQUIFER

WELL SCREENED FROM 109-112 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1665.6

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-10CDAD1 BIS. AQUIFER

WELL SCREENED FROM 77- 80 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1649.7  
SOUTH

122

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
11/19/79	35.43	1630.17	12/31/81	35.60	1630.00
12/14/79	35.50	1630.10			
12/21/79	35.38	1630.22	02/18/82	34.54	1631.06
12/27/79	35.28	1630.32	03/26/82	33.97	1631.63
			04/22/82	33.47	1632.13
01/03/80	35.65	1629.95	05/14/82	33.61	1631.99
01/10/80	35.03	1630.57	06/09/82	33.28	1632.32
01/18/80	35.02	1630.58	07/06/82	33.89	1631.71
01/29/80	34.79	1630.81	08/05/82	35.00	1630.60
02/07/80	34.65	1630.95	09/03/82	35.37	1630.23
02/29/80	34.50	1631.10	09/30/82	35.60	1630.00
03/11/80	34.26	1631.34	10/29/82	34.68	1630.92
03/26/80	34.13	1631.47	12/01/82	34.34	1631.26
04/03/80	34.16	1631.44	12/30/82	34.41	1631.19
04/16/80	34.32	1631.28			
04/23/80	34.44	1631.16	01/04/83	34.21	1631.39
05/02/80	34.83	1630.77	01/28/83	33.93	1631.67
05/20/80	35.55	1630.05	02/10/83	33.86	1631.74
06/06/80	35.92	1629.68	02/25/83	33.73	1631.87
06/25/80	35.91	1629.69	03/31/83	33.24	1632.36
07/18/80	36.74	1628.86	05/12/83	33.58	1632.02
08/01/80	36.58	1629.02	05/31/83	33.90	1631.70
08/14/80	36.61	1628.99			
09/08/80	35.62	1629.98			
09/19/80	35.65	1629.95			
10/03/80	35.62	1629.98			
10/17/80	35.44	1630.16			
11/03/80	35.34	1630.26			
12/09/80	35.13	1630.47			
12/29/80	35.02	1630.58			
01/09/81	34.89	1630.71			
01/19/81	34.69	1630.91			
02/11/81	34.56	1631.04			
03/04/81	34.25	1631.35			
03/31/81	34.44	1631.16			
04/29/81	35.16	1630.44			
05/26/81	35.76	1629.84			
06/30/81	35.99	1629.61			
07/23/81	35.66	1629.94			
08/17/81	35.67	1629.93			
09/14/81	35.64	1629.96			
09/18/81	35.68	1629.92			
10/07/81	35.64	1629.96			
11/06/81	35.72	1629.88			
12/04/81	35.40	1630.20			

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
11/19/79	26.62	1623.08	01/04/82	25.98	1623.72
12/14/79	26.36	1623.34	02/18/82	24.32	1625.38
12/21/79	26.08	1623.62	03/25/82	23.63	1626.07
12/28/79	25.98	1623.72	04/23/82	23.37	1626.33
			05/14/82	23.93	1625.77
01/04/80	25.85	1623.85	06/11/82	23.20	1626.50
01/11/80	25.69	1624.01	07/07/82	25.68	1624.02
01/18/80	25.44	1624.26	08/05/82	26.66	1623.04
01/29/80	25.01	1624.69	09/03/82	26.34	1623.36
02/08/80	24.75	1624.93	10/04/82	26.30	1623.40
02/29/80	24.55	1625.15	10/29/82	25.46	1624.24
03/12/80	24.08	1625.62	12/02/82	24.90	1624.80
03/26/80	23.99	1625.71	12/30/82	24.90	1624.80
04/03/80	24.15	1625.53			
04/18/80	24.34	1625.36	01/04/83	24.58	1625.12
04/29/80	25.77	1623.93	01/26/83	24.19	1625.51
05/02/80	25.54	1624.16	02/10/83	23.94	1625.76
05/20/80	26.59	1623.11	02/25/83	23.68	1626.02
06/06/80	27.31	1622.39	03/31/83	23.21	1626.49
06/25/80	27.01	1622.69	05/16/83	23.97	1625.73
07/18/80	29.37	1620.33	05/31/83	26.08	1623.62
08/01/80	28.65	1620.85			
08/15/80	27.51	1622.19			
09/08/80	26.37	1623.33			
09/18/80	27.35	1622.35			
09/26/80	26.31	1623.39			
09/26/80	26.27	1623.43			
10/03/80	26.31	1623.39			
10/17/80	26.15	1623.55			
11/03/80	26.07	1623.63			
12/12/80	25.70	1624.00			
12/31/80	25.41	1624.29			
01/09/81	25.29	1624.41			
01/19/81	24.91	1624.79			
02/12/81	24.57	1625.13			
03/04/81	24.26	1625.44			
03/31/81	24.63	1625.07			
04/30/81	24.96	1624.74			
05/29/81	25.80	1623.90			
07/01/81	28.57	1621.13			
07/24/81	26.12	1623.58			
08/18/81	27.30	1622.40			
10/07/81	26.35	1623.35			
12/04/81	26.47	1623.23			

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-10CDAD2 RIS. AQUIFER

WELL SCREENED FROM 51- 54 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1649.7  
NORTH

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

136-080-14ADAA UNN. AQUIFER

WELL SCREENED FROM 35- 38 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1649.3

123

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
05/02/80	24.10	1625.60	02/25/83	22.43	1627.27
05/20/80	25.20	1624.50	03/31/83	20.97	1628.73
06/06/80	25.89	1623.81	05/16/83	22.61	1627.09
06/25/80	25.50	1624.20	05/31/83	23.87	1625.83
07/18/80	27.43	1622.27			
08/01/80	27.04	1622.66			
08/14/80	26.25	1623.45			
09/08/80	24.99	1624.71			
09/18/80	25.53	1624.17			
09/26/80	24.74	1624.76			
10/03/80	24.90	1624.80			
10/17/80	24.80	1624.90			
11/03/80	24.60	1625.10			
12/12/80	24.32	1625.38			
12/31/80	24.09	1625.61			
01/09/81	23.96	1625.74			
01/19/81	23.65	1626.05			
02/12/81	23.32	1626.38			
03/04/81	23.00	1626.70			
03/31/81	23.37	1626.33			
04/30/81	26.95	1622.75			
05/29/81	27.62	1622.08			
07/01/81	26.54	1623.16			
07/24/81	24.90	1624.80			
08/18/81	25.60	1624.10			
10/07/81	24.93	1624.77			
12/04/81	25.00	1624.70			
01/04/82	24.61	1625.09			
02/16/82	23.00	1626.70			
03/25/82	22.48	1627.22			
04/23/82	22.19	1627.51			
05/14/82	22.64	1627.06			
06/11/82	22.04	1627.66			
07/07/82	23.65	1626.05			
08/05/82	24.90	1624.80			
09/03/82	24.88	1624.82			
10/04/82	24.86	1624.84			
10/29/82	24.06	1625.64			
12/02/82	23.50	1626.20			
12/30/82	23.51	1626.19			
01/04/83	23.23	1626.47			
01/28/83	22.85	1626.85			
02/10/83	22.86	1627.04			

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
11/20/79	14.21	1635.09	03/25/82	15.62	1633.68
12/14/79	13.95	1635.35	04/23/82	14.52	1634.78
12/21/79	13.94	1635.36	05/14/82	14.46	1634.84
12/28/79	14.13	1635.17	06/11/82	14.20	1635.10
			07/07/82	14.44	1634.86
01/04/80	13.97	1635.33	08/05/82	14.66	1634.64
01/11/80	14.03	1635.27	09/03/82	14.90	1634.40
01/18/80	13.91	1635.39	10/04/82	14.95	1634.35
01/30/80	14.13	1635.17	10/29/82	14.58	1634.72
02/08/80	14.13	1635.17	12/02/82	14.42	1634.88
02/29/80	14.35	1634.95	12/30/82	14.51	1634.79
03/12/80	14.04	1635.26			
03/26/80	14.15	1635.15	01/04/83	14.50	1634.80
04/03/80	14.20	1635.10	01/28/83	14.45	1634.85
04/18/80	14.14	1635.16	02/10/83	14.33	1634.97
04/23/80	14.32	1634.98	02/25/83	14.53	1634.77
05/02/80	14.44	1634.86	03/31/83	14.20	1635.10
05/20/80	15.04	1634.26	05/16/83	14.11	1635.19
06/06/80	15.35	1633.95	05/31/83	14.17	1635.13
06/25/80	15.49	1633.81	06/27/83	14.57	1634.73
07/18/80	16.07	1633.23			
08/01/80	16.12	1633.18			
08/18/80	16.29	1633.01			
09/08/80	16.17	1633.13			
09/18/80	16.11	1633.19			
10/03/80	15.87	1633.43			
10/17/80	15.68	1633.62			
11/03/80	15.65	1633.65			
12/12/80	15.42	1633.88			
12/31/80	15.39	1633.91			
01/09/81	15.26	1634.04			
01/19/81	15.33	1633.97			
02/12/81	15.48	1633.82			
03/04/81	15.41	1633.89			
03/31/81	15.39	1633.91			
04/30/81	16.92	1632.38			
05/29/81	16.34	1632.96			
07/02/81	16.65	1632.65			
07/24/81	16.92	1632.38			
08/18/81	16.91	1632.39			
10/07/81	16.53	1632.77			
12/04/81	16.40	1632.90			
01/04/82	16.08	1633.22			
02/19/82	15.07	1634.23			

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-15CAAA1 BIS. AQUIFER

WELL SCREENED FROM 138-141 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1656.5  
SOUTH

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-15CAAA2 BIS. AQUIFER

WELL SCREENED FROM 52- 55 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1656.3  
NORTH

124

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
05/02/80	34.28	1622.22	03/31/83	31.33	1625.17
05/20/80	35.20	1621.50	05/16/83	32.27	1624.23
06/06/80	36.45	1620.05	05/31/83	33.59	1622.91
06/25/80	35.46	1621.04			
07/18/80	39.34	1617.16			
08/01/80	38.35	1618.15			
08/15/80	35.92	1620.58			
09/08/80	34.72	1621.78			
09/19/80	34.65	1621.85			
10/03/80	33.95	1622.55			
10/17/80	34.44	1622.06			
11/03/80	34.31	1622.19			
12/12/80	33.90	1622.60			
12/31/80	33.57	1622.93			
01/09/81	33.45	1623.05			
01/19/81	33.00	1623.50			
02/12/81	32.62	1623.88			
03/04/81	32.34	1624.16			
03/31/81	32.81	1623.69			
04/30/81	35.38	1621.12			
05/29/81	36.31	1620.19			
07/01/81	37.70	1618.80			
07/24/81	34.67	1621.83			
08/18/81	35.77	1620.73			
10/07/81	34.60	1621.90			
12/04/81	34.67	1621.83			
01/04/82	34.07	1622.43			
02/18/82	32.61	1623.89			
03/25/82	31.70	1624.80			
04/23/82	31.45	1625.05			
05/14/82	32.10	1624.40			
06/11/82	31.47	1625.03			
07/07/82	34.50	1622.00			
08/05/82	35.82	1620.68			
09/03/82	34.47	1622.03			
10/04/82	34.60	1621.90			
10/29/82	33.78	1622.72			
12/02/82	33.09	1623.41			
12/30/82	33.05	1623.45			
01/04/83	32.77	1623.73			
01/28/83	32.34	1624.16			
02/10/83	32.14	1624.36			
02/25/83	31.82	1624.68			

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
05/02/80	33.94	1622.36	03/31/83	31.13	1625.17
05/20/80	34.85	1621.45	05/16/83	32.03	1624.27
06/06/80	36.07	1620.23	05/31/83	34.32	1621.98
06/25/80	35.11	1621.19			
07/18/80	38.92	1617.38			
08/01/80	37.97	1618.33			
08/15/80	35.57	1620.73			
09/08/80	34.52	1621.78			
09/19/80	34.45	1621.85			
10/03/80	35.46	1620.84			
10/17/80	35.25	1621.05			
11/03/80	34.03	1622.27			
12/12/80	33.67	1622.63			
12/31/80	33.35	1622.95			
01/09/81	33.23	1623.07			
01/19/81	32.79	1623.51			
02/12/81	32.39	1623.91			
03/04/81	32.13	1624.17			
03/31/81	32.60	1623.70			
04/30/81	35.13	1621.17			
05/29/81	36.03	1620.27			
07/01/81	37.47	1618.83			
07/24/81	34.42	1621.88			
08/18/81	35.54	1620.76			
10/07/81	34.37	1621.93			
12/04/81	34.43	1621.87			
01/04/82	33.81	1622.49			
02/18/82	32.35	1623.95			
03/25/82	31.49	1624.81			
04/23/82	31.23	1625.07			
05/14/82	31.89	1624.41			
06/11/82	31.22	1625.08			
07/07/82	33.97	1622.33			
08/05/82	35.12	1621.18			
09/03/82	34.34	1621.96			
10/04/82	34.29	1622.01			
10/29/82	33.54	1622.76			
12/02/82	32.85	1623.45			
12/30/82	32.84	1623.46			
01/04/83	32.56	1623.74			
01/28/83	32.13	1624.17			
02/10/83	31.92	1624.38			
02/25/83	31.60	1624.70			

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-15CCCC BIS. AQUIFER

WELL SCREENED FROM 88- 91 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1633.4

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-16DAGR BIS. AQUIFER

WELL SCREENED FROM 75- 78 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1643.1

125

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
11/19/79	8.60	1624.80	07/24/81	11.75	1621.85
12/14/79	11.15	1622.25	08/18/81	12.27	1621.13
12/21/79	11.14	1622.26	10/07/81	11.58	1621.82
12/27/79	10.99	1622.41	12/04/81	11.65	1621.75
01/03/80	10.84	1622.56	01/04/82	11.00	1622.40
01/10/80	10.47	1622.93	02/18/82	8.25	1625.15
01/14/80	10.44	1622.96	03/25/82	8.64	1624.76
01/17/80	10.35	1623.05	04/23/82	8.35	1625.05
01/29/80	9.80	1623.60	05/14/82	8.95	1624.45
02/08/80	9.53	1623.87	06/11/82	8.40	1625.00
02/29/80	9.33	1624.07	07/07/82	9.83	1623.57
03/12/80	8.86	1624.54	08/06/82	11.25	1622.15
03/26/80	8.76	1624.64	09/03/82	11.35	1622.05
04/03/80	9.05	1624.35	10/04/82	11.53	1621.87
04/18/80	9.32	1624.08	10/29/82	10.80	1622.60
04/24/80	9.67	1623.73	12/02/82	10.03	1623.37
			12/30/82	9.95	1623.45
01/04/83	9.66	1623.74			
01/28/83	9.20	1624.20	01/04/83	9.66	1623.74
02/10/83	8.97	1624.43	01/28/83	9.20	1624.20
02/25/83	8.65	1624.75	02/10/83	8.97	1624.43
03/31/83	8.22	1625.18	02/25/83	8.65	1624.75
05/02/83	10.68	1622.72	03/31/83	8.22	1625.18
05/20/80	11.50	1621.90	05/13/83	9.01	1624.39
06/06/80	12.43	1620.97	05/31/83	9.55	1623.85
06/25/80	12.22	1621.18			
07/18/80	14.05	1619.35			
08/01/80	13.75	1619.65			
08/15/80	12.88	1620.52			
09/05/80	11.75	1621.65			
09/19/80	11.61	1621.79			
10/03/80	11.55	1621.85			
10/17/80	11.48	1621.92			
11/03/80	11.11	1622.29			
12/12/80	10.85	1622.55			
12/30/80	10.54	1622.86			
01/09/81	10.39	1623.01			
01/19/81	9.95	1623.45			
02/12/81	9.55	1623.85			
03/04/81	9.21	1624.19			
03/31/81	9.71	1623.69			
04/30/81	10.87	1622.53			
05/29/81	11.09	1621.51			
07/01/81	12.81	1620.59			

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
11/19/79	20.93	1622.17	01/04/83	18.97	1624.13
12/14/79	20.79	1622.31	01/28/83	18.48	1624.62
12/27/79	20.34	1622.76	02/10/83	18.25	1624.85
			02/25/83	17.93	1625.17
01/03/80	20.21	1622.89	03/31/83	17.47	1625.63
01/11/80	20.06	1623.04	05/16/83	17.79	1625.31
01/17/80	19.68	1623.42	05/31/83	19.09	1624.01
01/29/80	19.27	1623.83			
02/08/80	19.00	1624.10			
02/29/80	18.75	1624.35			
03/11/80	18.31	1624.79			
03/26/80	18.16	1624.94			
04/03/80	18.39	1624.71			
04/18/80	18.59	1624.51			
05/02/80	18.85	1624.25			
05/19/80	21.06	1622.04			
06/25/80	21.45	1621.65			
09/05/80	20.99	1622.11			
09/19/80	20.85	1622.25			
10/17/80	20.70	1622.40			
11/03/80	20.48	1622.62			
12/12/80	20.17	1622.93			
12/30/80	19.82	1623.28			
01/09/81	19.69	1623.41			
01/19/81	19.23	1623.87			
02/12/81	18.87	1624.23			
03/04/81	18.53	1624.57			
04/30/81	20.52	1622.58			
05/29/81	21.76	1621.34			
07/01/81	22.49	1620.61			
08/17/81	21.69	1621.41			
09/18/81	21.00	1622.10			
10/07/81	20.82	1622.28			
12/31/81	20.60	1622.50			
02/18/82	18.62	1624.48			
03/25/82	17.90	1625.20			
04/23/82	17.67	1625.43			
05/14/82	18.30	1624.80			
07/07/82	19.23	1623.87			
09/03/82	20.64	1622.46			
10/04/82	20.81	1622.29			
10/29/82	20.07	1623.03			
12/30/82	19.32	1623.78			



NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-16DCCA1 BIS. AQUIFER

WELL SCREENED FROM 93- 96 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1631.9  
SOUTH WELL

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-16DCCA2 BIS. AQUIFER

WELL SCREENED FROM 56- 59 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1631.9  
NORTH WELL

126

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
05/02/80	8.63	1623.27
05/20/80	9.43	1622.47
06/06/80	10.50	1621.40
06/25/80	10.15	1621.75
07/18/80	11.60	1620.30
08/01/80	11.44	1620.46
08/15/80	10.77	1621.13
09/05/80	9.80	1622.10
09/19/80	9.67	1622.23
10/03/80	9.60	1622.30
10/17/80	9.54	1622.36
11/03/80	9.50	1622.60
12/12/80	8.94	1622.96
12/30/80	8.80	1623.10
01/09/81	8.64	1623.26
01/19/81	8.20	1623.70
02/12/81	7.60	1624.30
03/04/81	7.27	1624.63
03/31/81	7.74	1624.16
04/30/81	8.87	1623.03
05/29/81	9.94	1621.96
07/01/81	10.70	1621.20
07/24/81	9.88	1622.22
08/18/81	10.17	1621.73
10/07/81	9.62	1622.28
12/04/81	9.72	1622.18
01/07/82	9.02	1622.88
02/19/82	7.24	1624.66
03/25/82	6.64	1625.26
04/23/82	6.42	1625.48
07/07/82	7.79	1624.11
08/06/82	9.11	1622.79
09/03/82	9.37	1622.53
10/04/82	9.58	1622.32
10/29/82	8.86	1623.04
12/02/82	8.15	1623.75
12/30/82	8.07	1623.83
01/04/83	7.41	1624.49
01/28/83	7.21	1624.69
02/10/83	6.96	1624.94
02/25/83	6.65	1625.25
05/31/83	7.60	1624.30

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
05/20/80	9.55	1622.35
06/06/80	10.58	1621.32
06/25/80	10.22	1621.68
07/18/80	11.70	1620.20
08/01/80	11.56	1620.34
08/15/80	10.86	1621.04
09/05/80	9.92	1621.98
09/19/80	9.76	1622.14
10/03/80	9.70	1622.20
10/17/80	9.65	1622.25
11/03/80	9.40	1622.50
12/12/80	9.05	1622.85
12/30/80	8.52	1623.38
01/09/81	8.36	1623.54
01/19/81	7.89	1624.01
02/12/81	7.70	1624.20
03/04/81	7.37	1624.53
03/31/81	7.83	1624.07
04/30/81	9.00	1622.90
05/29/81	10.09	1621.81
07/01/81	10.80	1621.10
07/24/81	9.77	1622.13
08/18/81	10.28	1621.62
10/07/81	9.70	1622.20
12/04/81	9.80	1622.10
01/07/82	9.12	1622.78
02/18/82	7.35	1624.55
03/25/82	6.74	1625.16
04/23/82	6.51	1625.39
07/07/82	7.88	1624.02
08/06/82	9.21	1622.69
09/03/82	9.47	1622.43
10/04/82	9.67	1622.23
10/29/82	8.96	1622.94
12/02/82	8.21	1623.69
12/30/82	8.13	1623.77
01/04/83	7.97	1623.93
01/28/83	7.30	1624.60
02/10/83	7.05	1624.85
02/25/83	6.73	1625.17
05/31/83	7.70	1624.20

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-17ACCC BIS. AQUIFER

WELL SCREENED FROM 78- 81 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1633.8  
WEST

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-17DBAR BIS. AQUIFER

WELL SCREENED FROM 37- 40 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1633.4  
EAST

127

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
11/15/79	11.80	1622.00	03/26/82	7.75	1626.05
12/14/79	11.68	1622.12	04/22/82	8.42	1625.38
12/21/79	10.61	1623.19	05/14/82	9.05	1624.75
12/27/79	10.77	1623.03	06/11/82	8.85	1624.95
			07/06/82	10.05	1623.75
01/03/80	10.82	1622.98	08/05/82	10.80	1623.00
01/10/80	10.56	1623.24	09/03/82	11.42	1622.38
01/17/80	9.68	1624.12	09/30/82	11.66	1622.14
01/29/80	8.83	1624.97	10/29/82	10.87	1622.93
02/07/80	9.39	1624.41			
02/29/80	8.46	1625.34	02/10/83	7.80	1626.00
03/11/80	8.08	1625.72	02/25/83	8.04	1625.74
03/26/80	8.31	1625.49	03/31/83	8.27	1625.53
04/02/80	8.66	1625.14	05/12/83	9.35	1624.45
04/18/80	9.06	1624.74	05/31/83	10.03	1623.77
05/02/80	9.87	1623.93			
05/19/80	10.72	1623.08			
06/06/80	11.35	1622.45			
06/25/80	11.69	1622.11			
07/18/80	11.86	1621.94			
08/01/80	11.79	1622.01			
08/14/80	11.87	1621.93			
09/05/80	11.35	1622.45			
09/18/80	11.21	1622.59			
10/03/80	11.26	1622.54			
10/17/80	10.95	1622.85			
11/03/80	10.92	1622.88			
12/10/80	10.80	1623.00			
12/29/80	9.80	1624.00			
01/09/81	9.42	1624.38			
01/19/81	8.84	1624.96			
02/11/81	8.31	1625.49			
03/04/81	8.63	1625.17			
03/31/81	9.78	1624.02			
04/29/81	10.53	1623.27			
05/26/81	11.19	1622.61			
06/30/81	11.03	1622.77			
07/23/81	10.70	1623.10			
08/17/81	11.15	1622.65			
10/07/81	11.45	1622.35			
11/06/81	11.71	1622.09			
12/04/81	11.16	1622.64			
12/30/81	11.13	1622.67			
02/18/82	7.98	1625.82			

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
11/15/79	12.19	1621.21	02/18/82	8.08	1625.32
12/14/79	11.09	1622.31	03/26/82	7.55	1625.85
12/21/79	10.37	1623.03	04/22/82	7.80	1625.60
12/27/79	10.39	1623.01	05/14/82	8.46	1624.94
			06/11/82	8.13	1625.27
01/03/80	10.34	1623.06	07/06/82	9.15	1624.25
01/10/80	9.44	1623.96	08/05/82	10.09	1623.31
01/17/80	9.59	1623.81	09/03/82	10.52	1622.88
01/29/80	8.91	1624.49	09/30/82	11.05	1622.35
02/07/80	7.98	1625.42	10/29/82	10.16	1623.24
02/29/80	8.40	1625.00	12/01/82	9.48	1623.92
03/11/80	8.00	1625.40	12/30/82	9.21	1624.19
03/26/80	8.02	1625.38			
04/02/80	8.27	1625.13	01/04/83	8.64	1624.76
04/18/80	8.53	1624.87	01/28/83	8.15	1625.25
04/28/80	9.11	1624.29	02/10/83	7.78	1625.32
05/02/80	9.32	1624.08	02/25/83	7.80	1625.60
05/19/80	10.19	1623.21	03/31/83	7.58	1625.82
06/06/80	10.93	1622.47	05/12/83	8.65	1624.75
06/25/80	11.12	1622.28	05/31/83	9.12	1624.28
07/18/80	11.68	1621.72			
08/01/80	11.62	1621.78			
08/14/80	11.52	1621.88			
09/05/80	10.91	1622.49			
09/18/80	10.81	1622.59			
10/03/80	10.83	1622.57			
10/17/80	10.57	1622.83			
11/03/80	10.51	1622.89			
12/10/80	10.33	1623.07			
12/29/80	9.69	1623.71			
01/09/81	9.37	1624.03			
01/19/81	8.89	1624.51			
02/11/81	8.02	1625.38			
03/04/81	8.32	1625.08			
03/31/81	9.10	1624.30			
04/29/81	9.85	1623.55			
05/26/81	10.56	1622.84			
06/30/81	10.49	1622.91			
07/23/81	10.45	1622.95			
08/17/81	11.00	1622.40			
10/07/81	10.94	1622.46			
11/06/81	11.10	1622.30			
12/04/81	11.07	1622.33			
12/30/81	10.58	1622.82			

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-18AACD BIS. AQUIFER

WELL SCREENED FROM 34- 37 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1633.4

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-18CBDD BIS. AQUIFER

WELL SCREENED FROM 48- 51 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1628.2

128

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
11/15/79	10.61	1622.79	02/18/82	4.40	1629.00
12/14/79	10.04	1623.36	03/18/82	4.37	1629.03
12/19/79	7.03	1626.37	03/25/82	6.66	1626.74
12/27/79	8.74	1624.66	04/22/82	8.19	1625.21
			05/14/82	8.06	1625.34
01/03/80	8.88	1624.52	06/09/82	8.21	1625.19
01/10/80	7.25	1626.15	07/06/82	8.70	1624.70
01/17/80	6.44	1626.96	08/05/82	9.18	1624.22
01/29/80	5.64	1627.76	09/03/82	9.95	1623.45
02/07/80	5.23	1628.17	09/30/82	10.40	1623.00
02/29/80	5.09	1628.31	10/29/82	9.52	1623.88
03/11/80	4.82	1628.58	12/01/82	7.75	1625.65
03/26/80	6.20	1627.20	12/30/82	6.89	1626.51
04/02/80	6.94	1626.46			
04/18/80	7.80	1625.60	01/04/83	5.94	1627.46
05/02/80	8.49	1624.91	01/28/83	5.80	1627.60
05/19/80	9.30	1624.10	02/09/83	5.98	1627.42
06/06/80	9.55	1623.85	02/25/83	5.39	1628.01
06/25/80	9.80	1623.60	03/31/83	6.89	1626.51
07/18/80	9.11	1624.29	05/12/83	8.48	1624.92
08/01/80	9.40	1624.00	05/31/83	9.26	1624.14
08/14/80	9.41	1623.99			
09/05/80	9.14	1624.26			
09/18/80	9.48	1623.92			
09/25/80	9.51	1623.89			
10/03/80	9.41	1623.99			
10/17/80	9.11	1624.29			
11/03/80	9.05	1624.35			
12/09/80	8.95	1624.45			
12/29/80	6.21	1627.19			
01/09/81	6.10	1627.30			
01/19/81	5.38	1628.02			
02/11/81	5.34	1628.06			
03/04/81	7.05	1626.35			
03/31/81	9.10	1624.30			
04/29/81	9.71	1623.69			
05/26/81	10.05	1623.35			
06/30/81	9.03	1624.37			
07/23/81	8.23	1625.17			
08/17/81	9.08	1624.32			
09/18/81	10.15	1623.25			
10/07/81	9.97	1623.43			
11/06/81	10.49	1622.91			
12/04/81	10.15	1623.25			
12/30/81	7.69	1625.71			

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
11/15/79	6.68	1621.52	09/30/82	6.48	1621.72
12/14/79	5.54	1622.66	10/29/82	5.47	1622.73
12/19/79	3.72	1624.48	12/01/82	3.61	1624.59
12/27/79	5.51	1622.69	12/30/82	2.47	1625.73
01/03/80	4.14	1624.06	01/28/83	0.67	1627.53
01/10/80	2.74	1625.46	02/09/83	0.20	1628.00
01/17/80	1.81	1626.39	02/25/83	0.65	1627.55
04/18/80	2.31	1625.89	03/31/83	1.67	1626.53
04/24/80	2.81	1625.39	05/12/83	3.85	1624.35
05/02/80	3.56	1624.64	05/31/83	5.45	1622.75
05/19/80	5.14	1623.06	07/11/83	6.15	1622.05
06/06/80	5.20	1623.00	07/21/83	6.28	1621.92
06/25/80	5.52	1622.68	08/21/83	5.22	1622.98
07/18/80	4.89	1623.31	09/19/83	5.69	1622.51
08/01/80	5.36	1622.84	10/14/83	6.55	1621.65
08/14/80	5.31	1622.89	11/18/83	6.31	1621.89
09/05/80	4.98	1623.22	12/28/83	2.19	1626.01
09/18/80	5.33	1622.87			
10/03/80	5.18	1623.02			
10/17/80	4.71	1623.49			
11/03/80	4.67	1623.53			
12/09/80	4.57	1623.63			
12/29/80	2.24	1625.96			
01/09/81	2.00	1626.20			
01/19/81	1.36	1626.84			
02/11/81	1.42	1626.78			
04/29/81	5.53	1622.67			
05/26/81	6.12	1622.08			
06/30/81	4.44	1623.76			
07/23/81	3.28	1624.92			
08/17/81	5.07	1623.13			
09/18/81	6.17	1622.03			
10/07/81	5.84	1622.36			
11/06/81	6.84	1621.36			
12/04/81	6.06	1622.14			
12/30/81	4.18	1624.02			
03/25/82	1.20	1627.00			
04/22/82	2.58	1625.62			
05/14/82	3.09	1625.11			
06/09/82	2.32	1625.88			
07/06/82	4.77	1623.43			
08/05/82	5.42	1622.78			
09/03/82	6.10	1622.10			

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-19DB00 BIS. AQUIFER

WELL SCREENED FROM 45- 48 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1630.2

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-19DBADA BIS. AQUIFER

WELL SCREENED FROM 98-101 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1628.4  
SLETTENS

129

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
05/19/80	7.97	1622.23	02/09/83	3.11	1627.09
06/06/80	7.89	1622.51	02/25/83	2.70	1627.50
06/25/80	8.20	1622.00	03/31/83	5.83	1624.37
07/18/80	7.12	1623.08	05/12/83	7.28	1622.92
08/01/80	7.83	1622.37	05/31/83	8.23	1621.97
08/14/80	7.78	1622.42	07/11/83	9.05	1621.15
09/05/80	7.59	1622.61	07/21/83	8.42	1621.78
09/19/80	7.84	1622.36	08/21/83	7.30	1622.90
10/03/80	7.94	1622.26	09/19/83	8.02	1622.18
10/17/80	7.43	1622.77	10/14/83	9.14	1621.06
11/03/80	7.37	1622.83	11/18/83	8.82	1621.38
12/10/80	7.40	1622.80	12/28/83	3.58	1626.84
12/31/80	4.54	1625.66			
01/09/81	4.43	1625.77			
01/19/81	3.69	1626.51			
02/11/81	3.57	1626.63			
03/04/81	5.35	1624.85			
03/31/81	7.84	1622.36			
04/29/81	8.40	1621.80			
05/26/81	8.80	1621.40			
06/30/81	7.37	1622.83			
07/23/81	6.53	1623.67			
08/17/81	7.46	1622.74			
09/24/81	8.51	1621.69			
10/09/81	8.70	1621.50			
11/06/81	9.52	1620.68			
12/07/81	8.66	1621.54			
12/31/81	5.34	1624.86			
04/22/82	6.67	1623.53			
05/14/82	6.23	1623.97			
06/11/82	6.13	1624.07			
07/07/82	7.23	1622.97			
08/02/82	7.67	1622.53			
09/07/82	8.69	1621.51			
10/04/82	9.05	1621.15			
10/29/82	8.04	1622.16			
12/01/82	6.20	1624.00			
12/30/82	4.14	1626.06			
01/04/83	3.39	1626.81			
01/28/83	4.40	1625.80			
02/09/83	3.11	1627.09			
02/25/83	2.70	1627.50			
02/25/83	4.40	1625.80			

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
11/15/79	7.55	1620.85	02/18/82	4.41	1623.99
12/14/79	7.36	1621.04	03/18/82	3.65	1624.75
12/19/79	6.83	1621.57	03/25/82	3.73	1624.67
12/27/79	6.57	1621.83	04/22/82	3.61	1624.79
01/03/80	6.46	1621.94	05/14/82	4.24	1624.16
01/10/80	5.88	1622.52	06/09/82	3.96	1624.44
01/17/80	5.56	1622.84	07/06/82	5.46	1622.94
01/29/80	4.78	1623.62	08/05/82	6.48	1621.92
02/07/80	4.44	1623.96	09/03/82	7.33	1621.07
02/29/80	4.05	1624.35	09/30/82	7.68	1620.72
03/11/80	3.69	1624.71	10/29/82	6.99	1621.41
03/26/80	3.70	1624.70	12/01/82	5.95	1622.45
04/02/80	4.06	1624.34	12/30/82	5.63	1622.77
04/18/80	4.53	1623.87	01/04/83	5.19	1623.21
04/28/80	4.93	1623.47	01/28/83	4.57	1623.83
05/02/80	5.19	1623.21	02/09/83	4.24	1624.16
05/19/80	5.85	1622.55	02/25/83	3.82	1624.58
06/06/80	6.48	1621.92	03/31/83	3.38	1625.02
06/25/80	7.19	1621.21	05/12/83	4.48	1623.92
07/18/80	7.53	1620.87	05/31/83	5.21	1623.19
08/01/80	7.66	1620.74			
08/14/80	7.58	1620.82			
09/05/80	7.24	1621.16			
09/18/80	7.29	1621.11			
10/03/80	7.13	1621.27			
10/17/80	6.90	1621.50			
11/03/80	6.72	1621.68			
12/09/80	6.40	1622.00			
12/29/80	5.79	1622.61			
01/09/81	5.51	1622.89			
01/19/81	5.04	1623.36			
02/11/81	5.09	1623.31			
03/04/81	4.38	1624.02			
03/31/81	5.28	1623.12			
04/29/81	6.21	1622.19			
05/26/81	6.72	1621.68			
06/30/81	6.98	1621.42			
07/23/81	6.95	1621.45			
08/17/81	7.31	1621.09			
09/18/81	7.78	1620.62			
10/07/81	7.48	1620.92			
11/06/81	7.77	1620.63			
12/04/81	7.61	1620.79			
12/30/81	6.94	1621.46			

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-19DCC1 BIS. AQUIFER

WELL SCREENED FROM 83- 86 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1634.00  
EAST WELL

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-19DCC2 BIS. AQUIFER

WELL SCREENED FROM 33- 36 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1633.50  
WEST WELL

130

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
05/19/80	11.35	1622.65	02/25/83	8.99	1625.01
06/06/80	11.79	1622.21	03/31/83	8.94	1625.06
06/25/80	12.14	1621.86	05/12/83	10.30	1623.70
07/18/80	12.21	1621.79			
08/01/80	12.39	1621.61			
08/14/80	12.44	1621.56			
09/05/80	12.23	1621.77			
09/19/80	12.30	1621.70			
10/03/80	12.33	1621.67			
10/17/80	12.12	1621.88			
11/03/80	11.94	1622.06			
12/10/80	11.64	1622.36			
12/31/80	10.75	1623.25			
01/09/81	10.46	1623.54			
01/19/81	10.05	1623.95			
02/11/81	9.58	1624.42			
03/04/81	9.37	1624.63			
03/31/81	10.75	1623.25			
04/29/81	11.80	1622.20			
05/26/81	12.28	1621.72			
06/30/81	11.90	1622.10			
07/23/81	11.74	1622.26			
08/17/81	12.17	1621.83			
09/24/81	12.73	1621.27			
10/09/81	12.73	1621.27			
11/06/81	13.16	1620.84			
12/07/81	12.88	1621.12			
12/31/81	12.06	1621.94			
02/19/82	9.14	1624.86			
03/26/82	8.62	1625.38			
04/22/82	9.26	1624.74			
05/14/82	9.82	1624.18			
06/11/82	9.64	1624.36			
07/07/82	10.72	1623.28			
08/05/82	11.37	1622.63			
09/07/82	12.34	1621.66			
10/04/82	12.80	1621.20			
10/29/82	12.24	1621.76			
12/01/82	11.04	1622.96			
12/30/82	10.76	1623.24			
01/04/83	10.31	1623.69			
01/28/83	9.80	1624.20			
02/09/83	9.39	1624.61			

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
05/19/80	11.88	1621.62	02/25/83	9.52	1623.98
06/06/80	12.30	1621.20	03/31/83	9.45	1624.05
06/25/80	12.65	1620.85	05/12/83	10.83	1622.67
07/18/80	12.74	1620.76	05/31/83	11.45	1622.05
08/01/80	12.90	1620.60			
08/14/80	12.97	1620.53			
09/05/80	12.77	1620.73			
09/19/80	12.85	1620.65			
10/03/80	12.83	1620.67			
10/17/80	12.64	1620.86			
11/03/80	12.45	1621.05			
12/10/80	12.17	1621.33			
12/31/80	11.29	1622.21			
01/09/81	11.02	1622.48			
01/19/81	10.60	1622.90			
02/11/81	10.14	1623.36			
03/04/81	9.88	1623.62			
03/31/81	11.24	1622.26			
04/29/81	12.30	1621.20			
05/26/81	12.80	1620.70			
06/30/81	12.41	1621.09			
07/23/81	12.28	1621.22			
08/17/81	12.71	1620.79			
09/24/81	13.32	1620.18			
10/09/81	13.25	1620.25			
11/06/81	13.69	1619.81			
12/07/81	13.43	1620.07			
12/31/81	12.59	1620.91			
02/19/82	9.69	1623.81			
03/26/82	9.15	1624.35			
04/22/82	9.76	1623.74			
05/14/82	10.34	1623.16			
06/11/82	10.13	1623.37			
07/07/82	11.24	1622.26			
08/05/82	12.22	1621.28			
09/07/82	12.85	1620.65			
10/04/82	13.32	1620.18			
10/29/82	12.79	1620.71			
12/01/82	11.59	1621.91			
12/30/82	11.31	1622.19			
01/04/83	10.85	1622.65			
01/28/83	10.39	1623.11			
02/09/83	9.95	1623.55			

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-20B88A BIS. AQUIFER

WELL SCREENED FROM 68- 71 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1634.0

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-20DCCC BIS. AQUIFER

WELL SCREENED FROM 78- 81 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1629.9

131

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
11/15/79	12.61	1621.39	02/18/82	7.60	1626.40
12/14/79	11.80	1622.20	03/18/82	7.34	1626.66
12/19/79	10.35	1623.65	03/25/82	8.75	1625.25
12/27/79	11.05	1622.95	04/22/82	9.83	1624.17
			05/14/82	9.80	1624.20
01/03/80	11.25	1622.75	06/09/82	9.81	1624.19
01/10/80	10.64	1623.36	07/06/82	10.52	1623.48
01/17/80	8.88	1625.12	08/05/82	11.14	1622.86
01/29/80	8.28	1625.72	09/03/82	11.93	1622.07
02/07/80	7.99	1626.01	09/30/82	12.42	1621.58
02/29/80	7.95	1626.05	10/29/82	11.79	1622.21
03/11/80	7.76	1626.24	12/01/82	10.26	1623.74
03/26/80	9.02	1624.98			
04/02/80	9.51	1624.49	01/04/83	8.45	1625.55
04/18/80	10.01	1623.99	01/28/83	8.76	1625.24
05/02/80	10.60	1623.40	02/09/83	7.87	1626.13
05/19/80	11.12	1622.88	02/25/83	8.43	1625.57
06/06/80	11.33	1622.67	03/31/83	9.37	1624.63
06/25/80	11.66	1622.34	05/12/83	10.52	1623.48
07/18/80	11.04	1622.96	05/31/83	11.07	1622.93
08/01/80	11.53	1622.47			
08/14/80	11.61	1622.39			
09/05/80	11.45	1622.55			
09/16/80	11.68	1622.32			
10/02/80	11.65	1622.35			
10/03/80	11.69	1622.31			
10/17/80	11.31	1622.69			
11/03/80	11.29	1622.71			
12/09/80	11.24	1622.76			
12/29/80	9.34	1624.66			
01/09/81	9.90	1624.10			
01/19/81	8.41	1625.59			
03/04/81	9.14	1624.86			
03/31/81	10.75	1623.25			
04/29/81	11.49	1622.51			
05/26/81	11.93	1622.07			
06/30/81	11.14	1622.86			
07/23/81	10.54	1623.46			
08/17/81	11.34	1622.66			
09/18/81	12.30	1621.70			
10/07/81	12.29	1621.71			
11/06/81	12.53	1621.47			
12/04/81	12.44	1621.56			
12/30/81	10.62	1623.38			

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
11/15/79	9.63	1620.27	02/19/82	5.98	1623.92
12/14/79	9.34	1620.56	03/26/82	5.50	1624.40
12/19/79	8.74	1621.16	04/22/82	5.60	1624.30
12/27/79	8.29	1621.61	05/14/82	6.36	1623.54
			06/11/82	6.02	1623.88
01/03/80	8.21	1621.69	07/07/82	7.90	1622.00
01/10/80	7.59	1622.31	08/05/82	8.37	1621.53
01/17/80	7.11	1622.79	09/03/82	9.23	1620.67
01/29/80	6.20	1623.70	10/04/82	9.60	1620.30
02/07/80	5.95	1623.95	10/29/82	8.79	1621.11
02/29/80	5.80	1624.10	12/01/82	7.86	1622.04
03/11/80	5.54	1624.36	12/30/82	7.49	1622.41
03/26/80	5.71	1624.19			
04/02/80	6.10	1623.80	01/04/83	7.09	1622.81
04/18/80	8.00	1621.90	01/28/83	6.61	1623.29
04/21/80	7.50	1622.40	02/09/83	6.19	1623.71
05/02/80	8.54	1621.36	02/25/83	5.79	1624.11
05/19/80	8.94	1620.96	03/31/83	5.70	1624.20
06/06/80	9.49	1620.41	05/12/83	6.57	1623.33
06/25/80	10.13	1619.77	05/31/83	7.16	1622.74
07/18/80	11.22	1618.68			
08/01/80	10.81	1619.09			
08/14/80	9.70	1620.20			
09/05/80	9.19	1620.71			
09/18/80	9.29	1620.61			
10/03/80	9.20	1620.70			
10/17/80	9.00	1620.90			
11/03/80	8.78	1621.12			
12/10/80	8.46	1621.44			
12/30/80	7.91	1621.99			
01/09/81	7.64	1622.26			
01/19/81	7.05	1622.85			
02/11/81	6.47	1623.43			
03/04/81	6.28	1623.62			
03/31/81	7.87	1622.03			
04/29/81	9.34	1620.56			
05/26/81	8.65	1621.25			
06/30/81	9.75	1620.15			
07/23/81	8.83	1621.07			
08/17/81	10.40	1619.50			
09/24/81	9.71	1620.19			
10/09/81	9.50	1620.40			
11/06/81	9.83	1620.07			
12/07/81	9.54	1620.36			
12/31/81	8.70	1621.20			

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-120000 BIS. AQUIFER

WELL SCREENED FROM 60- 83 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1623.8  
S. OF IMP. VALLEY

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
11/16/79	3.13	1620.67
12/14/79	2.85	1620.95
12/21/79	2.24	1621.56
12/27/79	2.13	1621.67
01/03/80	2.09	1621.71
01/10/80	1.50	1622.30
01/18/80	1.21	1622.59
01/30/80	0.63	1623.17
04/18/80	0.64	1623.16
04/24/80	0.97	1622.83
05/02/80	1.66	1622.14
05/20/80	2.56	1621.24
06/06/80	3.51	1620.29
06/25/80	3.42	1620.38
07/18/80	4.44	1619.36
08/01/80	4.52	1619.28
08/15/80	3.97	1619.83
09/05/80	3.09	1620.71
09/18/80	3.02	1620.78
10/03/80	2.97	1620.83
10/17/80	2.80	1621.00
11/03/80	2.56	1621.24
12/10/80	2.20	1621.60
12/30/80	1.74	1622.06
01/09/81	1.67	1622.13
04/30/81	2.23	1621.57
05/29/81	3.16	1620.64
07/01/81	3.23	1620.57
07/24/81	2.87	1620.93
08/18/81	3.37	1620.43
09/24/81	3.06	1620.74
12/04/81	3.07	1620.73

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-220000 HCR. AQUIFER

WELL SCREENED FROM 77- 80 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1653.2  
DESTROYED

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
11/20/79	32.14	1621.06	03/26/82	29.03	1624.17
12/14/79	31.83	1621.37	04/23/82	28.87	1624.33
12/21/79	31.34	1621.86	05/14/82	29.35	1623.85
12/27/79	31.23	1621.97	06/11/82	28.95	1624.25
01/03/80	31.14	1622.06	07/07/82	30.27	1622.93
01/10/80	30.61	1622.59	08/06/82	31.50	1621.70
01/18/80	30.38	1622.82			
01/30/80	29.84	1623.36			
02/08/80	29.63	1623.57			
02/29/80	29.45	1623.75			
03/12/80	29.05	1624.15			
03/26/80	29.05	1624.15			
04/03/80	29.47	1623.73			
04/18/80	29.91	1623.29			
05/02/80	30.87	1622.33			
05/20/80	31.79	1621.41			
06/06/80	33.07	1620.13			
06/25/80	32.59	1620.61			
07/18/80	34.17	1619.03			
08/01/80	34.25	1618.95			
08/15/80	33.20	1620.00			
09/05/80	32.22	1620.98			
09/19/80	32.14	1621.06			
10/03/80	32.01	1621.19			
10/17/80	31.89	1621.31			
11/03/80	31.60	1621.60			
12/12/80	31.21	1621.99			
12/30/80	30.81	1622.39			
01/09/81	30.69	1622.51			
01/19/81	30.23	1622.97			
02/12/81	29.89	1623.31			
03/04/81	29.58	1623.62			
03/31/81	30.29	1622.91			
04/30/81	31.35	1621.85			
05/29/81	32.07	1621.13			
07/01/81	32.72	1620.48			
07/24/81	32.07	1621.13			
08/18/81	32.68	1620.52			
09/18/81	32.37	1620.83			
10/07/81	32.20	1621.00			
12/04/81	32.09	1621.11			
01/04/82	31.19	1622.01			
02/18/82	29.42	1623.78			

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-23A0CD1 BIS. AQUIFER

WELL SCREENED FROM 84- 87 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1648.5  
WEST WELL

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-23A0CD2 BIS. AQUIFER

WELL SCREENED FROM 44- 47 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1648.2  
EAST WELL

133

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
11/20/79	26.12	1622.38	04/23/82	22.63	1625.87
12/14/79	25.91	1622.59	05/14/82	23.37	1625.13
12/21/79	25.57	1622.93	06/11/82	23.07	1625.43
12/28/79	25.49	1623.01	07/07/82	24.75	1623.75
			08/05/82	26.22	1622.28
01/04/80	25.48	1623.02	09/03/82	26.02	1622.48
01/11/80	25.09	1623.41	10/04/82	26.11	1622.39
01/18/80	24.90	1623.60	10/29/82	25.30	1623.20
01/30/80	24.06	1624.44	12/02/82	24.55	1623.95
02/08/80	24.27	1624.23	12/30/82	24.55	1623.95
02/29/80	24.20	1624.30			
03/12/80	23.70	1624.80	01/04/83	24.29	1624.21
03/26/80	23.53	1624.97	01/28/83	24.03	1624.47
04/03/80	23.83	1624.67	02/10/83	23.92	1624.58
04/18/80	24.19	1624.31	02/25/83	23.59	1624.91
05/02/80	25.59	1622.91	03/31/83	23.23	1625.27
05/20/80	27.11	1621.39	05/16/83	23.22	1625.28
06/06/80	29.73	1618.77	05/31/83	24.35	1624.15
06/25/80	27.50	1621.00	06/27/83	24.93	1623.57
07/18/80	31.03	1617.47	07/11/83	25.02	1623.48
08/01/80	31.08	1617.42	07/21/83	25.84	1622.66
08/18/80	27.97	1620.53	08/21/83	26.44	1622.06
09/08/80	26.60	1621.90	09/19/83	26.29	1622.21
09/18/80	26.50	1622.00	10/14/83	26.16	1622.34
10/03/80	26.28	1622.22	11/18/83	25.80	1622.70
10/17/80	26.16	1622.34	12/28/83	24.87	1623.63
11/03/80	25.80	1622.70			
12/12/80	25.43	1623.07			
12/31/80	25.15	1623.35			
01/09/81	25.07	1623.43			
01/19/81	24.71	1623.79			
02/12/81	24.34	1624.16			
03/04/81	24.01	1624.49			
03/31/81	24.57	1623.93			
04/30/81	25.08	1622.62			
05/29/81	26.79	1621.71			
07/02/81	28.35	1620.15			
07/24/81	27.03	1621.47			
08/18/81	27.63	1620.87			
10/07/81	26.32	1622.18			
12/04/81	26.19	1622.31			
01/04/82	25.76	1622.74			
02/19/82	23.99	1624.51			
03/25/82	23.42	1625.08			

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
05/02/80	25.20	1623.00	03/31/83	22.41	1625.79
05/20/80	26.55	1621.65	05/16/83	22.34	1625.86
06/06/80	28.90	1619.30	05/31/83	23.98	1624.22
06/25/80	27.07	1621.13	06/27/83	24.49	1623.71
07/18/80	29.94	1618.26	07/11/83	24.71	1623.49
08/01/80	30.13	1618.07	07/21/83	25.39	1622.81
08/18/80	27.54	1620.66	08/21/83	26.05	1622.15
09/08/80	26.28	1621.92	09/19/83	25.97	1622.23
09/18/80	26.15	1622.05	10/14/83	25.81	1622.39
10/03/80	25.93	1622.27	11/18/83	25.43	1622.77
10/17/80	25.82	1622.38	12/28/83	24.49	1623.71
11/03/80	25.46	1622.74			
12/12/80	25.13	1623.07			
12/31/80	24.88	1623.32			
01/09/81	25.76	1622.44			
01/19/81	24.49	1623.71			
02/12/81	24.15	1624.05			
03/04/81	23.79	1624.41			
03/31/81	24.29	1623.91			
04/30/81	25.46	1622.74			
05/29/81	26.29	1621.91			
07/02/81	27.45	1620.75			
07/24/81	27.70	1620.50			
08/18/81	27.16	1621.04			
10/07/81	25.97	1622.23			
12/04/81	25.79	1622.41			
01/04/82	25.66	1622.54			
02/19/82	23.79	1624.41			
03/25/82	23.15	1625.05			
04/23/82	21.95	1626.25			
05/14/82	22.90	1625.30			
06/11/82	22.71	1625.49			
07/07/82	24.24	1623.96			
08/05/82	25.62	1622.58			
09/03/82	25.59	1622.61			
10/04/82	25.70	1622.50			
10/29/82	24.90	1623.30			
12/02/82	24.22	1623.98			
12/30/82	24.33	1623.87			
01/04/83	24.06	1624.14			
01/28/83	23.79	1624.41			
02/10/83	23.69	1624.51			
02/25/83	23.35	1624.85			



NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-23RABAA BIS. AQUIFER

WELL SCREENED FROM 42- 45 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1649.3  
EAST WELL

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-23RABBA BIS. AQUIFER

WELL SCREENED FROM 42- 45 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1652.1  
WEST WELL

134

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
11/20/79	24.55	1624.75	04/23/82	22.50	1626.80
12/14/79	25.47	1623.83	05/14/82	23.04	1626.26
12/21/79	25.21	1624.09	06/11/82	22.89	1626.61
12/27/79	25.09	1624.21	07/07/82	24.10	1625.20
			08/05/82	25.54	1623.76
01/04/80	24.93	1624.37	09/03/82	25.54	1623.76
01/11/80	24.73	1624.57	10/04/82	25.60	1623.70
01/17/80	24.55	1624.75	10/29/82	24.69	1624.61
01/30/80	24.18	1625.12	12/02/82	24.01	1625.29
02/07/80	24.00	1625.30	12/30/82	24.11	1625.19
02/29/80	23.81	1625.49			
03/12/80	23.50	1625.80	01/04/83	23.92	1625.38
03/26/80	23.36	1625.94	01/28/83	23.64	1625.66
04/03/80	23.56	1625.74	02/10/83	23.56	1625.74
04/18/80	23.79	1625.51	02/25/83	23.27	1626.03
05/02/80	24.94	1624.36	03/31/83	22.57	1626.73
05/20/80	26.11	1623.19	05/16/83	23.19	1626.11
06/06/80	27.86	1621.44	05/31/83	23.87	1625.43
06/25/80	26.74	1622.56			
07/18/80	28.95	1620.35			
08/01/80	29.17	1620.13			
08/15/80	27.75	1621.55			
09/08/80	25.89	1623.41			
09/18/80	25.80	1623.50			
10/03/80	25.68	1623.62			
10/17/80	25.56	1623.74			
11/03/80	25.19	1624.11			
12/12/80	24.93	1624.37			
12/31/80	24.71	1624.59			
01/09/81	24.59	1624.71			
01/19/81	24.34	1624.96			
02/12/81	24.03	1625.27			
03/04/81	23.68	1625.62			
03/31/81	24.24	1625.06			
04/30/81	25.23	1624.07			
05/29/81	26.08	1623.22			
07/01/81	26.65	1622.65			
07/24/81	26.38	1622.92			
08/18/81	26.95	1622.35			
10/07/81	25.75	1623.55			
12/04/81	25.65	1623.65			
01/04/82	25.23	1624.07			
02/18/82	23.82	1625.48			
03/25/82	23.09	1626.21			

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
11/20/79	27.89	1624.21	04/23/82	25.56	1626.54
12/14/79	27.56	1624.54	05/14/82	26.08	1626.02
12/21/79	27.36	1624.74	06/11/82	25.74	1626.36
12/27/79	27.01	1625.09	07/07/82	27.12	1624.98
			08/05/82	28.51	1623.59
01/04/80	26.69	1625.41	09/03/82	28.51	1623.59
01/11/80	26.45	1625.65	10/04/82	28.67	1623.43
01/18/80	25.62	1626.48	10/29/82	27.80	1624.30
01/30/80	26.31	1625.79	12/02/82	27.12	1624.98
02/08/80	25.72	1626.38	12/30/82	27.18	1624.92
02/29/80	24.72	1627.38			
03/12/80	25.52	1626.58	01/04/83	26.99	1625.11
03/26/80	25.91	1626.19	01/28/83	26.49	1625.61
04/03/80	26.10	1626.00	02/10/83	26.60	1625.50
04/18/80	26.26	1625.84	02/25/83	26.32	1625.78
05/02/80	27.32	1624.78	03/31/83	25.61	1626.49
05/20/80	28.39	1623.71	05/16/83	26.25	1625.85
06/06/80	30.64	1621.46	05/31/83	27.01	1625.09
06/25/80	28.92	1623.18			
07/18/80	31.04	1621.06			
08/01/80	31.18	1620.92			
08/15/80	29.77	1622.33			
09/08/80	28.03	1624.07			
09/18/80	27.94	1624.16			
10/03/80	27.86	1624.24			
10/17/80	27.77	1624.33			
11/03/80	27.46	1624.64			
12/12/80	27.65	1624.45			
12/31/80	27.71	1624.39			
01/09/81	27.60	1624.50			
01/19/81	27.32	1624.78			
02/12/81	27.01	1625.09			
03/04/81	26.64	1625.46			
03/31/81	27.21	1624.89			
04/30/81	28.28	1623.82			
05/29/81	29.14	1622.96			
07/01/81	29.64	1622.46			
07/24/81	29.44	1622.66			
08/18/81	30.07	1622.03			
10/07/81	28.81	1623.29			
12/04/81	28.65	1623.45			
01/04/82	28.26	1623.84			
02/18/82	26.79	1625.31			
03/25/82	26.02	1626.08			

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-23BCDC BIS. AQUIFER

WELL SCREENED FROM 90- 93 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1653.8

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-23CCDD BIS. AQUIFER

WELL SCREENED FROM 98-101 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1654.2

135

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
11/20/79	31.88	1621.92	04/23/82	28.60	1625.20
12/14/79	31.67	1622.13	05/14/82	29.25	1624.55
12/21/79	31.34	1622.46	06/11/82	28.78	1625.02
12/28/79	31.20	1622.60	07/07/82	30.67	1623.13
			08/02/82	32.15	1621.65
01/04/80	31.01	1622.79	09/03/82	31.76	1622.04
01/11/80	30.78	1623.02	10/04/82	31.93	1621.87
01/18/80	30.51	1623.29	10/29/82	31.11	1622.69
01/30/80	30.03	1623.77	12/02/82	30.24	1623.56
02/08/80	29.87	1623.93	12/30/82	30.27	1623.53
02/29/80	29.67	1624.13			
03/12/80	29.23	1624.57	01/04/83	29.99	1623.81
03/26/80	29.26	1624.54	01/28/83	29.71	1624.09
04/03/80	29.58	1624.22	02/10/83	29.54	1624.26
04/18/80	29.98	1623.82	02/25/83	29.22	1624.58
05/02/80	31.36	1622.44	03/31/83	28.69	1625.11
05/20/80	32.29	1621.51	05/16/83	28.67	1625.13
06/06/80	40.30	1613.50	05/31/83	30.48	1623.32
06/25/80	32.90	1620.90	06/27/83	30.98	1622.82
07/18/80	41.64	1612.16	07/11/83	31.01	1622.79
08/01/80	41.30	1612.50	07/21/83	31.67	1622.13
08/18/80	33.15	1620.65	08/21/83	32.44	1621.36
09/08/80	32.13	1621.67	09/19/83	31.96	1621.84
09/18/80	32.11	1621.69	10/14/83	31.92	1621.88
10/03/80	31.90	1621.90	11/18/83	31.67	1622.13
10/17/80	31.80	1622.00	12/28/83	30.72	1623.08
11/03/80	31.45	1622.35			
12/12/80	31.10	1622.70			
12/31/80	30.81	1622.99			
01/09/81	30.72	1623.08			
01/19/81	30.30	1623.50			
02/12/81	29.89	1623.91			
03/04/81	29.64	1624.16			
03/31/81	30.32	1623.48			
04/30/81	31.38	1622.42			
05/29/81	32.16	1621.64			
07/02/81	39.50	1614.30			
07/24/81	32.43	1621.37			
08/18/81	33.14	1620.66			
10/07/81	31.99	1621.81			
12/04/81	31.90	1621.90			
01/04/82	31.47	1622.33			
02/19/82	29.51	1624.29			
03/25/82	29.04	1624.76			

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
11/20/79	32.13	1622.07	03/25/82	29.36	1624.84
12/14/79	31.95	1622.25	04/23/82	28.90	1625.30
12/21/79	31.58	1622.62	05/14/82	29.53	1624.67
12/28/79	31.47	1622.73	06/11/82	29.11	1625.09
			07/07/82	30.76	1623.44
01/04/80	31.23	1622.92	08/05/82	32.15	1622.05
01/10/80	30.88	1623.32	09/03/82	32.04	1622.16
01/18/80	30.38	1623.82	10/04/82	32.18	1622.02
01/30/80	30.32	1623.88	10/29/82	31.36	1622.84
02/08/80	30.16	1624.04	12/02/82	30.54	1623.66
02/29/80	29.35	1624.85	12/30/82	30.52	1623.68
03/12/80	29.54	1624.66			
03/26/80	29.41	1624.79	01/04/83	30.25	1623.95
04/03/80	29.78	1624.42	01/28/83	29.99	1624.21
04/18/80	30.11	1624.09	02/10/83	29.84	1624.36
04/23/80	30.34	1623.86	02/25/83	29.53	1624.67
05/02/80	31.51	1622.69	03/31/83	29.02	1625.18
05/20/80	32.67	1621.53	05/16/83	30.18	1624.02
06/06/80	35.52	1618.68	05/31/83	30.52	1623.68
06/25/80	33.21	1620.99			
07/18/80	36.77	1617.43			
08/01/80	36.78	1617.42			
08/18/80	33.53	1620.67			
09/08/80	32.44	1621.76			
09/18/80	32.41	1621.79			
10/03/80	32.23	1621.97			
10/17/80	32.11	1622.09			
11/03/80	31.79	1622.41			
12/12/80	31.41	1622.79			
12/31/80	31.09	1623.11			
01/09/81	30.02	1624.18			
01/19/81	30.56	1623.64			
02/12/81	30.18	1624.02			
03/04/81	29.94	1624.26			
03/31/81	30.51	1623.69			
04/30/81	31.59	1622.61			
05/29/81	32.49	1621.71			
07/01/81	34.02	1620.18			
07/24/81	32.69	1621.51			
08/18/81	33.42	1620.78			
10/07/81	32.32	1621.88			
12/04/81	32.23	1621.97			
01/04/82	31.96	1622.24			
02/18/82	30.39	1623.81			

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-030-25AAA 500. AQUIFER

WELL SCREENED FROM 163-168 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1692.0

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
03/30/83	61.25	1630.75
06/27/83	70.24	1621.76
07/19/83	71.29	1620.71
08/16/83	75.97	1616.03
09/12/83	72.21	1619.79
10/14/83	65.15	1626.85
11/18/83	64.04	1627.96
12/14/83	63.40	1628.60

138-080-25ABA 500. AQUIFER

WELL SCREENED FROM 163-168 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1688.0

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
03/30/83	58.05	1629.95
06/27/83	66.77	1621.23
07/19/83	68.24	1619.76
08/16/83	72.25	1615.75
09/12/83	68.60	1619.40
10/14/83	61.98	1626.02
11/18/83	60.87	1627.13
12/14/83	60.29	1627.71

138-080-25BAB APL. AQUIFER

WELL SCREENED FROM -100 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1630.0

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
03/30/83	7.57	1622.43
06/27/83	14.48	1615.52
07/19/83	16.12	1613.88
08/16/83	19.13	1610.87
09/12/83	13.94	1616.06
10/14/83	10.25	1619.75
11/18/83	9.36	1620.64
12/14/83	8.92	1621.08

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-27ADDD HCR. AQUIFER

WELL SCREENED FROM 47- 50 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1656.5

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
11/20/79	31.37	1625.13	03/25/82	33.02	1623.48
12/14/79	30.94	1625.56	04/23/82	32.40	1624.10
12/21/79	30.97	1625.53	05/14/82	32.60	1623.90
12/28/79	31.46	1625.04	06/11/82	32.54	1623.96
01/04/80	30.99	1625.51	07/07/82	32.65	1623.85
01/10/80	30.22	1626.28	08/05/82	32.63	1623.87
01/18/80	31.28	1625.22	09/03/82	32.56	1623.94
01/30/80	31.29	1625.21	10/04/82	32.55	1623.95
02/03/80	31.17	1625.33	10/29/82	32.30	1624.20
02/29/80	31.62	1624.88	12/02/82	32.06	1624.44
03/12/80	30.68	1625.82	12/30/82	32.36	1624.14
03/26/80	30.93	1625.57	01/04/83	32.28	1624.22
04/03/80	31.13	1625.37	01/28/83	32.06	1624.44
04/18/80	30.91	1625.59	02/10/83	32.20	1624.30
05/02/80	31.20	1625.30	02/25/83	32.02	1624.48
05/20/80	31.22	1625.28	03/31/83	31.90	1624.60
06/06/80	31.48	1625.02	05/16/83	31.99	1624.51
06/25/80	31.55	1624.95	05/31/83	32.07	1624.43
07/18/80	31.68	1624.82			
08/01/80	31.63	1624.87			
08/18/80	31.51	1624.99			
09/08/80	31.84	1624.66			
09/18/80	32.10	1624.40			
10/02/80	32.24	1624.26			
10/03/80	31.87	1624.63			
10/17/80	31.84	1624.66			
11/03/80	32.12	1624.38			
12/12/80	32.12	1624.38			
12/31/80	32.15	1624.35			
01/09/81	32.03	1624.47			
01/19/81	31.95	1624.55			
02/12/81	32.37	1624.13			
03/04/81	32.28	1624.22			
03/31/81	32.99	1623.51			
04/30/81	32.41	1624.09			
05/29/81	32.59	1623.91			
07/01/81	32.43	1624.07			
07/24/81	32.69	1623.81			
08/18/81	32.72	1623.78			
10/07/81	32.70	1623.80			
12/04/81	33.32	1623.18			
01/04/82	33.07	1623.43			
02/18/82	32.64	1623.86			

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-27DRDC HCR. AQUIFER

WELL SCREENED FROM 110-116 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1652.2  
PETERSON'S

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-27DCDC HCR. AQUIFER

WELL SCREENED FROM 42-45 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1626.3  
SCHOOL YARD

137

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
11/16/79	34.44	1617.76	02/18/82	34.20	1618.00
12/14/79	34.37	1617.83	03/26/82	33.52	1618.68
12/21/79	34.36	1617.84	04/23/82	32.95	1619.25
12/28/79	34.39	1617.81	05/14/82	32.90	1619.30
			06/11/82	32.66	1619.54
01/04/80	34.18	1618.02	07/07/82	33.12	1619.08
01/10/80	33.05	1619.15	08/06/82	33.30	1618.90
01/18/80	33.98	1618.22	09/03/82	33.69	1618.31
01/30/80	33.79	1618.41	10/04/82	34.04	1618.16
02/08/80	33.59	1618.61	10/29/82	33.59	1618.61
02/29/80	33.39	1618.81	12/02/82	33.44	1618.76
03/12/80	33.06	1619.14	12/30/82	33.92	1618.28
03/26/80	33.02	1619.18			
04/03/80	32.93	1619.27	01/04/83	33.34	1618.86
04/18/80	33.00	1619.20	01/28/83	32.81	1619.39
04/25/80	33.42	1618.78	02/10/83	33.08	1619.12
05/02/80	33.75	1618.45	02/25/83	32.72	1619.48
05/20/80	35.51	1616.69	03/31/83	32.23	1619.97
06/06/80	34.98	1617.22	05/13/83	32.11	1620.09
06/25/80	35.20	1617.00	05/31/83	32.08	1620.12
07/18/80	35.98	1616.22			
09/01/80	35.43	1616.77			
08/15/80	35.39	1616.81			
09/05/80	35.17	1617.03			
09/19/80	35.10	1617.10			
10/03/80	35.10	1617.10			
10/17/80	34.96	1617.24			
11/03/80	34.80	1617.40			
12/12/80	34.64	1617.56			
12/30/80	34.61	1617.59			
01/09/81	34.58	1617.62			
01/19/81	34.36	1617.84			
02/12/81	33.55	1618.65			
03/04/81	33.59	1618.61			
03/31/81	33.74	1618.46			
04/30/81	33.97	1618.23			
05/29/81	34.28	1617.92			
07/01/81	34.62	1617.58			
07/24/81	34.69	1617.51			
08/18/81	34.77	1617.43			
09/24/81	34.79	1617.41			
10/07/81	35.15	1617.05			
12/04/81	35.53	1616.67			
01/04/82	34.66	1617.54			

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
11/16/79	7.14	1619.16	01/04/82	5.69	1620.61
12/14/79	7.21	1619.09	02/18/82	5.76	1620.54
12/21/79	7.29	1619.01	04/23/82	4.57	1621.73
12/28/79	7.26	1619.04	05/14/82	4.84	1621.76
			06/11/82	4.38	1621.92
01/04/80	7.27	1619.03	07/07/82	4.35	1621.95
01/10/80	6.81	1619.49	08/06/82	4.97	1621.33
01/18/80	7.19	1619.11	09/03/82	5.02	1621.28
01/30/80	7.04	1619.26	10/04/82	5.11	1621.19
02/08/80	6.88	1619.42	10/29/82	4.99	1621.31
02/29/80	6.59	1619.71	12/02/82	5.14	1621.16
03/12/80	6.36	1619.94	12/30/82	5.17	1621.13
03/26/80	6.13	1620.17			
04/02/80	7.06	1619.24	01/04/83	5.21	1621.09
04/18/80	5.95	1620.35	01/28/83	5.23	1621.07
04/24/80	5.92	1620.38	02/10/83	5.22	1621.08
04/28/80	5.91	1620.39	02/25/83	5.25	1621.05
05/02/80	5.93	1620.37	03/31/83	4.70	1621.60
05/20/80	6.06	1620.24	05/13/83	4.44	1621.86
06/06/80	6.16	1620.14	05/31/83	4.46	1621.84
06/25/80	6.25	1620.05			
07/18/80	6.34	1619.96			
08/01/80	6.36	1619.94			
08/15/80	6.40	1619.90			
09/05/80	6.37	1619.93			
09/19/80	6.39	1619.91			
10/03/80	6.43	1619.87			
10/17/80	6.45	1619.85			
11/03/80	6.54	1619.76			
12/12/80	6.63	1619.67			
12/30/80	6.66	1619.64			
01/09/81	6.67	1619.63			
01/19/81	6.68	1619.62			
02/12/81	6.71	1619.59			
03/04/81	6.75	1619.55			
03/31/81	6.73	1619.57			
04/30/81	6.72	1619.58			
05/29/81	6.66	1619.64			
07/01/81	6.68	1619.62			
07/24/81	6.68	1619.62			
08/18/81	6.68	1619.62			
09/24/81	6.68	1619.62			
10/07/81	6.68	1619.62			
12/04/81	6.87	1619.43			

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-2700AA APC. AQUIFER

WELL SCREENED FROM 40- 43 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1632.1

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-2700BC HCR. AQUIFER

WELL SCREENED FROM 37- 40 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1647.2

138

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
11/20/79	13.13	1618.97	04/23/82	11.27	1620.83
12/14/79	13.17	1618.93	05/14/82	11.68	1620.42
12/21/79	12.96	1619.14	06/11/82	11.76	1620.34
12/28/79	12.96	1619.14	07/07/82	12.25	1619.85
01/04/80	12.81	1619.29	08/05/82	12.81	1619.29
01/10/80	12.86	1619.44	09/03/82	13.32	1618.78
01/18/80	12.50	1619.60	10/04/82	13.63	1618.47
01/30/80	12.07	1620.03	10/29/82	13.42	1618.88
02/08/80	11.79	1620.31	12/02/82	13.17	1618.93
02/29/80	11.53	1620.57	12/30/82	12.98	1619.12
03/12/80	11.25	1620.85	01/04/83	12.93	1619.17
03/28/80	11.19	1620.91	01/28/83	11.70	1620.40
04/03/80	11.38	1620.72	02/10/83	12.43	1619.67
04/18/80	11.89	1620.41	02/25/83	12.20	1619.90
05/02/80	11.96	1620.14	03/31/83	11.59	1620.51
05/20/80	12.27	1619.83	05/16/83	11.68	1620.42
06/06/80	12.51	1619.59	05/31/83	12.21	1619.89
06/25/80	12.93	1619.17			
07/18/80	13.26	1618.84			
08/01/80	13.40	1618.70			
08/18/80	13.48	1618.62			
09/08/80	13.52	1618.58			
09/18/80	13.80	1618.50			
10/03/80	13.70	1618.40			
10/17/80	13.80	1618.30			
11/03/80	13.79	1618.31			
12/12/80	13.75	1618.35			
12/31/80	13.52	1618.58			
01/09/81	13.47	1618.63			
01/19/81	13.17	1618.93			
02/12/81	12.85	1619.25			
03/04/81	12.80	1619.50			
03/31/81	12.81	1619.29			
04/30/81	13.14	1618.96			
05/27/81	13.58	1618.52			
07/01/81	13.74	1618.36			
07/24/81	13.80	1618.30			
08/18/81	14.04	1618.06			
10/07/81	14.30	1617.80			
12/04/81	14.34	1617.76			
01/04/82	14.11	1617.99			
02/18/82	12.59	1619.71			
03/25/82	11.84	1620.26			

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
11/16/79	26.27	1620.93	04/23/82	26.72	1620.48
12/14/79	26.62	1620.58	05/14/82	26.77	1620.43
12/21/79	26.68	1620.52	06/11/82	26.47	1620.73
12/29/79	27.22	1619.98	07/07/82	27.23	1619.97
01/04/80	26.73	1620.47	08/02/82	27.56	1619.64
01/10/80	25.95	1621.25	09/03/82	26.63	1620.57
01/18/80	27.03	1620.17	10/04/82	26.74	1620.46
01/30/80	27.02	1620.18	10/29/82	26.48	1620.72
02/08/80	26.82	1620.38	12/02/82	26.27	1620.93
02/29/80	27.17	1620.03	12/30/82	26.69	1620.51
03/12/80	26.13	1621.07	01/04/83	26.57	1620.63
03/26/80	26.33	1620.87	01/28/83	26.32	1620.88
04/03/80	26.50	1620.70	02/10/83	26.49	1620.71
04/18/80	26.24	1620.96	02/25/83	26.25	1620.95
05/02/80	26.53	1620.67	03/31/83	25.97	1621.23
05/20/80	26.52	1620.68	05/16/83	25.95	1621.25
06/06/80	26.81	1620.39	05/31/83	25.84	1621.36
06/25/80	26.93	1620.27			
07/18/80	27.17	1620.03			
08/01/80	27.14	1620.06			
08/18/80	26.99	1620.21			
09/08/80	27.30	1619.90			
09/18/80	27.52	1619.68			
10/03/80	27.36	1619.84			
10/17/80	27.18	1620.02			
11/03/80	27.13	1620.07			
12/12/80	27.56	1619.64			
12/31/80	27.56	1619.64			
01/09/81	27.44	1619.76			
01/19/81	27.36	1619.84			
02/12/81	27.64	1619.56			
03/04/81	27.29	1619.91			
03/31/81	27.12	1620.08			
04/30/81	27.59	1619.61			
05/29/81	27.59	1619.61			
07/01/81	27.65	1619.55			
07/24/81	27.93	1619.27			
08/18/81	27.92	1619.28			
10/07/81	27.92	1619.28			
12/04/81	28.55	1618.65			
01/04/82	28.08	1619.12			
02/19/82	27.63	1619.57			
03/25/82	27.50	1619.70			

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-27DDCB HCR. AQUIFER

WELL SCREENED FROM 47- 50 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1633.2  
RIVINDOUS LAND

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-28ABADA RIS. AQUIFER

WELL SCREENED FROM 37- 40 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1633.4  
MCWILLIAMS'S SITE

139

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
11/16/79	12.79	1620.41	04/23/82	12.77	1620.43
12/14/79	13.00	1620.20	05/14/82	12.64	1620.56
12/21/79	12.97	1620.23	06/11/82	12.24	1620.96
12/28/79	13.25	1619.95	07/07/82	12.29	1620.91
			08/02/82	12.49	1620.71
01/04/80	13.01	1620.19	09/03/82	12.75	1620.45
01/10/80	12.71	1620.49	10/04/82	12.92	1620.28
01/18/80	13.12	1620.08	10/29/82	12.71	1620.49
01/30/80	13.08	1620.12	12/02/82	12.62	1620.58
02/08/80	13.01	1620.19	12/30/82	12.41	1620.79
02/29/80	13.04	1620.16			
03/12/80	12.51	1620.69	01/04/83	12.45	1620.75
03/26/80	12.59	1620.41	01/28/83	12.61	1620.59
04/03/80	12.64	1620.56	02/10/83	12.63	1620.57
04/18/80	12.56	1620.64	02/25/83	12.57	1620.63
05/02/80	12.69	1620.51	03/31/83	12.17	1621.03
05/20/80	12.75	1620.45	05/16/83	12.19	1621.01
06/06/80	12.92	1620.28	05/31/83	11.90	1621.30
06/25/80	13.10	1620.10			
07/18/80	13.35	1619.85			
08/01/80	13.39	1619.81			
08/18/80	13.37	1619.83			
09/08/80	13.42	1619.78			
09/18/80	13.60	1619.60			
10/03/80	13.59	1619.61			
10/17/80	13.51	1619.69			
11/03/80	13.17	1620.03			
12/12/80	13.69	1619.51			
12/31/80	13.73	1619.47			
01/09/81	13.62	1619.58			
01/19/81	13.63	1619.57			
02/12/81	13.68	1619.52			
03/04/81	13.47	1619.73			
03/31/81	13.43	1619.77			
04/30/81	13.72	1619.48			
05/29/81	13.68	1619.52			
07/01/81	13.88	1619.32			
07/24/81	14.04	1619.16			
08/18/81	14.14	1619.06			
10/07/81	14.26	1618.94			
12/04/81	14.55	1618.65			
01/04/82	14.37	1618.83			
02/19/82	13.90	1619.30			
03/25/82	13.49	1619.71			

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
11/16/79	12.89	1620.51	02/19/82	9.07	1624.33
12/14/79	12.51	1620.89	03/26/82	9.07	1624.33
12/21/79	11.69	1621.71	04/22/82	9.53	1623.87
12/27/79	11.62	1621.78	05/14/82	9.64	1623.76
			06/11/82	9.64	1623.76
01/03/80	11.60	1621.80	07/07/82	10.68	1622.72
01/10/80	10.94	1622.46	08/05/82	11.61	1621.79
01/17/80	10.50	1622.90	09/03/82	12.36	1621.04
01/29/80	9.74	1623.66	10/04/82	12.64	1620.76
02/07/80	9.43	1623.97	10/29/82	11.85	1621.55
02/29/80	9.29	1624.11	12/02/82	10.86	1622.54
03/11/80	8.98	1624.42	12/30/82	10.51	1622.89
03/26/80	9.25	1624.15			
04/02/80	9.81	1623.59	01/04/83	10.16	1623.24
04/18/80	10.23	1623.17	01/28/83	9.75	1623.65
05/02/80	11.03	1622.37	02/09/83	9.37	1624.03
05/19/80	11.85	1621.55	02/25/83	9.00	1624.40
06/06/80	12.62	1620.78	03/31/83	9.34	1624.06
06/25/80	12.88	1620.52	05/12/83	10.10	1623.30
07/18/80	13.32	1620.08	05/31/83	10.63	1622.77
08/01/80	13.45	1619.95			
08/14/80	13.38	1620.02			
09/05/80	12.60	1620.80			
09/19/80	12.55	1620.85			
10/03/80	12.53	1620.87			
10/17/80	12.35	1621.05			
11/03/80	12.13	1621.27			
12/10/80	11.78	1621.62			
12/30/80	11.17	1622.23			
01/09/81	10.91	1622.49			
01/19/81	10.35	1623.05			
02/12/81	9.81	1623.59			
03/04/81	9.67	1623.73			
03/31/81	10.75	1622.65			
04/29/81	11.67	1621.73			
05/28/81	12.41	1620.99			
07/01/81	12.40	1621.00			
07/24/81	12.23	1621.17			
08/13/81	12.72	1620.68			
09/24/81	12.88	1620.52			
10/09/81	12.69	1620.71			
11/06/81	12.96	1620.44			
12/07/81	12.63	1620.77			
12/31/81	11.70	1621.70			

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-28BCAB BIS. AQUIFER

WELL SCREENED FROM 37- 40 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1632.8

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-28BDAB BIS. AQUIFER

WELL SCREENED FROM 37- 40 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1630.8

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DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
11/15/79	12.73	1620.07	02/19/82	9.44	1623.36
12/14/79	12.23	1620.57	03/26/82	8.62	1624.18
12/19/79	12.27	1620.53	04/23/82	8.38	1624.42
12/27/79	11.88	1620.92	05/14/82	9.21	1623.59
			06/11/82	8.98	1623.82
01/03/80	11.62	1621.18	07/06/82	10.16	1622.64
01/11/80	11.31	1621.49	08/05/82	11.17	1621.63
01/17/80	10.83	1621.97	09/03/82	12.16	1620.64
01/29/80	9.73	1623.07	09/30/82	12.78	1620.02
02/07/80	9.46	1623.34	10/29/82	12.10	1620.70
02/29/80	9.16	1623.64	12/01/82	11.24	1621.56
03/11/80	8.74	1624.06	12/30/82	10.90	1621.90
03/26/80	8.74	1624.06			
04/02/80	9.02	1623.78	01/04/83	10.64	1622.16
04/18/80	9.08	1623.72	01/28/83	10.04	1622.76
04/21/80	9.07	1623.73	02/09/83	9.66	1623.14
05/02/80	9.79	1623.01	02/25/83	9.22	1623.58
05/19/80	10.42	1622.38	03/31/83	8.94	1623.86
06/06/80	11.30	1621.50	05/12/83	9.60	1623.20
06/25/80	11.83	1620.97	05/31/83	9.98	1622.82
07/18/80	12.54	1620.26			
08/01/80	12.64	1620.16			
08/14/80	12.83	1619.97			
09/05/80	12.57	1620.23			
09/18/80	12.64	1620.16			
09/22/80	12.66	1620.14			
11/03/80	12.09	1620.71			
12/10/80	11.75	1621.05			
12/29/80	11.38	1621.42			
01/09/81	11.11	1621.69			
01/19/81	10.66	1622.14			
02/11/81	10.00	1622.80			
03/04/81	9.59	1623.21			
03/31/81	10.17	1622.63			
04/29/81	10.97	1621.83			
05/26/81	11.49	1621.31			
06/30/81	11.79	1621.01			
07/24/81	11.98	1620.82			
08/17/81	12.31	1620.49			
09/24/81	12.87	1619.93			
10/09/81	12.68	1620.12			
11/06/81	12.68	1619.92			
12/04/81	12.75	1620.05			
12/30/81	12.17	1620.63			

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
11/15/79	10.87	1619.93	02/19/82	7.35	1623.45
12/14/79	10.65	1620.15	04/23/82	6.85	1623.95
12/19/79	10.42	1620.38	05/14/82	7.44	1623.36
12/27/79	9.82	1620.98	06/11/82	7.27	1623.53
			07/06/82	8.46	1622.34
01/03/80	9.69	1621.11	08/02/82	9.48	1621.32
01/14/80	8.91	1621.89	09/03/82	10.45	1620.35
01/17/80	8.76	1622.04	09/30/82	10.98	1619.82
01/29/80	7.94	1622.86	10/29/82	10.12	1620.68
02/07/80	7.63	1623.17	12/01/82	9.17	1621.63
02/29/80	7.31	1623.49	12/30/82	8.81	1621.99
03/11/80	6.89	1623.91			
03/26/80	6.97	1623.83	01/04/83	8.50	1622.30
04/02/80	7.41	1623.39	01/28/83	8.02	1622.78
04/18/80	7.68	1623.12	02/09/83	7.63	1623.17
05/02/80	8.19	1622.61	02/25/83	7.23	1623.57
05/19/80	8.87	1621.93	03/31/83	7.27	1623.53
06/06/80	9.72	1621.08	05/12/83	7.78	1623.02
06/25/80	10.32	1620.48	05/31/83	8.20	1622.60
07/18/80	10.79	1620.01			
08/01/80	10.88	1619.92			
08/14/80	11.09	1619.71			
09/05/80	10.71	1620.09			
09/18/80	10.76	1620.04			
09/22/80	10.78	1620.02			
10/03/80	10.62	1620.18			
10/17/80	10.50	1620.30			
11/03/80	10.15	1620.65			
12/10/80	9.80	1621.00			
12/29/80	9.36	1621.44			
01/09/81	9.07	1621.73			
01/19/81	8.53	1622.27			
02/11/81	7.89	1622.91			
03/04/81	7.64	1623.16			
03/31/81	8.40	1622.40			
04/29/81	9.16	1621.64			
05/26/81	9.73	1621.07			
06/30/81	10.00	1620.80			
07/24/81	10.12	1620.68			
08/17/81	10.52	1620.28			
09/24/81	11.04	1619.76			
10/09/81	10.75	1620.05			
11/06/81	10.88	1619.92			
12/07/81	10.75	1620.05			
12/30/81	10.04	1620.76			

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-29CABB BIS. AQUIFER

WELL SCREENED FROM 37- 40 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1631.4  
BY outhouse

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-28DBDB BIS. AQUIFER

WELL SCREENED FROM 37- 40 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1633.4  
BY BOAT RAMP

141

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
11/15/79	11.90	1619.50	02/26/82	7.53	1623.87
12/14/79	11.08	1620.32	04/23/82	8.42	1622.98
12/19/79	9.16	1622.24	05/14/82	8.92	1622.48
12/27/79	9.96	1621.44	06/11/82	8.80	1622.60
			07/06/82	9.85	1621.55
01/03/80	10.12	1621.28	08/05/82	10.55	1620.85
01/14/80	7.79	1623.61	09/03/82	11.30	1620.10
01/17/80	7.44	1623.96	09/30/82	11.75	1619.65
01/29/80	6.70	1624.70	10/29/82	10.73	1620.67
02/07/80	6.47	1624.93	12/01/82	9.45	1621.95
02/29/80	6.67	1624.73	12/30/82	7.88	1623.52
03/11/80	6.48	1624.92			
03/26/80	7.76	1623.64	01/04/83	7.85	1623.55
04/02/80	8.38	1623.02	01/28/83	8.11	1623.29
04/18/80	8.80	1622.60	02/09/83	7.07	1624.33
05/02/80	9.51	1621.89	02/25/83	7.53	1623.87
05/19/80	10.21	1621.19	03/31/83	8.68	1622.72
06/06/80	10.81	1620.59	05/12/83	9.47	1621.93
06/25/80	11.26	1620.14	05/31/83	9.89	1621.51
07/18/80	10.68	1620.72	07/11/83	10.74	1620.66
08/01/80	11.25	1620.15	07/21/83	10.87	1620.53
08/14/80	11.41	1619.99	08/21/83	10.50	1620.90
09/05/80	11.09	1620.31	09/19/83	9.19	1622.21
09/18/80	11.36	1620.04	10/14/83	11.48	1619.92
09/22/80	11.37	1620.03	11/18/83	11.42	1619.98
11/03/80	10.70	1620.70	12/28/83	7.85	1623.55
12/10/80	10.49	1620.91			
12/29/80	9.02	1622.38			
01/09/81	8.73	1622.67			
01/19/81	7.68	1623.72			
02/11/81	7.24	1624.16			
03/04/81	8.08	1623.32			
03/31/81	9.51	1621.89			
04/29/81	10.36	1621.04			
05/26/81	10.84	1620.56			
06/30/81	10.40	1621.00			
07/23/81	9.90	1621.50			
08/17/81	10.73	1620.67			
09/24/81	11.63	1619.77			
10/09/81	11.44	1619.96			
11/06/81	11.77	1619.63			
12/04/81	11.42	1619.98			
12/30/81	8.98	1622.42			
02/18/82	6.35	1625.05			

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
11/15/79	15.09	1618.31	02/19/82	7.90	1625.50
12/14/79	12.45	1620.95	03/26/82	9.95	1623.45
12/19/79	10.09	1623.31	04/23/82	11.59	1621.81
12/27/79	11.83	1621.57	05/14/82	11.29	1622.11
			06/11/82	11.05	1622.35
01/03/80	12.11	1621.29	07/06/82	11.98	1621.42
01/14/80	8.45	1624.95	08/05/82	12.62	1620.78
01/17/80	8.56	1624.84	09/03/82	13.36	1620.04
01/29/80	7.94	1625.46	09/30/82	13.71	1619.69
02/07/80	7.70	1625.70	10/29/82	12.72	1620.68
02/29/80	8.31	1625.09	12/01/82	11.17	1622.23
03/11/80	8.32	1625.08	12/30/82	8.99	1624.41
03/26/80	10.53	1622.87			
04/02/80	11.05	1622.35	01/04/83	9.18	1624.22
04/18/80	11.53	1621.87	01/28/83	9.81	1623.59
05/02/80	12.32	1621.08	02/09/83	8.55	1624.85
05/19/80	12.94	1620.46	02/25/83	9.44	1623.96
06/06/80	13.01	1620.39	03/31/83	10.95	1622.45
06/25/80	13.32	1620.08	05/12/83	11.76	1621.64
07/18/80	12.32	1621.08	05/31/83	12.35	1621.05
08/01/80	13.19	1620.21			
08/14/80	13.29	1620.11			
09/05/80	12.85	1620.55			
09/18/80	13.20	1620.20			
09/22/80	13.16	1620.24			
10/03/80	13.17	1620.23			
10/17/80	12.55	1620.85			
11/03/80	12.44	1620.96			
12/10/80	12.45	1620.95			
12/29/80	10.48	1622.92			
01/09/81	10.19	1623.21			
01/19/81	9.00	1624.40			
02/11/81	8.72	1624.68			
03/04/81	10.20	1623.20			
03/31/81	12.34	1621.06			
04/29/81	12.97	1620.43			
05/26/81	13.42	1619.98			
06/30/81	12.29	1621.11			
07/23/81	11.60	1621.80			
08/17/81	12.60	1620.80			
09/24/81	13.50	1619.90			
10/09/81	13.52	1619.88			
11/06/81	14.08	1619.32			
12/04/81	13.32	1620.08			
12/30/81	10.29	1623.11			



NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-200DAD BIS. AQUIFER

WELL SCREENED FROM 37- 40 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1628.2

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-29BCBC1 BIS. AQUIFER

WELL SCREENED FROM 113-116 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1628.0  
SOUTH WELL

142

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
11/16/79	9.98	1618.22	12/07/81	8.81	1619.39
12/14/79	6.91	1621.29	12/31/81	5.47	1622.73
12/19/79	5.29	1622.91			
12/27/79	7.20	1621.00	02/19/82	3.01	1625.19
			03/26/82	4.87	1623.33
01/03/80	7.53	1620.67	04/23/82	7.34	1620.86
01/10/80	4.94	1623.26	05/14/82	6.65	1621.55
01/14/80	4.62	1623.58	06/11/82	6.45	1621.75
01/17/80	4.34	1623.86	07/07/82	7.43	1620.77
01/29/80	3.19	1625.01	08/05/82	8.18	1620.02
02/07/80	3.00	1625.20	09/03/82	8.98	1619.22
02/29/80	3.54	1624.66	10/04/82	9.39	1618.81
03/11/80	3.47	1624.73	10/29/82	8.25	1619.95
03/26/80	5.35	1622.85	12/02/82	6.67	1621.53
04/02/80	6.70	1621.50	12/30/82	5.00	1623.20
04/18/80	7.38	1620.82			
04/24/80	7.64	1620.56	01/04/83	4.80	1623.40
05/02/80	7.11	1621.09	01/28/83	5.08	1623.12
05/19/80	8.68	1619.52	02/10/83	3.95	1624.25
06/06/80	8.27	1619.93	02/25/83	4.36	1623.84
06/25/80	8.62	1619.58	03/31/83	6.37	1621.83
07/18/80	7.50	1620.70	05/12/83	7.24	1620.96
08/01/80	8.44	1619.76	05/31/83	8.07	1620.13
08/14/80	8.54	1619.66	07/11/83	8.77	1619.43
09/05/80	8.20	1620.00	07/21/83	8.21	1619.99
09/19/80	8.49	1619.71	08/21/83	7.38	1620.82
10/02/80	8.49	1619.71	09/19/83	8.27	1619.93
10/03/80	8.50	1619.70	10/14/83	9.57	1618.63
10/17/80	8.03	1620.17	11/18/83	8.99	1619.21
11/03/80	7.73	1620.47	12/28/83	4.68	1623.52
12/10/80	7.75	1620.45			
12/30/80	5.62	1622.58			
01/09/81	5.49	1622.71			
01/19/81	4.72	1623.48			
02/12/81	4.07	1624.13			
03/04/81	5.05	1623.15			
03/31/81	8.38	1619.82			
04/29/81	8.85	1619.35			
05/27/81	9.19	1619.01			
07/01/81	7.29	1620.91			
07/24/81	6.77	1621.43			
08/17/81	7.86	1620.34			
09/18/81	9.09	1619.11			
10/09/81	9.09	1619.11			
11/06/81	9.99	1618.21			

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
05/19/80	6.97	1621.03	05/31/83	6.22	1621.78
06/06/80	7.03	1620.97			
06/25/80	7.82	1620.18			
07/18/80	7.84	1620.16			
08/01/80	8.08	1619.92			
08/14/80	7.43	1620.57			
09/05/80	7.08	1620.92			
09/19/80	8.24	1619.76			
11/03/80	6.67	1621.33			
12/10/80	6.62	1621.38			
12/31/80	5.33	1622.67			
01/09/81	5.20	1622.80			
01/19/81	4.22	1623.78			
02/11/81	3.79	1624.21			
03/04/81	4.05	1623.95			
03/31/81	6.45	1621.55			
04/29/81	7.37	1620.63			
05/26/81	7.27	1620.73			
06/30/81	7.25	1620.75			
07/23/81	6.47	1621.53			
08/17/81	7.53	1620.47			
09/24/81	7.70	1620.30			
10/09/81	7.73	1620.27			
11/06/81	8.38	1619.62			
12/07/81	8.75	1619.25			
12/31/81	6.14	1621.86			
02/19/82	3.06	1624.94			
04/22/82	4.44	1623.56			
05/14/82	4.87	1623.13			
06/11/82	4.63	1623.37			
07/07/82	6.08	1621.92			
08/05/82	6.59	1621.41			
09/07/82	7.63	1620.37			
10/04/82	7.98	1620.02			
10/29/82	6.84	1621.16			
12/01/82	5.78	1622.22			
12/30/82	4.63	1623.37			
01/04/83	4.24	1623.76			
01/28/83	4.32	1623.68			
02/09/83	3.57	1624.43			
02/25/83	3.49	1624.51			
03/31/83	4.18	1623.82			
05/12/83	5.20	1622.80			

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-29BCBC2 BIS, AQUIFER

WELL SCREENED FROM 37- 40 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1628.1  
NORTH WELL

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-29CDAC BIS, AQUIFER

WELL SCREENED FROM 98-101 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1627.8  
NEAR DOME

143

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
05/19/80	6.40	1621.70	05/31/83	5.40	1622.70
06/06/80	7.02	1621.08			
06/25/80	7.80	1620.30			
07/18/80	7.83	1620.27			
08/01/80	8.07	1620.03			
08/14/80	7.49	1620.61			
09/05/80	7.09	1621.01			
09/19/80	7.25	1620.85			
11/03/80	6.71	1621.39			
12/10/80	6.65	1621.45			
12/31/80	5.40	1622.70			
01/09/81	5.24	1622.86			
01/19/81	4.30	1623.90			
02/11/81	3.82	1624.28			
03/04/81	4.03	1624.07			
03/31/81	6.39	1621.71			
04/29/81	7.30	1620.80			
05/26/81	7.28	1620.82			
05/30/81	7.24	1620.86			
07/23/81	6.53	1621.57			
08/17/81	7.47	1620.63			
09/24/81	7.74	1620.36			
10/09/81	7.76	1620.34			
11/06/81	8.40	1619.70			
12/07/81	7.77	1620.33			
12/31/81	6.23	1621.87			
02/19/82	3.10	1625.00			
04/22/82	4.40	1623.70			
05/14/82	4.87	1623.23			
06/11/82	4.65	1623.45			
07/06/82	6.07	1622.03			
08/05/82	6.84	1621.26			
09/07/82	7.68	1620.42			
10/04/82	7.99	1620.11			
10/29/82	6.84	1621.26			
12/01/82	5.82	1622.28			
12/30/82	4.66	1623.44			
01/04/83	4.27	1623.83			
01/28/83	4.34	1623.76			
02/09/83	3.62	1624.48			
02/25/83	3.50	1624.60			
03/31/83	4.17	1623.93			
05/12/83	5.19	1622.91			

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
11/19/79	8.40	1619.40
12/17/79	4.14	1623.66
12/28/79	5.96	1621.84
01/03/80	5.62	1622.18
01/14/80	1.37	1626.43
05/02/80	6.88	1620.92
05/19/80	7.37	1620.43
06/06/80	6.65	1621.15
06/25/80	6.76	1621.04
07/18/80	5.46	1622.34
08/01/80	6.59	1621.21
08/14/80	6.55	1621.25
09/05/80	6.30	1621.50
09/18/80	6.82	1620.98
10/03/80	6.77	1621.03
11/03/80	5.97	1621.83
12/10/80	6.11	1621.69
12/30/80	3.03	1624.77
01/09/81	3.04	1624.76
04/29/81	7.62	1620.18
07/01/81	5.34	1622.46
07/23/81	4.83	1622.97
08/17/81	6.01	1621.79
10/09/81	7.65	1620.15
12/07/81	7.36	1620.44
12/31/81	3.31	1624.49
09/03/82	7.23	1620.57
09/30/82	7.66	1620.14
11/01/82	6.38	1621.42
12/01/82	4.71	1623.09
01/28/83	3.28	1624.52
02/09/83	1.53	1626.27
02/25/83	3.36	1624.44
03/31/83	5.26	1622.54
05/16/83	6.21	1621.59
05/31/83	7.47	1620.33

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-29DADB BIS. AQUIFER

WELL SCREENED FROM 78- 81 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1624.9  
LONE TREE

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-29DBDC BIS. AQUIFER

WELL SCREENED FROM 38- 41 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1624.9  
CURVE

144

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
11/19/79	5.75	1619.15
12/17/79	2.77	1622.13
12/28/79	1.41	1623.49
01/03/80	1.67	1623.23
05/02/80	0.41	1624.49
05/19/80	0.95	1623.95
06/06/80	1.23	1623.67
06/25/80	1.46	1623.44
07/18/80	1.64	1623.26
08/01/80	1.63	1623.27
08/14/80	1.74	1623.16
09/05/80	1.41	1623.49
09/18/80	1.87	1623.03
10/03/80	1.99	1622.91
11/03/80	2.13	1622.77
12/10/80	2.28	1622.62
12/30/80	2.28	1622.62
01/09/81	2.24	1622.66
04/29/81	0.56	1624.34
07/01/81	1.22	1623.68
07/23/81	1.24	1623.66
08/17/81	1.29	1623.61
10/09/81	1.69	1623.21
12/07/81	2.32	1622.58
12/31/81	2.43	1622.47
07/07/82	0.74	1624.16
09/03/82	1.35	1623.55
09/30/82	1.74	1623.16
11/01/82	1.50	1623.40
12/01/82	1.53	1623.37
01/28/83	1.13	1623.77
02/09/83	0.95	1623.95
03/31/83	2.02	1622.88
05/16/83	2.78	1622.12
05/31/83	2.97	1621.93

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
11/19/79	9.35	1615.55
12/17/79	4.47	1620.43
12/28/79	4.64	1620.26
01/03/80	4.66	1620.24
01/14/80	1.59	1623.31
05/02/80	5.29	1619.61
05/19/80	5.97	1618.93
06/06/80	5.85	1619.05
06/25/80	6.25	1618.65
07/18/80	5.38	1619.52
08/01/80	6.13	1618.77
08/14/80	6.15	1618.75
09/05/80	5.47	1619.43
09/18/80	6.18	1618.72
10/03/80	6.11	1618.79
11/03/80	5.37	1619.53
12/10/80	5.40	1619.50
12/30/80	3.30	1621.60
01/09/81	3.07	1621.83
05/29/81	6.24	1618.66
07/01/81	5.13	1619.77
07/23/81	4.57	1620.33
08/17/81	5.62	1619.28
10/09/81	6.70	1618.20
12/07/81	6.52	1618.38
12/31/81	3.36	1621.54
07/07/82	5.22	1619.68
09/03/82	6.55	1618.35
09/30/82	6.88	1618.02
11/01/82	5.56	1619.34
12/01/82	4.15	1620.75
01/28/83	2.68	1622.22
02/09/83	1.19	1623.71
02/25/83	2.23	1622.67
03/31/83	3.71	1621.19

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-29DCAB BIS. AQUIFER

WELL SCREENED FROM 37- 40 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1626.2  
OUT HOUSE

145

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
11/19/79	6.40	1619.80
12/17/79	3.38	1622.82
12/28/79	3.89	1622.31
01/03/80	3.89	1622.31
01/14/80	0.15	1626.05
05/02/80	4.73	1621.47
05/19/80	5.42	1620.78
06/06/80	5.08	1621.12
06/25/80	5.39	1620.81
07/18/80	4.34	1621.86
08/01/80	5.19	1621.01
08/14/80	5.24	1620.96
09/05/80	4.90	1621.30
09/18/80	5.35	1620.85
10/03/80	5.30	1620.90
11/03/80	4.55	1621.65
12/10/80	4.60	1621.60
12/30/80	2.11	1624.09
01/09/81	1.88	1624.32
04/29/81	5.70	1620.50
07/01/81	4.17	1622.03
07/23/81	3.59	1622.61
08/17/81	4.64	1621.56
10/09/81	5.97	1620.23
12/07/81	5.75	1620.45
12/31/81	2.12	1624.08
07/07/82	4.52	1621.68
09/03/82	5.75	1620.45
09/30/82	6.16	1620.04
11/01/82	4.77	1621.43
12/01/82	3.23	1622.97
01/28/83	1.78	1624.42
02/09/83	0.13	1626.07
02/25/83	2.57	1623.63
03/31/83	3.98	1622.22
05/16/83	3.40	1622.80
05/31/83	4.10	1622.10

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-080-34DCDB BIS. AQUIFER

WELL SCREENED FROM 70- 73 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1631.8  
GIRL SCOUT

DATE	DEPTH TO WATER	WATER LEVEL ELEVATION	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
11/20/79	6.71	1625.09	01/04/83	9.78	1622.02
12/27/79	11.22	1620.58	01/28/83	9.50	1622.30
01/03/80	11.37	1620.43	02/09/83	8.63	1623.17
01/14/80	9.69	1622.11	02/25/83	8.55	1623.25
01/17/80	9.41	1622.39	03/31/83	9.67	1622.13
01/29/80	7.95	1623.85	05/13/83	10.50	1621.30
02/08/80	7.69	1624.11	05/31/83	11.21	1620.59
02/29/80	7.75	1624.05			
03/11/80	7.55	1624.25			
03/26/80	8.27	1623.53			
04/02/80	9.05	1622.75			
04/18/80	9.66	1622.14			
05/19/80	11.34	1620.46			
06/06/80	11.67	1620.13			
06/25/80	12.11	1619.69			
08/01/80	12.41	1619.39			
08/14/80	12.56	1619.24			
09/05/80	12.46	1619.34			
09/19/80	12.67	1619.13			
10/03/80	12.67	1619.13			
10/17/80	12.37	1619.43			
11/03/80	12.09	1619.71			
12/10/80	11.90	1619.90			
12/30/80	11.30	1620.50			
01/09/81	10.45	1621.35			
01/19/81	9.61	1622.19			
02/12/81	9.10	1622.70			
03/04/81	9.16	1622.64			
03/31/81	11.14	1620.66			
04/30/81	12.00	1619.80			
05/27/81	12.47	1619.33			
07/01/81	11.65	1620.15			
10/07/81	12.90	1618.90			
12/04/81	12.75	1619.05			
12/31/81	11.48	1620.32			
02/19/82	6.77	1625.03			
03/26/82	7.77	1624.03			
04/23/82	9.24	1622.56			
05/14/82	9.60	1622.20			
10/29/82	12.58	1619.22			
12/02/82	11.20	1620.60			
12/30/82	9.98	1621.82			

NORTH DAKOTA STATE WATER COMMISSION  
OBSERVATION WELL WATER LEVELS

138-000-34DBBA HCR. AQUIFER

WELL SCREENED FROM 42- 45 FEET BELOW LAND SURFACE  
LAND SURFACE ELEVATION IS 1628.1  
FRES.CHURCH LAND

	DATE	DEPTH TO WATER	WATER LEVEL ELEVATION
	05/19/80	8.29	1619.81
	06/06/80	8.90	1619.20
	06/25/80	9.56	1618.54
	07/18/80	10.19	1617.91
	08/01/80	10.33	1617.77
	08/14/80	10.55	1617.55
	09/05/80	10.37	1617.73
	10/03/80	10.35	1617.75
	10/17/80	10.20	1617.90
	11/03/80	10.01	1618.09
146	01/09/81	9.28	1618.82
	04/30/81	8.99	1619.11
	05/28/81	9.27	1618.83
	07/01/81	9.70	1618.40
	07/24/81	10.00	1618.10
	08/18/81	10.39	1617.71
	10/07/81	10.70	1617.40
	12/21/81	10.68	1617.42
	12/31/81	10.11	1617.99
	02/18/82	8.03	1620.07
	03/26/82	7.02	1621.08
	04/23/82	6.65	1621.45
	05/14/82	7.25	1620.85
	06/11/82	7.06	1621.04
	07/07/82	8.05	1620.05
	08/06/82	8.96	1619.14
	09/03/82	10.01	1618.09
	10/04/82	10.43	1617.67
	10/29/82	10.02	1618.08
	12/02/82	9.32	1618.78
	12/30/82	9.04	1619.06
	01/04/83	8.86	1619.24
	01/28/83	8.43	1619.67
	02/10/83	8.12	1619.98
	02/25/83	7.76	1620.34
	03/31/83	7.12	1620.98
	05/13/83	7.53	1620.57
	05/31/83	7.79	1620.31

Table 3. List of Observation Wells Monitored by the U. S. Geological Survey (U. S. Geological Survey, 1961-1983)

UNITED STATES DEPARTMENT OF INTERIOR 3-82  
 Geological Survey - Water Resources Division  
 North Dakota District

Ground water stations		Water Year 1982						
Local well number and I.D.	Aquifer	Aquifer no.	Period of record	Observation frequency	Type of recorder	Cooperation	Operating office	Remarks
BURLEIGH COUNTY (015) (Page 1 of 2)								
137-080-03CAC 464240100460201	Bismarck aquifer	112BMCK	1979-	M		CE-0	B	
137-080-03CBC 464239100462401	Bismarck aquifer	112BMCK	1980-	C	D	SWC	B	
137-080-04DBB 464246100465901	Bismarck aquifer	112BMCK	1979-	M		CE-0	B	
138-080-02CCC 464741100450001	Bismarck aquifer	112BMCK	1962-	Q		SWC	B	
138-080-03CAD 464754100454901	Bismarck aquifer	112BMCK	1979-	M		CE-0	B	
138-080-05ADD 464805100474601	Bismarck aquifer	112BMCK	1979-	M		CE-0	B	
138-080-08ABA1 464732100480501	Bismarck aquifer	112BMCK	1968-	M		SWC	B	
138-080-08ABA2 464732100480502	Bismarck aquifer	112BMCK	1973-	M		SWC	B	
138-080-11DAA 464709100435301	Bismarck aquifer	112BMCK	1967-	Q		SWC	B	
138-080-15BBB 464641100461801	Bismarck aquifer	112BMCK	1979-	M		CE-0	B	
138-080-15CDD 464556100454901	Bismarck aquifer	112BMCK	1961-	C	D	SWC	B	
138-080-17CDD1 464554100482401	Bismarck aquifer	112BMCK	1968-	C	D	SWC	B	
138-080-17CDD2 464554100482402	Bismarck aquifer	112BMCK	1973-	M		SWC	B	
138-080-19DAA 464521100490301	Bismarck aquifer	112BMCK	1979-	M		CE-0	B	
138-080-27CDA 464418100454901	Bismarck aquifer	112BMCK	1979-	M		CE-0	B	
138-080-28AAA1 464457100462801	Bismarck aquifer	112BMCK	1968-	M		SWC	B	
138-080-28AAA2 464457100462802	Bismarck aquifer	112BMCK	1973-	M		SWC	B	
138-080-28AAA3 464457100462803	Bismarck aquifer	112BMCK	1973-	M		SWC	B	
138-080-28BBC 464450100473601	Bismarck aquifer	112BMCK	1979-	M		CE-0	B	

Table 4. Chemical Analyses of Ground Water

(Analytical results are in milligrams per liter except where indicated)

AQUIFERS Owner or Designation	Location	Depth of Well (feet)	Temp <sup>o</sup> C	Date of Collection	(SiO <sub>2</sub> )	(Fe)	(Mn)	(Ca)	(Mg)	(Na)	(K)	(HCO <sub>3</sub> )	(CO <sub>3</sub> )	(SO <sub>4</sub> )	(Cl)	(F)	(NO <sub>3</sub> )	(B)	Total Dissolved Solids c.	Total Hardness		Percent Sodium	BAR	RBC	Specific Conductance (Lab)	pH
																				as CaCO <sub>3</sub>	Noncarbonate					
SMC 11138	137-80-03ABCD	35	11.0	04/23/80	19	.19	2.4	210	81	240	6.5	1100	0	460	28	.2	1	.32	1590	860	0	38	3.6	1	2230	7.8
SMC 11139	137-80-03BBCD	51	11.0	04/23/80	19	1.8	.28	70	23	67	2.4	316	0	150	8.5	1.8	1	.32	500	270	11	35	1.8	0	782	7.8
"	"	"	8.0	08/21/80	20	2.5	.31	86	28	69	2.5	334	0	150	11	2.5	1	.17	516	280	6	35	1.8	0	792	7.9
Corps P278-B	137-80-03CAC	37	12.0	04/22/80	22	.05	2.2	230	81	210	6.6	1140	0	400	41	.2	1	.06	1360	910	0	33	3.0	1	2210	7.7
SMC 11262	137-80-03CBC	42	--	05/06/80	20	1.6	.17	89	41	210	5.1	813	0	170	14	.4	10	.13	961	390	0	34	4.6	6	1650	7.9
Corps PX-78-10	137-80-04BBB	37	13	04/22/80	17	.03	2.2	190	65	120	6.3	975	0	150	23	.1	1	0	1050	740	0	26	1.9	1	1590	7.6
"	"	"	9	07/22/82	17	1.8	2.4	190	80	130	11	954	0	140	21	.3	1	.1	1060	804	21	26	2.8	0	1610	7.4
SMC 11162	137-80-10BBB	96	8	08/21/80	31	.1	.27	87	35	210	6	835	0	130	22	.4	1	0	934	360	0	55	4.8	7	1440	8.1
USGS 2057	138-80-02CCC	142	-	09/08/62	27	.16	-	60	23	420	8.1	768	0	438	51	.7	5	1.7	1410	104	0	88	15	-	-	8.3
" (PPH)	"	"	"	09/11/62	-	1.2	-	-	-	-	-	220	-	445	46	-	0	-	1486	220	-	80	12	-	2192	8.2
" (PPH)	"	"	"	01/20/64	21	1.7	-	57	23	405	20	761	0	450	44	1.2	0	1.73	1400	240	-	77	11	-	2105	8.1
SMC 11227	138-80-02DDD <sub>1</sub>	112	8.0	08/21/80	28	.33	.15	40	19	380	5.5	777	0	290	68	.8	1	.27	1220	180	0	82	12	9	1850	8.0
SMC 11260	138-80-02DDD <sub>2</sub>	79	8.0	08/21/80	30	.63	1.4	170	52	110	8.0	867	0	350	5.2	.2	1	.07	1040	640	0	27	1.9	0	1480	7.9
Corps P2-78-13	138-80-03CAD <sub>1</sub>	43	8.0	08/19/80	23	1.7	2.1	210	94	220	7.4	1080	0	400	43	.2	1	0	1530	910	24	34	3.2	0	2170	7.6
SMC 11167	138-80-04DDBAC	85	9.0	04/21/80	27	.1	.28	120	44	210	8.1	667	0	380	38	.4	1	.68	1150	480	0	48	6.2	1	1680	7.9
"	"	"	9.0	08/19/80	29	2.0	.33	120	49	210	6.0	627	0	390	39	.5	1	.40	1160	500	0	47	6.1	0	1670	8.0
SMC 2906	138-80-08ABA <sub>1</sub>	60	-	04/17/60	26	8.3	-	149	52	334	7.8	895	0	508	62	.5	1	.83	1390	583	0	55	6.0	-	2220	7.9
"	"	"	-	09/02/70	26	8.4	-	68	51	305	6.3	682	0	430	60	.3	.3	.16	1290	380	0	63	6.8	-	1910	7.9
" (D)	"	"	11.0	04/25/80	26	.01	.55	93	48	300	6.1	687	0	320	54	.5	1	.45	1190	430	0	60	6.3	3	1670	8.3
"	"	"	9.0	07/19/82	24	.72	.72	110	50	300	9.6	825	0	350	49	.5	1	.48	1300	480	0	57	5.9	4	1940	7.8
SMC 2906-A	138-80-08ABA <sub>2</sub>	27	-	04/19/73	18	5.3	2.7	125	67	318	6.4	848	0	451	61	.5	0	.73	1470	586	0	54	5.7	2	2090	7.7
" (D)	"	"	11.0	04/25/80	19	.05	2.1	120	46	310	6.0	693	0	370	60	.5	1	.39	128	490	0	58	6.1	2	1790	8.1
Golf Course Test Hole #1(PPH)	138-80-08BDA	98	-	03/03/67	25	5.6	-	133	52	179	7.2	786	0	229	40	.3	.1	.12	1060	543	0	41	3.3	-	1610	7.9
Golf Course Test Hole #2(PPH)	138-80-08BDC	98	-	03/01/67	25	2.9	-	86	34	145	6.2	611	0	112	33	.4	.2	.23	746	353	0	47	3.3	-	1160	8.0
Golf Course Test Hole #3(PPH)	138-80-08BDD	98	-	02/28/67	25	2.8	-	112	49	193	8.1	725	0	222	51	.4	.2	.25	1020	480	0	46	3.8	-	1560	7.9
SMC 11124	138-80-08CBD	83	12.0	04/29/80	25	.99	.45	98	35	89	3.9	498	0	130	.3	.3	1	.23	629	390	0	33	2.0	0	948	8.1
"	"	"	8.0	08/19/80	27	3.0	.45	98	38	86	3.9	544	0	130	12	.5	1	.34	668	400	0	32	1.9	1	1020	8.0
Wachter Irr.	138-80-09BCD	105	8.9	07/19/67	23	3.4	-	149	49	394	7.2	873	0	603	67	.5	6.8	.59	1730	574	0	60	7.1	-	2420	8.0
"	138-80-09BCD	"	8.3	08/19/70	23	.2	-	112	59	400	6.8	773	0	639	63	.9	.5	.60	1690	523	0	62	7.6	-	2610	7.8
"	138-80-09BCD	"	-	08/02/74	15	5.4	.68	150	60	390	7.0	890	0	640	67	.9	1.0	.59	1780	620	0	57	6.8	2	2310	7.7
SMC 11151	138-80-09CCCD	40	187	04/21/80	17	.48	1.5	80	34	86	3.2	370	0	190	19	.4	1.0	.23	615	340	37	35	2.0	0	928	8.0
"	"	"	9.0	08/19/80	17	1.8	1.9	90	33	78	3.2	272	0	260	28	.5	1.0	0	648	360	140	32	1.8	0	986	8.0
SMC 11147	138-80-10AAADA	112	8.0	04/23/80	25	.05	.16	42	16	450	5.0	845	0	410	57	.6	1.0	1.2	1420	170	0	85	15.0	10	2160	8.2
SMC 11166 (D)	138-80-10CCDAD <sub>1</sub>	80	13.0	04/29/80	28	.44	.28	70	28	240	5.8	584	9	210	.8	.5	1.0	.71	883	290	0	64	6.1	4	1350	8.4
"	"	"	8.0	01/27/81	28	2.5	.30	74	28	240	5.3	700	0	210	46	.6	1.0	.74	981	300	0	63	6.0	3	1610	7.7

C Calculated  
 \* Well screened in bedrock sandstone  
 (PPH) Analytical results are in parts per million  
 (D) Difference between cations and anions exceeded 5%

Table 4. Chemical Analyses of Ground Water - continued

(Analytical results are in milligrams per liter except where indicated)

AQUIFERS Owner or Designation	Location	Depth of Well (feet)	Temp(°C)	Date of Collection	(SiO <sub>2</sub> )	(Fe)	(Mn)	(Ca)	(Mg)	(Na)	(K)	(HCO <sub>3</sub> )	(CO <sub>3</sub> )	(SO <sub>4</sub> )	(Cl)	(F)	(NO <sub>3</sub> )	(B)	Total Dissolved Solids c	Total Hardness		Percent Sodium	SAR	RSC	Specific Conductance (Lab)	pH (Lab)
																				as CaCO <sub>3</sub>	Noncarbonate					
SMC 11228	138-80-10CDAD <sub>2</sub>	54	15.0	04/29/80	28	.02	.66	96	32	150	5.0	44.3	0	230	24	.4	.2	.26	785	370	7	46	3.4	0	1110	8.2
SMC 2643	138-80-11DAA	148	-	05/19/67	23	.54	-	52	18	325	5.7	709	0	237	50	.6	0	1.0	1060	205	0	77	9.9	-	1650	7.8
Thom Irrig.	138-80-13DBB	87	10.0	07/18/67	22	.34	-	73	22	234	6.0	695	0	192	37	.6	.2	.74	950	271	0	66	6.7	-	1440	8.1
SMC 11117	138-80-14ADAA	38	13.0	04/23/80	25	.16	.54	76	19	3.8	1.4	307	0	24	1.5	.1	1.0	.13	304	270	18	3	.1	0	497	8.0
"	"	"	9.0	07/15/80	27	.11	.60	75	20	1.9	1.4	309	0	26	4	.2	1.0	.13	311	270	17	3	.1	0	590	8.0
Pt. Lincoln Nur- sery Irr. Well 12	138-80-15BBD	129	10.6	09/07/61	28	7.4	-	80	26	299	6.4	680	0	245	41	.7	.2	.8	1020	307	0	66	6.3	-	1260	7.3
SMC 11230-A	138-80-15CAAA <sub>1</sub>	141	8.0	08/21/80	31	.54	.18	57	24	300	5.4	740	0	230	53	.7	1.0	.62	1070	240	0	73	8.4	7	1620	8.1
SMC 11230-B (D)	138-80-15CAA <sub>2</sub>	55	13.0	08/22/80	22	.02	.59	260	63	32	4.5	616	0	290	8.2	.2	1.0	.18	985	910	400	7	.5	0	1350	7.7
Pt. Lincoln Nur- sery Irr. Well 11	138-80-15CBA	164	8.9	09/07/61	29	6.8	-	85	27	253	7.0	687	0	235	47	.9	.2	.82	1030	384	0	62	6.1	-	1370	7.5
SMC 11148 (D)	138-80-15CCC	91	16.0	04/24/80	30	.01	.18	150	50	130	6.0	497	0	290	16	.2	1.0	.39	919	580	170	33	2.4	0	1240	7.9
"	"	"	9.0	07/14/80	33	.16	.19	160	49	120	5.4	650	0	300	19	.3	1.0	.39	1010	600	67	30	2.1	0	1430	7.8
USGS 1956	138-80-15CDD	168	-	09/61	-	-	-	-	-	-	-	-	-	-	-	-	-	.90	1080	284	-	63	-	-	1345	-
"	"	"	8.0	09/02/70	24	8.0	-	40	30	237	6.0	590	0	210	42	.3	1	.38	890	225	0	69	6.9	-	1380	8.2
"	"	"	10.0	05/10/78	29	4.4	.24	73	33	230	6.5	679	0	200	51	.5	1	.73	963	320	0	60	5.6	5	1490	7.8
"	"	"	8.4	05/10/78	28	.10	.24	70	28	230	6.4	651	0	200	46	.5	1	.54	932	290	0	63	5.9	5	1440	8.3
"	"	"	10.0	08/18/80	26	.19	.19	66	30	230	6.5	631	0	200	35	.4	1	.46	907	290	0	63	5.9	5	1390	8.1
SMC 11231	138-80-16DCA <sub>1</sub>	96	8.0	08/19/80	31	3.3	.34	170	57	310	7.6	910	0	540	59	.4	1	.1	1630	660	0	30	3.2	2	2280	7.7
SMC 11260	138-80-16DCA <sub>2</sub>	59	9.0	08/19/80	27	9.4	1.3	210	67	200	8.0	825	0	520	36	.3	1	0	1500	800	120	35	3.1	0	2080	7.7
Peterson Irr. Well	138-80-17ACB <sub>1</sub>	88	8.3	09/08/61	25	8.3	-	113	39	134	5.8	596	0	201	17	.5	0	.31	832	442	0	39	2.8	-	1250	7.5
"	"	"	-	11/12/62	24	11	-	141	49	135	6.9	672	0	248	18	.5	5.9	.27	974	555	4	34	2.5	-	1440	7.5
"	"	"	-	11/14/62	26	6.6	-	125	46	133	6.4	640	0	229	17	.4	5.6	.30	911	500	0	36	2.6	-	1360	7.5
"	"	"	-	10/63	26	1.9	-	-	-	137	11	665	0	244	16	0	1.0	0	1066	580	0	36	2.6	-	1422	7.7
"	"	"	-	07/19/67	23	3.5	-	140	40	134	6.1	649	0	235	19	.4	1.9	.18	923	515	0	36	2.6	-	1350	7.9
SMC 2907	138-80-17CDD <sub>1</sub>	59	-	04/23/68	20	1.9	-	162	58	181	7.9	856	0	332	16	.4	1	.15	1200	641	0	38	3.1	-	1720	7.7
"	"	"	8.0	05/11/78	19	8.5	1.1	140	51	170	6.0	763	0	270	14	.4	.5	.09	1060	560	0	39	3.1	1	1580	8.0
"	"	"	-	05/12/78	20	11.0	1.0	150	52	170	5.7	792	0	260	15	.4	.4	.18	1080	590	0	38	3.0	1	1610	7.8
"	"	"	8.5	05/12/78	19	7.2	1.0	150	52	170	5.8	794	0	260	15	.3	.4	0	1070	590	0	38	3.0	1	1610	7.8
"	"	"	10.0	08/18/80	19	1.8	.91	140	49	160	5.0	662	0	260	13	.3	1	.09	976	550	7	38	3.0	0	1400	7.8
SMC 2907-A	138-80-17CDD <sub>2</sub>	33	-	03/26/73	15	.28	.04	154	89	190	7.4	876	0	397	20	.3	2.1	.21	1310	753	34	35	3.0	0	1850	7.7
"	"	"	8.0	05/11/78	17	4.4	2.2	160	61	180	6.3	857	0	300	19	.3	2.5	.32	1180	650	0	37	3.1	1	1740	8.0
"	"	"	8.5	05/12/78	17	10.0	2.2	160	68	180	5.8	904	0	290	18	.3	1.0	1.8	1200	680	0	36	3.0	1	1800	7.8
SMC 11150 (D)	138-80-17DBAB	40	14.0	04/28/80	18	.14	2.3	200	75	150	5.6	618	0	390	19	.2	1.0	0	1170	810	300	29	2.3	0	1470	7.8
SMC 11153 (p)	138-80-18CADD	51	11.5	04/24/80	22	1.2	.65	150	60	170	6.4	810	0	170	25	.4	1.0	.48	1010	620	0	37	3.0	1	1610	7.9
" (D)	"	"	8.0	08/18/80	24	3.7	.81	150	60	170	5.9	849	0	160	24	.4	1.0	.37	1020	620	0	37	3.0	2	1510	7.7
"	"	"	5.0	01/27/81	24	7.3	.76	150	62	180	5.5	1020	0	170	30	.4	1.0	.45	1130	630	0	38	3.1	4	1720	7.5
Corps PZB-6	138-80-19DAA	40	12.0	04/25/80	21	.13	.61	160	66	160	7.1	768	0	280	22	.2	1.0	.39	1100	620	40	34	2.7	0	1440	7.9

c Calculated  
 \* Well screened in bedrock sandstone  
 (ppm) Analytical results are in parts per million  
 (D) Difference between cations and anions exceeded 5%



Table 4. Chemical Analyses of Ground Water - Continued

(Analytical results are in milligrams per liter except where indicated)

AQUIFERS Owner or Designation	Location	Depth of Well (feet)	Temp <sup>o</sup> F	Date of Collection	(SiO <sub>2</sub> )	(Fe)	(Mn)	(Ca)	(Mg)	(Na)	(K)	(HCO <sub>3</sub> )	(CO <sub>3</sub> )	(SO <sub>4</sub> )	(Cl)	(F)	(NO <sub>3</sub> )	(B)	Total Dissolved Solids C	Total Hardness		Percent Sodium	SAR	RSC	Specific Conductance (Lab)	pH
																		as CaCO <sub>3</sub>		Noncarbonate						
Targa P27-A	138-80-19DAA	40	9.5	07/19/82	22	1.3	.22	160	75	160	0.0	813	0	270	19	.3	1.0	.20	1120	710	41	33	2.6	0	1640	7.6
SMC 11146 (B)	138-80-19DBADA	101	12.0	04/28/80	27	.01	.33	140	56	180	6.7	662	0	210	2	.2	1.0	.26	948	580	37	40	3.3	0	1360	8.0
" (B)	"	"	8.0	08/18/80	29	.78	.37	140	54	170	6.2	707	0	200	28	.4	1.0	.37	978	570	0	39	3.1	0	1430	7.8
"	"	"	6.0	01/23/81	28	3.0	.36	140	54	170	5.9	893	0	200	33	.5	1.0	.29	1080	570	0	39	3.1	3	1750	7.7
SMC 11263-A	138-80-19DCC <sub>1</sub>	84	9.0	08/19/80	25	0.0	.48	180	66	120	5.5	1170	0	2.9	4.3	.2	1.0	0	1030	720	0	26	1.9	5	1650	7.6
SMC 11263-B	138-80-19DCC <sub>2</sub>	36	10.0	08/19/80	27	.39	.81	240	73	220	8.5	977	0	310	150	.3	1.0	0	1510	900	99	34	3.2	0	3310	7.5
State Pen. Irr. Well	138-80-19DD	115	-	11/03/65	-	1.4	-	-	-	307	-	425	16	140	84	-	0	-	845	135	0	-	-	-	1300	-
"	"	115	-	11/08/65	-	8.2	-	-	-	291	-	944	0	277	72	-	0	-	1841	530	0	-	-	-	1940	-
McDonald Irr. Well	138-80-22AAC	131	8.3	09/08/61	29	4.8	-	85	23	179	6.8	686	0	151	15	.6	.1	.43	814	305	0	55	4.5	-	1230	7.5
"	"	"	8.3	10/10/61	-	-	-	103	24	121	-	626	0	175	-	-	-	.39	-	830	0	42	2.9	-	1280	8.1
"	"	"	8.3	10/12/61	-	-	-	84	20	176	-	634	0	144	-	-	-	.48	-	789	0	57	4.5	-	1200	8.0
USGS 1957	138-80- ABD <sub>2</sub>	157.5	-	09/61	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	272	-	-	-	-	1000	-
SMC 11145 (B)	138-80-22DCC	63	12.0	04/24/80	18	.16	1.4	140	39	190	6.2	668	0	250	17	.4	1.0	.55	993	510	0	44	3.7	1	1370	8.0
"	"	"	9.0	07/14/80	21	.50	1.6	130	50	190	5.7	829	0	250	21	.4	1.0	.46	1080	530	0	44	3.6	3	1590	7.7
SMC 11137*	138-80-22DCC	80	15.0	04/21/80	26	.03	.81	190	69	200	6.8	928	0	390	36	.2	1.0	.16	1380	760	0	36	3.2	0	1960	7.9
SMC 11118	138-80-23ADAB	63	15.0	04/24/80	25	.08	1.1	140	44	86	4.3	475	0	250	12	.2	1.0	.55	798	530	140	26	1.6	0	1870	8.0
"	"	"	10.0	07/01/80	22	.09	1.3	140	49	83	4.1	596	0	240	13	.5	1.0	.23	848	550	61	25	1.5	0	1260	7.9
SMC 11114	138-80-23ADCB <sub>1</sub>	87	8.0	08/21/80	30	1.3	.42	73	31	230	5.1	788	0	220	25	.4	1.0	.24	967	310	0	61	5.7	5	1410	7.9
SMC 11229	138-80-23ADCB <sub>2</sub>	47	9.0	08/21/80	28	5.1	.84	160	46	23	4.2	533	0	190	5.1	.4	1.0	0	723	590	150	8	.4	0	1100	8.0
Solberg Irr. #1	138-80-23ADC	110	9.4	09/08/61	29	3.9	-	66	20	222	6.4	647	0	170	20	.6	.1	.78	-	248	0	65	6.1	-	1300	7.7
"	"	"	7.8	10/16/63	24	.84	-	-	-	290	10	744	0	206	14	.1	1.5	1.35	-	210	0	74	8.8	-	1515	7.9
"	"	"	10.0	07/18/67	27	2.0	-	97	26	183	6.8	627	0	174	16	.5	.3	.51	838	332	0	54	4.4	-	1240	8.1
"	"	"	-	07/11/74	20	3.2	.18	82	22	180	5.8	630	0	170	17	.6	1.0	.71	816	310	0	55	4.4	-	1260	7.9
SMC 11132	138-80-23CCDD	101	11.0	04/24/80	31	.13	.19	53	14	200	4.2	669	0	78	6.1	.4	1.0	.13	718	190	0	69	6.2	7	1100	8.0
Tegen Irr. #1	138-80-24ACC <sub>1</sub>	80	-	09/09/61	31	.38	-	53	16	279	6.2	701	0	188	5.1	.6	.1	.9	-	196	0	73	8.	-	1350	7.6
"	"	"	-	04/22/63	23	1.14	-	41	22	267	8.0	698	0	169	16	.7	.207	1.15	891	192	0	74	8.7	-	1529	7.7
"	"	"	-	04/24/63	23	.94	-	43	21	267	6.7	703	0	170	16	.6	0	1.15	895	192	0	74	8.7	-	1529	7.7
Tegen Irr. #2	133-90-25BAB	100	9.4	03/24/45	21	3.2	-	85	22	147	-	660	0	132	9	.5	1.7	.5	780	303	0	56	4.5	-	1200	8.0
Tegen Irr. #4	138-80-25BBA	81	15.6	07/10/47	24	.74	-	107	11	179	5.9	661	0	147	3.6	.6	.3	.45	813	311	0	55	4.4	-	1210	8.0
"	"	"	9.5	07/06/72	29	.76	.17	78	23	130	7.1	579	0	120	6.4	.6	.3	1.3	682	290	0	49	3.3	-	1040	7.6
"	"	"	-	08/02/74	19	2.6	.46	76	22	190	5.4	670	0	140	6.2	.8	1.0	.55	796	280	0	59	4.9	-	1240	7.7
Tegen Irr. #3	138-80-25DAC	155	8.9	07/01/63	19	7.10	-	212	46	16	2.5	737	0	145	0	.5	1.0	.35	811	720	115	5	.3	-	1296	7.6
"	"	"	8.9	07/02/63	21	5.44	-	212	46	15	2.5	737	0	140	0	.4	1.0	.35	805	720	115	5	.3	-	1269	7.8
SMC 11126*	138-80-27DBDC	116	13	04/24/80	13	.05	.01	2.5	1.5	410	1.4	782	62	120	20	1.1	1.0	1.4	1020	12	0	48	31	15	1580	9.0
" (D)	"	"	10	07/15/80	14	.12	.03	2.7	1.1	370	1.4	847	32	130	18	.9	1.0	1.3	948	11	0	98	49	15	1580	8.7
"	"	"	10	08/18/80	10	.52	.01	3.7	.5	410	2.5	854	26	140	17	.7	7.0	1.3	1050	11	0	98	54	15	1620	8.7

C Calculated  
 \* Well screened in bedrock sandstone  
 (PPM) Analytical results are in parts per million  
 (D) Difference between cations and anions exceeded 5%

Table 4. Chemical Analyses of Ground Water - Continued

(Analytical results are in milligrams per liter except where indicated)

AQUIFERS Owner or Designation	Location	Depth of Well (feet)	Temp(°C)	Date of Collection	(SiO <sub>2</sub> )	(Fe)	(Mn)	(Ca)	(Mg)	(Na)	(K)	(HCO <sub>3</sub> )	(CO <sub>3</sub> )	(SO <sub>4</sub> )	(Cl)	(F)	(NO <sub>3</sub> )	(B)	Total Dissolved Solids C	Total Hardness		Percent Sodium	SAR	RSC	Specific Conductance (Lab)	pH (Lab)
																				as CaCO <sub>3</sub>	Noncarbonate					
SWC 2905	138-80-28AAA1	100	-	04/16/88	29	3.3	-	113	28	195	8.8	716	0	217	30	.3	1.0	.59	979	396	0	51	4.3	-	1430	7.9
SWC 2905-A	138-80-28AAA2	25.5	-	04/19/73	-	9.8	.78	78	27	57	4.8	364	0	141	6.2	.5	.3	.09	510	306	24	28	1.4	0	750	7.6
"	"	"	8.5	07/22/82	16	1.2	.85	95	24	64	4.8	411	0	130	4.8	.5	1.0	.06	556	340	0	29	1.5	0	864	7.8
SWC 2905-B	138-80-28AAA3	16.7	-	04/19/73	12	1.1	.31	114	35	52	5.8	478	0	131	.8	.5	2.0	.43	590	428	36	21	1.1	0	890	8.0
SWC 11115	138-80-28ABADA	40	8.0	07/14/80	22	.94	2.3	150	55	190	6.0	780	0	350	30	.5	1.0	.66	1190	600	0	41	3.4	1	1730	7.8
"	"	"	8.0	08/18/80	20	3.5	2.6	150	11	200	5.9	736	0	180	30	.4	1.0	.31	968	420	0	50	4.2	4	1700	7.8
SWC 11142	138-80-28BCAB	40	15.0	04/21/80	19	.04	1.5	210	62	190	6.0	884	0	440	33	.2	1.0	.32	1400	780	55	34	3.0	0	1980	7.7
"	"	"	9.0	07/01/80	17	.04	1.6	200	71	210	6.3	915	0	460	36	.4	1.0	0	1490	790	39	36	3.3	0	2010	7.8
SWC 11143	138-80-28DDAD	40	11.0	04/24/80	17	.26	1.3	100	36	230	5.0	748	0	240	26	.4	1.0	.39	1030	400	0	53	5.0	4	1490	8.2
State Pen Tr. Well #1	138-80-29BAD	93	-	10/61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	648	-	-	-	-	-	1735	-
SWC 11140	138-80-34CDCB	73	8.0	08/21/80	22	.22	.48	59	30	72	2.5	355	0	120	11	.4	1.0	0	494	270	0	36	1.9	0	751	8.1
SWC 11263*	138-80-34DEBA	45	8.0	08/21/80	16	.15	1.7	150	52	470	6.5	973	0	630	27	.3	1.0	.46	1830	590	0	63	8.4	4	2570	7.8

C Calculated  
 \* Well screened in bedrock sandstone  
 (PPM) Analytical results are in parts per million  
 (D) Difference between cations and anions exceeded 5%

TABLE 5 -- Dissolved chemical constituents in water -- their effects upon usability and recommended concentration limits for domestic and municipal water supplies in North Dakota.

Constituent or Parameter	Effects of dissolved constituents on water use	Suggested limits for drinking water in North Dakota <sup>1</sup>	U.S. Public Health Service recommended limits for drinking water <sup>2</sup>	Constituent or Parameter	Effects of dissolved constituents on water use	Suggested limits for drinking water in North Dakota <sup>1</sup>	U.S. Public Health Service recommended limits for drinking water <sup>2</sup>
Silica (SiO <sub>2</sub> )	No physiological significance			Chloride (Cl)	Over 250 mg/l may impart a salty taste, greatly excessive concentrations may be physiologically harmful. Humans and animals may adapt to higher concentrations.		250 mg/l
Iron (Fe)	Concentrations over 0.1 mg/l will cause staining of fixtures. Over 0.5 mg/l may impart taste and colors to food and drink.		0.3 mg/l	Flouride (F)	Flouride helps prevent tooth decay within specified limits. Higher concentrations cause mottled teeth.	Limits of 0.9 mg/l to 1.5 mg/l	Recommended limits depend on average of daily temperatures. Limits range from 0.6 mg/l at 32°C. to 1.7 mg/l at 10°C.
Manganese (Mn)	Produces black staining when present in amounts exceeding 0.05 mg/l		0.05 mg/l	Nitrate (NO <sub>3</sub> )	Over 45 mg/l can be toxic to infants. Larger concentrations can be tolerated by adults. More than 200 mg/l may have a deleterious effect on livestock health		45 mg/l
Calcium (Ca) and Magnesium (Mg)	Calcium and magnesium are the primary causes of hardness. High concentrations may have a laxative effect on persons not accustomed to this type of water.			Boron (B)	No physiological significance. Greater than 2.0 mg/l may be detrimental to many plants		
Sodium (Na)	No physiological significance except for people on salt-free diets. Does have an effect on the irrigation usage of water.			Total dissolved solids	Persons may become accustomed to water containing 2,000 mg/l or more dissolved solids.	0-500 mg/l - low 500-1400 mg/l average 1400-2500 mg/l high over 2500 mg/l very high	500 mg/l
Potassium (K)	Small amounts of potassium are essential to plant and animal nutrition.			Hardness (as CaCO <sub>3</sub> )	Increases soap consumption, but can be removed by a water-softening system.	0-200 mg/l - low 200-300 mg/l average 300-450 mg/l high over 450 mg/l very high	
Bicarbonate (HCO <sub>3</sub> ) and Carbonate (CO <sub>3</sub> )	No definite significance, but high bicarbonate content will impart a flat taste to water.			pH	Should be between 6.0 and 9.0 for domestic consumption		
Sulfate (SO <sub>4</sub> )	Combines with Calcium to form scale. More than 500 mg/l tastes bitter and may be a laxative	0-300 mg/l - low 300-700 mg/l - high over-700 mg/l - very high	250 mg/l	Specific Conductance	An electrical indication of total dissolved solids measured in micromhos per Centimeter at 25°C. Used primarily for irrigation analyses.		
Percent Sodium and Sodium Adsorption Ratio (SAR)	Indicate the sodium hazard of irrigation water.						

- Schmid, R. W., 1965, Water Quality Explanation: North Dakota State Water Commission, unpublished report, File No. 989.
- U.S. Public Health Service, 1962, Public Health Service Drinking Water Standards: U.S. Public Health Service, Pub. No. 956, 61 p.