

COUNTY GROUND WATER STUDIES 16 — PART II
NORTH DAKOTA STATE WATER COMMISSION

M. W. Hoisveen, *State Engineer*

GROUND WATER BASIC DATA
HETTINGER and STARK COUNTIES,
NORTH DAKOTA

by
Henry Trapp, Jr.
U. S. Geological Survey

Prepared by the United States Geological Survey in cooperation
with the North Dakota State Water Commission, Hettinger
County Water Management District and Stark County Water
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INTRODUCTION

The purpose of the hydrologic investigation in Hettinger and Stark Counties, N. Dak. (fig. 1), is to determine the quantity and quality of ground water available for municipal, domestic, livestock, industrial, and irrigation uses. Specifically, within the amount of financing and time available the objectives are to: (1) determine the location, extent, and nature of the major aquifers; (2) evaluate the occurrence and movement of ground water, including the sources of recharge and discharge; (3) estimate the potential yields to wells tapping the major aquifers; and (4) determine the chemical quality of the ground water.

The investigation was made cooperatively by the U.S. Geological Survey, North Dakota State Water Commission, and Hettinger and Stark Counties Water Management Districts. The results of the investigation will be published in two separate parts. Part I is an interpretive report describing the geology and ground-water resources, and Part II is a compilation of the ground-water basic data. Part II makes available hydrologic data collected during the county investigation and functions as a reference for Part I.

The information in this report was collected chiefly between 1966 and 1969, and consists of the following: (1) Data on about 3,060 wells and test holes; (2) data on 91 springs; (3) water-level measurements in 61 observation wells; (4) logs of 544 test holes and wells; (5) chemical analyses of 261 water samples; (6) color values of 331 water samples; and (7) 28 particle-size distribution curves.

The data in this report are useful for predicting geologic and ground-water conditions in Hettinger and Stark Counties. For example; a person considering the construction of a new well can locate the proposed site on plate 1 (in pocket). The characteristics of nearby wells and springs may be determined from tables 1 and 2, and the water-level fluctuations in the area may be determined from table 3. The type of material encountered in nearby wells may be determined in table 4, and the chemical quality and color of water in adjacent wells may be determined from tables 5 and 6. Extrapolations based on these data should be conservative because of the irregular distribution of the water-bearing rocks.

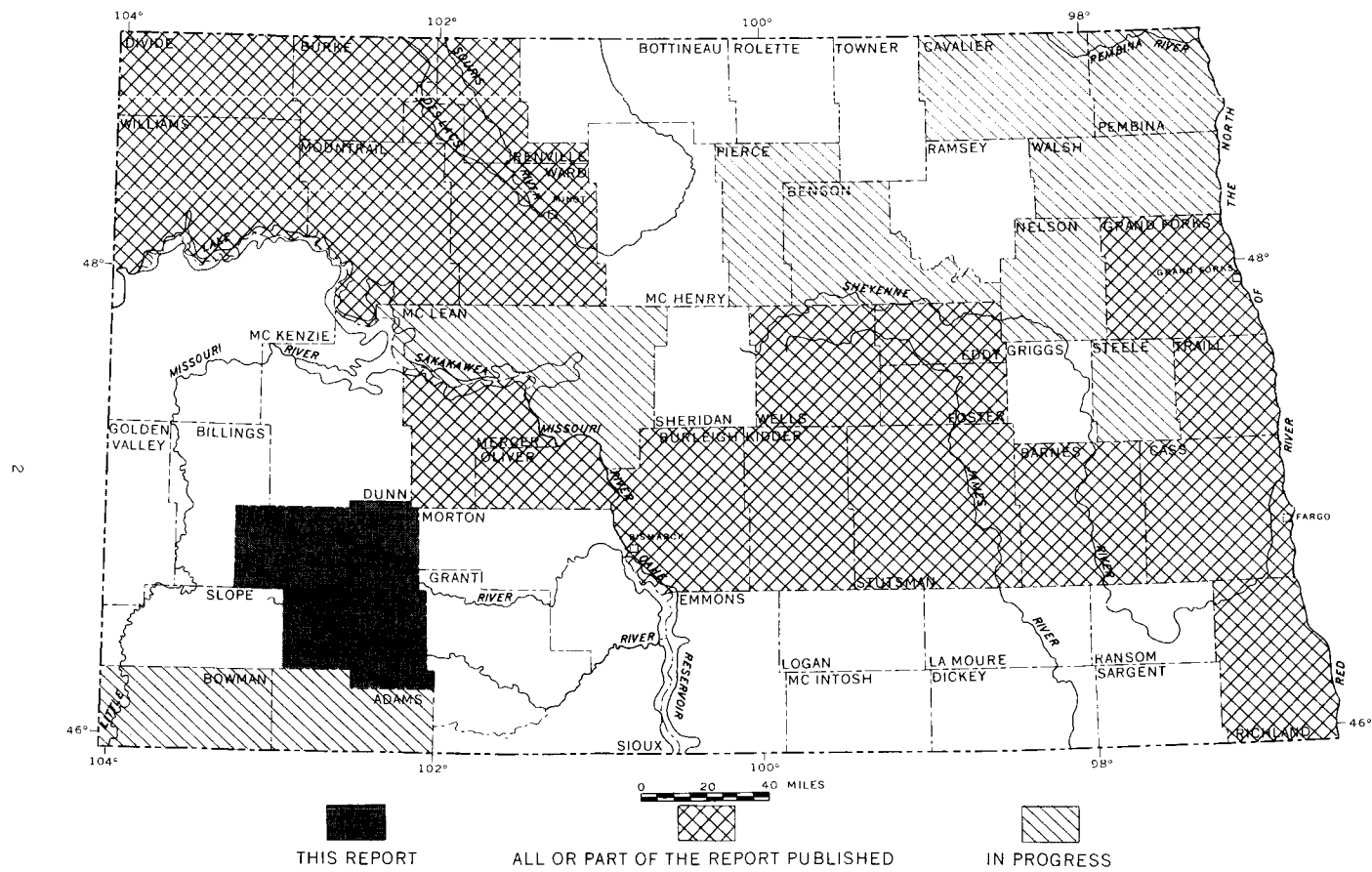


FIGURE 1.—County ground-water studies in North Dakota.

WELL NUMBERING SYSTEM

The wells, springs, and test holes in the tables are numbered according to a system based on the location in the public land classification of the United States Bureau of Land Management. The system is illustrated in figure 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. The 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 133-91-15DAA is in the NE $\frac{1}{4}$ sec. 15, T. 133 N., R. 91 W. Consecutive terminal numerals are added if more than one well is recorded within a 10-acre tract. The location of each well, spring, and test hole listed in the tables is shown on plate 1.

ACKNOWLEDGMENTS

The collection of data for this report was made possible by the cooperation of the County Commissioners and residents of Hettinger and Stark Counties, the U.S. Bureau of Reclamation, the Conservation Division of the U.S. Geological Survey, the North Dakota State Highway Dept., the North Dakota State Health Dept., and the Northern Pacific Railway Co. Bandy Drilling Co., Kruger Drilling Co., Layne-Minnesota, Mann Drilling Co., Moe's Well Drilling, Opp Drilling Co., Sander and Son, and Richard D. Smith of the University of North Dakota furnished logs and other information published in this report. L. L. Froelich, geologist with the North Dakota State Water Commission, logged most of the test holes.

METHODS OF STUDY

Observation wells were developed in selected test holes for water-level measurements (table 3) and water sampling (table 5). The wells are constructed for the most part of $1\frac{1}{4}$ -inch plastic casing with 18-slot Johnson well screens, 2-inch steel casings with 18-slot Johnson well screens, or 4-inch steel casings that were set at the top of a water sand and cemented. Most of the observation wells were pumped a minimum of 6 hours before water samples were collected for chemical analyses (table 5). Several domestic and live-stock wells also were used as observation wells. Water-level measurements were made periodically beginning in the fall of 1966 through December 1969. Six wells were equipped with continuous water-level recorders. Measurements will continue to be made in many of these wells as part of the Statewide observation-well network. The locations of observation wells are shown on plate 1.

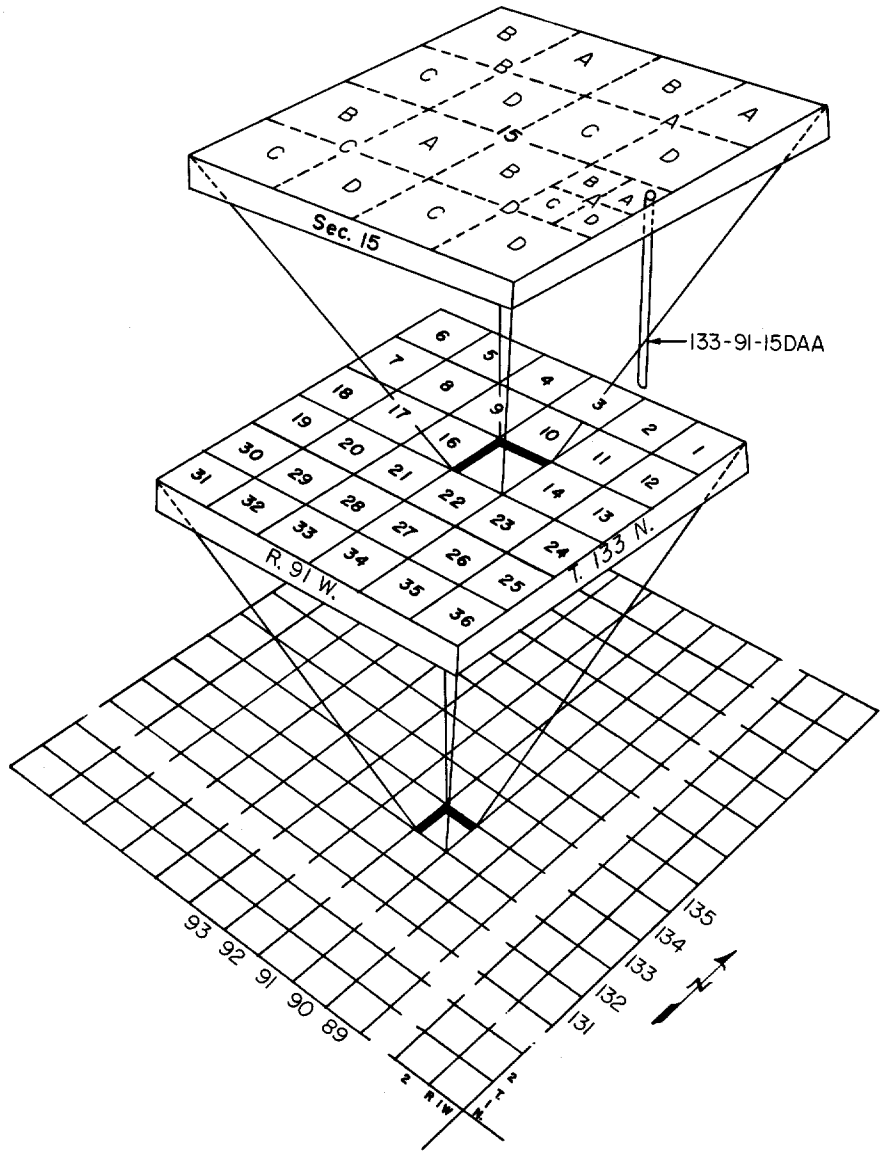


FIGURE 2.-- System of numbering wells, springs, and test holes.

The logs of test holes in table 4 are composites of the well-site geologists' and drillers' descriptions, sample analyses, electric logs, and gamma-ray logs. Many samples were examined with a binocular microscope in order to describe them more precisely and completely. Grain-size determinations refer to the Wentworth (1922) size scale. Test holes listed in table 4 with numbers between 3525 and 3722 were drilled with rotary rigs as part of this investigation. Thirty-five additional test holes were drilled with a power auger. Test holes 319 to 321 were drilled for a ground-water investigation at the city of Richardton by Powell and Paulson (1961). Test holes with numbers between 1-748 and 25-748 were drilled for a ground-water investigation at the city of Dickinson (Schmid, 1963). Test holes 3433 and 3662 were drilled for a report on the geology and ground-water resources of Mercer and Oliver Counties (Croft, 1970).

Descriptions of materials penetrated in geologists' and drillers' logs from the Conservation Division of the U.S. Geological Survey and from the Northern Pacific Railway Co. are shown in table 4 essentially as received, except that the word order has been changed to that used in this report and depths and thicknesses have been rounded to the nearest tenth of a foot.

Drillers' logs from the report area tend to show sand sizes as being coarser than they would be classified under the standard Wentworth (1922) size scale.

Interpretive logs were prepared from a few drillers' logs that were accompanied by electric or gamma-ray logs.

Surficial deposits of unconsolidated sand, gravel, clay, silt, and till are designated as "Quaternary deposits, undifferentiated." Tops of geologic formations shown on logs of test holes and wells were assigned by the author. Names of geologic formations used in this report are those of the North Dakota Geological Survey and, in some instances, differ from those used by the U.S. Geological Survey.

Particle-size distribution curves shown in table 7 are the result of sieve and hydrometer analysis of rock samples obtained from test holes. About half the curves were constructed from core analyses made by the U.S. Geological Survey laboratory, Denver, Colo. The remainder of the curves were constructed by the author.

WATER-QUALITY DATA

Natural water contains dissolved mineral matter. Water in contact with soils or rock, even for only a few hours, will dissolve some mineral matter. The quantity of dissolved mineral matter in water depends primarily on the length of time and type of rocks or soil with which the water has been in contact. Ground water commonly is more highly mineralized than surface water because it remains in contact with rocks and soil for much longer periods.

The mineral constituents and physical properties of water reported in the table of analyses (table 5) include those that have a practical bearing on the value of the water for most purposes. The analyses generally include determinations of silica, iron, calcium, magnesium, sodium, potassium (or sodium and potassium together calculated as sodium), alkalinity as carbonate and bicarbonate, sulfate, chloride, fluoride, nitrate, boron, dissolved solids, pH, and specific conductance.

The dissolved mineral constituents in water are usually reported in milligrams per liter (mg/l, as in table 5 of this report), parts per million (ppm), or grains per U.S. gallon (gr/gal). A milligram per liter is 1 milligram of dissolved material per unit volume of solution. A part per million is a unit weight of dissolved material in a million unit weights of solution. A grain per U.S. gallon is 1 grain (unit of weight) of dissolved material per U.S. gallon of solution.

Milligrams per liter is practically equivalent to parts per million for water containing less than 7,000 ppm dissolved solids. Milligrams per liter can be converted to grains per gallon by dividing milligrams per liter by 17.12 (Hem, 1959, p. 30-31).

Equivalent per million (epm) is the unit chemical combining weight of a constituent in a million weights of water. These units are usually not reported, but are used to calculate percent sodium, the sodium-adsorption ratio (SAR), or to check the accuracy of a chemical analysis.

Mineral Constituents in Solution

Silica (SiO₂)

Silica is dissolved from practically all rocks. Some water contains less than 5 mg/l of silica and some contains more than 50 mg/l, but the more common range is from 10 to 30 mg/l. Silica affects the usefulness of water because it contributes to the formation of scale in pipes, water heaters, and boilers.

Iron (Fe)

Iron compounds are common in rocks and are easily leached by ground water. On exposure to air, normal basic water that contains more than 1 mg/l of iron soon becomes turbid with the insoluble reddish ferric oxide produced by oxidation. Surface water, therefore, seldom contains as much as 1 mg/l of dissolved iron, although some acid water carries large quantities of iron in solution. Ground water usually contains less than 10 mg/l. The U.S. Public Health Service (1962) recommends an upper limit of 0.3 ppm (= 0.3 mg/l) of iron in drinking water because in greater concentrations it imparts a metallic taste. It also causes reddish-brown stains on porcelain or enamelware and fixtures and on fabrics washed in the water.

Calcium (Ca)

Calcium may be leached from most rocks. It is a major cause of hardness and forms scale on utensils and on boilers and pipes. The calcium content of ground water may be as high as several hundred milligrams per liter.

Magnesium (Mg)

Magnesium is dissolved from many rocks, particularly from dolomitic rocks. Its effect in water is similar to that of calcium. The magnesium in soft water may amount to only 1 or 2 mg/l, but water in areas that contain large quantities of dolomite or other magnesium-bearing rocks may contain more than 100 mg/l of magnesium. Sea water contains more than 1,000 mg/l of magnesium.

Sodium and potassium (Na and K)

Sodium and potassium are dissolved from practically all rocks. Sodium is the predominant cation in some of the more highly mineralized water found in the western United States. Water that contains 3 or 4 mg/l of sodium and potassium is likely to contain them in equal concentrations because the potassium content of most rocks is almost equal to the sodium content. However, the proportion of sodium becomes much greater as the total quantity of these constituents increases. The potassium concentration in water rarely exceeds 50 mg/l because potassium compounds in rocks are less soluble than sodium compounds, and because base exchange, adsorption by clays, and formation of new minerals tend to remove potassium from ground water. Moderate quantities of sodium and potassium generally have little effect on the usefulness of water, but water that carries more than about 50 mg/l of the two may require careful operation of steam boilers to prevent foaming. More highly mineralized water that contains a large proportion of sodium salts may be unsatisfactory for irrigation. The presence of several hundred milligrams per liter of sodium in water makes it unsuitable for use in sodium-restricted diets used as therapy for cardiovascular diseases.

Bicarbonate and carbonate (HCO_3 and CO_3)

Bicarbonate and carbonate ions commonly are dissolved from carbonate rocks and are the major cause of alkalinity in most water. Although alkalinity is primarily due to the presence of bicarbonate and carbonate, other ions also contribute to alkalinity such as silicates, phosphates, borates, possibly fluoride, and certain organic anions that may occur in colored water. The significance of alkalinity to the domestic, agricultural, and industrial user is usually dependent upon the nature of the cations (Ca, Mg, Na, and K) associated with it. However, moderate amounts of alkalinity do not adversely affect most uses.

Sulfate (SO₄)

Sulfate is dissolved from many rocks and soils--in especially large quantities from beds of gypsum and from the weathering products of sulfide-bearing rocks, which include coal and some shales. It is often present in considerable quantities in mine water. Sulfate in water that contains much calcium and magnesium causes the formation of hard scale in steam boilers and may increase the cost of softening the water. The U.S. Public Health Service (1962) recommends that 250 ppm (mg/l) of sulfate should be the upper limit for drinking water.

Chloride (Cl)

Chlorides are generally very soluble compounds and are found in most rocks, therefore chlorides are found in all natural water. Large quantities of chloride may affect the industrial use of water by increasing the corrosiveness of water that contains large quantities of calcium and magnesium. The U.S. Public Health Service (1962) recommends an upper limit of 250 ppm (mg/l) of chloride for drinking water.

Fluoride (F)

Fluoride has been reported as being present in igneous and some sedimentary rocks to about the same extent as chloride. However, most fluorides, unlike the chlorides, are low in solubility so that the quantity of fluoride in natural water is ordinarily very small compared to that of chloride. Hem (1959) reported that fluoride concentrations in excess of 10 ppm (mg/l) are rare. Investigations have proved that fluoride concentrations between 0.6 and 1.7 ppm (mg/l) have a beneficial effect on the structure and resistance to decay of children's teeth, and that concentrations greater than 1.7 ppm also protect the teeth from cavities but cause an undesirable black stain (Durfur and Becker, 1964). The U.S. Public Health Service (1962, p. 8) states, "When fluoride is naturally present in drinking water, the concentration should not average more than the appropriate upper limit..." (0.8 to 1.7 mg/l). "Presence of fluoride in average concentrations greater than two times the optimum values ... shall constitute grounds for rejection of the supply." According to the U.S. Public Health Service, the recommended optimum fluoride concentration in drinking water depends on the annual mean of the maximum daily air temperature (which presumably controls water intake). For climates having a mean daily maximum air temperature below 53.7°F (Dickinson; Miller, no date), the optimum fluoride concentration is 1.2 ppm (mg/l), and the recommended upper limit is 1.7 ppm; for climates having a mean daily maximum air temperature between 53.8° and 58.3°F (Mott; Skrede, no date), the optimum value and recommended upper limit are 1.1 and 1.5 ppm (mg/l), respectively. Concentrations higher than the stated limits may cause mottled enamel in teeth, endemic cumulative fluorosis, and skeletal defects.

Nitrate (NO₃)

Nitrate in water is considered a final oxidation product of nitrogenous material and may indicate contamination by sewage or other organic matter. U.S. Public Health Service (1962) sets 45 ppm (mg/l) as the upper limit for nitrate. Ingestion of water containing excessive quantities of nitrate may result in infantile methemoglobinemia. If the concentration is sufficiently great, both man and animals can be poisoned by nitrate.

Boron (B)

Boron in small quantities is essential for plant growth, but irrigation water containing more than 1 mg/l boron is detrimental to boron-sensitive crops.

Dissolved solids

The reported quantity of dissolved solids--the residue on evaporation--consists mainly of the dissolved mineral constituents in the water. It may also contain some organic matter and water of crystallization. Water with less than 500 mg/l of dissolved solids is usually satisfactory for domestic and some industrial uses. Water containing several thousand milligrams per liter dissolved solids is sometimes successfully used for irrigation where practices permit the removal of soluble salts through the application of large volumes of water on well-drained lands, but generally water containing more than about 2,000 mg/l is considered to be unsuitable for long-term irrigation under average conditions.

Properties and Characteristics of Water

Temperature

Temperature is an important factor in properly determining the quality of water. This is evident for such a direct use as an industrial coolant. Temperature also is important, but perhaps not so evident, for its indirect influence upon concentrations of dissolved gases and distribution of chemical solutes in ground water. Temperatures in this report (tables 1, 2, and 5) are expressed in degrees Centigrade. Degrees Centigrade and the equivalent temperature in degrees Fahrenheit are given in the following table.

<u>Degrees Centigrade</u>	<u>Degrees Fahrenheit</u>	<u>Degrees Centigrade</u>	<u>Degrees Fahrenheit</u>	<u>Degrees Centigrade</u>	<u>Degrees Fahrenheit</u>
2.0	36	10.5	51	19.0	66
2.5	37	11.0	52	19.5	67
3.0	38	11.5	53	20.0	68
4.0	39	12.0	54	20.5	69
4.5	40	12.5	55	21.0	70
5.0	41	13.5	56	21.5	71
5.5	42	14.0	57	22.0	72
6.0	43	14.5	58	22.5	73
6.5	44	15.0	59	23.5	74
7.0	45	15.5	60	24.0	75
7.5	46	16.0	61	24.5	76
8.5	47	16.5	62	25.0	77
9.0	48	17.0	63	25.5	78
9.5	49	17.5	64	26.0	79
10.0	50	18.5	65	26.5	80

Normally, the temperature of ground water within 60 feet of the surface approximates the mean annual air temperature and increases 0.56°C (1°F) for each 60 to 100 feet of increase in depth.

Hardness

Hardness is the characteristic of water that receives the most attention in industrial and domestic use. It is commonly recognized by the increased quantity of soap required to produce lather. The use of hard water is also objectionable because it contributes to the formation of scale in boilers, water heaters, radiators, and pipes, with a resultant decrease in rate of heat transfer and possibility of water heater or boiler failure.

Hardness is caused almost entirely by compounds of calcium and magnesium. Other constituents--such as iron, manganese, aluminum, barium, strontium, and free acid--also cause hardness, although they usually are not present in quantities large enough to have any appreciable effect.

Generally bicarbonate and carbonate determine the proportions of "carbonate" hardness of water. Carbonate hardness is the amount of hardness chemically equivalent to the amount of bicarbonate and carbonate in solution. Carbonate hardness is approximately equal to the amount of hardness that is removed from water by boiling and is termed temporary hardness.

Noncarbonate hardness is the difference between the hardness calculated from the total amount of calcium and magnesium in solution and the carbonate hardness. If the carbonate hardness (expressed as calcium carbonate) equals the amount of calcium and magnesium hardness (also expressed as calcium carbonate) there is no noncarbonate hardness. Noncarbonate hardness is about equal to the amount of hardness remaining after water is boiled. The scale formed at high temperatures by the evaporation of water containing noncarbonate hardness commonly is tough, heat resistant, and difficult to remove.

Although many people talk about soft water and hard water, there has been no firm line of demarcation. Water that seems hard to an easterner may seem soft to a westerner. Therefore, the U.S. Geological Survey has adopted the following classification.

<u>Hardness range (calcium carbonate in mg/l)</u>	<u>Hardness description</u>
0-60	Soft
61-120	Moderately hard
121-180	Hard
More than 180	Very hard

For public use, water with hardness of about 200 ppm (mg/l) generally requires softening treatment (Durfor and Becker, 1964).

Specific conductance (micromhos per centimeter at 25°C)

Specific conductance is a convenient, rapid determination used to estimate the amount of dissolved solids in water. It is a measure of the ability of water to conduct an electrical current. Commonly, the amount of dissolved solids (in milligrams per liter) is about 55 percent of the specific conductance (in micromhos). This relation is not constant from well to well and it may even vary in the same source with changes in the composition of the water (Durfor and Becker, 1964).

Specific conductance of most water in the eastern United States is less than 1,000 micromhos, but in the arid western parts of the country, a specific conductance of more than 1,000 micromhos is common.

Sodium-adsorption ratio (SAR)

The term "sodium-adsorption ratio (SAR)" was introduced by the U.S. Salinity Laboratory Staff (1954). It is the ratio expressing the relative activity of sodium ions in exchange reaction with soil and is an index of the sodium or alkali hazard to the soil. Sodium-adsorption ratio is expressed by the equation:

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

where the concentrations of the ions are expressed in milliequivalents per liter (or equivalents per million for most irrigation water).

Water is divided into sixteen classes (U.S. Salinity Laboratory Staff, 1954, p. 80), depending upon the SAR and specific conductance. Water varies in respect to sodium hazard and specific conductance from that which can be used for irrigation on almost all soils to that which is generally unsatisfactory for irrigation.

Hydrogen-ion concentration (pH)

Hydrogen-ion concentration is expressed in terms of pH units. The values of pH often are used as a measure of the solvent power of water or as an indicator of the chemical behavior certain solutions may have toward rock minerals.

The degree of acidity or alkalinity of water, as indicated by the hydrogen-ion concentration, expressed as pH, affects the corrosive properties of water, and partly determines the proper treatment for coagulation that may be necessary at water-treatment plants. A pH of 7.0 indicates that the water is neither acid nor alkaline. Readings progressively lower than 7.0 denote increasing acidity and those progressively higher than 7.0 denote increasing alkalinity. The pH of most ground water ranges between 5.5 and slightly more than 8.

Color value

Color is a factor affecting the desirability of the water for domestic and public supply use and some industrial uses. It indicates the presence of traces of organic compounds that are not determined in standard chemical analyses. Most of the ground water in Hettinger and Stark Counties has a brownish color. This is due to traces of organic compounds picked up by the water as it passed through lignite beds or rock material containing plant remains. The intensity of the coloration ranges from barely detectable to brownish black.

In order to describe the intensity of coloration in quantitative terms, a Taylor water analyzer with a color standard slide (color comparator) was used to measure the color values of water samples, based on the standard described by Hem (1959, p. 49). The color slide had color values up to 70 units; higher values were read by diluting the samples with distilled water and multiplying the readings by factors representing the dilution.

The accuracy of the color determinations was probably adversely affected by the dilution required to get readings. Also, for accurate color determination, the samples should have been clarified by either settling or centrifuging, and not filtered. However, the color in samples can change upon standing, and no centrifuge was available. Most of the color values in table 6 were measured at the time of collection, some after several days. A few very turbid samples were filtered before measurement. Despite the limitations on the accuracy of the color determinations, they should be a useful measure of the relative intensity of coloration of the waters from various aquifers.

The U.S. Public Health Service (1962) recommends a limit of 15 color units for drinking water, based on aesthetic considerations. According to Durfor and Becker (1964, p. 25), the maximum color value of treated water from the public supplies of the 100 largest cities in the United States is 24 units.

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TABLE 1.--Records of wells and test holes

EXPLANATION

<p><u>Water use</u></p> <p>C, commercial H, domestic I, irrigation K, domestic and stock N, industrial P, public supply S, stock T, institutional U, unused Z, other</p> <p><u>Yield, in gallons per minute</u></p> <p>A, 0.1 or less E, 0.5 B, 0.2 F, 0.6 C, 0.3 G, 0.7 D, 0.4 H, 0.8</p> <p><u>Water level (feet)</u></p> <p>Water level, in feet below (+ above) land surface > greater than. Water level below specified depth F, well flows</p> <p><u>Frequency of water-level measurements</u></p> <p>C, continuous - recorder I, intermittent M, monthly N, none O, original only</p>	<p><u>Aquifer</u></p> <p>21, alluvium 22, terrace deposits 31, outwash 41, till 52, buried-channel deposits</p> <p>WR, White River Formation CV, Golden Valley Formation GS, Golden Valley and Sentinel Butte Formations, undifferentiated SB, Sentinel Butte Formation ST, Sentinel Butte and Tongue River Formations, undifferentiated TR, Tongue River Formation TC, Tongue River and Cannonball Formations, undifferentiated TL, Tongue River and Ludlow Formations, undifferentiated C, Cannonball Formation CL, Cannonball and Ludlow Formations, undifferentiated L, Ludlow Formation LH, Ludlow and Hell Creek Formations, undifferentiated HC, Hell Creek Formation FH, Fox Hills Formation</p> <p><u>Water-bearing material</u></p> <p>1, very fine grained 2, fine grained 3, medium grained 4, coarse grained 6, clayey 7, silty 8, sandy 9, gravelly V, semiconsolidated</p>	<p><u>Water-bearing material, continued</u></p> <p>A, alluvium F, shale G, gravel P, clay R, sand and gravel S, sand T, till V, sandstone L, lignite</p> <p><u>Log available</u></p> <p>C, caliper (diameter) survey logs D, drillers log E, electric log G, geologists log J, gamma-ray log Y, electric, radiation, and sample (or drillers) logs 8, other combinations 9, penetration log</p> <p><u>Quality-of-water type</u></p> <p>C, complete chemical analysis available K, conductance only P, partial chemical analysis available</p> <p>Specific conductance (micromhos per centimeter at 25°C)</p> <table border="0"> <tbody> <tr> <td>1, 51-150</td> <td>5, 1,001-2,000</td> </tr> <tr> <td>2, 151-300</td> <td>6, 2,001-5,000</td> </tr> <tr> <td>3, 301-500</td> <td>7, 5,001-10,000</td> </tr> <tr> <td>4, 501-1,000</td> <td></td> </tr> </tbody> </table>	1, 51-150	5, 1,001-2,000	2, 151-300	6, 2,001-5,000	3, 301-500	7, 5,001-10,000	4, 501-1,000	
1, 51-150	5, 1,001-2,000									
2, 151-300	6, 2,001-5,000									
3, 301-500	7, 5,001-10,000									
4, 501-1,000										

LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAILABLE	QW TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ALTITUDE-OF LSD (FT.)
HETTINGER COUNTY																		
132N091W04CDA	F. KELSCH	165	--	4	4	1942	H	--	30	--	N	TR	I	--	K	6	--	2436
132N091W10CCA	A. KIMBEL	8	0	60	60	--	K	--	6	--	N	SR	I	--	--	--	--	2428
132N091W12CDC	A. HEIPEL	111	111	4	4	1916	U	--	14	3-67	0	TR	--	--	--	--	--	2415
132N091W14AAB	K. SCHAFFER	202	122	4	4	1964	K	4	125	--	N	TR	VV	D	C	5	9.0	2439
132N091W17DDC	W. KILZER	160	--	3	3	1917	K	--	80	--	N	TR	--	--	K	5	9.5	2540
132N091W18CDD1	M. HUEITHER	265	--	4	4	1916	U	--	100	--	N	TR	--	--	--	--	--	2558
132N091W18CDD2	M. HUEITHER	260	260	4	4	1952	H	--	--	--	N	TR	I	--	K	5	--	2557
132N091W208BB	W. MATTIS	135	--	2	2	1950	U	--	30	--	N	TR	--	--	--	--	--	2550
132N091W21ACC	E. KILZER	304	304	4	4	1949	K	--	120	--	N	TR	--	--	K	5	--	2550
132N091W21DDD	EAGLE BUTTE SCH	180	164	4	4	1968	H	15	110	--	N	TR	VV	D	--	--	2545	
132N091W23AAC	G. SCHAFFER	255	225	6	6	1951	S	--	140	--	N	TR	I	--	K	5	--	2550
132N091W23ADA	G. SCHAFFER	110	--	6	6	1916	K	--	48	--	N	TR	--	--	K	6	10.5	2530
132N091W24ABC	G. SCHAFFER	60	--	6	6	1922	S	--	10	--	N	ST	VV	--	--	--	--	2580
132N091W24CDD1	F. SCHAFFER	60	60	4	4	--	S	--	30	--	N	ST	--	--	K	5	11.0	--
132N091W24CDD2	E. SCHAFFER	60	60	4	4	1957	H	--	28	--	N	ST	--	--	--	--	--	--
132N091W24CDD3	E. SCHAFFER	253	253	4	4	1962	H	--	50	--	N	TR	I	--	K	5	--	--
132N091W26ABA	J. ULRICH	138	--	4	4	1964	K	--	18	--	N	TR	I	--	K	6	11.0	2580
132N091W27DBB	A. FRIEZ	300	--	4	4	1954	H	--	100	--	N	TR	--	--	--	--	--	2590
132N091W28BCC	A. REICHERT	275	275	6	6	1915	K	--	20	--	N	TR	P	--	K	5	--	2500
132N091W28DDU	NDSHC 3627	1050	1420	1030	4	1968	U	--	290	10-68	C	PH	3V	YC	C	6	--	2469
132N091W30DAA	L. BROWN	154	114	6	6	--	K	--	84	--	N	TR	VV	--	K	4	--	2510
132N091W34CAA	J. BHMNET	80	80	6	6	1948	K	--	40	--	N	TR	--	--	K	5	--	2510
132N092W07CCC	P. SCHULZ	220	--	4	4	1963	K	--	135	--	N	TR	--	--	K	5	--	2555
132N092W06DDU1	E. SUTNIK	193	193	5	5	--	S	--	30	--	N	TR	VV	D	K	5	--	2556
132N092W06DDU2	E. SUTNIK	185	185	6	6	1963	H	--	60	--	N	TR	VV	--	K	6	--	--
132N092W07ADD	M. SWINDLER	0	68	--	--	--	U	--	--	--	N	TR	I	D	--	--	--	2520
132N092W09AAA	N. SCHULZ	275	--	5	5	--	S	--	--	--	N	TR	VV	D	C	5	9.0	2569
132N092W10CCB	C. THORESUN	100	100	3	3	1920	K	--	16	--	N	TR	--	--	K	3	7.0	--
132N092W118BB	P. SCHULZ	225	--	6	6	1913	S	--	164	--	N	TR	--	--	K	5	--	--
132N092W156CB	A. SCHULZ	125	--	4	4	--	K	--	85	--	N	TR	--	--	P	3	--	2528
132N092W19CCC	NDSMC 3713	80	--	--	--	1969	U	--	59	--	N	--	--	SD	--	--	--	2566
132N092W18ABH2	N. KJOS	20	20	6	6	--	H	--	10	--	N	ST	I	--	K	5	7.5	2500
132N092W18ADD	L. KJOS	65	--	--	--	1956	U	--	50	--	N	ST	--	--	--	--	--	2520
132N092W19DBB	L. BUTLER	100	100	4	4	--	S	--	15	--	N	TR	--	--	K	5	8.5	2490
132N092W21DDU1	NDSMC 3714	310	--	--	--	1969	U	--	--	--	N	--	--	GE	--	--	--	2460
132N092W21DDU2	NDSMC 3714A	70	67	1	1	1969	U	--	11	6-69	M	TR	VV	--	C	4	7.5	2460
132N092W23CAC1	H. BOLTE	66	--	4	4	1934	S	--	20	--	N	TR	--	--	K	3	13.5	2490
132N092W23CAC2	H. BOLTE	80	0	18	18	1956	H	--	16	--	N	TR	IV	--	K	4	--	--
132N092W24AAA	NDSMC 3672	174	200	168	1	1968	U	--	108	12-68	M	TR	IV	GE	C	5	7.0	2559
132N092W24CDD	P. KOR	180	--	6	6	1922	U	--	--	--	N	TR	I	--	K	5	--	--

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LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAM-ETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER-BEARING MATERIAL	LOG AVAIL-ABLE	OW TYPE	SPE-CIFIC CON-DUCT ANCE	TEM-PERATURE (°C)	ALTI-TUDE-OF L50 (FT.)
132N092W26ACC	L.ZENT	44	--	--	4	1956	S	--	10	--	N	ST	P	--	K	7	9.0	2490
132N092W260CD1	L.ZENT	80	--	80	3	1927	U	--	27	10-67	O	TR	VV	--	--	--	--	2495
132N092W260CD2	L.ZENT	120	--	--	6	1953	K	--	90	--	N	TR	P	--	K	7	--	--
132N092W288CC1	J.ZENT	30	--	30	3	1933	S	--	10	--	N	ST	--	--	K	6	8.5	2480
132N092W288CC2	J.ZENT	315	--	315	4	1963	H	--	70	--	N	TR	VV	--	K	5	--	--
132N092W280CD1	J.SMINDLER	--	--	--	--	--	U	--	--	--	N	ST	--	--	P	6	--	2462
132N092W280CD2	J.SMINDLER	69	--	34	5	1960	U	27	20	--	N	SB	VV	D	--	--	2462	
132N092W30AAA1	L.BUTLER	120	--	120	4	1949	H	--	14	10-67	O	TR	VV	--	K	6	--	2480
132N092W30AAZ	L.BUTLER	65	--	65	4	1950	S	--	20	--	N	TR	--	--	K	6	10.5	--
132N092W30CAA	L.BUTLER	400	--	400	4	--	S	--	3	--	N	TR	--	--	K	6	8.5	2480
132N092W31DAD1	O.BUTLER	50	--	50	6	--	U	--	25	--	N	ST	--	--	--	--	--	2510
132N092W31DAD2	O.BUTLER	250	--	250	5	1951	H	--	160	--	N	TR	VV	--	K	5	--	2510
132N092W31DAD3	O.BUTLER	50	--	50	5	1960	S	--	25	--	N	ST	--	--	K	5	8.5	2510
132N092W32ACC1	E.JOHNSON	126	--	85	3	1929	K	--	30	--	N	SB	VV	--	K	5	8.5	2510
132N092W32ACC2	E.JOHNSON	122	--	100	4	1967	H	125	30	--	N	SB	3V	D	--	--	--	2510
132N092W32CDB1	R.JOHNSON	80	--	80	4	--	U	--	40	--	N	TR	VV	--	--	--	--	--
132N092W32CDB2	R.JOHNSON	115	--	85	4	1952	K	--	40	--	N	TR	--	--	K	6	--	--
132N092W348AA	L.FRIEZ	80	--	80	3	1927	K	--	30	--	N	ST	VV	--	K	4	--	2510
132N093W088B0	F.MILLER	120	--	--	6	--	K	--	18	--	N	TR	I	--	K	5	--	2553
132N093W090DA	G.SPRECHER	120	--	120	6	--	K	--	45	--	N	TR	--	--	K	5	--	2532
132N093W13ABB	A.LINDEMANN	192	--	--	4	1915	K	--	132	--	N	TR	VV	--	K	5	10.0	2540
132N093W140DD	R.HAGLER	180	--	--	4	1929	K	--	16	--	N	TR	--	--	P	7	--	2488
132N093W18AAC	H.GREEN	140	--	--	4	1947	K	--	100	--	N	TR	VV	--	K	5	--	2542
132N093W208BB	A.SPRECHER	130	--	--	4	1949	K	--	50	--	N	TR	--	--	K	6	--	2542
132N093W21DAB	E.ANDERSON	28	--	--	36	1938	H	--	17	--	N	SB	--	--	K	5	9.5	2540
132N093W228CB	NDSWC 3525	900	--	0	5	1967	U	--	--	--	N	--	--	Y	--	--	--	2514
132N093W228CC	R.ROTH	70	--	60	4	1957	H	12	20	--	N	TR	VV	--	K	5	--	2520
132N093W228CB	R.ROTH	70	--	60	4	1912	S	--	30	--	N	SB	VV	--	K	5	10.0	2520
132N093W238AB1	GRANT RANCH	150	--	--	--	--	U	--	--	--	N	TR	--	--	--	--	--	2500
132N093W238AB2	GRANT RANCH	82	--	62	4	1964	H	25	35	--	N	TR	VV	D	C	6	10.0	2500
132N093W248AA	GRANT RANCH	82	--	--	3	--	U	--	13	8-67	O	TR	--	--	--	--	--	2472
132N093W288CB1	H.WATSON	164	--	164	4	--	K	--	20	--	N	TR	VV	--	K	5	--	2514
132N093W288CB2	H.WATSON	162	--	147	4	1966	H	15	51	--	N	TR	2V	D	C	5	--	2514
132N093W288CB	G.HUGHES	183	--	141	4	1966	K	9	80	--	N	TR	VV	D	K	5	--	2537
132N093W34ADA	CGG.HARDMEYER	100	--	70	4	1968	H	4	52	--	N	SB	VV	D	K	5	--	2524
132N093W34ADD1	G.HARDMEYER	110	--	--	4	1944	H	--	45	--	N	TR	--	--	K	5	11.0	2530
132N093W34ADD2	G.HARDMEYER	32	--	32	18	--	S	--	13	--	N	SB	I	--	--	--	--	--
132N093W34ADD3	G.HARDMEYER	19	--	15	5	1966	S	--	--	--	N	SB	P	D	K	5	11.5	2527
132N093W34DAA	G.HARDMEYER	33	--	12	6	1966	S	7	9	--	N	SB	I	D	K	4	--	2544
132N093W368BB	G.HARDMEYER	150	--	--	6	--	U	--	--	--	N	TR	--	--	--	--	--	--

LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAILABLE	QM TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ALTITUDE OF LSD (FT.)	
132N093N36EAD	G.HARDMEYER	81	--	--	6	--	U	--	28	8-67	0	TR	--	--	--	--	--	2501	
132N094W0CCDD	FST.NATL.BK.TR.	75	--	--	5	1910	U	--	51	10-67	0	TR	--	--	--	--	--	2570	
132N094W0CDD	P.MCKENNA TR.	70	70	70	6	1935	S	--	50	--	N	TR	--	--	--	K	4	2593	
132N094W10DAA	M.POTTER	85	--	--	--	--	U	--	--	--	N	TR	--	--	--	K	3	2593	
132N094W11ADD	P.MILLER	50	50	50	5	--	S	--	15	--	N	TR	--	--	--	K	4	2550	
132N094W11BCC	P.MILLER	110	--	--	6	1948	K	--	60	--	N	TR	WV	--	F	3	--	2592	
132N094W15BAC	NDSWC 3715	143	200	137	1	1969	U	--	46	6-69	M	TR	2V	Y	C	4	8.5	2576	
132N094W15BAC2	NDSWC 3715A	40	200	37	1	1969	U	--	18	6-69	M	SE	3S	--	C	3	6.5	2576	
132N094W15CDC	E.BUCHANAN	80	80	80	--	--	H	--	--	--	N	TR	--	--	--	K	4	8.5	2610
132N094W16DHC	I.BRATCHER	90	90	90	4	1938	S	--	50	--	N	TR	--	--	--	K	4	9.5	2618
132N094W17CDD	I.BRATCHER	150	160	160	6	--	K	--	60	--	N	TR	WV	--	--	K	5	7.5	2645
132N094W18AAA1	R.SVIHOVEC	128	--	--	--	--	S	--	--	--	N	TR	--	--	--	K	6	11.5	2650
132N094W18AAA2	R.SVIHOVEC	81	21	4	4	1961	S	5	45	--	N	SB	WV	D	--	--	--	2645	
132N094W20AAA	I.BRATCHER	150	150	150	6	1908	K	--	60	--	N	ST	--	--	--	K	4	--	2662
132N094W20CCC	R.HUFENW	102	102	102	5	1959	K	--	76	--	N	ST	WV	--	--	K	4	--	2680
132N094W21AAA	HTGP.SCH.DIST.7	80	80	80	--	1949	H	--	40	--	N	ST	--	--	--	K	5	9.5	2620
132N094W21BAC	I.BRATCHER	47	47	47	6	1922	S	--	40	--	N	SB	--	--	--	--	--	2670	
132N094W22AAA	I.BRATCHER	70	70	70	6	--	H	--	40	--	N	ST	--	--	--	K	4	9.0	2600
132N094W24DBR1	B.LINCE	150	180	180	6	1918	U	--	35	--	N	TR	--	--	--	--	--	2610	
132N094W24DBE2	B.LINCE	200	200	200	--	1951	H	--	--	--	N	TR	--	--	--	K	5	8.5	2610
132N094W29CCU	NDSWC 3673	204	285	198	1	1968	U	--	75	10-69	M	TR	1V	GE	C	5	10.5	2604	
132N094W29DAA1	H.SCHNEIDER	50	50	50	--	1959	S	--	--	--	N	ST	--	--	--	K	5	9.0	2660
132N094W29DAA2	H.SCHNEIDER	70	70	70	6	1964	K	--	--	--	N	ST	--	--	--	K	5	--	2660
132N094W29DAA3	H.SCHNEIDER	50	50	50	--	1965	S	--	39	10-67	0	ST	--	--	--	K	5	9.0	2630
132N094W30DDA	C.SCHNEIDER	80	--	--	16	--	U	--	53	10-67	0	TR	--	--	--	K	5	--	2660
132N094W32CBB1	W.POWELL	16	16	16	30	--	H	--	11	10-67	0	SB	1	--	--	K	5	--	2595
132N094W32CBB2	W.POWELL	65	--	--	6	1928	S	--	20	--	N	ST	WV	--	--	K	4	8.5	2282
132N094W32CBB3	W.POWELL	113	113	113	6	1959	H	--	36	10-67	0	TR	1	--	--	K	4	--	2595
132N094W32DAD	E.ZIMMERMAN	--	--	--	6	--	U	60	26	10-67	0	ST	--	--	--	--	--	2640	
133N091W01BBD	W.WRUCK	121	61	4	4	1963	K	60	30	--	N	TR	WV	D	C	3	10.5	2322	
133N091W01DCC	W.WRUCK	152	--	--	5	1965	H	--	F	--	N	TR	WV	--	--	K	4	--	2281
133N091W01LDD	W.WRUCK	160	--	--	5	1954	S	8	F	--	N	TR	WV	--	--	--	--	2282	
133N091W02DRB	E.LEMKE	86	43	4	4	1963	U	20	58	--	N	SB	WV	D	--	--	--	2368	
133N091W02DCC	E.LEMKE	70	--	--	4	1952	H	--	--	--	N	TR	--	--	--	K	4	--	2338
133N091W04BGB	R.BIEBER	101	64	4	4	1963	S	12	54	--	N	TR	WV	D	K	4	7.5	2366	
133N091W04BGL1	R.BIEBER	87	87	87	4	--	U	--	41	11-67	0	TR	--	--	--	--	--	2376	
133N091W04BGL2	R.BIEBER	19	0	24	--	--	U	--	12	11-67	0	SB	--	--	--	K	5	5.0	2376
133N091W04BGL3	R.BIEBER	400	--	--	--	--	U	--	--	--	N	C	--	--	--	K	3	--	2376
133N091W09LBD	N.ZEMNER	87	71	4	4	1964	H	2	23	--	N	TR	--	--	--	K	5	--	2382
133N091W06AAD	A.SCHLOSSER	36	--	--	4	1967	H	--	--	--	N	SB	--	D	K	6	9.0	2390	

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LOCAL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASTING DEPTH (FT.)	DIA-ETER (IN.)	DATE OF DRILLING (YEAR)	WATER USE	YIELD (GPM)	WATER LEVEL (FT.)	DATE OF WATER MEAS.	FREQUENCY OF MEAS.	MAJOR MATERIAL	AVAIL-	LOG TYPE	CON-	PER-	ATU-	ALTI-
		(FT.)	(FT.)	(FT.)	(IN.)	(YEAR)		(GPM)	(FT.)				ABLE	QM	CIFIC	AGE	RE OF	UDE-
133091406CD1	G. NEULER	90	90	90	5	1958	H	1	30	---	---	ST	---	---	---	---	---	---
133091406CD2	E. NEULER	90	90	90	5	1950	S	---	---	---	---	TR	---	---	---	---	---	---
133091406CD3	S. NEULER	110	---	---	4	1950	S	---	---	---	---	TR	---	---	---	---	---	---
133091407AA01	E. AUCH	90	90	90	6	---	U	---	---	---	---	TR	---	---	---	---	---	---
133091407AA02	E. AUCH	90	90	90	30	1967	U	---	82	---	---	N	---	---	---	---	---	---
133091407BC8	E. AUCH	90	---	---	0	---	U	---	20	---	---	N	---	---	---	---	---	---
133091407BC9	A. HERTSCH	20	---	---	---	1963	S	---	8	---	---	N	---	---	---	---	---	---
133091408A8	W. PEDERSON	31	---	---	2	---	U	---	18	6-68	---	TR	---	---	---	---	---	---
133091413BC	L. HINTZ	172	---	---	4	1964	H	12	35	---	---	TR	---	---	---	---	---	---
133091414DD	L. HINTZ	70	---	---	5	---	S	---	---	---	---	TR	---	---	---	---	---	---
133091414DDP	A. KILZER	160	---	---	2	---	R	---	---	---	---	TR	---	---	---	---	---	---
133091414DC	A. KILZER	161	131	---	1	1963	S	3	44	---	---	TR	---	---	---	---	---	---
133091415AA	L. HINTZ	---	---	---	4	---	H	---	---	---	---	TR	---	---	---	---	---	---
133091415AA	L. HINTZ	---	---	---	4	---	H	---	---	---	---	TR	---	---	---	---	---	---
133091415AA	E. G. GIBBLE	280	---	---	4	---	H	---	40	---	---	TR	---	---	---	---	---	---
133091415CD1	J. PETERSCH	60	---	---	5	1958	R	5	25	---	---	TR	---	---	---	---	---	---
133091415CD2	J. PETERSCH	80	---	---	5	1958	S	3	35	---	---	TR	---	---	---	---	---	---
133091419AA	P. MEIER	160	160	---	3	---	S	---	30	---	---	N	---	---	---	---	---	---
133091419CD	L. BURN	111	91	---	4	1961	S	36	25	---	---	TR	---	---	---	---	---	---
133091419DD	L. BURN	100	100	---	2	---	U	A	---	---	---	TR	---	---	---	---	---	---
133091422BB	A. SCHMIDT	100	---	---	4	---	K	---	11	---	---	TR	---	---	---	---	---	---
133091423AA	L. HINTZ	---	---	---	4	1916	K	---	18	---	---	TR	---	---	---	---	---	---
133091423AA	F. HUBER	158	---	---	4	---	Z	---	14	---	---	TR	---	---	---	---	---	---
133091423AA	F. HUBER	140	---	---	4	1952	H	---	12	---	---	TR	---	---	---	---	---	---
133091423AA	F. HUBER	140	---	---	4	---	K	---	7	---	---	TR	---	---	---	---	---	---
133091423AD	F. HUBER	140	---	---	6	---	S	F	---	---	---	TR	---	---	---	---	---	---
133091423DD	A. K. JENSE	90	---	---	5	1927	H	---	20	---	---	TR	---	---	---	---	---	---
133091423DDA	F. HUBER	140	---	---	6	1957	H	---	---	---	---	TR	---	---	---	---	---	---
133091423DDA	J. HUBER	101	---	---	1	1962	S	---	---	---	---	TR	---	---	---	---	---	---
133091423DDA1	A. KILBEL	400	---	---	2	1945	U	---	---	---	---	TR	---	---	---	---	---	---
133091423DDA2	A. KILBEL	95	---	---	4	1967	K	8	57	---	---	TR	---	---	---	---	---	---
133091423DDA3	A. KILBEL	103	---	---	5	1916	S	---	24	---	---	TR	---	---	---	---	---	---
133091423DDA4	K. KILBEL	103	---	---	5	1952	S	---	30	---	---	TR	---	---	---	---	---	---
133091423DDA5	K. KILBEL	80	---	---	4	1904	U	---	38	10-67	---	TR	---	---	---	---	---	---
133091423DDA6	G. HUBER	140	---	---	3	1925	U	---	35	---	---	TR	---	---	---	---	---	---
133091423AA7	G. HUBER	135	---	---	4	1963	K	100	20	---	---	TR	---	---	---	---	---	---
133091423AA8	G. KILFER	160	---	---	3	1928	H	---	---	---	---	TR	---	---	---	---	---	---
133091423AA9	E. KRISCH	55	---	---	5	1948	U	---	40	---	---	TR	---	---	---	---	---	---
133091423AAZ	E. KRISCH	85	---	---	24	1967	K	---	40	---	---	TR	---	---	---	---	---	---
133091424AA1	K. KILBEL	100	---	---	4	---	U	---	38	10-67	---	TR	---	---	---	---	---	---
133091424AA2	K. KILBEL	46	---	---	0	1905	U	---	22	10-67	---	TR	---	---	---	---	---	---
133091424AA3	K. KILBEL	111	---	---	5	1916	S	---	24	---	---	TR	---	---	---	---	---	---
133091424AA4	K. KILBEL	103	---	---	5	1952	S	---	30	---	---	TR	---	---	---	---	---	---
133091424AA5	K. KILBEL	80	---	---	4	1904	U	---	38	10-67	---	TR	---	---	---	---	---	---
133091424AA6	G. HUBER	140	---	---	3	1925	U	---	35	---	---	TR	---	---	---	---	---	---
133091424AA7	G. HUBER	135	---	---	4	1963	K	100	20	---	---	TR	---	---	---	---	---	---
133091424AA8	G. KILFER	160	---	---	3	1928	H	---	---	---	---	TR	---	---	---	---	---	---
133091424AA9	E. KRISCH	55	---	---	5	1948	U	---	40	---	---	TR	---	---	---	---	---	---
133091424AAZ	E. KRISCH	85	---	---	24	1967	K	---	40	---	---	TR	---	---	---	---	---	---
133091425AA1	A. KILBEL	115	---	---	2	1967	K	8	57	---	---	TR	---	---	---	---	---	---
133091425AA2	A. KILBEL	400	---	---	2	1945	U	---	---	---	---	TR	---	---	---	---	---	---
133091425AA3	J. HUBER	151	---	---	1	1962	S	---	---	---	---	TR	---	---	---	---	---	---
133091425AA4	A. KILBEL	90	---	---	5	1927	H	---	20	---	---	TR	---	---	---	---	---	---
133091425AA5	F. HUBER	140	---	---	6	1957	H	---	---	---	---	TR	---	---	---	---	---	---
133091425AA6	A. KILBEL	90	---	---	5	1927	H	---	---	---	---	TR	---	---	---	---	---	---
133091425AA7	F. HUBER	140	---	---	6	---	S	F	---	---	---	TR	---	---	---	---	---	---
133091425AA8	F. HUBER	140	---	---	4	1952	H	---	12	---	---	TR	---	---	---	---	---	---
133091425AA9	K. KILZER	201	---	---	4	1964	H	---	7	---	---	TR	---	---	---	---	---	---
133091425AAA	F. HUBER	158	---	---	4	1952	Z	---	14	---	---	TR	---	---	---	---	---	---
133091425AAA	F. HUBER	140	---	---	4	1952	H	---	12	---	---	TR	---	---	---	---	---	---
133091425AAA	F. HUBER	140	---	---	4	1952	H	---	7	---	---	TR	---	---	---	---	---	---
133091425AAA	F. HUBER	140	---	---	6	---	S	F	---	---	---	TR	---	---	---	---	---	---
133091425AAA	F. HUBER	140	---	---	4	1952	H	---	12	---	---	TR	---	---	---	---	---	---
133091425AAA	F. HUBER	140	---	---	4	1952	H	---	7	---	---	TR	---	---	---	---	---	---
133091425AAA	F. HUBER	140	---	---	4	1952	H	---	12	---	---	TR	---	---	---	---	---	---
133091425AAA	F. HUBER	140	---	---	4	1952	H	---	7	---	---	TR	---	---	---	---	---	---
133091425AAA	F. HUBER	140	---	---	4	1952	H	---	12	---	---	TR	---	---	---	---	---	---
133091425AAA	F. HUBER	140	---	---	4	1952	H	---	7	---	---	TR	---	---	---	---	---	---
133091425AAA	F. HUBER	140	---	---	4	1952	H	---	12	---	---	TR	---	---	---	---	---	---
133091425AAA	F. HUBER	140	---	---	4	1952	H	---	7	---	---	TR	---	---	---	---	---	---
133091425AAA	F. HUBER	140	---	---	4	1952	H	---	12	---	---	TR	---	---	---	---	---	---
133091425AAA	F. HUBER	140	---	---	4	1952	H	---	7	---	---	TR	---	---	---	---	---	---
133091425AAA	F. HUBER	140	---	---	4	1952	H	---	12	---	---	TR	---	---	---	---	---	---
133091425AAA	F. HUBER	140	---	---	4	1952	H	---	7	---	---	TR	---	---	---	---	---	---
133091425AAA	F. HUBER	140	---	---	4	1952	H	---	12	---	---	TR	---	---	---	---	---	---
133091425AAA	F. HUBER	140	---	---	4	1952	H	---	7	---	---	TR	---	---	---	---	---	---
133091425AAA	F. HUBER	140	---	---	4	1952	H	---	12	---	---	TR	---	---	---	---	---	---
133091425AAA	F. HUBER	140	---	---	4	1952	H	---	7	---	---	TR	---	---	---	---	---	---
133091425AAA	F. HUBER	140	---	---	4	1952	H	---	12	---	---	TR	---	---	---	---	---	---
133091425AAA	F. HUBER	140	---	---	4	1952	H	---	7	---	---	TR	---	---	---	---	---	---
133091425AAA	F. HUBER	140	---	---	4	1952	H	---	12	---	---	TR	---	---	---	---	---	---
133091425AAA	F. HUBER	140	---	---	4	1952	H	---	7	---	---	TR	---	---	---	---	---	---
133091425AAA	F. HUBER	140	---	---	4	1952	H	---	12	---	---	TR	---	---	---	---	---	---
133091425AAA	F. HUBER	140	---	---	4	1952	H	---	7	---	---	TR	---	---	---	---	---	---
133091425AAA	F. HUBER	140	---	---	4	1952	H	---	12	---	---	TR	---	---	---	---	---	---
133091425AAA	F. HUBER	140	---	---	4	1952	H	---	7	---	---	TR	---	---	---	---	---	---
133091425AAA	F. HUBER	140	---	---	4	1952	H	---	12	---	---	TR	---	---	---	---	---	---
133091425AAA	F. HUBER	140	---	---	4	1952	H	---	7	---	---	TR	---	---	---	---	---	---
133091425AAA	F. HUBER	140	---	---	4	1952	H	---	12	---	---	TR	---	---	---	---	---	---
133091425AAA	F. HUBER	140	---	---	4	1952	H	---	7	---	---	TR	---	---	---	---	---	---
133091425AAA	F. HUBER	140	---	---	4	1952	H	---	12	---	---	TR	---	---	---	---	---	---
133091425AAA	F. HUBER	140	---	---	4	1952	H	---	7	---	---	TR	---	---	---	---	---	---
133091425AAA	F. HUBER	140	---	---	4	1952	H	---	12	---	---	TR	---	---	---	---	---	---
133091425AAA	F. HUBER	140	---	---	4	1952	H	---	7	---	---	TR	---	---	---	---	---	---
133091425AAA	F. HUBER	140	---	---	4	1952	H	---	12	---	---	TR	---	---	---	---	---	---
133091425AAA	F. HUBER	140	---	---	4	1952												

LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAILABLE	QW TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ALTITUDE OF LSD (FT.)
133N092W0186A	E. BERTSCH	80		80	6	1952	S	--	30	--	N	TR	--	--	K	4	7.0	--
133N092W0186B	E. BERTSCH	48		48	24	1967	S	--	13	--	N	TR	--	--	K	4	9.0	--
133N092W058AA1	R. STERN	25		25	36	1945	S	--	20	--	N	TR	--	--	K	5	9.5	2358
133N092W058AA2	R. STERN	310		282	4	1963	K	100	15	--	N	TR	3V	D	C	5	11.5	2382
133N092W058BB1	THE CURVE	306		275	6	1950	C	--	30	--	N	TR	--	--	P	5	--	2396
133N092W058BB2	H. HINTZ	340		300	4	1968	H	15	10	--	N	TR	3V	D	--	--	--	2402
133N092W06ACC	BLICKENS DERFFER	60		--	--	--	K	--	--	--	N	TR	--	--	K	5	--	2356
133N092W06CCC	R. SCHWARTZ	145		145	3	1945	K	--	16	--	N	TR	--	--	K	5	--	2390
133N092W078BC1	S. SCHWARTZ	125		--	4	--	U	--	25	--	N	TR	--	--	K	6	8.5	2397
133N092W078BC2	S. SCHWARTZ	175		90	--	1949	K	--	25	--	N	TR	--	--	K	5	--	2396
133N092W07DAA	M. MEHRER	151		--	4	1959	K	--	--	--	N	TR	--	--	K	6	12.0	2394
133N092W11CCG	R. BERRETH	115		110	3	1946	K	--	30	--	N	TR	VV	--	K	6	--	--
133N092W12ADA1	A. BERTSCH	8		8	4	--	H	--	7	--	N	--	--	--	K	5	--	--
133N092W12ADA2	A. BERTSCH	132		132	3	1949	H	--	25	--	N	TR	1	--	K	5	--	--
133N092W12ADA3	A. BERTSCH	20		--	6	1967	S	--	8	--	N	--	1	--	K	6	--	--
133N092W15GCC	M. HUISMAN	150		--	6	1960	K	--	25	--	N	TR	VV	--	--	--	--	--
133N092W17ACC	E. MEHRER	150		--	4	1918	K	--	10	--	N	TR	--	--	K	5	9.5	2398
133N092W18BAA	BLICKENS DERFFER	101		58	4	1960	H	9	20	--	N	TR	VV	D	K	6	--	2412
133N092W19AAA	J. HUMMEL	--		--	4	--	U	--	13	10-67	O	TR	--	--	K	5	8.5	2440
133N092W20DDG	R. HIRNING	130		--	4	1916	U	--	20	--	N	TR	1	--	K	5	9.5	2490
133N092W23AAA	J. HUMMEL	22		--	4	--	U	--	20	10-67	O	TR	--	--	--	--	--	2395
133N092W24ABA1	R. SCHWEINFURTH	290		160	4	1924	H	--	130	--	N	TC	--	--	K	5	--	2423
133N092W24ABA2	R. SCHWEINFURTH	174		174	4	1963	H	--	165	--	N	TR	VV	--	K	6	--	--
133N092W248BB	MDT MILLGEELEV.	--		--	3	--	U	--	24	10-67	O	TC	--	--	K	5	7.0	2397
133N092W258BB	D. KIRBEL	100		--	4	--	K	--	60	--	N	TR	--	--	K	5	--	--
133N092W25DCD	D. KIRBEL	195		195	4	--	U	--	52	--	N	TR	VV	--	--	--	--	2505
133N092W27ABC	M. HUISMAN	243		199	4	1963	S	12	130	--	N	TR	3V	D	C	6	15.0	2540
133N092W270BB	M. KJOS	109		--	5	1953	U	--	100	--	N	ST	--	--	--	--	--	--
133N092W28AAA	M. HUISMAN	200		--	6	--	S	--	--	--	N	TR	VV	--	--	--	--	--
133N092W28CAA	E. KJOS	20		10	4	1960	U	--	16	--	N	SB	--	--	--	--	--	--
133N092W28DAE1	M. KJOS	35		0	60	1943	U	--	--	--	N	SB	VV	--	--	--	--	--
133N092W28DAE2	M. KJOS	60		44	4	1948	H	--	44	--	N	ST	1	--	C	5	--	--
133N092W28DAE3	M. KJOS	50		40	4	1953	S	--	34	--	N	ST	1	--	K	5	--	--
133N092W29CCG	F. VASEY	275		260	3	1944	K	--	120	--	N	TR	1	--	K	5	8.5	2572
133N092W30BCD2	BLICKENS DERFFER	22		21	24	--	U	--	14	11-67	O	TR	--	--	--	--	--	2460
133N092W30DAE	BLICKENS DERFFER	189		--	4	--	U	--	55	11-67	U	TR	--	--	--	--	--	2498
133N092W31AAD	E. IVERSOM	--		--	--	--	U	--	--	--	N	ST	--	--	K	5	--	2585
133N092W32CDD	L. VASEY	164		164	4	1935	U	--	116	10-67	O	ST	--	--	--	--	--	2570
133N092W348AD	E. SUTNIK	180		--	4	1959	U	--	12	10-67	O	ST	--	--	--	--	--	2550
133N092W34CDU	F. SUTNIK	290		290	6	1960	U	--	80	--	N	TR	VV	--	K	3	9.0	2590

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LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAILABLE	GN TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ALTI-TUDE OF LSO (FT.)
133N092W356AA	C. THORESON	203	157	4	1964	S	10	150	--	N	TR	VV	D	K	5	8.5	2585	
133N092W364CA	R. BERRETH	130	130	4	--	S	--	20	--	N	TR	--	--	K	4	7.0	--	
133N093W019AB	M. LARSON	367	--	4	1966	H	13	110	--	N	TR	VV	D	--	--	2412		
133N093W019C1	H. EMERY	100	--	4	--	K	2	F	--	N	TR	--	--	K	5	7.5	2373	
133N093W019C62	G. EMERY	70	--	4	--	H	--	F	--	N	TR	--	--	K	5	--	2377	
133N093W019CC	J. FIEDLER	82	--	--	--	K	--	F	--	N	TR	--	--	K	5	--	2373	
133N093W02AAA	C. HEINRICH	314	284	5	1964	H	12	35	--	N	TR	VV	D	K	5	--	2378	
133N093W02AAB	MOTT NO. 3	402	377	10	1960	P	70	50	--	N	TR	--	--	C	5	13.5	2381	
133N093W02AAU1	C. HEINRICH	145	104	2	1960	S	--	F	--	N	TR	VV	D	K	5	9.0	2375	
133N093W02AAU2	C. HEINRICH	27	--	6	1959	U	--	F	--	N	22	C	--	--	--	--	2375	
133N093W02ACH	C. LYMAN	140	--	--	--	H	--	--	--	N	TR	--	--	P	5	--	2385	
133N093W02RAD	H. KAMRATH	75	--	24	1966	H	--	--	--	N	--	5	--	P	5	--	2376	
133N093W03AAU	MOTT EQUITY	153	146	4	1966	N	20	15	--	N	TR	VV	D	--	--	--	2385	
133N093W03ACC1	R. TRAUTWEIN	22	--	30	--	S	--	17	11-67	U	TR	--	--	K	6	6.5	2385	
133N093W03ACC2	R. TRAUTWEIN	40	--	24	1967	H	--	17	11-67	U	TR	--	--	K	6	--	2385	
133N093W03ACD	R. TRAUTWEIN	92	--	4	--	U	--	80	--	N	TR	--	--	K	5	6.5	2410	
133N093W036CA	R. MARTIN	250	174	4	1963	S	100	+3	--	N	TR	VV	D	K	5	10.0	2396	
133N093W04ADU	R. MARTIN	73	73	4	1947	H	6	40	--	N	TR	1	--	K	5	--	2420	
133N093W04DAB	R. MARTIN	202	142	4	1961	S	--	F	--	N	TR	VV	D	--	--	--	2417	
133N093W05ACC	A. FRIEBES	142	--	1	1959	S	A	F	--	N	TR	VV	D	K	5	9.5	2400	
133N093W05ADU	A. FRIEBES	90	70	4	1951	H	9	30	--	N	TR	--	--	P	5	--	2452	
133N093W05BBD	USBR	116	--	--	1952	U	--	12	10-52	U	TR	1	G	--	--	--	2425	
133N093W05DDU	L. EVERHART	92	--	6	--	U	--	50	6-38	I	TR	--	--	--	--	--	2442	
133N093W05CCD	A. SCHAIBLE	207	167	1	1961	S	3	+2	--	N	TR	VV	D	C	5	10.0	2420	
133N093W07HCA	B. SCHAIBLE	270	--	4	1962	S	--	2	--	N	TR	3V	D	--	--	--	2442	
133N093W09AAA	J. KHEMICH	180	130	4	--	K	--	8	--	N	TR	--	--	K	5	--	2422	
133N093W10AAB	M. KOLLER	120	--	4	1920	K	--	9	--	N	TR	--	--	K	5	--	2420	
133N093W10ABH1	R. STEBEK	200	200	5	--	S	--	6	--	N	TR	--	--	K	5	7.5	2422	
133N093W10ABH2	R. STEBEK	187	187	5	1942	K	--	70	--	N	TR	--	--	K	5	--	2420	
133N093W10CCR	J. KHEMICH	60	60	4	--	U	--	36	11-67	U	TR	--	--	--	--	--	2450	
133N093W10CDD1	R. FIEDLER	140	140	3	1947	U	--	0	10-67	U	TR	--	--	--	--	--	2445	
133N093W10CDD2	R. FIEDLER	50	--	6	1965	K	--	20	--	N	TR	1V	--	K	5	--	2436	
133N093W11AAA	C. HEINRICH	180	180	5	--	S	--	20	--	N	TR	VV	--	K	5	--	2412	
133N093W11DDC	C. HEINRICH	82	42	4	1963	S	6	+5	--	N	TR	VV	D	K	5	9.0	2412	
133N093W12ABH	R. BERRETH	160	160	4	1927	K	--	25	--	N	TR	1	--	K	5	7.0	2405	
133N093W12BCC	M. MOSHER	260	--	--	--	H	--	--	--	N	TR	--	--	K	5	--	2403	
133N093W13AAC	R. BERRETH	30	30	24	--	S	--	10	--	N	TR	--	--	K	5	7.0	2415	
133N093W13CCC	MSMC 3711	300	--	--	1969	U	--	--	--	N	--	--	YC	--	--	--	2475	
133N093W14BBH	M. AUER	180	--	8	1909	H	--	170	--	N	TR	--	--	K	5	--	2435	
133N093W14CBB	C. GREEN	180	180	6	--	U	--	--	--	N	TR	--	--	--	--	--	2445	

LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAILABLE	QW TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ALTITUDE OF LSD (FT.)
133N093M14DUA	A. MEHRER	82		80	5	1915	K	---	17	---	N	TR	VV	---	K	5	---	2463
133N093M15ADD	C. GREEN	180		180	6	---	K	---	6	---	N	TK	---	---	K	5	7.0	2438
133N093M150AA	R. FIEDLER	30		---	18	1944	S	---	20	---	N	TR	VV	---	K	4	---	2430
133N093M17AA4	M. SALLE	---		---	---	---	S	---	48	10-67	U	ST	---	---	K	7	9.0	2485
133N093M18ABU	D. KAMKATH	197		---	4	---	U	---	30	---	N	TR	---	---	K	5	10.0	2475
133N093M18CDU	G. SCHMITT	80		36	4	1963	K	20	20	---	N	TR	VV	D	K	6	---	2488
133N093M21AAU1	R. SWINDLER	580		---	4	---	H	---	490	---	N	TC	VV	---	K	5	---	2550
133N093M21AAU2	R. SWINDLER	146		106	4	1964	S	12	65	---	N	TR	VV	D	K	5	---	2550
133N093M22DAA	K. REMINGTON	98		100	6	1911	K	---	35	---	N	TR	VV	---	K	6	7.5	2483
133N093M24CCG1	J. HARSCH	160		---	4	---	U	---	60	---	N	TR	---	---	---	---	---	2508
133N093M24CCG2	J. HARSCH	140	130	4	4	1968	K	6	67	---	N	TR	VV	D	---	---	---	2508
133N093M26AAA	NDSWC 3526	128	200	108	1	1967	U	---	59	11-67	N	TR	2V	GE	C	5	8.5	2505
133N093M26CBB1	S. LARSON	70		70	6	1957	S	---	50	---	N	ST	VV	---	K	5	7.5	2638
133N093M26CBB2	S. LARSON	218		---	4	1957	K	5	200	---	N	TK	VV	---	K	5	7.0	2640
133N093M27ABC	J. SWINDLER	90		90	4	---	K	---	20	---	N	---	---	---	K	5	7.0	2555
133N093M28AAB	A. SPRECHER	80		80	6	---	K	---	---	---	N	TR	---	---	K	4	---	2538
133N093M28BAC	A. SPRECHER	195		---	---	1950	S	---	---	---	N	TR	---	---	---	---	---	2640
133N093M30BAA	L. WILKON	90		---	4	1906	U	---	80	---	N	ST	---	---	---	---	---	2576
133N093M30CDC	C. DORJAHN	40		30	4	1967	K	8	18	---	N	ST	VV	D	K	4	---	2585
133N093M31AAA	C. DORJAHN	62		37	4	1964	S	30	9	---	N	SB	VV	D	K	4	8.5	2550
133N093M31BCC	A. MEHRER	82		52	4	1964	S	20	40	---	N	TK	VV	D	---	---	---	2550
133N093M32AAC	H. SPRFCHER	120		---	6	1964	K	---	15	---	N	ST	---	---	K	5	11.5	2623
133N093M34BCC1	J. SWINDLER	110		110	4	---	K	---	98	---	N	ST	---	---	K	4	8.5	2608
133N093M34BCC2	J. SWINDLER	100		100	4	1957	S	---	75	---	N	ST	VV	---	K	4	7.0	2590
133N093M34BCC3	J. SWINDLER	560		---	4	1959	H	---	---	---	N	TC	---	---	K	5	---	2604
133N093M34CBB1	M. SWINDLER	550		---	4	1949	H	---	530	---	N	TC	VV	---	K	5	---	2602
133N093M34CBB2	M. SWINDLER	120		74	4	1964	I	16	78	---	N	ST	VV	D	K	4	---	2602
133N093M34BCC	L. HALBETT	76		---	6	---	H	---	60	---	N	ST	---	---	K	4	---	2573
133N093M35BAC	J. SWINDLER	95		95	4	1950	S	---	60	---	N	TR	---	---	K	5	---	2550
133N093M36HAD	A. MEHRER	82		58	4	1964	S	30	35	---	N	ST	3V	D	K	5	10.5	2515
133N093M36CD1	NDSWC 3712	320		---	---	1969	U	---	---	---	N	---	---	Y	---	---	---	2576
133N094M01BBU	NDSWC 3717	340		---	---	1969	U	---	---	---	N	---	---	Y	---	---	---	2454
133N094M02ABA	NDSWC 3709	380		---	---	1969	U	---	---	---	N	---	---	Y	---	---	---	2470
133N094M02ABB1	P. CHRISTMAN	200		200	4	---	S	---	10	---	N	TR	---	---	K	5	7.0	2487
133N094M02ABB2	P. CHRISTMAN	210		210	4	---	H	---	---	---	N	TR	---	---	K	5	---	2490
133N094M03BBU	H. AUSTIN	157		117	4	1961	U	---	1	---	N	TR	1	D	---	---	---	2473
133N094M04AAA1	H. AUSTIN	60		---	6	1928	H	---	---	---	N	TR	---	---	K	6	---	2470
133N094M04AAA2	H. AUSTIN	90		---	---	---	S	---	---	---	N	TR	---	---	K	6	---	2470
133N094M04DAA1	C. WALLACE	20		---	24	---	H	---	10	---	N	TR	---	---	K	6	---	2465
133N094M04DAA2	C. WALLACE	165		129	1	1959	K	---	F	---	N	TR	VV	D	C	5	12.0	2465

LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAILABLE	QM TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ALTITUDE OF LSD (FT.)
133N095W21AAA	L. HAGBOM	65	--	--	2	1957	U	--	--	--	N	ST	--	--	--	--	--	2625
133N095W225AA1	L. HAGBOM	100	--	--	2	1962	H	--	75	--	N	ST	--	--	K	5	--	2630
133N095W225AA2	L. HAGBOM	100	--	--	2	1965	K	--	75	--	N	ST	--	--	K	5	8.5	--
133N095W225DD	L. HACKERSON	135	--	--	6	1910	S	--	--	--	N	TR	--	--	K	5	--	2670
133N095W24ADD1	G. OLSON	180	--	--	6	--	K	--	120	--	N	TR	--	--	--	--	--	2634
133N095W24ADD2	G. OLSON	210	--	--	4	1965	S	--	100	--	N	TR	--	--	K	5	--	2634
133N095W24BRC1	W. OLSON	92	62	4	4	1962	K	4	45	--	N	SB	VV	--	K	5	--	2634
133N095W24BRC7	W. OLSON	132	102	4	4	1966	K	8	55	--	N	TR	I D	--	K	5	--	2634
133N095W26AAD1	C. DONNER	130	--	--	6	1911	U	--	90	--	N	ST	--	--	--	--	--	2664
133N095W26AAD2	C. DONNER	161	--	--	4	1961	K	6	80	--	N	TR	I D	--	C	5	8.5	2659
133N095W26BRC	H. HUETHER	150	--	--	6	1913	H	--	30	--	N	TR	--	--	--	--	--	--
133N095W26BRC1	H. ANDERSON	50	50	18	--	--	H	--	30	--	N	ST	--	--	K	6	--	2670
133N095W26BRC2	H. ANDERSON	220	220	5	--	--	U	--	80	--	N	TR	--	--	--	--	--	2670
133N095W26BRC3	H. ANDERSON	530	530	4	--	--	H	--	300	--	N	FC	--	--	K	5	--	2670
133N095W29RCR	H. EBERLANDER	186	--	--	6	1913	U	--	--	--	N	TR	--	--	K	5	8.5	2660
133N095W30AAA	C. KIRSCHMANN	135	--	--	6	--	U	--	75	--	N	TR	--	--	--	--	--	--
133N095W32CCG1	C. WOLFF ESTATE	228	165	4	4	1928	H	--	75	--	N	TR	--	--	K	5	--	2695
133N095W32CCG2	C. WOLFF ESTATE	--	--	--	4	1958	S	--	75	--	N	TR	--	--	K	5	--	--
133N095W34AAD	L. HAGEN	230	--	--	--	1910	--	--	100	--	N	TR	--	--	K	6	7.0	--
133N096W02AAB	G. JACOBS	112	112	5	5	1954	S	--	60	--	N	TR	--	--	K	6	7.5	2630
133N096W02ABA	G. JACOBS	96	96	18	18	1947	K	--	55	--	N	ST	VV	--	K	5	--	2640
133N096W04ADD	L. THORSgard	105	--	--	6	1911	K	--	60	--	N	ST	--	--	K	6	6.5	2725
133N096W04BCC	L. STANG	300	--	--	6	--	S	--	250	--	N	TR	--	--	--	--	--	--
133N096W06DAH	W. ZENKER	212	210	5	5	1939	K	5	125	--	N	TR	VV	D	P	6	--	2770
133N096W06DDD	H. LIEN	125	125	6	6	1914	K	--	30	--	N	ST	--	--	K	4	--	--
133N096W08CD9	E. SHERR	150	150	6	6	1932	H	--	130	--	N	ST	P	--	K	5	4.0	2740
133N096W099CD	G. LIEN	200	200	6	6	1960	K	--	150	--	N	TR	--	--	K	5	--	2780
133N096W10AAB1	H. HOWLAND	140	--	--	6	1911	K	--	72	--	N	TR	--	--	K	4	5.5	2672
133N096W10AAB2	H. HOWLAND	181	157	4	4	1968	K	150	32	--	N	TR	VV	D	K	4	11.0	2672
133N096W10BDB	W. STANG	141	--	--	4	1961	S	--	50	--	N	TR	VV	D	C	6	7.5	2673
133N096W10BDC1	W. STANG	130	130	4	4	1912	S	--	100	--	N	TR	--	--	K	3	--	2695
133N096W10BDC2	W. STANG	130	130	4	4	1950	H	--	80	--	N	TR	--	--	K	3	--	--
133N096W10CCG	A. OLSEN	144	144	5	5	1910	H	--	100	--	N	TR	--	--	K	6	6.5	--
133N096W11AAD	A. JACOBS	91	56	4	4	1962	K	27	50	--	N	TR	--	D	K	4	--	2611
133N096W11BCT1	F. KIRSCHMANN	145	--	--	6	1925	Z	--	90	--	N	TR	VV	--	K	6	--	2678
133N096W11BCT2	F. KIRSCHMANN	140	117	4	4	1966	S	5	99	--	N	TR	3V	D	K	6	10.0	2678
133N096W18AAA	E. SHERR	130	130	6	6	1928	U	--	--	--	N	TR	--	--	--	--	--	2710
133N096W18DD9	H. WOLFF	57	--	--	12	--	U	--	53	11-67	O	TR	--	--	--	--	--	2685
133N096W18DD92	H. WOLFF	70	--	--	12	--	U	--	30	11-67	O	TR	--	--	--	--	--	2685
133N096W21AB6	L. SWINDLER	15	0	60	60	1919	U	--	7	11-67	U	SB	--	--	--	--	--	2700

LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAILABLE	OW TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ALTITUDE OF LSD (FT.)
133N096W22DDC1	B. HUETHER	50	--	24	1909	S	--	25	--	--	N	ST	1	--	--	--	--	--
133N096W22DDC2	B. HUETHER	70	47	4	1960	H	15	38	--	--	N	TR	1	D	--	--	--	2703
133N096W22DDC3	B. HUETHER	190	--	4	--	K	--	120	--	--	N	TR	--	--	K	5	--	--
133N096W23AB	C. HUETHER	180	--	5	1930	U	--	150	--	--	N	TR	--	--	--	--	--	--
133N096W24AB1	E. KIRSCHMANN	258	170	6	1927	U	--	68	--	--	N	TR	--	--	--	--	--	--
133N096W24AB2	E. KIRSCHMANN	62	62	16	1942	H	--	--	--	--	N	ST	--	--	K	6	--	2720
133N096W24CDC	W. HUETHER	164	164	5	1951	U	--	140	--	--	N	TR	VV	--	--	--	--	--
133N096W25BBB	R. HUETHER	180	--	5	1924	K	--	48	--	--	N	TR	1	--	K	6	5.0	2520
133N096W26CBB	C. HOFFER	175	--	5	--	U	--	100	--	--	N	TR	--	--	--	--	--	--
133N096W26DBB	E. HUETHER, JR.	90	90	5	--	U	--	42	--	--	N	TR	1	--	K	7	5.0	--
133N096W28ADD	C. KIRSCHMANN	165	--	6	1917	U	--	50	--	--	N	TR	1	--	--	--	--	--
133N096W28DAA1	C. KIRSCHMANN	154	--	4	1953	H	--	40	--	--	N	TR	VV	--	K	5	--	2708
133N096W28DAA2	C. KIRSCHMANN	71	51	4	1960	S	6	30	--	--	N	TR	1	D	C	6	8.5	2696
133N096W28DAA3	C. KIRSCHMANN	97	60	4	1966	H	5	60	--	--	N	TR	VV	--	K	5	--	2708
133N096W29CCA	R. JORSTAD	24	0	24	--	U	--	14	11-67	--	D	TR	--	--	--	--	--	2680
133N096W30BAA	P. URLACHER	35	35	24	1954	S	--	28	--	--	N	TR	--	--	K	4	2.0	--
133N096W30BAB1	P. URLACHER	35	35	24	1956	S	--	20	--	--	N	TR	--	--	K	5	5.5	--
133N096W30BAB2	P. URLACHER	25	25	24	1964	H	--	20	--	--	N	TR	1	--	K	5	--	--
133N096W30BAB3	P. URLACHER	47	67	60	4	1966	H	3	15	--	N	TR	--	D	K	5	--	2667
133N096W30CAA1	P. URLACHER	20	0	60	1917	U	--	14	11-67	--	O	TR	--	--	K	5	4.0	2650
133N096W30CAA2	P. URLACHER	22	--	--	1936	U	--	--	--	--	N	TR	--	--	--	--	--	--
133N096W33DDA	F. RIEBER	22	22	6	1945	H	--	10	--	--	N	TR	VV	--	K	5	--	--
133N096W33DDU	F. RIEBER	50	50	18	1942	U	--	24	--	--	N	TR	VV	--	K	5	4.0	--
133N096W34ACB	J. KIRSCHMANN	150	150	5	--	K	--	130	--	--	N	TR	--	--	K	5	--	--
133N096W35BAA	M. NUTZ	8	--	48	1938	U	--	4	11-67	--	O	TR	--	--	--	--	--	2690
133N097M04BBU1	D. OLSON	45	--	5	1946	H	5	30	--	--	N	ST	--	D	--	--	--	2732
133N097M04BBU2	D. OLSON	90	--	6	--	U	--	20	--	--	N	TR	--	--	--	--	--	--
133N097M05DAA	G. OTT	90	80	5	1961	U	--	5	12-67	--	I	TR	VV	D	K	4	6.0	2705
133N097M06AAA	A. RUSTAN	52	--	18	--	K	--	12	--	--	N	TR	--	--	K	4	--	2730
133N097M065AA1	G. RUSTAN	60	60	6	1910	S	--	20	--	--	N	TR	VV	--	K	4	6.5	--
133N097M068AA2	G. RUSTAN	65	65	5	1951	K	8	43	--	--	N	TR	VV	D	K	4	--	2748
133N097M08AC11	W. BETTS	50	50	16	1912	U	--	38	--	--	N	TR	--	--	K	6	4.0	2710
133N097M08AC2	W. BETTS	80	80	6	1957	H	--	40	--	--	N	TR	P	--	K	5	--	--
133N097M09AAA1	NDSMC 3531	81	260	78	1	1967	U	4	12-67	--	M	TR	1V	Y	C	4	8.5	2690
133N097M09AAA2	NDSMC 3531	221	260	218	1	1967	U	7	12-67	--	M	TR	2V	Y	C	5	7.0	2690
133N097M10RCD1	E. RUSTAN	43	43	18	1943	S	--	8	--	--	N	TR	1	--	K	7	--	2687
133N097M10RCD2	E. RUSTAN	75	68	5	1946	H	5	20	--	--	N	TR	VV	--	P	5	--	2687
133N097M10RCD3	E. RUSTAN	43	43	18	1948	U	--	8	--	--	N	TR	1	--	--	--	--	--
133N097M10RCD4	E. RUSTAN	95	70	4	1948	H	--	71	--	--	N	TR	VV	D	K	5	11.0	2687
133N097M10LDA1	G. OTT	21	0	48	1904	U	--	18	12-67	--	U	TR	VV	--	--	--	--	2685

LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAILABLE	GW TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ALTITUDE OF LSO (FT.)
133N097W10CDA2	G.OTT	28		28	18	--	U	--	--	--	N	TK	VV	--	K	4	6.0	2686
133N097W11CDC	K. HEIDT	56		56	18	1926	K	--	30	--	N	TR	--	--	K	4	--	--
133N097W11DDA1	R. MULTHAUP	38		38	6	1927	U	--	29	12-67	U	ST	--	--	K	4	--	2707
133N097W11DDA2	R. MULTHAUP	102		85	4	1967	K	--	38	--	N	TR	LV	D	C	5	10.0	2707
133N097W12DDO1	R. JORSTAD	120		120	6	1910	S	--	107	--	N	TR	--	--	K	5	7.0	--
133N097W12DDU2	R. JORSTAD	223		183	4	1967	H	--	119	--	N	TR	F	--	K	5	--	--
133N097W14C8C1	J. PAUL	34		0	54	1908	S	--	16	8-67	D	TR	--	--	K	4	--	2681
133N097W14C8C2	J. PAUL	41		21	4	1962	K	6	8	--	N	TR	1	D	K	4	--	2688
133N097W14DA1	L. FARBER	16		0	72	1909	S	--	10	--	N	ST	--	--	K	4	--	--
133N097W14DA2	L. FARBER	20		20	4	1945	H	--	15	--	N	ST	--	--	K	4	--	--
133N097W15A8B1	G.OTT	24		24	6	1949	H	--	12	--	N	ST	VV	--	K	4	--	--
133N097W15A8B2	G.OTT	28		28	18	1960	S	--	14	--	N	ST	VV	--	K	5	6.5	--
133N097W18BUC	A. JALBERT	50		--	24	--	S	--	35	--	N	ST	--	--	K	5	--	2760
133N097W18DAC	T. DILSE	74		0	24	--	U	--	62	12-67	O	TR	--	--	K	5	5.5	2760
133N097W19BB0	D. JALBERT	135		--	4	1959	H	--	--	--	N	TR	--	--	P	6	--	2765
133N097W20ACB	M. BOHNHOFF	90		--	18	1923	U	--	58	12-67	O	TK	--	--	K	6	6.0	2785
133N097W21AAB	L. THOMAS	60		60	5	1949	S	--	40	--	N	ST	--	--	K	4	--	2720
133N097W22BCH	L. THOMAS	117		--	4	1964	K	--	87	--	N	TK	--	--	K	5	--	--
133N097W22DDA	G. REDETZKE	90		90	6	--	S	--	40	--	N	TR	--	--	K	4	6.0	--
133N097W23BGD	J. PAUL	40		--	4	--	S	--	30	--	N	TR	--	--	--	--	--	--
133N097W23CCC1	G. REDETZKE	116		75	6	1914	S	--	55	--	N	TK	VV	--	K	4	6.0	--
133N097W23CCC2	G. REDETZKE	75		75	6	1948	H	--	55	--	N	TK	--	--	K	4	--	--
133N097W24ACC	G. STOCKERT	40		--	18	1923	U	--	27	12-67	O	ST	1	--	K	3	5.5	2680
133N097W26AAA	D. SCHRÖDER	114		--	5	1912	U	--	45	--	N	TR	--	--	--	--	--	--
133N097W27DDA	G. REDETZKE	99		--	6	--	U	--	44	12-67	O	TR	--	--	--	--	--	2750
133N097W28ADA	G. URLACHER	60		--	18	1931	S	--	55	--	N	TK	--	--	K	4	6.5	--
133N097W28BGB	M. HOLTZER	188		--	6	1914	U	--	100	--	N	TR	--	--	K	6	6.0	2780
133N097W29CCC	E. DECKER	42		42	6	1966	K	--	20	--	N	TR	--	--	K	5	--	2695
133N097W30BBB	R. JALBERT	60		--	48	--	H	--	50	--	N	TR	--	--	P	5	--	2760
133N097W30CCB1	A. KRENZ	50		4	42	1906	S	--	35	--	N	TR	--	--	K	5	--	2735
133N097W30CCB2	A. KRENZ	50		50	18	1957	H	--	35	--	N	TR	--	--	K	5	--	2735
133N097W30CC1	E. NESTER	112		112	5	1950	U	2	52	--	N	TR	VV	D	--	--	--	2736
133N097W30CC2	E. NESTER	63		--	10	1952	U	--	20	--	N	TR	--	--	--	--	--	2736
133N097W30CC3	E. NESTER	67		63	4	1967	K	--	20	--	N	TR	--	--	X	5	--	--
133N097W32BBA	E. NESTER	85		80	6	1950	U	--	35	--	N	TR	--	--	K	6	7.5	2700
133N097W32DCC1	C. TEWS	35		--	24	1908	U	--	27	--	N	TR	--	--	--	--	--	2700
133N097W32DCC2	C. TEWS	94		--	4	1952	S	--	44	--	N	TR	--	--	--	--	--	2700
133N097W32DCC3	C. TEWS	95		75	4	1967	K	4	50	--	N	TK	P	D	C	6	10.0	2699
133N097W34BBB	NDSMC 3556	674	1000	668	2	1967	U	--	159	12-67	M	L	LV	Y	C	6	8.5	2733
133N097W34CCB	A. RETTINGER	40		--	4	--	U	--	24	12-67	O	TR	--	--	--	--	--	2695

LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAILABLE	OW TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ALTITUDE OF LSD (FT.)
134N091W01CDC	N.HERNER	196	--	3	1954	K	--	110	--	N	TR	--	--	K	5	--	2433	
134N091W01DDC	A.KALLIS	311	255	4	1949	K	--	--	--	N	TR	--	--	K	5	--	2490	
134N091W02ADA	M.RUFF	211	--	4	1957	K	--	180	--	N	TR	--	--	K	5	12.0	2455	
134N091W02BBB1	J.HABERSTROH	260	--	4	--	S	3	220	--	N	TR	--	--	K	5	10.5	2490	
134N091W02BBB2	J.HABERSTROH	477	432	4	1968	H	12	210	--	N	TR	--	Y	K	6	--	2490	
134N091W03HAB	A.FIEDLER	80	80	6	1920	S	3	50	--	N	ST	--	--	--	--	--	2483	
134N091W04CDC	A.FIEDLER	25	0	36	--	U	--	9	6-68	O	TR	--	--	--	--	--	2420	
134N091W06DDC1	H.REICH	300	--	5	--	S	--	--	--	N	TR	--	--	--	--	--	2418	
134N091W06DDC2	H.REICH	474	414	4	1963	H	3	56	--	N	TR	--	D	C	6	10.5	2418	
134N091W10DDC	E.LIMHOFF	160	160	6	--	K	--	60	--	N	TR	--	--	K	5	--	2426	
134N091W11ADA	W.TBLINGS	151	--	4	--	U	--	105	6-68	O	TR	--	--	K	7	9.5	2415	
134N091W14DDA	W.KALLIS	120	--	4	1918	K	--	80	--	N	TR	--	--	K	6	--	2370	
134N091W20CCD	S.KUEHN	200	--	4	1925	K	--	100	--	N	TR	--	--	K	5	9.5	2470	
134N091W21HCR	E.WEICKUM	80	80	4	1952	K	--	12	--	N	TR	--	--	K	5	--	2338	
134N091W22ADD	E.GROSZ	180	--	6	--	K	--	150	--	N	TR	--	--	K	6	--	2378	
134N091W23BAA	A.GROSZ	365	320	4	1968	H	10	180	--	N	TR	--	D	--	--	--	2450	
134N091W24DAA	A.KALLIS	265	265	4	1958	K	7	100	--	N	TR	--	--	K	5	--	2397	
134N091W28BAA	S.KUEHN	71	25	4	1961	S	5	30	--	N	TR	--	D	K	4	9.5	2350	
134N091W29BAA	S.KUEHN	117	--	--	--	S	3	35	--	N	TR	--	--	K	4	9.5	2436	
134N091W30AAD	L.ROLL	160	--	6	1925	K	--	--	--	N	TR	--	--	K	5	--	2460	
134N091W30DAC	L.ROLL	81	42	4	1961	S	36	15	--	N	SB	--	D	--	--	--	2417	
134N091W31DCD	G.HEINLE	40	--	18	--	K	--	20	--	N	ST	--	--	K	5	--	2438	
134N091W32CCC	NDSWC 3527	478	980	458	1	1967	U	--	46	12-67	K	TR	2V	Y	C	5	10.0	2378
134N091W34BDD	M.PASTIAN	56	--	6	--	K	--	40	--	N	TR	--	--	K	3	--	2387	
134N091W34DDD	NDSWC 3671	112	200	106	1	1968	U	--	67	11-68	M	TR	1V	GE	C	4	9.0	2373
134N092W02BDC	R.HIRSCH	112	33	4	1962	S	15	--	--	N	TR	--	--	K	5	--	2431	
134N092W02CCC1	R.HIRSCH	111	91	4	1961	K	12	45	--	N	TR	--	--	--	--	--	2438	
134N092W02CCC2	R.HIRSCH	131	48	4	1961	K	13	70	--	N	TR	--	--	C	5	10.0	2438	
134N092W04ADD	P.WOLF	73	--	8	--	U	--	38	6-68	O	TR	--	--	--	--	--	2425	
134N092W04DDD	A.WOLF	40	--	4	--	S	--	9	6-68	O	ST	--	--	K	4	11.5	2454	
134N092W06DDD	O.SVIHOVEC	380	--	6	--	U	--	35	--	N	TR	--	--	K	5	9.5	2485	
134N092W10DAD	L.BIEBER	15	0	36	--	U	--	10	6-68	O	ST	--	--	--	--	--	2430	
134N092W12DDD	I.ZENTNER	47	44	6	1962	K	--	21	--	N	TR	--	--	K	5	--	2373	
134N092W13BAB	E.STIEG	72	40	5	1910	K	--	20	--	N	TR	--	--	K	5	9.5	2396	
134N092W13DDA	J.HERNER	240	80	4	--	K	7	60	--	N	TR	--	--	K	5	--	2446	
134N092W14DCC	H.VAN LISHOUT	80	80	4	1916	K	5	60	--	N	TR	1	--	K	5	--	2473	
134N092W15BCB	E.BIEBER	130	120	5	1957	U	--	65	--	N	TR	--	--	K	6	11.0	2467	
134N092W17ABA	R.HIRSCH	90	--	18	--	U	--	60	--	N	TR	--	--	--	--	--	2490	
134N092W18DCC	J.HUMMEL	175	165	4	1961	K	5	90	--	N	TR	--	--	K	5	--	2465	
134N092W20RAA	A.HUMMEL	75	--	6	1920	K	--	20	--	N	TR	--	--	K	5	--	2460	

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LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER REARING MATERIAL	LOG AVAIL-ABLE	OW TYPE	SPE-CIFIC CON-DUCTANCE	TEM-PERATURE (°C)	ALTI-TUDE-OF LSD (FT.)
134N092W228CC	E. BIEBER	100		90	4	1956	K	--	45	--	N	TR	VV	--	K	6	--	2447
134N092W248AA	J. KUNTZ	250	--	4	4	1930	K	--	100	--	N	TR	--	--	K	5	--	2461
134N092W25GDC	L. PEKAS	132	--	6	6	1932	K	--	70	--	N	TR	--	--	K	4	10.0	2402
134N092W268AB	H. EBERT	151	--	6	--	--	K	--	70	--	N	TR	VV	--	K	4	--	2432
134N092W288BB	GILBREATH TRUST	38	--	24	--	--	U	--	11	6-68	O	TR	--	--	K	6	9.0	2420
134N092W28DCA1	C. BRACKEL	80		60	6	--	S	1	40	--	N	TR	--	--	K	4	11.0	2435
134N092W28DCA2	C. BRACKEL	60		50	6	1949	H	3	--	--	N	TR	VV	--	K	4	--	2436
134N092W308RA	A. LUTZ	16		0	60	--	U	--	4	6-68	D	TR	--	--	--	--	--	2430
134N092W31CCD	GILBREATH TRUST	280		6	--	--	S	--	--	--	N	TR	--	--	K	6	--	2370
134N092W32ADA	H. BRACKEL	135		120	6	--	K	6	30	--	N	TR	--	--	K	5	--	2443
134N092W328BB	A. STERN	21		--	20	--	S	--	12	--	N	TR	--	--	K	4	10.0	2430
134N092W330D01	E. KIRSCH	60		--	5	--	S	3	42	--	N	ST	VV	--	K	6	--	--
134N092W330D02	E. KIRSCH	375		375	4	1965	K	5	30	--	N	TR	VV	--	K	5	--	--
134N092W340CC	J. VAN LISHOUT	372		270	4	1962	K	5	50	--	N	TR	VV	--	K	5	--	--
134N092W340CC	NDSMC 3670	174	200	168	1	1968	U	--	100	11-68	M	TR	IV GE	C	5	8.5	2434	
134N092W350DD	A. KIRSCH	40		36	16	1953	K	4	10	--	N	TR	--	--	K	4	--	--
134N093W01CCD	NDSMC 3554	200		--	5	1967	U	--	--	--	N	--	--	Y	--	--	--	2494
134N093W02AAB	C. SCHWARTZ	180		--	4	1945	K	--	170	--	N	ST	VV	--	K	6	--	2583
134N093W04ADA	E. SALSCHIEDER	286		--	4	1908	U	--	160	9-67	O	TR	VV	--	--	--	--	2565
134N093W06ADC	J. SRB	385		--	3	--	K	--	200	--	N	TR	--	--	K	5	--	2555
134N093W08CDC	H. PEKAS	75		--	6	1947	U	--	--	--	N	ST	--	--	--	--	--	2514
134N093W088BB	H. PEKAS	61	173	44	4	1964	S	21	41	--	N	TR	1 D	C	6	9.0	2528	
134N093W10ADD1	H. ZOELLER	340		100	3	1936	S	--	80	--	N	TR	P	--	K	5	--	2545
134N093W10ADD2	H. ZOELLER	80		80	6	1944	H	--	66	--	N	ST	P	--	--	--	--	2560
134N093W10ADA	H. LUTZ	154		--	4	--	S	--	146	--	N	TR	P	--	K	6	--	2550
134N093W12CC1	D. FRIES	75		50	4	1964	K	5	23	--	N	TR	--	D	K	6	--	2494
134N093W12CC2	D. FRIES	60		35	4	1967	S	10	+1	--	N	TR	1	--	C	6	--	2494
134N093W138CB1	H. FRIES	345		--	3	--	S	--	125	--	N	TR	VV	--	K	5	12.0	2515
134N093W138CB2	H. FRIES	102		42	4	1963	H	9	39	--	N	TR	1 D	K	6	--	--	2511
134N093W140DD1	H. LUTZ	54		54	6	1946	H	2	18	--	N	ST	VV	D	--	--	--	2500
134N093W140DD2	F. LUTZ	200		180	6	1956	S	4	20	--	N	TR	VV	--	--	--	--	2500
134N093W17ABB	H. PEKAS	150		130	5	1958	K	--	70	--	N	TR	--	--	K	5	--	2512
134N093W17CCD	A. SALSCHIEDER	130		--	6	--	K	--	50	--	N	TR	--	--	K	6	--	2490
134N093W170DD1	A. SALSCHIEDER	64		--	6	--	U	--	18	8-67	O	TR	--	--	--	--	--	2520
134N093W170DD2	A. SALSCHIEDER	61		45	4	1954	S	8	25	--	N	TR	2V D	K	4	9.5	2520	
134N093W188BA	C. PEKAS	35		35	24	1913	S	--	28	--	N	TR	1	--	--	--	--	2490
134N093W188BB1	C. PEKAS	52		52	6	1910	S	--	36	--	N	TR	1	--	K	5	--	2493
134N093W188BB2	C. PEKAS	53		53	6	1953	H	--	30	--	N	TR	1	--	K	5	--	2493
134N093W190CC	O. SCHAIBLE	550		--	6	--	H	--	90	--	N	TC	--	--	K	5	--	2443
134N093W190CD	O. SCHAIBLE	0	300	--	--	1962	U	--	3	--	N	TR	3V D	--	--	--	--	2419

LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAILABLE	GW TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ALTI-TUDE OF LSO (FT.)
134N093M21CBB	E. HEINRICH	125		--	4	--	K	--	20	--	N	TR	--	--	K	5	--	2443
134N093M23ADD	NDSWC 3710	263	320	257	1	1969	U	--	130	6-69	M	TR	VV	Y	C	5	9.5	2510
134N093M24AAD1	J. HUMMEL	470		--	4	1964	M	--	270	--	N	TC	--	--	K	5	--	2489
134N093M24AAD2	J. HUMMEL	50		--	4	1964	S	--	--	--	N	ST	--	--	K	5	--	2488
134N093M24BBU	BLICKENSERFER	41		--	6	--	U	--	6	9-67	D	ST	--	--	--	--	--	2480
134N093M24DCC	F. LUTZ	38		--	12	--	U	--	24	9-67	D	ST	--	--	K	5	--	2455
134N093M26BAB	H. LUCHSINGER	72		--	24	--	K	--	50	--	N	TR	--	--	--	--	--	2481
134N093M26CDD	P. DAUBENBAUER	250		--	4	--	K	--	40	--	N	TR	--	--	--	--	--	2421
134N093M28AAD1	C. HEINRICH	270		210	4	1968	S	10	20	--	N	TR	--	--	--	--	--	2440
134N093M28AAD2	C. HEINRICH	90		0	--	1964	U	--	--	--	N	TR	--	D	--	--	--	2440
134N093M28ADA	V. HEINRICH	345		--	6	1945	K	--	18	--	N	TR	J	--	K	5	--	2443
134N093M31BAB1	M. GREFF	175		--	3	--	K	0	F	--	N	TR	--	--	K	5	--	2400
134N093M31BAB2	M. GREFF	35		0	4	1963	H	4	15	--	N	22	S	D	K	5	--	2398
134N093M32AAB	J. BRUSSEAU	142		124	4	1964	K	25	40	--	N	TR	2V	D	K	5	--	2433
134N093M32CAA	USBR	84		0	--	1952	U	--	7	9-52	D	21	7S	G	--	--	--	2393
134N093M32CAD	USBR	83		0	--	1952	U	--	7	9-52	D	TR	V	G	--	--	--	2393
134N093M32CCB	C. HEINRICH	150		100	1	1962	S	5	F	--	N	TR	VV	D	K	5	9.5	2412
134N093M32CC1	USBR	74		0	--	1952	U	--	12	+14	10-52	U	TR	V	G	--	--	2388
134N093M32CC2	USBR	118		0	--	1952	U	--	12	10-52	D	TR	V	G	--	--	--	2426
134N093M32CC3	USBR	75		0	--	1952	U	15	+21	9-58	D	TR	V	G	--	--	--	2383
134N093M32CDD	USBR	83		0	--	1952	U	--	15	10-52	D	TR	V	G	--	--	--	2393
134N093M32DAD	USBR	80		0	--	1964	U	--	19	12-64	D	TR	V	G	--	--	--	2392
134N093M32DBB	USBR	123		0	--	1952	U	--	23	9-52	D	TR	V	G	--	--	--	2430
134N093M33ACD	BLICKENSERFER	200		--	2	--	S	6	F	--	N	TR	--	--	K	5	--	2400
134N093M35ACD	B. PARSON	380		350	4	1968	H	12	112	--	N	TR	--	D	--	--	--	2412
134N093M350B0	MOTT NO. 2	421	432	401	8	1947	P	100	121	--	N	TR	VV	D	C	5	--	2422
134N093M35UCD	MOTT NO. 1	378	384	356	11	1928	P	100	100	--	N	TR	VV	D	C	5	11.0	2380
134N093M36AAC1	T. BERTSCH	30		--	4	--	H	--	--	--	N	TR	--	--	--	--	--	2410
134N093M36AAC2	T. BERTSCH	12		--	32	--	S	--	9	--	N	TR	VV	--	K	6	--	2412
134N093M36DCC	HTNGR. CO. FAIR	151		131	4	1966	S	3	50	--	N	TR	2V	D	--	--	--	2408
134N094W03DCC	W. GIDON	80		--	5	1956	H	--	37	--	N	SB	--	--	--	--	--	2517
134N094W04DCD1	A. IVEY	38		38	4	1952	H	--	20	--	N	SB	VV	--	--	--	--	2476
134N094W04DCD2	A. IVEY	52		17	4	1961	S	33	20	--	N	SB	VV	D	K	5	--	2479
134N094W06DD01	F. KLEIN	18		0	48	1925	H	--	--	--	N	SB	VV	--	--	--	--	2473
134N094W06DD02	F. KLEIN	30		--	6	--	S	--	6	--	N	SB	--	--	K	6	9.5	2472
134N094W08DCC	NDSWC 3629	223	1760	217	1	1968	U	--	12	10-68	M	TR	1V	Y	C	5	9.0	2465
134N094W10DCD1	P. CANDRIAN, JR.	120		100	6	1925	S	--	90	--	N	ST	VV	--	--	--	--	2535
134N094W10DCD2	P. CANDRIAN, JR.	120		90	6	1951	K	--	80	--	N	ST	VV	--	K	6	--	2530
134N094W12DAA	A. TOLLEFSON	90		--	--	1964	U	0	--	--	N	--	--	D	--	--	--	2480
134N094W12DAB	A. TOLLEFSON	49		--	--	1964	U	--	--	--	N	TR	VV	--	--	--	--	2475

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LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER-BEARING MATERIAL	LONG-AVAIL-	QW TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ALTITUDE OF LSD (FT.)
134N094W120CD	A.TOLLEFSON	160	--	--	--	1964	U	--	F	--	N	TR	VV	D	--	--	--	2448
134N094W120DA1	A.TOLLEFSON	300	240	4	4	1948	K	--	18	--	N	TR	VV	--	K	5	--	2472
134N094W120DA2	A.TOLLEFSON	90	--	--	--	1964	U	--	--	--	N	TR	2V	--	--	--	--	2473
134N094W120DD	A.TOLLEFSON	60	--	--	--	1964	U	--	1	--	N	TR	VV	--	--	--	--	2448
134N094W17AAA1	G.LARSON	35	25	6	6	1928	H	--	20	--	N	SB	VV	--	--	--	--	2466
134N094W17AAA2	G.LARSON	50	26	4	4	1961	S	16	15	--	N	SB	VV	D	K	5	--	2466
134N094W20AAD	C.BINSTOCK	170	170	6	6	1957	K	--	70	--	N	TR	1	--	K	5	--	2460
134N094W20CDU	A.RADACH	150	130	4	--	--	U	--	15	--	N	TR	--	--	--	--	--	2450
134N094W20CDU	A.RADACH	150	--	5	5	1947	H	--	27	--	N	TR	--	--	K	5	--	2465
134N094W20DBD	A.ROGNE	100	120	5	5	1955	S	--	9	6-68	U	TR	VV	--	K	5	12.0	2440
134N094W20DCD	A.ROGNE	80	70	4	4	1950	H	1	30	--	N	TR	VV	--	K	6	--	2450
134N094W24CDC	D.SCHAIBLE	141	99	1	1	1961	S	--	F	--	N	TR	VV	D	K	5	9.5	2420
134N094W27BBD	MDE ESTATE	260	215	1	1	1962	S	3	F	--	N	TR	VV	D	K	5	10.0	2420
134N094W27DAB	B.SCHAIBLE	202	142	1	1	1962	S	5	+2	--	N	TR	VV	--	K	5	9.5	2426
134N094W28ADC	L.KOUBA	150	150	1	1	1961	S	10	F	--	N	TR	VV	D	--	--	--	2438
134N094W28BCB1	L.KOUBA	39	0	72	--	--	U	--	20	9-67	D	TR	--	--	--	--	--	2450
134N094W28BCB2	L.KOUBA	142	100	6	6	1963	U	5	10	--	N	TR	VV	--	K	5	11.0	2450
134N094W28BDC	L.KOUBA	181	154	1	1	1963	S	A	+1	--	N	TR	VV	D	--	--	--	2452
134N094W28CAD	L.KOUBA	171	136	4	4	1964	S	1	+1	--	N	TR	VV	--	K	5	--	2443
134N094W32AAA1	MDE ESTATE	300	330	4	4	1959	H	25	55	--	N	TR	VV	U	C	5	11.5	2465
134N094W32AAA2	MDE ESTATE	200	--	4	4	1963	H	500	60	--	N	TR	VV	--	K	5	--	2465
134N094W32AAA3	MDE ESTATE	110	110	3	3	1964	S	--	5	--	N	TR	VV	--	--	--	--	2465
134N094W33BAA	MDE ESTATE	200	150	4	--	--	S	--	8	--	N	TR	V	--	--	--	--	2475
134N094W34UCD1	T.RADASH	50	--	6	6	1947	S	--	R	--	N	TR	VV	--	--	--	--	2445
134N094W34UCD2	T.RADASH	150	150	6	6	1960	H	--	F	--	N	TR	--	--	--	--	--	2445
134N094W35CAC	NDGS A-1	115	--	--	--	1969	U	--	--	--	N	--	--	G	--	--	--	2535
134N094W35DBB	NDGS F-1	54	--	--	--	1969	U	--	--	--	N	--	--	G	--	--	--	2508
134N095W01CBB	S.BINSTOCK	50	30	4	4	1963	U	15	36	--	N	SB	VV	D	--	--	--	2500
134N095W01CCD	S.BINSTOCK	80	0	7	7	1963	U	0	--	--	N	SB	--	D	--	--	--	2500
134N095W01DDA	S.BINSTOCK	30	--	4	4	1939	H	--	25	--	N	SB	VV	--	K	5	--	2485
134N095W03BAB1	V.GREFF	63	71	32	4	1959	S	11	31	--	N	ST	VV	D	K	4	--	2535
134N095W03BAB2	V.GREFF	60	31	4	4	1962	H	24	20	--	N	ST	VV	--	K	4	--	2535
134N095W03CCD	V.GREFF	118	55	1	1	1961	S	7	+9	--	N	TR	VV	D	C	5	9.5	2460
134N095W04DCD	T.UHLER	40	40	6	6	1953	K	3	--	--	N	TR	VV	--	K	6	9.5	2468
134N095W09DCA	R.WAGGONER	86	--	4	4	1961	H	--	36	--	N	TR	VV	--	K	6	--	2502
134N095W10CCB1	W.BOLTE	140	80	24	24	1956	U	--	38	6-68	U	TR	--	--	--	--	--	2520
134N095W10CCB2	W.BOLTE	172	112	4	4	1961	S	18	40	--	N	TR	VV	D	K	4	--	2512
134N095W13ACA1	H.BACH	30	--	12	--	--	U	--	15	9-66	M	ST	--	--	--	--	--	2463
134N095W13ACA2	A.ANTON	233	--	4	--	--	H	--	+1	--	N	TR	--	--	--	--	--	2463
134N095W13ACC	E.HONEYMAN	167	167	4	4	1959	H	27	10	--	N	--	--	--	--	--	--	2470

LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAILABLE	QW TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ALTITUDE OF LSD (FT.)
134N095W1JACD	REGENT NO.1	546	--	--	8	1936	P	35	57	--	N	C	VV	D	C	6	--	2465
134N095W13BD0	D.BRUGAMYER	90	--	--	6	--	H	--	20	--	N	TR	--	--	--	--	--	2475
134N095W13CD0	REGENT NO.2	900	--	--	8	1950	P	22	--	--	N	CL	VV	--	--	--	--	2493
134N095W13CDD1	R.HUFFMAN	123	--	88	4	1963	S	12	60	--	N	TR	VV	D	K	5	--	2493
134N095W13CD02	R.HUFFMAN	67	--	47	4	1964	H	10	53	--	N	TR	VV	--	K	6	--	2490
134N095W14AB0	C.KUNZE	130	--	105	4	1963	H	16	50	--	N	TR	VV	D	K	5	--	2486
134N095W14DAA	E.HONEYMAN	130	130	4	4	1963	S	5	120	--	N	TR	VV	--	--	--	--	2504
134N095W20AAA	NDSWC 3530	161	220	158	1	1967	U	--	79	12-67	M	TR	1V	Y	C	4	10.0	2572
134N095W23AAA	J.LUTZ	80	--	--	6	--	H	--	--	--	N	TR	VV	--	K	5	11.0	2517
134N095W23AAC	J.LUTZ	142	--	40	4	1961	S	5	25	--	N	TR	VV	D	K	5	--	2480
134N095W26CBB	C.DOE	120	--	--	6	--	S	--	80	--	N	TR	1	--	K	5	--	2493
134N095W26CBC	C.DOE	70	--	--	6	--	H	--	4	--	N	TR	VV	--	K	5	--	2490
134N095W26DAD	R.ANDERSON	410	--	395	4	1967	K	21	180	--	N	TR	VV	D	K	5	--	2540
134N095W30GCC	C.WOODRUFF	132	--	77	4	1961	K	13	32	--	N	TR	VV	D	K	5	--	2544
134N095W33CCD1	E.NETZER	225	--	225	4	1956	S	--	125	--	N	TR	--	--	K	5	--	--
134N095W33CCD2	E.NETZER	228	--	218	4	1960	H	--	125	--	N	TR	--	--	K	5	--	--
134N095W34AAB	V.OLSON	125	--	--	4	--	K	4	--	--	N	TR	VV	--	K	5	--	2521
134N095W34CAA	V.OLSON	126	--	--	4	1965	S	8	57	--	N	TR	VV	D	K	5	--	2562
134N096W03BAB	J.HERBERHOLZ	200	--	--	6	1963	K	--	150	--	N	TR	1	--	K	5	--	2584
134N096W03DD	NDSWC 3718	200	--	--	--	1969	U	--	--	--	N	--	--	Y	--	--	--	2584
134N096W04DAD	J.LUTZ	96	--	--	6	1915	U	--	65	6-68	D	TR	--	--	--	--	--	2580
134N096W05CCD1	E.MAYER	20	0	96	--	--	S	--	6	--	N	TR	1	--	K	4	14.5	--
134N096W05CCD2	E.MAYER	160	--	--	4	1961	H	10	--	--	N	TR	VV	D	K	5	--	2592
134N096W06CCD	J.SCHAUF	114	--	--	4	--	U	--	78	6-68	D	TR	--	--	--	--	--	2600
134N096W07DDA	M.JUNG	100	--	--	6	1958	K	--	80	--	N	TR	VV	--	--	--	--	--
134N096W08CCB	H.LUTZ	300	--	--	6	1959	K	--	80	--	N	TR	VV	--	K	5	--	--
134N096W10BBA	J.RAFFERTY	185	--	--	6	1915	K	6	80	--	N	TR	VV	--	C	5	--	2595
134N096W11BBB	J.HERBERHOLZ	254	--	--	6	--	U	--	88	6-68	D	TR	--	--	--	--	--	2600
134N096W11CCG	F.MAGELKY	117	--	--	6	1958	K	--	30	--	N	TR	1	--	K	5	--	2595
134N096W18BAB	J.JUNG	15	0	110	110	1909	S	--	10	--	N	TR	1	--	--	--	--	--
134N096W18BA1	J.JUNG	18	18	84	84	1929	H	--	14	--	N	TR	--	--	K	5	--	2597
134N096W18BA2	J.JUNG	122	--	86	4	1961	H	5	45	--	N	TR	VV	D	K	5	--	2597
134N096W19DD1	E.DOE	110	--	60	6	1955	H	7	60	--	N	TR	VV	--	K	5	--	--
134N096W19DD2	E.DOE	123	--	83	6	1964	S	--	9	60	--	N	TR	VV	--	--	--	--
134N096W20BAA	H.LUTZ	250	--	250	8	1959	K	15	100	--	N	TR	VV	--	--	--	--	--
134N096W21AB0	J.WOLF	300	--	--	--	1965	S	--	80	--	N	TR	VV	--	K	5	--	2670
134N096W219AA	J.WOLF	180	--	--	6	1955	H	2	80	--	N	TR	1	--	K	6	--	2670
134N096W24CC	SOCONY VACUUM	10433	--	--	9	1954	U	--	--	--	N	--	--	GE	--	--	--	2604
134N096W25BBB1	NDSWC 3687	700	--	--	--	1968	U	--	--	--	N	--	--	Y	--	--	--	2610
134N096W25BBB2	NDSWC 3687A	374	--	318	1	1968	U	--	95	10-69	M	TR	2V	--	C	5	10.5	2610

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134N096W25DCB	C. WOODRUFF, JR.	50		40	6	1961	S	11	--	--	N	ST	I	--	--	--	--	2615
134N096W26BCB	H. HOVLAND EST.	73		--	6	1917	U	--	--	--	N	--	--	--	--	--	--	--
134N096W28DCC	F. OBERLANDER	370		--	--	1960	S	--	--	--	N	TR	--	--	K	6	--	2679
134N096W29ADD	A. LUTZ	280		280	6	1926	S	4	--	--	N	TR	--	--	K	5	11.5	2705
134N096W29AAA	A. LUTZ	90		90	6	1958	K	1	12	--	N	ST	VV	--	K	6	--	2700
134N096W30CCC	W. ZENKER	110		--	6	1908	S	--	70	--	N	ST	VV	--	K	5	--	2800
134N096W37ADH1	L. DOE	245		--	6	1927	U	--	105	--	N	TR	VV	--	--	--	--	2708
134N096W32ADD2	L. DOE	240		225	4	1963	K	--	--	--	N	TR	6V	0	C	5	11.0	2710
134N096W33ABR	F. OBERLANDER	270		--	6	1959	U	--	--	--	N	TR	--	--	--	--	--	--
134N096W34ABU	N. LEE	195		--	6	1916	U	--	70	--	N	TR	--	--	K	5	8.5	2670
134N097W02DAA	J. STEEN	100		--	6	1920	K	3	80	--	N	TR	I	--	K	5	11.5	2610
134N097W05AAA	M. JUNG, JR.	143		--	4	--	U	--	22	6-6B	0	TR	--	--	--	--	--	2680
134N097W06CBC	D. RUSTAN	90		--	6	1915	U	--	50	--	N	TR	--	--	--	--	--	2680
134N097W07ADA1	R. NELSON	135		--	5	1946	U	3	115	--	N	TR	VV	0	--	--	--	2704
134N097W07ADA2	R. NELSON	134		--	5	1964	K	--	30	--	N	TR	--	--	--	--	--	2704
134N097W07A00	R. NELSON	235		102	4	1962	S	2	25	--	N	TR	I	0	--	--	--	2695
134N097W07BCC	D. BAKKE	122		102	4	--	S	3	90	--	N	TR	VV	0	K	4	4.0	2694
134N097W08CCA1	C. NELSON	62		62	6	1913	K	--	27	--	N	TR	VV	--	K	6	1.0	2680
134N097W08CCA2	C. NELSON	100		96	4	1963	H	12	33	--	N	TR	VV	0	K	5	--	2684
134N097W08CCA3	C. NELSON	42		34	6	1963	S	5	15	--	N	TR	VV	--	K	6	5.0	--
134N097W09DAC	D. BOHNHOFF	112		72	4	1961	K	4	57	--	N	TR	VV	0	K	5	--	2693
134N097W10ABB	E. KRISCHMAN	150		150	6	1958	K	6	66	--	N	TR	--	--	K	5	--	2685
134N097W10CBU1	M. JUNG	250		--	6	--	S	--	60	--	N	TR	--	--	K	5	--	--
134N097W10C009	M. JUNG	101		31	4	1962	H	4	--	--	N	TR	I	0	K	4	--	2664
134N097W13BCC	T. GUTESOHN	130		130	6	1960	S	--	30	--	N	TR	VV	--	--	--	--	--
134N097W15RCB	E. ERICKSON	179		155	4	1966	H	15	51	--	N	TR	VV	0	K	5	--	2689
134N097W15CCC1	NDSWC 3555	636	1000	630	2	1967	U	--	--	--	N	--	--	Y	--	--	--	2677
134N097W15CCC2	NDSWC 3555A	81		78	1	1967	U	--	5	12-67	M	TR	1V	--	C	6	11.0	2677
134N097W19DDA	A. RUSTAN	60		--	6	1924	U	--	20	17-67	U	ST	--	--	--	--	--	2730
134N097W20DAA	P. JOHNSON	154		151	5	1951	U	7	79	--	N	TR	VV	0	--	--	--	2746
134N097W22BCC1	M. ERICKSON	107		--	6	--	H	--	60	--	N	TR	--	--	--	--	--	--
134N097W22BCC2	M. ERICKSON	207		183	4	1966	S	18	40	--	N	TR	3V	0	C	5	--	2701
134N097W26CDD	W. JOHNSON	90		--	6	1939	K	4	50	--	N	ST	--	--	--	--	--	2740
134N097W28BCL1	D. JOHNSON	86		72	6	--	U	7	48	6-6A	U	ST	VV	--	--	--	--	2780
134N097W28BCL2	D. JOHNSON	100		--	6	1930	H	--	60	--	N	ST	--	--	--	--	--	--
134N097W28BCL3	D. JOHNSON	100		--	6	1967	S	--	60	--	N	ST	--	--	K	5	8.5	--
134N097W28DAA1	W. JOHNSON	96		80	6	1946	H	2	76	--	N	TR	VV	--	K	6	--	2772
134N097W28DAA2	W. JOHNSON	185	370	159	4	1960	S	5	84	--	N	TR	VV	0	--	--	--	2770
134N097W30CB5	P. JOHNSON	65		--	--	1913	U	--	40	--	N	ST	--	--	--	--	--	2770
134N097W325CD	T. JOHNSON	70		--	5	1913	U	--	40	12-67	0	ST	--	--	K	5	4.0	2790

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134N097M32D081	L. BOHNHOFF	65	65	6	6	1949	S	--	25	--	N	SB	VV	--	K	3	3.0	2739
134N097M32D082	L. BOHNHOFF	91	--	4	4	1961	H	15	35	--	N	SB	VV	D	K	4	--	2739
134N097M33C88	L. STENMDEN	--	--	5	5	--	U	--	--	--	N	ST	--	--	K	4	6.5	--
134N097M34A88	O. STENMDEN	105	--	4	4	1927	U	--	101	6-88	D	ST	--	--	K	--	--	2790
134N097M34DA1	O. STENMDEN	110	0	36	36	1909	S	--	90	--	N	SB	--	--	K	6	9.5	2794
134N097M34DA2	O. STENMDEN	146	--	126	4	1955	H	--	33	--	N	ST	--	--	--	--	--	2794
134N097M34DA3	O. STENMDEN	189	--	161	4	1966	H	150	80	--	N	TR	3V	D	P	5	--	2794
135N091M01C88	E. HINTZ	165	--	165	3	--	K	--	--	--	N	ST	--	--	K	4	--	2452
135N091M03B8	H. KIRSCH	130	--	4	4	--	K	--	110	--	N	ST	1	--	--	--	--	2443
135N091M04C4	J. BERTSCH	145	--	145	6	--	K	--	125	--	N	ST	--	--	K	6	--	2465
135N091M05ADC	T. SCHAFF	58	--	24	24	--	S	--	F	--	N	SB	--	--	--	--	--	2430
135N091M06DA1	E. HIRNING	14	14	5	5	1946	H	--	--	--	N	SB	1	--	P	6	--	2461
135N091M06DA2	E. HIRNING	184	139	4	4	1964	U	3	135	--	N	TR	VV	--	--	--	--	2461
135N091M06DA3	E. HIRNING	285	235	4	4	1964	U	5	150	--	N	TR	1	D	--	--	--	2461
135N091M07BAA	J. OTTMAR	20	20	36	36	--	H	--	14	--	N	SB	VV	--	K	6	--	2480
135N091M08DCC	USGS	403	--	--	--	1966	U	--	--	--	N	--	--	G	--	--	--	2562
135N091M09DGD	T. SCHAFF	298	--	5	5	--	S	--	268	--	N	TR	--	--	K	5	12.0	2498
135N091M10AAA	A. KREBS	140	--	3	3	--	U	--	115	--	N	TR	VV	--	--	--	--	2432
135N091M12CAB1	L. SCHRAMM	50	--	24	24	--	S	--	36	--	N	TR	--	--	K	3	10.5	2425
135N091M12CAB2	L. SCHRAMM	144	--	128	4	1964	H	12	100	--	N	TR	3V	D	C	4	--	2410
135N091M14AAA	V. LEMKE	76	--	76	5	--	K	--	44	--	N	ST	1	--	K	3	12.0	2425
135N091M14DAB	V. LEMKE	90	--	4	4	1925	K	--	40	--	N	TR	--	--	K	4	--	2422
135N091M18A0D	W. PLUNKETT	255	255	6	6	1942	K	--	200	--	N	TR	--	--	K	6	10.5	2565
135N091M18DAA	W. WALKER	290	290	4	4	1924	S	--	220	--	N	TR	1	--	K	5	10.5	2550
135N091M20ACH	S. ROLL	420	370	4	4	1968	S	8	210	--	N	TR	VV	D	C	5	12.0	2481
135N091M20BAC	S. ROLL	31	31	24	24	1958	H	--	15	--	N	SB	1	--	--	--	--	2475
135N091M20RAD	S. ROLL	45	0	24	24	1925	S	3	25	--	N	SB	1	--	K	6	13.5	2485
135N091M20BDA	S. ROLL	70	70	6	6	1953	U	--	--	--	N	SB	1	--	--	--	--	2487
135N091M20D8	P. ROLL	100	--	4	4	--	K	--	60	--	N	ST	VV	--	K	6	--	2470
135N091M21CCC	P. ROLL	62	38	4	4	1961	S	27	35	--	N	SB	1	D	--	--	--	2499
135N091M27CCD	C. RUFF	80	80	6	6	--	K	--	64	--	N	SB	--	--	K	6	10.5	2573
135N091M24GCC1	E. HINTZ	180	180	18	18	--	U	3	150	--	N	TR	--	--	--	--	--	2450
135N091M24GCC2	E. HINTZ	120	120	6	6	1960	K	--	90	--	N	ST	--	--	K	5	--	2450
135N091M28CC81	V. MEIER	50	--	24	24	1935	S	--	36	--	N	ST	--	--	K	4	11.0	2495
135N091M28CC82	V. MEIER	100	90	4	4	1964	H	4	94	--	N	TR	6V	--	K	5	--	2500
135N091M28CC83	V. MEIER	120	105	4	4	1967	S	10	80	--	N	TR	1	D	C	6	9.0	2500
135N091M30ACB1	A. SULLIVAN	90	90	24	24	--	S	--	65	--	N	SB	--	--	--	--	--	2445
135N091M30ACB2	A. SULLIVAN	190	--	4	4	--	K	--	80	--	N	ST	VV	--	K	6	--	2448
135N091M31AAD1	T. MEIER	104	81	4	4	1964	K	8	73	--	N	TR	1V	--	K	5	--	2432
135N091M31AAD2	T. MEIER	115	96	4	4	1968	S	7	45	--	N	TR	VV	D	--	--	--	2432

LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAILABLE	GW TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ALTITUDE OF LSD (FT.)	
135N091W3288B1	M.FRIEZE	72	72	6	---	---	K	---	55	---	N	TR	1	---	K	5	13.5	2450	
135N091W3288B2	M.FRIEZE	140	120	4	---	1968	H	15	70	---	N	TR	VV	D	---	---	---	2445	
135N091W34CCC	A.FIEDLER	95	---	6	---	---	K	---	60	---	N	ST	---	---	K	5	9.5	2471	
135N092W02AAD	M.SCHMIDT	44	44	24	---	1965	K	---	24	---	N	SB	VV	---	K	5	9.0	2488	
135N092W02ADA1	K.HABERSTROH	250	230	6	---	1963	H	13	230	---	N	TK	VV	---	K	6	10.0	2540	
135N092W02ADA2	K.HABERSTROH	415	90	6	---	1963	S	---	60	---	N	TR	1	---	K	5	9.0	2540	
135N092W02CCC	NDSWC 3669	200	0	---	---	1968	U	---	---	---	N	---	---	GE	---	---	---	2523	
135N092W03CC1	F.MOSBRUCKER	80	80	6	---	1927	S	---	65	---	N	SB	VV	---	K	4	---	2562	
135N092W03CC2	F.MOSBRUCKER	80	80	4	---	1951	H	---	65	---	N	SB	VV	---	---	---	---	2562	
135N092W03CCD	F.MOSBRUCKER	80	60	4	---	1964	S	5	65	---	N	SB	1	D	C	4	9.0	2565	
135N092W04DAA1	L.ROLLER	60	60	4	---	---	S	---	40	---	N	SB	1	---	---	---	---	2525	
135N092W04DAA2	L.ROLLER	35	35	24	---	1945	H	---	15	---	N	SB	1	---	K	4	---	2522	
135N092W05ADA1	S.GREFF	32	32	18	---	1949	S	---	16	---	N	SB	1	---	K	4	9.5	2499	
135N092W05ADA2	S.GREFF	52	52	18	---	1958	H	---	24	---	N	SB	1	---	K	6	9.5	2497	
135N092W07AAD	B.FRIEDT	60	60	6	---	---	S	---	20	---	N	SB	---	---	K	5	9.0	2468	
135N092W088B01	B.FRIEDT	56	---	5	---	1945	U	---	20	---	N	SB	---	---	---	---	---	2477	
135N092W088B02	B.FRIEDT	126	126	6	---	1949	H	---	20	---	N	SB	---	---	K	5	---	2477	
135N092W088B03	B.FRIEDT	160	---	6	---	1965	S	---	30	---	N	TK	---	---	K	5	---	2480	
135N092W088C01	M.RDKUSEK	18	0	60	---	1935	U	---	8	---	N	SB	---	---	---	---	---	2458	
135N092W088C02	M.RDKUSEK	80	80	6	---	1965	K	---	20	---	N	ST	---	---	K	5	---	2465	
135N092W10CBA1	KERZMAN ESTATE	41	41	4	---	---	H	---	38	7-67	0	SB	---	---	---	---	---	2498	
135N092W10CBA2	KERZMAN ESTATE	47	47	4	---	---	H	---	40	7-67	0	SB	---	---	K	5	---	2497	
135N092W14DD01	J.OTTMAR	151	136	4	---	1961	H	3	120	---	N	TR	VV	---	K	6	---	2463	
135N092W14DD02	J.OTTMAR	151	140	---	---	1963	K	8	100	---	N	TR	1V	U	---	---	---	2464	
135N092W17DD0	NDSWC 3707	200	---	---	---	1969	U	---	---	---	N	---	---	Y	---	---	---	2452	
135N092W18ACA1	C.REINERT	80	---	6	---	1927	H	---	65	---	N	TR	6V	---	K	5	---	2441	
135N092W18ACA2	C.REINERT	100	53	4	---	1961	S	8	55	---	N	TR	1	D	K	6	9.0	2450	
135N092W19ACD	A.STEINER	52	52	6	---	---	K	10	20	---	N	ST	1	---	---	---	---	2442	
135N092W19DAA	A.STEINER	26	26	12	---	---	S	---	7	7-67	0	ST	1	---	---	---	7	11.0	2418
135N092W20DAC	J.PFUFF	45	45	24	---	---	U	---	40	---	N	TR	---	---	---	---	---	10.0	2416
135N092W22CDC1	J.KAUTZMAN	220	220	3	---	1937	H	---	200	---	N	TK	---	---	K	6	---	2408	
135N092W22CC02	J.KAUTZMAN	220	30	18	---	---	S	---	---	---	N	ST	---	---	K	6	8.5	2406	
135N092W24C001	R.WETZSTEIN	175	170	2	---	1927	S	---	20	---	N	TR	---	---	K	6	14.5	2421	
135N092W24C002	R.WETZSTEIN	205	185	4	---	1967	H	18	80	---	N	TR	2V	D	K	5	14.5	2421	
135N092W24D8C1	J.HELLMAN	110	110	4	---	---	H	---	101	---	N	TR	---	---	K	6	---	2430	
135N092W24D8C2	J.HELLMAN	36	36	24	---	---	S	---	26	---	N	ST	---	---	K	6	7.5	2430	
135N092W28BD01	L.WANNER	75	75	6	---	1949	S	---	---	---	N	TR	---	---	---	---	---	2405	
135N092W28BD02	L.WANNER	60	60	4	---	1962	H	---	---	---	N	TR	VV	---	K	6	---	2405	
135N092W30CCC	J.WANNER	130	130	6	---	1952	K	---	120	---	N	TR	VV	---	K	6	10.0	2480	
135N092W34ABD	J.KAUTZMAN	18	0	48	---	---	U	---	10	7-67	0	TR	---	---	---	---	---	2380	

LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAIL-ABLE	QM TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ALTITUDE-OF LSD (FT.)
135N093W31ADB	H. HOIBY	385	--	--	6	--	K	--	251	--	N	TR	--	--	K	5	9.5	2610
135N093W32CAB	J. Z...	400	--	--	4	--	S	--	176	--	N	TR	P	--	K	5	--	2597
135N093W36GCC	USGS	70	--	--	--	1968	U	--	42	--	N	--	G	--	K	--	--	2565
135N094W02ADC1	P. GION	12	12	24	24	--	H	--	6	--	N	SB	1	--	K	4	--	2515
135N094W02ADC2	P. GION	13	13	18	18	1956	S	--	7	--	N	SB	1	--	K	4	--	2520
135N094W02CDC	L. DEWIT	30	12	4	4	1962	K	24	15	--	N	SB	VV	D	K	4	--	2535
135N094W04DCC	G. GREFF	60	10	44	--	--	K	--	50	--	N	SB	VV	--	K	4	--	2620
135N094W06ADD1	R. DANMUS	200	200	4	4	1949	H	--	50	--	N	SB	VV	--	K	5	--	2620
135N094W06ADD2	R. DANMUS	48	28	4	4	1964	K	4	30	--	N	SB	1	D	K	5	13.5	2625
135N094W06BCD	P. MAX	200	--	--	6	1928	K	--	80	--	N	SB	VV	--	K	5	--	--
135N094W09ABB	G. GREFF	60	10	42	--	--	S	3	50	--	N	SB	VV	--	K	5	9.0	2615
135N094W09DAA	L. BARTH	133	133	6	6	1934	K	--	30	--	N	SB	VV	--	K	4	9.5	2614
135N094W10ABA	G. GREFF	31	10	42	--	--	U	--	18	8-67	O	SB	VV	--	--	--	--	2580
135N094W12DDD	F. WEINBERGER	195	195	6	6	1912	K	--	130	--	N	SB	VV	--	K	6	9.5	2610
135N094W14DCD	J. HONEYMAN	205	--	--	2	--	U	--	--	--	N	--	--	--	--	--	--	2573
135N094W19CAD	J. GION	102	96	4	4	1955	S	--	82	--	N	SB	--	--	--	--	--	2665
135N094W19AAB	R. MASAD	30	6	48	--	--	K	--	F	--	N	SB	--	--	K	4	13.5	2600
135N094W19CCC1	C. CARLSON	54	--	4	4	1935	U	--	28	8-67	O	SB	--	--	--	--	--	2525
135N094W19CCC2	NDSMC 3528	81	200	78	1	1967	U	--	24	12-67	M	SB	2V	V	C	4	9.5	2521
135N094W20DAD1	L. NASSET	250	--	--	6	--	S	--	90	--	N	ST	--	--	K	5	--	2535
135N094W20DAD2	L. NASSET	133	93	6	6	1962	H	24	55	--	N	SB	VV	D	K	6	--	2536
135N094W22BCC	A. GION	110	110	4	4	1959	K	--	100	--	N	SB	VV	--	K	6	--	2579
135N094W22CBC	J. GION	120	120	6	6	1917	K	5	90	--	N	SL	VV	--	K	6	--	2573
135N094W23AAA	J. HONEYMAN	200	--	4	--	--	U	--	102	8-67	O	ST	--	--	--	--	--	2570
135N094W24DCD	A. HARTHALLER	240	--	--	6	--	K	--	150	--	N	ST	VV	--	K	6	--	2605
135N094W27BBR	NDSMC 3676	200	0	--	--	1968	U	--	--	--	N	--	--	GE	--	--	--	2569
135N094W28CBB1	C. CARLSON	70	--	6	6	1945	K	--	50	--	N	SB	--	--	K	6	--	2515
135N094W28CBB2	C. CARLSON	60	30	4	4	1968	S	12	36	--	N	SB	VV	D	C	5	8.5	2515
135N094W30DAA	L. PRINCE	142	82	6	6	1962	K	20	38	--	N	SB	VV	D	K	5	--	2530
135N094W31CCC	NDSMC 3675	81	200	78	1	1968	U	--	6	11-68	M	SB	2V	GE	C	4	9.5	2478
135N094W33DDD	R. PRINCE	162	102	4	4	1962	K	15	90	--	N	SB	VV	D	P	6	--	2535
135N094W34DAA	G. JACOBS	220	--	6	--	--	K	--	120	--	N	SB	--	--	K	6	--	2634
135N094W35BCD	H. GILN	180	--	5	5	1947	K	--	70	--	N	SB	VV	--	P	6	--	2596
135N095W01AAA	A. HONEYMAN	257	242	4	4	1968	K	5	151	--	N	SD	VV	D	--	--	--	2626
135N095W01DAD	E. HONEYMAN	180	--	6	6	1915	K	--	155	--	N	SH	VV	--	K	5	9.0	--
135N095W02BAC	L. THOMPSON	30	0	36	36	1907	U	--	11	7-68	O	SB	--	--	--	--	--	2670
135N095W02CAA	L. THOMPSON	25	--	24	--	--	K	--	6	--	N	SH	--	--	K	4	9.5	--
135N095W04CUC	D. BRUCAMYER	65	40	4	4	1963	K	10	25	--	N	ST	VV	--	K	5	--	2605
135N095W06DAA	E. MONKE	97	--	6	6	1916	U	--	77	7-68	O	ST	VV	--	--	--	--	2620
135N095W07AAA	E. MONKE	58	--	6	6	--	U	--	27	7-68	O	ST	--	--	--	--	--	2610

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LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAIL-ABLE	QW TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (° C)	ALTITUDE OF LSO (FT.)	
135N095W090CD	E. HONEYMAN	60	---	---	6	1956	S	5	25	---	N	ST	VV	---	---	---	---	2580	
135N095W100CD	R. KOLBA	72	---	50	6	1948	K	8	50	---	N	ST	---	---	---	---	---	2595	
135N095W110AA	R. KOLBA	254	---	187	4	1963	S	30	170	---	N	SB	VV	D	---	---	---	2715	
135N095W120CD	C. TOMFORD	70	---	---	24	1912	S	---	56	7-6R	G	SB	---	---	K	6	9.5	2700	
135N095W120AD	H. PAYNE	50	---	---	8	1907	K	---	20	---	N	SB	VV	---	K	5	---	---	
135N095W14ADD	B. NEPRASH	150	---	90	6	1961	K	13	90	---	N	SB	3V	D	---	---	---	2591	
135N095W14DCC	D. PAYNE	55	---	55	6	1909	K	---	20	---	N	SB	VV	---	---	---	---	2575	
135N095W170DD	S. MAGELKY	29	---	23	6	1942	S	1	---	---	N	SB	VV	---	K	5	10.0	2580	
135N095W190DC1	H. SCHROEDER	65	---	45	6	1950	H	---	20	---	N	TR	I	---	K	6	---	2500	
135N095W190DC2	H. SCHROEDER	81	---	61	4	1966	S	15	36	---	N	TR	VV	D	C	5	7.0	2515	
135N095W22AAA	NDSWC 3677	270	---	0	---	1968	U	---	---	---	N	---	---	---	GE	---	---	2592	
135N095W230AB1	J. JESCH	40	---	---	6	1948	S	4	25	---	N	SB	---	---	---	---	---	2562	
135N095W230AB2	J. JESCH	35	---	---	6	1958	H	2	25	---	N	SB	VV	---	---	K	4	---	2565
135N095W230UB	F. GEERTS	24	---	12	6	1968	S	---	8	---	N	SB	VV	---	---	---	---	2555	
135N095W240CC	F. GEERTS	110	---	---	6	1909	K	---	90	---	N	ST	VV	---	---	K	4	---	2493
135N095W26AAD	G. NEPRASH	40	---	20	6	1964	K	---	25	---	N	SB	VV	---	---	K	4	---	2525
135N095W26BBB	J. JESCH	18	---	0	48	---	U	---	10	7-6R	O	SB	---	---	---	---	---	2538	
135N095W320A1	KOLBA BROS.	16	---	0	48	1936	S	---	12	---	N	ST	6V	---	---	---	---	---	
135N095W320A2	KOLBA BROS.	40	---	12	6	1948	H	2	12	---	N	ST	VV	---	---	---	---	---	
135N095W328CA	H. LEIGAL	175	---	---	6	1964	U	---	---	---	N	TR	I	---	P	5	12.0	---	
135N095W35ADC	M. GIDON	50	---	43	4	1959	S	13	6	---	N	ST	VV	D	---	---	---	2497	
135N095W36ACD	A. HILLMAN	18	---	---	18	---	U	---	1	7-6R	O	ST	---	---	---	---	---	2485	
135N096W070DA	E. HELLEKSON	230	---	212	6	1957	S	12	140	---	N	ST	I	---	---	K	5	9.5	2610
135N096W08ABB	E. HELLEKSON	140	---	75	6	1959	S	10	115	---	N	SB	VV	D	---	K	4	---	2577
135N096W08DDA	E. HELLEKSON	100	---	83	---	---	S	12	---	---	N	SB	VV	D	---	---	---	2544	
135N096W109AA	A. KREHS	318	---	282	7	1964	K	60	57	---	N	TR	VV	D	C	5	11.5	2589	
135N096W12AAA	P. MELLNER	80	---	---	6	---	S	---	20	---	N	ST	---	---	---	K	3	9.0	2605
135N096W130AA	F. STECHER	82	---	---	6	---	U	---	25	6-6R	O	ST	---	---	---	---	---	2580	
135N096W14BBC	J. MESLING	124	---	---	5	1928	U	---	---	---	N	ST	P	---	---	---	---	2605	
135N096W14CCC	A. HILLEKSON	85	---	---	6	1915	S	7	25	---	N	ST	VV	---	---	K	4	---	2590
135N096W208Bb1	P. MESLING	31	---	---	24	---	U	---	30	6-6R	O	SB	---	---	---	---	---	2558	
135N096W208Bb2	P. MESLING	60	---	42	6	1948	S	10	30	---	N	ST	VV	D	C	6	7.5	2557	
135N096W20C0C	A. MESJA	100	---	18	5	1958	K	9	30	---	N	TR	VV	---	---	K	5	10.5	2575
135N096W20D0B	G. AUSTIN	178	---	---	6	1915	U	---	44	4-67	O	TR	VV	---	---	---	---	2561	
135N096W21CCA1	R. DURISAR	42	---	---	4	---	U	---	23	6-6R	O	TR	---	---	---	---	---	2540	
135N096W21CCA7	R. DURISAR	48	---	---	16	---	H	1	---	---	N	TR	I	---	---	K	5	---	2550
135N096W220D0b	F. SCHORSCH	86	---	---	6	1914	K	---	60	---	N	TR	---	---	---	K	4	---	---
135N096W24CCC1	W. THIELMAN	50	---	0	48	1920	S	---	30	---	N	TR	I	---	---	K	6	10.5	2525
135N096W24CCC2	W. THIELMAN	50	---	---	18	1948	H	1	30	---	N	TR	I	---	---	---	---	2475	
135N096W24DCC	J. GRUNDHAUSER	30	---	---	6	---	H	---	11	---	N	TR	I	---	---	K	6	9.5	2520

LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAILABLE	OH TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ALTITUDE OF LSD (FT.)
135N096M27ABD	K. SCHAEFER	90		70	4	1955	K	6	20		N	TR	VV		K	5		
135N096M28ABA1	O. AUSTIN	105			5		K		97		N	TR	VV					2510
135N096M28ABA2	O. AUSTIN	13					H		10		N	TR	VV					2510
135N096M28HDA	O. AUSTIN	196			4		S				N	TR	VV	D	C	5	11.0	2569
135N096M29DAA1	J. MESLING	100		70	6	1948	H	2	40		N	TR	VV		K	4		
135N096M29DAA2	J. MESLING	250		217	4	1960	S	12	40		N	TR	VV	D	K	5		2578
135N097M01B8C	E. SCHORSCH	80		50	4	1959	H	8	40		N	SB	VV	D	K	4		2596
135N097M02B8C1	J. RFHEL	78		78	6		H		20		N	SB			K	5		
135N097M02B8C2	J. REBEL	100			6	1919	S				N	SB			K	5	9.0	
135N097M04ADR1	NEW ENGLAND 4	73		73	24		U		47	9-66	C	SB	VV					2595
135N097M04ADB2	NEW ENGLAND 6	84	128	84	8	1955	P	8	42		N	SB	VV		C	5	8.5	2595
135N097M04ADC	F. SCHATZ	59			12		U		49	9-66	D	SB						2592
135N097M04ADD1	NEW ENGLAND 7	105		105	8	1955	P	130	63		N	SB	VV		C	5	9.0	2593
135N097M04ADD2	NEW ENGLAND 8	105		77	10	1968	P		49		N	SB	V	D				2593
135N097M04D8A1	NEW ENGLAND 1	101			12	1940	P	85	57		N	SB	VV					2593
135N097M04D8A2	NEW ENGLAND 2	79				1940	U	18	57		N	SB	VV					2593
135N097M04D8A3	NEW ENGLAND 3	100		100	8	1944	P	40	48		N	SB	VV					2593
135N097M04DCA	NDSHC 3628	1360	1790	1320	4	1968	U	5	146	9-68	C	FH	2V	YC	C	6	14.0	2567
135N097M05ABD1	J. KOHL	28		28	6	1930	S		21		N	SB	VV		K	5	9.0	
135N097M05ABD2	J. KOHL	23		23	4	1947	H	3	19		N	SB	VV					2600
135N097M06ABA	A. HISEBERG	120			4	1967	K				N	SB			K	6		
135N097M07ABA	H. HANSON	200		200	6	1963	H		100		N	SB	VV		K	5		2690
135N097M08BCC	K. NIELSON	170			6		K		100		N	SB	VV		K	6		
135N097M10BRB	A. REISENAUER	49		0	18		K		23		N	SB			K	6		
135N097M10CAB	W. KELLER	67		53			S		35		N	SB	VV	D				2606
135N097M10CBA	W. KELLER	230		222		1956	H				N	TR						2350
135N097M11RDA	M. KDRANG	60			6	1949	K		10		N	ST	VV		K	5		2565
135N097M13G6C	J. FRANK	88		49	4	1963	K	4	64		N	SB	VV	D	K	4		2601
135N097M15CCA	R. JOHNSON	108		100	6	1951	H	7	68		N	SB	VV	D	K	5		2616
135N097M18CRB1	J. FRICKSON	97		97	6	1944	H		35		N	SB	VV		K	6		
135N097M18CBH2	J. ERICKSON	135		135	6	1960	S		35		N	SB	1		K	5	7.5	
135N097M24HAA	R. SCHOBINGER	35		0	24	1919	K		25		N	ST	VV		K	5	5.0	2570
135N097M26ABH	P. GARDNER, TR.	40		0	24		U		30	7-68	O	ST			K	7	5.5	2610
135N097M26S8B	M. KOPPINGEK	85			6		K		65		N	ST	VV		K	6	7.5	2640
135N097M26UDA	J. NIELSEN	41			6		U	0			N							2605
135N097M27BCC	P. JUNG	87		87	18		K		73		N	SB	1		K	6		2700
135N097M28BCH	R. HELLAND	270		270	5	1956	K		100		N	TR	VV		K	5		2700
135N097M28DAA	M. EASTQUIPIL	350			6	1962	K		100		N	TR			P	6		
135N097M31ADD1	B. SORENSON	243			6		H				N	TR	VV		K	5		2728
135N097M31ADD2	B. SORENSON	114		106	4	1966	S	14	55		N	TR	1	D				2725

LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAILABLE	GW TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ALTITUDE OF L.S.D. (FT.)
135N097M318B6	L. ZASTOUPIL	143	139	6	1939	K	4	120	--	N	TR	1	--	K	5	7.0	2680	
135N097M32AAD	D. SORENSON	184	179	5	1949	K	6	80	--	N	TR	1	U	K	5	--	2730	
135N097M33AAA	NDSMC 3532	200	0	5	1967	U	--	--	--	N	--	--	Y	--	--	--	2685	
135N097M33DBC1	A. JUNG	185	--	6	--	U	--	--	--	N	TR	VV	--	--	--	--	2670	
135N097M33DBC2	A. JUNG	64	65	18	1935	S	--	20	--	N	TR	1	--	--	--	--	2670	
135N097M33DBC3	A. JUNG	96	96	18	1949	H	--	41	--	N	TR	1	--	K	5	--	--	
136N091W02LDC	USGS	60	--	--	1966	U	--	30	--	N	--	--	G	--	--	--	2280	
136N091W04ABA	H. GUNSCHE	175	175	2	1941	K	--	--	--	N	TR	--	--	--	--	--	2366	
136N091W04CDB	A. BEIFFERT	38	--	18	--	U	--	15	8-67	U	TR	--	--	K	6	9.5	2277	
136N091W06BDC	W. HARSCH	100	--	5	--	K	--	25	--	N	TR	VV	--	K	5	10.5	2325	
136N091W06CAC	T. HIRNING	135	135	5	1958	K	--	65	--	N	TR	VV	--	K	5	--	2368	
136N091W06DAB	H. RIFGER	180	180	6	--	K	--	--	--	N	TR	1	--	K	6	9.5	2353	
136N091W09ACA	A. ROKUSEK	84	--	5	1959	K	--	20	--	N	TR	--	--	K	4	--	2292	
136N091W09ACD	A. ROKUSEK	100	--	4	--	S	--	--	--	N	TR	--	--	--	--	--	2302	
136N091W09BCC	A. ROKUSEK	67	67	3	--	U	--	6	10-66	U	TR	--	--	--	--	--	2322	
136N091W09CAB	J. GRUBELE	110	--	4	1959	K	--	90	--	N	TR	--	--	K	4	--	2337	
136N091W09CBC	M. KLEIN	110	110	2	1945	K	--	10	--	N	TR	--	--	K	3	--	2322	
136N091W09CCC	A. ROKUSEK	138	138	3	1957	U	--	84	10-66	C	TR	--	--	--	--	--	2374	
136N091W11CCD	R. MAGSTADT	90	56	6	--	K	--	--	--	N	TR	--	--	--	--	--	2323	
136N091W12ABB	J. HARSCH	6	--	36	--	S	1	F	--	U	FR	--	--	C	5	11.5	2215	
136N091W12BDC1	J. HOCHHALTER	90	90	24	1961	K	--	70	--	N	TR	VV	--	K	5	--	2210	
136N091W12BDC2	J. HOCHHALTER	190	188	2	1962	K	--	27	--	N	TR	VV	--	K	5	10.5	2210	
136N091W14ACD	W. FUCHS	30	--	12	1936	H	--	8	--	N	TR	--	--	--	--	--	2244	
136N091W14ADC	W. FUCHS	80	--	4	--	K	--	20	--	N	TR	--	--	K	5	--	2246	
136N091W17BBB	DDESSA SCHOOL	87	48	4	1965	H	--	--	--	N	TR	--	--	--	--	--	2350	
136N091W18AAA	H. HIRNING	50	50	18	--	U	--	--	--	N	TR	VV	--	--	--	--	2350	
136N091W18BAD	H. HIRNING	51	--	5	1935	K	--	30	--	N	TR	VV	--	K	4	9.0	2352	
136N091W18DDD	H. ROKUSEK	140	--	6	--	H	--	--	--	N	TR	--	--	K	4	14.0	2393	
136N091W20BAB	H. ROKUSEK	69	101	18	1961	U	5	60	8-67	U	TR	VV	0	--	--	--	2377	
136N091W20DCD	H. LUTHLER	120	--	4	--	S	--	120	--	N	TR	--	--	--	--	--	2420	
136N091W20DDD	NDSMC 3668	300	0	--	1968	U	--	--	--	N	--	--	GE	--	--	--	2413	
136N091W21CDD	O. KLEIN	134	120	5	1963	K	15	100	--	N	TR	VV	D	C	5	10.0	2416	
136N091W22CDB	H. RUFELDT	60	--	2	--	K	--	55	--	N	TR	1	--	K	5	--	2358	
136N091W23HCB	A. LUTHLER	150	--	4	1960	K	--	70	--	N	TR	--	--	K	4	--	2305	
136N091W24CAA	A. MAGSTADT	33	33	24	1958	H	--	26	--	N	TR	1	--	K	6	--	2285	
136N091W24DBB	A. MAGSTADT	32	0	48	1905	U	--	26	--	N	TR	1	--	--	--	--	2280	
136N091W27DDA	R. KUNTZ	20	--	4	--	H	--	--	--	N	TR	--	--	K	4	--	2309	
136N091W27DDD	R. KUNTZ	12	--	4	--	U	--	8	8-67	U	TR	--	--	--	--	--	2321	
136N091W28RBB	H. LUTHLER	103	--	4	1961	S	--	--	--	N	TR	--	--	--	--	--	2413	
136N091W28DA1	G. WALTH	40	40	4	1925	S	--	20	--	N	TR	--	--	--	--	--	2373	

LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAM-ETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAIL-ABLE	QM TYPE	SPE-CIFIC CON-DUCT ANCE	TEN-PER-ATURE (°C)	ALTI-TUDE-OF-150 (FT.)
136N091W29DAA2	G. WALTH	40		40	18	--	K	--	20	--	N	TR	--	--	K	5	9.0	2365
136N091W30C00	R. KITZAN	40	--	18	18	1960	U	--	16	8-67	O	SB	--	--	--	--	--	2490
136N091W30DAA1	R. KLEIN	75		0	18	1941	S	4	10	--	N	SB	VV	--	--	--	--	2453
136N091W30DAA2	R. KLEIN	50		50	24	1960	K	--	10	--	N	ST	VV	--	K	4	9.5	2453
136N091W30DAC	R. KLEIN	70		36	4	1961	S	5	50	--	N	SB	VV	D	--	--	--	2490
136N091W31ABC	R. KLEIN	73		0	48	--	U	--	10	--	N	SB	VV	--	K	4	9.5	2480
136N091W32ADA1	R. KITZAN	84	--	--	18	--	S	--	--	--	N	ST	--	--	--	--	--	2463
136N091W32ADA2	R. KITZAN	137	137	24	1960	K	--	18	18	--	N	TR	--	--	K	5	--	2475
136N092W01C00	M. HERTZ	172	134	4	1964	U	--	18	120	--	N	SB	VV	D	K	5	12.0	2430
136N092W028CA	P. MATER	191	180	4	1967	K	--	25	100	--	N	TR	3V	D	C	6	9.5	2404
136N092W02CDA	J. LUTHLE	684	627	4	1968	K	--	12	260	--	H	CL	VV	D	--	--	--	2442
136N092W04DBU	H. FRIDT	45	45	24	--	H	--	--	25	--	N	ST	--	--	K	4	9.5	2375
136N092W05C00	J. MATER	70	70	18	1943	U	--	--	--	--	N	ST	1	--	--	--	--	2360
136N092W07CCA1	M. STEINER	160	160	4	1928	H	--	3	60	--	N	TR	VV	--	--	--	--	2412
136N092W07CCA2	M. STEINER	183	100	4	1963	S	--	9	50	--	N	TR	V	D	K	6	--	2412
136N092W106uC	P. ANTON	23	--	18	--	U	--	--	16	8-67	O	ST	--	--	K	6	9.5	2348
136N092W108BD	P. ANTON	12	0	36	--	S	--	--	5	8-67	O	SB	--	--	--	--	--	2349
136N092W10DDD	M. HERTZ	21	21	48	--	S	--	--	18	8-67	D	ST	--	--	K	6	--	2390
136N092W118AA	J. LUTHLE	360	310	--	1966	S	--	5	220	--	N	TR	3V	D	--	--	--	2475
136N092W12AAA	USGS	290	--	--	1966	U	--	--	--	--	N	--	--	G	--	--	--	2401
136N092W12BCC1	M. HERTZ	120	--	3	1905	S	--	--	75	--	H	SR	--	--	K	5	10.5	2435
136N092W12BCC2	M. HERTZ	169	135	4	1963	H	--	25	110	--	N	SB	VV	D	K	5	11.0	2429
136N092W12CAC	J. LUTHLE	86	--	2	--	U	--	--	74	8-67	O	TR	--	--	--	--	--	2388
136N092W15AAA	NDSWC 3667	300	0	--	1968	U	--	--	--	--	N	--	--	GE	--	--	--	2405
136N092W15CCC1	R. SENN	12	0	48	--	S	--	--	16	--	N	SB	VV	--	--	--	--	2403
136N092W15CCL2	R. SENN	276	223	4	1959	U	--	--	100	8-67	O	TR	VV	--	--	--	--	2402
136N092W19CCC3	R. SENN	32	32	24	1966	H	--	--	10	--	N	ST	1	--	K	6	--	2402
136N092W16C00	G. HERTZ	36	17	4	1964	S	--	20	8	--	N	SB	VV	D	K	3	7.5	2410
136N092W1700L1	G. HERTZ	70	--	4	1959	H	--	25	20	--	N	SB	VV	--	K	4	9.5	2434
136N092W1700L2	G. HERTZ	71	50	4	1966	S	--	7	20	--	N	SB	4V	D	K	4	9.5	2432
136N092W18ACA1	E. SWANSTON	79	58	6	1959	H	--	11	30	--	N	SB	VV	--	K	5	--	2403
136N092W18ACA2	E. SWANSTON	89	70	4	1966	K	--	--	30	--	N	SB	3V	D	--	--	--	2402
136N092W18CBB1	P. SMITH	75	75	6	1948	H	--	--	20	--	N	ST	1	--	K	5	--	2385
136N092W19CBB2	P. SMITH	80	--	6	1948	S	--	--	--	--	N	ST	1	--	K	5	--	2380
136N092W210AB	S. GREFF	83	83	4	1963	S	--	--	36	--	N	SB	VV	--	--	--	--	2490
136N092W26ADD1	S. GREFF	22	19	18	1962	H	--	--	10	--	N	SB	P	--	K	5	--	2456
136N092W26ADD2	S. GREFF	273	183	4	1962	H	--	--	160	--	N	TR	1	D	C	5	--	2457
136N092W25CDD	USGS	309	--	--	1966	U	--	--	--	--	N	--	--	G	--	--	--	2530
136N092W29BCD	L. SENN	12	12	30	1958	U	--	1	7	9-66	H	SB	--	--	--	--	--	2422
136N092W30ADH	F. SWANSTON	60	60	4	1907	U	--	--	0	--	N	ST	VV	--	--	--	--	2415

LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAILABLE	GW TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ALTITUDE OF LSD (FT.)
136N092W31ABA1	R. HUMMEL	16	16	18	18	1905	H	---	8	---	N	SR	VV	---	---	5	---	2430
136N092W31ABA2	R. HUMMEL	10	10	48	---	---	S	---	4	---	N	SB	VV	---	K	5	10.5	2425
136N092W32ACA1	N. REINERT	30	30	36	36	1908	S	---	20	---	H	SB	1	---	---	---	---	2472
136N092W32ACA2	N. REINERT	120	30	6	6	1947	S	7	30	---	N	SB	1	---	---	---	---	2478
136N092W32ACA3	N. REINERT	90	47	4	4	1960	H	18	55	---	N	SB	1	D	---	5	---	2472
136N092W32ACB	N. REINERT	151	151	4	4	1961	S	2	40	---	H	SB	VV	D	K	5	9.5	2483
136N092W34DCC	M. SCHMIDT	33	19	18	18	1953	S	---	20	---	N	SB	VV	---	---	---	---	2525
136N092W36DDH1	W. ROKUSEK	16	16	24	1917	S	---	6	---	---	N	SB	VV	---	---	---	---	2470
136N092W36DDH2	W. ROKUSEK	88	---	6	6	1967	U	---	17	8-67	O	ST	VV	---	---	---	---	2473
136N092W36DDH3	W. ROKUSEK	60	60	18	18	1967	K	---	8	---	N	ST	---	C	7	8.5	2473	
136N093W02CRC	P. MILLER	202	159	4	4	1968	K	7	105	---	N	SB	VV	D	C	6	9.5	2462
136N093W04RHC1	J. KOLLING	327	327	6	---	---	U	---	---	---	N	ST	VV	---	---	---	---	2615
136N093W04RHC2	J. KOLLING	30	30	6	---	---	H	---	10	---	N	SB	1	---	---	---	---	2612
136N093W09CDC1	F. MILLER	160	---	4	4	1956	S	---	100	---	N	SB	VV	---	---	---	---	2622
136N093W09CDC2	F. MILLER	283	---	4	4	1962	H	---	70	---	N	ST	VV	---	K	5	---	2622
136N093W09GDD	F. MILLER	22	---	8	8	1916	S	1	18	---	N	SB	---	---	K	4	---	2610
136N093W10ABB1	L. MILLER	30	0	60	---	---	S	---	25	---	N	SB	VV	---	K	6	7.5	2477
136N093W10ABR2	L. MILLER	192	147	4	4	1960	H	9	95	---	N	SB	VV	D	K	5	---	2480
136N093W10BBA1	N. REBEL	140	---	6	6	1909	S	---	---	---	N	SB	---	---	K	5	10.5	2508
136N093W10BBA2	N. REBEL	168	168	6	6	1957	H	---	40	---	N	ST	---	---	---	---	---	2508
136N093W10DAB	J. RUTH	120	120	4	---	---	H	---	60	---	N	ST	---	---	K	6	---	2480
136N093W12ABH	J. MAYER	105	105	6	6	1948	K	26	50	---	N	ST	VV	---	K	5	---	2413
136N093W12BBA1	P. WELSCH	90	90	6	---	---	S	---	---	---	N	ST	---	---	K	5	8.5	2404
136N093W12BBA2	P. WELSCH	85	85	5	---	---	H	---	41	---	N	ST	---	---	K	5	---	2403
136N093W14AAA1	F. MAYER	115	115	18	18	1928	S	---	50	---	N	ST	---	---	---	---	---	2430
136N093W14AAA2	USGS	45	---	---	---	1968	U	---	17	0-68	O	SB	---	G	---	---	---	2430
136N093W14CBC	N. MAYER	170	110	4	4	1961	S	18	65	---	N	SB	3V	D	K	4	9.0	2510
136N093W15BCD	J. ROTH	230	145	4	4	1961	S	3	190	---	N	SB	VV	D	C	6	10.0	2590
136N093W17DCC1	F. MAYER	75	0	48	---	---	S	3	22	---	N	SB	1	---	---	---	---	2593
136N093W17DCC2	F. MAYER	185	165	4	4	1958	S	5	80	---	N	ST	VV	---	K	5	---	2593
136N093W17DCC3	F. MAYER	132	52	4	4	1962	H	14	35	---	N	SB	1	D	K	4	---	2590
136N093W17DDO	L. MAYER	68	62	4	4	1965	H	5	---	---	N	SP	1	---	K	6	---	2560
136N093W18AAA1	F. THOMAS	82	82	18	18	1928	H	---	37	---	N	SB	VV	---	K	5	---	2633
136N093W18AAA2	F. THOMAS	290	294	4	4	1966	S	11	100	---	N	SB	VV	D	K	5	9.5	2635
136N093W19AAA	P. JORDAN	---	0	5	5	1959	U	---	F	---	N	ST	---	---	---	---	---	2515
136N093W20ABR	F. MAYER	162	127	4	4	1964	H	23	80	---	N	SB	3V	D	K	6	---	2560
136N093W20CBB	F. MAYER	283	233	4	4	1961	S	6	160	---	N	TR	VV	D	---	---	---	2510
136N093W20DAA	C. BITTENBRINDE	254	---	6	---	---	S	---	120	---	N	TR	---	---	K	5	---	2510
136N093W22AAA1	N. MAYER	110	110	6	6	1956	H	---	80	---	N	SB	VV	---	K	6	---	2470
136N093W22AAA2	N. MAYER	122	78	4	4	1960	S	12	100	---	N	SB	VV	D	C	6	9.0	2473

LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FRQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAIL-	DN TYPE	SPE-CIFIC CON-DUCT ANCE	TEM-PE-RATURE (°C)	ALTI-TUDE-OF LSD (FT.)
136N093W23ABB	A.FRIEDT	100		75	6	1916	S	--	20	--	N	SB	VV	--	K	4	9.0	2468
136N093W24BDC	L.FRIEDT	110		110	4	--	H	--	57	--	N	ST	--	--	K	6	--	2412
136N093W25BBB	NDSWC 3552	201	220	198	1	1967	U	--	99	11-67	M	TR	2V	Y	C	6	9.5	2421
136N093W26DBH1	J.FRIEDT	24		24	36	--	S	--	20	--	N	ST	I	--	K	6	9.5	2457
136N093W26DBH2	J.FRIEDT	280		280	6	1960	H	--	40	--	N	TA	--	--	K	5	--	2457
136N093W30ABA1	C.BITTENBINDER	30		--	18	1909	S	--	20	--	N	Sb	VV	--	K	5	10.5	2495
136N093W30ABA2	C.BITTENBINDER	60		60	18	--	H	--	25	--	N	SB	VV	--	--	--	--	2495
136N093W30ABA3	C.BITTENBINDER	81		36	4	1960	H	15	25	--	N	SB	VV	D	--	--	--	2498
136N093W30ABA4	C.BITTENBINDER	82		60	4	1967	H	15	30	--	N	Sb	VV	--	--	--	--	2498
136N093W32ADC	T.BURGHART	122		92	4	1962	H	5	50	--	N	SB	VV	D	K	5	--	2472
136N093W32CAD	N.EBNER	140		140	6	1912	K	--	15	--	N	TR	--	--	K	4	11.0	2477
136N093W34HC01	L.JORDAN	120		--	4	--	S	--	40	--	N	ST	--	--	K	3	11.5	2510
136N093W34HC02	L.JORDAN	100		90	4	1968	H	12	75	--	N	SB	VV	D	C	4	--	2515
136N093W35AB	AMERADA-GROSZ 1	7948		--	9	1958	U	--	--	--	N	--	--	--	--	--	--	2535
136N093W35DC	CANNONBALL UTIL	7503		--	9	1959	U	--	--	--	N	--	--	--	--	--	--	2545
136N094W03CCB	J.WEGH	32		--	18	1931	U	--	22	8-67	D	SB	--	--	--	--	--	2561
136N094W03DD	NDSWC 3666	224	240	218	1	1968	U	--	127	11-68	M	SB	2V	GE	C	5	8.5	2568
136N094W04DCC1	F.KRAUTER	21		0	72	1910	S	--	14	--	N	22	G	--	--	--	--	2575
136N094W04DCC2	F.KRAUTER	18		18	24	--	H	--	16	--	N	22	G	--	K	5	--	2575
136N094W06B8C	M.WAX	85		85	18	--	K	--	20	--	N	Sb	--	--	K	5	--	--
136N094W07AAU	J.LAMPL	160		--	8	--	S	--	75	--	N	SB	--	--	K	4	10.5	--
136N094W07CCD	A.DOBITZ	86		86	4	1964	H	--	40	--	N	SB	I	--	K	5	--	--
136N094W08BDC	J.LAMPL	30		0	60	1903	U	--	12	--	N	Sb	VV	--	--	--	--	--
136N094W10BDA1	J.WEGH	40		0	72	1907	H	--	35	--	N	SB	--	--	K	6	--	2380
136N094W10BDA2	J.WEGH	141		--	4	1961	S	12	55	--	N	SB	VV	D	K	7	7.5	2583
136N094W10BDD	J.WEGH	120		--	4	--	S	--	--	--	N	SB	VV	--	--	--	--	2582
136N094W11BAC	F.WELSCHE	14		0	72	1921	K	--	10	--	N	SB	VV	--	K	6	9.5	2540
136N094W20CCC1	C.RUTHERFORD	213		207	6	1936	U	--	90	--	N	SB	P	--	--	--	--	2630
136N094W20CCC2	C.RUTHERFORD	60		60	12	--	H	--	40	--	N	SB	--	--	K	3	--	--
136N094W24CBH1	V.JAHNER	90		90	4	1959	H	--	30	--	N	ST	VV	--	K	5	--	2497
136N094W24CBH2	V.JAHNER	90		90	4	1962	S	--	30	--	N	ST	VV	--	K	5	--	2497
136N094W24DDC	F.JAHNER	210		210	4	1955	H	--	--	--	N	TR	--	--	K	5	--	2490
136N094W25AAB	F.JAHNER	67		67	4	1964	S	--	--	--	N	ST	--	--	K	4	--	2490
136N094W26CBC	S.JAHNER	65		65	6	--	S	--	30	--	N	SB	VV	--	K	4	12.0	2580
136N094W28BB1	L.PEKAS	1200		--	6	1942	S	--	600	--	N	HC	--	--	K	4	9.0	2600
136N094W28BB2	L.PEKAS	400		400	6	--	H	--	110	--	N	TR	--	--	--	--	--	2600
136N094W28BB3	L.PEKAS	120		--	6	--	H	--	--	--	N	SB	--	--	K	6	--	2600
136N094W30CDC	H.KOPPINGER	120		80	4	1967	S	--	73	--	N	SB	VV	D	--	--	--	2696
136N094W30BDD	J.KOPPINGER	114		--	--	--	U	--	29	8-67	D	SB	--	--	--	--	--	2660
136N094W31ADD	J.KOPPINGER	80		--	6	--	S	--	50	--	N	SB	--	--	--	--	--	2645

LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAILABLE	QW TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ALTITUDE OF LSD (FT.)
136N094W31BAB1	M.KOPPINGER	120		120	4	1932	S	--	--	--	N	SB	--	--	K	5	12.0	2697
136N094W31BAB2	M.KOPPINGER	122		62	4	1958	H	2	85	--	N	SB	1	D	K	6	--	2699
136N094W31BAB3	M.KOPPINGER	110		110	4	1964	S	12	--	--	N	SB	P	--	--	--	--	--
136N094W31CDC	P.WAX	265		265	6	1954	U	0	80	--	N	SB	1	--	--	--	--	2690
136N094W32CBA1	J.KOPPINGER	60		60	6	1930	S	--	40	--	N	SB	--	--	K	5	--	2620
136N094W32CBA2	J.KOPPINGER	180		100	4	1952	H	--	110	--	N	SB	VV	--	K	5	--	2620
136N094W33CRC	D.PEKAS	90		25	4	1960	S	7	16	--	N	SB	VV	D	C	7	10.5	2582
136N094W34AAB1	K.JAHNER	40		40	24	--	H	--	15	--	N	SB	VV	--	K	4	17.5	2542
136N094W34AAB2	K.JAHNER	80		40	4	1962	S	3	25	--	N	SB	1	D	K	5	14.0	2540
136N094W34CDA	J.TGARD	30		0	72	--	H	--	28	--	N	SB	VV	--	K	4	--	2570
136N095W02AAD	G.DASSINGER	44		--	18	1950	K	--	--	--	N	SB	1	--	K	5	--	--
136N095W06ABA1	G.KOPPINGER	27		0	63	1906	S	--	15	--	N	SB	1	--	--	--	--	2680
136N095W06ABA2	G.KOPPINGER	150		--	6	1959	K	--	--	--	N	SB	--	--	K	6	--	2680
136N095W06DDB1	F.URLACHER	75		0	96	--	S	--	17	--	N	SB	--	--	--	--	--	2680
136N095W06DDH2	F.URLACHER	180		--	4	1948	H	3	120	--	N	SB	VV	--	K	6	--	2680
136N095W10DDC	M.KREBS	81		51	4	1959	K	--	25	--	N	SB	--	--	K	6	--	2625
136N095W11DDA	P.DASSINGER	24		0	60	1906	K	--	60	--	N	SB	--	--	K	6	6.0	--
136N095W12DDA	M.KRAUTER	100		100	4	1956	K	--	60	--	N	SB	VV	--	K	5	--	2605
136N095W13AAA	NDSMC 3529	300		0	5	1967	U	--	--	--	N	--	--	Y	--	--	--	2582
136N095W14BAB	M.KREBS	60		--	18	--	U	--	51	6-68	0	SB	--	--	--	--	--	2610
136N095W18AAA	R.KAISER	65		65	18	--	U	--	35	6-68	0	SB	--	--	K	7	7.5	2690
136N095W20CBB	I.STEINMETZ	84		0	18	1926	U	--	67	6-68	0	SB	--	--	--	--	--	2700
136N095W21DAA	H.PAHLMEYER	110		0	18	--	K	--	--	--	N	SB	--	--	K	6	8.5	2670
136N095W21BBA	H.PAHLMEYER	73		24	4	1963	U	6	21	--	N	SB	VV	D	--	--	--	2668
136N095W22AAB1	H.PAHLMEYER	65		20	18	1950	S	--	--	--	N	SB	1	--	K	6	9.5	2680
136N095W22AAB2	H.PAHLMEYER	120		120	6	1952	H	--	--	--	N	SB	1	--	K	5	11.0	2680
136N095W22CBB	W.WITTE	80		0	18	--	H	3	50	--	N	SB	--	--	P	5	--	--
136N095W22DDB1	L.WITTE	157		12	18	1908	U	--	10	6-68	U	SB	--	--	--	--	--	2720
136N095W22DDB2	L.WITTE	300		270	4	1965	H	3	200	--	N	TR	VV	--	K	5	--	2720
136N095W23CCB	L.HARTMAN	100		--	6	1918	K	--	--	--	N	SB	--	--	P	5	11.0	--
136N095W24AAA	C.HARTMAN	28		--	6	--	U	--	16	6-68	0	SB	--	--	--	--	--	2660
136N095W24DAA	W.MONKE	90		70	6	1963	K	--	--	--	N	SB	--	--	K	5	--	2650
136N095W26DCC	W.WITTE	170		--	18	--	S	3	78	--	N	SB	--	--	--	--	--	2700
136N095W28BBC	R.HARTMAN	66		--	4	1950	K	--	20	--	N	SB	VV	--	K	6	--	--
136N095W28DCC	E.SWITZER	120		120	4	1959	K	--	80	--	N	SB	VV	--	K	4	--	--
136N095W29DCD	W.WITTE	60		--	6	--	H	4	15	--	N	SB	VV	--	K	5	9.0	--
136N095W31ADD	M.KREBS	60		--	18	--	K	--	40	--	N	SB	--	--	K	5	10.5	--
136N095W32ABB	D.DILL	30		0	60	1914	H	--	12	--	N	SB	--	--	K	5	9.0	2630
136N095W34DAA1	A.DILL	40		40	6	1950	K	8	99	6-68	0	SB	--	--	P	5	--	2670
136N095W34DAA2	A.DILL	60		40	6	1952	S	8	30	--	N	SB	VV	--	K	5	--	--

LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIA-ETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAIL-ABLE	QW TYPE	SPE-CIFIC CON-DUCT ANCE	TEM- PER- ATURE (°C)	ALTI- TUDE- OF LSD (FT.)
136N096W02CCB	G. ANTON	197	--	4	4	1966	H	--	1	--	N	SR	VV	--	K	5	--	--
136N096W03HAD	G. ANTON	213	--	4	4	1960	S	--	150	--	N	SB	--	--	--	--	--	2785
136N096W09ADA	J. SCHIFF	42	--	16	--	--	H	--	30	--	N	SB	--	--	K	4	11.0	--
136N096W11CCC	A. STAGL	30	30	18	--	1947	K	--	10	--	N	SB	VV	--	K	4	--	--
136N096W12AAD1	F. URLACHER	70	--	0	48	1912	K	--	5	--	N	GS	VV	--	K	5	11.0	--
136N096W12AAB2	F. URLACHER	35	35	18	--	1961	U	--	12	--	N	SB	1	--	--	--	--	--
136N096W13DDC	G. WILHELM	41	--	18	--	--	S	--	22	11-67	0	SB	--	--	--	--	--	2740
136N096W14AAD	P. SCHRAMBERGER	20	0	96	--	1905	U	--	8	11-67	0	SB	1	--	--	--	--	2700
136N096W15ADD1	C. KILLER	180	--	6	--	1916	K	60	185	--	N	SB	1	--	--	--	--	2770
136N096W15ADD2	C. KILLER	220	205	6	--	1959	S	60	160	--	N	ST	1	--	K	6	--	2770
136N096W18ACA	F. WEHNER	48	--	12	--	--	U	--	21	11-67	0	SB	--	--	--	--	--	2870
136N096W19DDJ	M. HERBERHOLZ	132	30	4	--	1961	S	36	35	--	N	SB	1	D	C	4	--	2698
136N096W20BHC1	S. BOEHM	65	--	--	--	1919	K	--	--	--	N	SB	1	--	--	--	--	2785
136N096W20BRC2	S. BOEHM	85	--	6	--	1915	K	7	25	--	N	ST	VV	0	K	4	--	2590
136N096W20CDD	T. STAGL	52	40	4	--	1950	K	--	26	--	N	SB	1	--	K	4	--	--
136N096W24AAA	NDSMC 3719	144	300	138	1	1969	U	--	107	7-69	1	SR	VV	Y	--	--	--	2713
136N096W28ABB	T. STAGL	140	--	4	--	--	U	--	--	--	N	SB	--	--	--	--	--	--
136N096W28CCC	J. GRUNDHAUSER	300	300	6	--	--	S	--	200	--	N	ST	--	--	--	--	--	--
136N096W30AAC	M. HERBERHOLZ	45	--	18	--	1964	S	6	25	--	N	SB	1	--	--	--	--	2680
136N096W30AAD1	M. HERBERHOLZ	50	--	18	--	1949	K	4	--	--	N	SB	1	--	--	--	--	2704
136N096W30AAD2	M. HERBERHOLZ	50	--	18	--	--	S	--	--	--	N	SR	--	--	--	--	--	2700
136N096W30AAD3	M. & M. HERBERHOLZ	69	150	24	4	1960	H	5	35	--	N	SB	1	D	K	5	--	2704
136N096W32HAA1	N. RETTINGER	131	--	4	--	1961	H	2	50	--	N	SB	1	D	K	6	--	2652
136N096W32BAA2	N. RETTINGER	325	--	6	--	1962	S	--	--	--	N	ST	--	--	K	5	--	2652
136N097W02AL4	J. DONGEL	213	--	5	--	1930	U	--	86	9-67	0	SR	--	--	--	--	--	2820
136N097W03HAD	V. STEIER	200	0	--	--	1961	U	--	--	--	N	--	--	D	--	--	--	2807
136N097W03CAD	V. STEIER	413	0	--	--	--	U	--	--	--	N	--	--	D	--	--	--	2829
136N097W03CDD1	V. STEIER	50	50	24	--	--	S	--	25	--	N	SB	--	--	K	5	--	--
136N097W03CDD2	V. STEIER	25	--	24	--	--	H	--	--	--	N	SB	--	--	K	5	--	--
136N097W04HAD	J. KIPP	15	--	--	--	--	U	--	8	9-67	0	SB	--	--	--	--	--	2890
136N097W08RDD	P. LENHARDT	260	230	4	--	1961	S	50	10	--	N	SR	VV	--	--	--	--	2800
136N097W08CAA1	P. LENHARDT	232	--	4	--	1912	S	55	10	--	N	SB	VV	--	--	--	--	2799
136N097W08CAA2	P. LENHARDT	77	17	4	--	1967	H	15	14	--	N	SB	1	--	K	6	--	2799
136N097W08CAA3	P. LENHARDT	260	240	4	--	1967	H	30	118	--	N	SB	VV	D	--	--	--	2799
136N097W09ADD1	N. BETCHNER	34	--	24	--	1948	S	1	--	--	N	GS	VV	--	K	6	8.5	--
136N097W09ADD2	N. BETCHNER	87	81	6	--	1956	H	20	71	--	N	SB	1	--	K	6	--	2820
136N097W10DCD	N. WICKLOS	68	0	24	--	1910	U	--	78	9-67	H	GS	--	--	--	--	--	2804
136N097W12AAC	F. WEHNER	275	--	6	--	1928	K	--	60	--	N	SB	VV	--	K	5	9.5	2790
136N097W12BAB	M. GARTNER	16	0	36	--	--	U	--	7	9-67	I	SB	--	--	--	--	--	2782
136N097W12CAC	A. SIMON	315	--	4	--	1924	K	--	100	--	N	ST	1	--	--	--	--	--

LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPH)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAILABLE	QM TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ALTITUDE OF LSO (FT.)	
136N097W13BB6	F.DUBISAR	300			6	1915	S		200		N	ST	VV						
136N097W14AAA	F.DUBISAR	13		0	48		S	6	8	9-67	O	SB	VV		K	4	10.5	2895	
136N097W14C8C	M.WERT	255			6	1958	K	9	150		N	SB	VV					2790	
136N097W140AC	F.STEPHAN	52			24	1907	H		10		N	SB	VV						
136N097W150AO	NDSMC 3533	201	320	198	1	1967	U		132	10-67	M	SB	1V	Y	C	5	7.0	2758	
136N097W16CCC	A.JIRGES	40		40	18	1948	K		28		N	SR	1		K	5			
136N097W17ADA1	J.HEISER	34		34	6		U		9	9-67	I	SR						2741	
136N097W17ADA2	J.HEISER	189			6	1914	U		125	9-67	U	SB	VV					2745	
136N097W180DA	F.JIRGES	127			6	1916	U		74	9-67	O	SB	1					2764	
136N097W25CCD1	F.STAGL	280			6	1928	S		100		N	ST	1		K	5			
136N097W25CCD2	F.STAGL	85		85	6		H	2			N	SB	P						
136N097W29ACA	J.KREBS	240			5		K		70		N	ST	VV		K	5	10.0		
136N097W32C8B	NEW ENGLAND	170		140	4	1967	H		57		N	SB	1V	D	C	5	7.5	2586	
136N097W320AB	A.FITTERER	76			4	1965	S		15		N	SB			K	5	9.5	2610	
136N097W320BA	A.FITTERER	67			6	1945	H		60		N	SB	VV		K	5			
136N097W330CC	NEW ENGLAND 5	104			6		P	24	70		N	SB	VV		C	5	9.0	2600	
136N097W34AD8	J.BOHLMAN	135		135	6	1928	K				N	SB	VV		K	7	11.0		
136N097W34CCR	J.KREBS	190		101	5		K		75		N	SB	VV		K	5		2612	
136N097W34FDD	PLEYAN EST.	69			4	1946	S		59		N	SB	VV	D				2621	
STARK COUNTY																			
137N091W04DAA1	J.COMLON	192		92	4	1963	S	6	24		N	TR	VV	D	K	5	9.5	2146	
137N091W04DAA2	J.COMLON	600		563	2	1967	S	8	+38	3-68	O	C	VV	D	C	6	8.5	2144	
137N091W06ADD	P.MESSER	43		0	36		U		29	6-67	O	ST						2258	
137N091W06CCB1	M.MESSER	138		138	6		S		20		N	TR	I				11.0	2185	
137N091W06CCB2	M.MESSER	20		14	24	1947	H		15		N	TR	VV					2180	
137N091W06CCB3	M.MESSER	40		40	24	1963	S		20		N	TR	VV		K	4	10.5	2180	
137N091W10AB8	H.SIEWERT	600			2		S	8	+33	3-68	O	TC			K	6	10.0	2124	
137N091W10BB8	USGS	161			5	1966	U				N			G				2202	
137N091W10BB81	H.SIEWERT	35		35	18		U		29		N	TR						2120	
137N091W10BB82	H.SIEWERT	35		0	48		K		21		N	TR			K	5	9.5	2118	
137N091W10CB1	G.SIEWERT	38		0	24		S		32		N	TR	VV		K	5	10.5	2135	
137N091W10CB2	G.SIEWERT	38		38	18	1945	H		32		N	TR	VV		K	5		2135	
137N091W13ACC1	G.GUNSCH	61		61	2	1953	S				N	TR			K	6	8.5	2120	
137N091W13ACC2	G.GUNSCH	640			2	1964	K	2	+46	3-68	O	L	VV	D	C	6	11.0	2117	
137N091W14BAB1	A.ENZI	20		0	60		S		14		N	TR			K	6	10.0	2129	
137N091W14BAB2	A.ENZI	52		52	6	1947	H				N	TR	VV		K	5		2130	
137N091W14CBA	P.ENZI	78		35	6	1960	K	6	15		N	TR	1	D	K	5	11.0	2150	
137N091W18CCD	USGS	73	257	53	2	1966	U		32	10-67	M	SB	1V	GE				2347	
137N091W20B8C1	A.SCHWARTZMAN	153		153	4	1949	S		90		N	TR	VV		K	6	12.0	2312	
137N091W20B8C2	A.SCHWARTZMAN	159		159	4	1960	H		94		N	TR	VV		K	6		2310	
137N091W22AAC1	R.VINKLER	25		0	60	1902	S		17		N	22	G					2168	

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LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPN)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAIL-ABLE	OW TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ALTITUDE-OF LSD (FT.)
137N091W22AAC2	R. WINKLER	35		35	18	1959	U	10	23	--	N	22	G	--	--	--	--	2170
137N091W22DAC1	T. ROLL	70		70	6	--	H	3	20	--	N	TR	I	--	--	--	--	2178
137N091W22DAC2	T. ROLL	107		107	6	--	K	--	57	--	N	TR	I	--	--	K	5	2175
137N091W22DAC3	T. ROLL	1000		--	2	1967	K	--	+26	3-68	O	C	VV	O	K	6	7.5	2173
137N091W248CA	J. BERGER	165		165	2	1959	K	--	20	--	N	TR	P	--	K	6	--	2223
137N091W26CAD	C. WALTH	70		70	4	1967	S	15	30	--	N	TR	I	--	K	5	7.5	2250
137N091W26C8D	A. SAILER	16		0	48	--	K	--	8	--	N	TR	VV	--	K	5	6.5	2225
137N091W27C8U	C. WALTH	185		150	6	1960	K	20	85	--	N	TR	--	--	K	6	--	2285
137N091W288AA	A. LUTHLE	125		114	6	1959	S	15	60	--	N	TR	VV	--	--	--	--	2222
137N091W288BC	F. WALTH	--		--	--	--	H	--	--	--	N	--	--	--	K	6	--	2303
137N091W30A8A	E. SCHATZ	9		0	48	--	K	--	4	--	N	ST	I	--	K	5	--	2300
137N091W30DAB1	V. SCHOLZ	178		--	6	--	H	--	98	--	N	TR	--	--	K	6	11.0	2292
137N091W30DAB2	V. SCHOLZ	156		--	6	1963	H	--	125	--	N	TR	--	--	K	6	--	2293
137N091W31A0D	E. LUTHLE	115		84	5	1960	S	15	55	--	N	TR	VV	--	--	--	--	2353
137N091W32ABA1	A. LUTHLE	177		177	4	--	S	--	--	--	N	TR	--	--	--	--	--	2317
137N091W32ABA2	A. LUTHLE	177		177	4	1948	S	--	--	--	N	TR	--	--	K	6	12.0	2322
137N091W32C8B	E. LUTHLE	97		76	4	1904	K	--	52	--	N	TR	VV	--	K	6	--	2360
137N092W0280C	P. HAUCK	200		200	6	--	K	--	--	--	N	TR	--	--	K	5	--	2225
137N092W048C8	T. REBEL	240		200	3	1961	S	8	--	--	N	TR	VV	D	C	5	4.0	2315
137N092W04C0C1	B. KILZER	35		35	6	--	S	--	23	--	N	SB	I	--	K	5	9.5	2315
137N092W04C0C2	B. KILZER	66		66	18	1949	H	--	46	--	N	ST	--	--	K	5	--	2325
137N092W04ADD1	T. REBEL	60		0	96	--	H	--	20	--	N	ST	--	--	K	6	10.0	2320
137N092W05ADD2	T. REBEL	100		100	6	1950	S	--	--	--	N	ST	--	--	--	--	--	2330
137N092W07C0C	J. PECHTL	75		0	48	--	K	--	--	--	N	SB	--	--	K	4	9.5	2475
137N092W0800D1	C. SCHURSCH	50		50	6	--	K	3	--	--	N	SH	--	--	K	5	18.5	2340
137N092W0800D2	C. SCHURSCH	160		160	6	--	H	--	--	--	N	TR	--	--	K	6	--	2342
137N092W09CCL	USGS	35		--	--	1968	U	--	--	--	N	--	G	--	--	--	--	2352
137N092W1000R1	L. MESSER	30		0	60	--	S	--	15	--	N	SB	--	--	--	--	--	2305
137N092W1000R2	L. MESSER	50		0	60	--	S	--	--	--	N	SB	--	--	K	6	8.5	2295
137N092W150B	TEXACO, SCHANK 1	10420		10420	7	1966	U	--	--	--	N	--	--	--	--	--	--	2327
137N092W1688B	F. PATHAM	11		0	48	--	U	--	--	--	N	SB	--	--	--	--	--	2340
137N092W160DA	G. SCHANK	29		0	60	--	U	--	24	6-67	O	SB	--	--	--	--	--	2335
137N092W1788D	K. MESSER	23		0	60	1905	U	--	1	6-67	I	SB	--	--	--	--	--	2395
137N092W19C0C	V. SCHREIBER	7		7	24	--	U	--	3	6-67	O	SB	--	--	--	--	--	2427
137N092W2088B	A. SCHANK	80		80	6	1937	U	--	40	--	N	SB	--	--	--	--	--	2433
137N092W200DA	P. KELSCH	90		--	6	--	K	9	--	--	N	SB	--	--	K	5	--	2351
137N092W2180C	L. KILZER	17		0	72	--	U	--	13	6-67	U	SB	--	--	--	--	--	2340
137N092W22AAC1	A. SCHANK	80		80	6	1937	K	--	30	--	N	TR	--	--	K	6	9.5	2270
137N092W22AAC2	A. SCHANK	121		30	4	1964	S	15	35	--	N	TR	3V	D	C	6	--	2273
137N092W22ABD	A. SCHANK	80		55	4	1968	H	15	32	--	N	TR	VV	--	P	6	--	2271

LUCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAILABLE	QW TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ALTITUDE OF LSD (FT.)
137N092M2588B	P. MESSER	67		67	4	1952	K	11	34		N	TR			K	5		2275
137N092M2700D1	P. KUNTZ	30		30	6	1951	K		13		N	TR	VV		K	5		2320
137N092M2700D2	P. KUNTZ	30		30	6		U				N	TR	VV					2710
137N092M2700D3	P. KUNTZ	60		40	6	1968	H	3	9		N	TR	VV	D	K	5	10.0	2320
137N092M29AAA	USGS	45				1968	U				N			G				2366
137N092M3288R1	C. HAAS	180		180	6		S				N	ST						2440
137N092M3288B2	C. HAAS	120		120	6	1960	H				N	SB			K	6		2447
137N092M320GD	USGS	95				1968	U				N			G				2461
137N092M33AAA1	G. SCHANK	90		90	6		U		50		N	TR						2342
137N092M33AAA2	G. SCHANK	90		90	6	1965	K	7	30		N	TR			K	6		2346
137N092M3388B	NDSWC 3706	200				1969	U				N			Y				2410
137N092M3488D	B. KUNTZ	17	0	60			U		8	6-67	U	ST			K	6		2334
137N092M3588B	B. KUNTZ	50		50	6	1957	H		9		N	TR	VV					2322
137N093M01DCA	J. PETERS	26	0	48		1920	U		16	9-66	I	TR						2370
137N093M02C6D	E. PHILLIPS	30		30	18		S				N	SB	VV		K	6	10.0	2380
137N093M02CCA	E. PHILLIPS	100	100	18		1946	H		75		N	SB	1		K	6		2393
137N093M04ABB	KIRSCHENHEITER	60	40	24		1946	K		20		N	ST	VV		K	6		2328
137N093M04BBC1	H. NAUMAN	18	0	72		1898	S		12		N	SB			K	6	8.5	2334
137N093M04BBC2	H. NAUMAN	200		6		1952	H		140		N	TR			K	5		2343
137N093M04LDA	KIRSCHENHEITER	16	0	72		1918	S		13		N	SB			K	6	10.0	2335
137N093M04CDD	KIRSCHENHEITER	7	0	96			U		4	7-67	O	SB			K	4	12.0	2340
137N093M06BAC	J. HEIDECKER	40	40	18		1948	S		22		N	ST	VV					2384
137N093M06BBA1	J. HEIDECKER	21	0	72			S		17		N	SB	P		K	6	6.0	2390
137N093M06BBA2	J. HEIDECKER	48		48	18	1948	H		15		N	ST	VV					2395
137N093M08BAA	M. LINSTER	24	24	18		1956	S		16		N	SO	VV					2400
137N093M0888A1	M. LINSTER	12	0	72			S		1		N	SB			K	6	9.5	2400
137N093M0888A2	M. LINSTER	27	27	24		1953	H		18		N	SB	1		K	5		2410
137N093M0888D	N. KURTZ	25		12			U		17	7-67	O	SB						2410
137N093M10CDA	J. HAAS	70	0	72			H		12		N	SB						2470
137N093M10CDB	J. HAAS	144	84	4		1962	S	2	50		N	SB	1	D	K	5	10.0	2505
137N093M1100D1	J. SCHOLZ	17	0	72		1916	S		12		N	SB	S				8.5	2400
137N093M1100D2	J. SCHOLZ	51	31	4		1966	H		30		N	SB			K	5		2397
137N093M12CCA1	J. ZENT	54	54	18		1956	S		34		N	SB			K	6	8.5	2347
137N093M12CCA2	J. ZENT	104	104	4		1957	K		64		N	ST			K	5		2347
137N093M12CCA3	J. ZENT	283	283	4		1966	S		53		N	TR	P					2353
137N093M18CAA1	N. SCHNEIDER	20	0	72			S		4		N	SB	VV					2460
137N093M18CAA2	N. SCHNEIDER	75	75	4		1956	S		30		N	SB	1		K	5		2460
137N093M18CAB	N. SCHNEIDER	75	75	4		1960	H		30		N	SB	1		K	5		2466
137N093M20SCA	E. WIFGLANDA	140	140	4		1957	H		50		N	ST			K	5		2463
137N093M20CCC	K. BLOOM	29	0	72			S		20	7-67	O	SB			K	5	7.0	2490

LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAIL-ABLE	OW TYPE	SPE-CIFIC CON-DUCT ANCE	TEM- PER- ATURE (°C)	ALTI- TUDE- OF LSD (FT.)
137N093W218BA1	J.HAAS	80		80	24	1932	S	--	30	--	N	SB	--	--	K	6	9.0	2432
137N093W218BA2	J.HAAS	110		110	6	1951	H	--	100	--	N	ST	--	--	K	5	--	2432
137N093W24CCC	G.SCHREIBER	19		0	96	--	U	--	4	7-67	O	SB	--	--	--	--	--	2456
137N093W25AAA1	SCHREIBER BROS.	180		--	6	1910	S	--	120	--	N	SB	VV	--	--	--	--	2486
137N093W25AAA2	SCHREIBER BROS.	180		180	4	1948	S	--	--	--	N	SB	VV	--	K	6	--	2490
137N093W25AAA3	SCHREIBER BROS.	202		162	4	1961	S	9	180	--	N	SB	VV	D	C	5	10.5	2487
137N093W28AAC	J.WELSCHE	168		--	6	1950	S	--	--	--	N	SB	--	--	--	--	--	2559
137N093W28AAD	J.WELSCHE	126		126	6	1913	H	--	25	--	N	SB	VV	--	--	--	--	2538
137N093W290DD	M.MESSER	64		--	18	--	S	--	37	7-67	O	SB	--	--	--	--	--	2490
137N093W308GB1	E.PECHTL	28		0	72	1895	S	--	15	--	N	SB	--	--	K	6	10.5	2542
137N093W308GB2	E.PECHTL	28		28	4	1951	H	--	15	--	N	SB	--	--	K	6	--	2541
137N093W348AA1	M.JORDAN	216		216	6	--	K	--	136	--	N	SB	--	--	K	5	10.0	2572
137N093W348AA2	M.JORDAN	212		190	4	1968	K	3	150	--	N	SB	VV	D	K	5	8.5	2571
137N093W348BC	J.JORDAN	275		--	6	1929	K	--	--	--	N	ST	--	--	K	5	--	2611
137N093W368BC	J.LINK	230		230	6	1928	K	--	200	--	N	ST	VV	--	K	5	--	2547
137N094W010AB	A.SCHINWAL	27		0	48	--	S	--	19	7-67	O	SB	1	--	K	7	7.5	2425
137N094W010AC	A.SCHINWAL	30		30	18	--	S	--	--	--	N	SB	1	--	--	--	--	2427
137N094W030CD1	H.LEFOR	30		30	18	--	K	--	24	--	N	SB	--	--	K	5	--	--
137N094W030CD2	H.LEFOR	60		60	18	--	U	--	9	--	N	SB	--	--	--	--	--	2495
137N094W04BCC	N.LEFOR	74		64	6	1959	H	--	60	--	N	SB	1	--	--	--	--	2550
137N094W04CBC	NDSWC 3942	533	900	530	2	1967	U	--	226	6-69	N	TR	1V	Y	C	5	9.5	2545
137N094W04DBC1	F.LEFOR	10		0	48	--	U	20	4	--	N	SB	VV	--	--	--	--	--
137N094W04DBC2	F.LEFOR	16		16	18	--	U	--	6	--	N	SB	VV	--	--	--	--	--
137N094W05ADD	N.LEFOR	54		54	18	--	S	--	--	--	N	SB	P	--	K	4	8.5	--
137N094W05BDD	J.LEFOR	195		195	4	1964	K	4	80	--	N	ST	1	--	K	6	--	2600
137N094W08AAB	N.LEFOR	64		64	4	1965	S	--	15	--	N	SB	VV	--	--	--	--	--
137N094W08BAA1	P.BANYAI	20		0	60	--	S	--	6	--	N	SB	P	--	K	6	6.0	--
137N094W08BAA2	P.BANYAI	60		60	18	1944	H	--	16	--	N	SB	VV	--	K	5	--	2570
137N094W08DAA	J.MARTIN	29		0	48	--	U	--	4	7-67	O	SB	--	--	--	--	--	2580
137N094W10CAA1	C.GOETZ	40		40	18	--	S	--	12	--	N	SB	--	--	K	4	11.0	--
137N094W10CAA2	C.GOETZ	40		40	12	--	H	--	28	--	N	SB	--	--	--	--	--	--
137N094W128B01	R.MESSMER	190		140	18	1941	S	4	140	--	N	SB	--	--	--	--	--	2525
137N094W128B02	R.MESSMER	150		150	6	1956	H	--	140	--	N	SB	--	--	--	--	--	2526
137N094W128B03	R.MESSMER	272		172	4	1964	S	20	120	--	N	SB	VV	D	C	5	9.5	2532
137N094W12DAD	R.MESSMER	42		42	18	--	U	--	20	--	N	SB	1	--	--	--	--	2480
137N094W12DCB	J.SIGL	31		--	24	--	U	--	14	7-67	O	SB	--	--	--	--	--	2487
137N094W15CCA	P.MARTIN	132		--	6	--	S	--	52	--	N	SB	--	--	K	5	7.5	2565
137N094W17AAA	LEFOR CHEESE	285		225	6	1960	N	--	60	--	N	ST	6V	--	K	6	11.0	--
137N094W17ADC	G.LEFOR	100		100	6	--	H	--	--	--	N	SB	--	--	K	6	--	--
137N094W17ADD1	U.S.POST OFFICE	90		--	--	--	H	--	--	--	N	SB	--	--	K	5	--	--

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LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAILABLE	QW TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ALTI-TUDE OF LSD (FT.)
137N094W17ADD2	F. LEFOR	72	72	18	4	1968	H	9	50	---	N	SB	---	---	K	6	---	---
137N094W17ADD3	LEFOR KC CLUB	90	60	4	4	1968	H	10	35	---	N	SB	VV	D	K	5	---	2592
137N094W17DAA	KIRSCHENHEITER	96	76	4	4	1966	H	3	24	---	N	SB	---	---	K	6	---	2635
137N094W20CDD1	N. HENSEL	27	0	---	---	---	H	---	11	---	N	SB	VV	---	K	6	---	---
137N094W20CDD2	N. HENSEL	40	10	4	4	1962	S	---	15	---	N	SB	VV	D	C	5	8.5	2633
137N094W20DCC1	F. MILLER	28	0	72	---	---	K	---	10	---	N	SB	---	---	---	---	---	---
137N094W20DCC2	F. MILLER	30	30	18	---	---	S	---	10	---	N	SB	---	---	---	---	---	---
137N094W22BCC1	C. MARTIN	25	0	72	---	---	H	---	1	---	N	SB	---	---	---	---	---	---
137N094W22BCC2	C. MARTIN	18	18	24	---	---	H	---	1	---	N	SB	VV	---	K	5	---	---
137N094W22BCC3	C. MARTIN	22	12	4	4	1965	S	---	---	---	N	SB	VV	---	K	6	7.5	---
137N094W22BHC4	C. MARTIN	181	151	4	4	1969	S	25	---	---	N	SB	2V	D	---	---	---	2565
137N094W22DAC1	J. JORDAN	34	18	18	---	---	S	26	15	---	N	SB	---	---	---	6	7.0	2620
137N094W22DAC2	J. JORDAN	35	35	18	18	1950	U	3	15	---	N	SB	---	---	---	---	---	2620
137N094W22UAC3	J. JORDAN	218	158	4	4	1961	K	12	155	---	N	SB	VV	D	C	6	10.5	2622
137N094W24ADD1	P. KLEIN	128	128	4	---	---	H	---	70	---	N	SB	---	---	K	5	---	2529
137N094W24ADD2	P. KLEIN	130	130	4	4	1964	S	---	---	---	N	SB	---	---	---	---	---	2525
137N094W24DCB	F. SCHANK	120	120	6	6	1935	K	2	40	---	N	SB	---	---	K	5	---	2542
137N094W26DDB	N. GUTENKUNST	250	250	4	4	1958	H	3	200	---	N	ST	---	---	K	5	---	2595
137N094W26DDC1	N. GUTENKUNST	18	0	48	---	---	S	---	1	---	N	SB	I	---	---	---	---	2595
137N094W26DDC2	N. GUTENKUNST	143	68	4	4	1964	S	4	18	---	N	SB	I	D	K	5	9.5	2595
137N094W28ADD1	E. KREBS	100	---	6	---	---	K	---	70	---	N	SB	---	---	---	---	---	---
137N094W28ADD2	E. KREBS	150	100	4	4	1963	S	---	---	---	N	SB	---	---	---	---	---	---
137N094W28BCC1	P. HOLLINGER	25	0	72	---	---	S	---	10	---	N	SB	P	---	---	---	---	---
137N094W28BCC2	P. HOLLINGER	50	50	18	18	1928	H	---	20	---	N	SB	P	---	K	6	7.5	---
137N094W28BCC3	P. HOLLINGER	33	33	18	18	1961	S	---	18	---	N	SB	P	---	---	---	---	---
137N094W29ABB	F. MILLER	80	80	4	4	1966	S	---	10	---	N	SB	---	---	---	---	---	---
137N094W29ADD	P. HOLLINGER	90	90	6	6	1961	S	---	28	---	N	SB	P	---	---	---	---	---
137N094W29AAA	N. HENSEL	30	0	60	---	---	S	---	10	---	N	SB	VV	---	K	6	6.5	---
137N094W31BAC	N. KUHN	30	30	18	---	---	K	---	5	---	N	SB	VV	---	K	5	---	---
137N094W32ABD	N. SCHROEDER	85	85	6	6	1951	K	---	40	---	N	SB	---	---	K	4	---	---
137N094W32BBH1	D. GRUNDHAUSER	112	32	4	4	1961	H	2	30	---	N	SB	VV	D	C	4	---	2670
137N094W32BBH2	D. GRUNDHAUSER	75	75	18	18	1965	S	---	---	---	N	SB	VV	---	---	---	---	---
137N094W34CRC1	J. HEROLD	18	0	72	---	---	S	---	5	---	N	SB	VV	---	K	5	7.5	2600
137N094W34CBC2	J. HEROLD	30	30	18	---	---	H	---	18	---	N	SB	VV	---	K	4	---	2602
137N094W34CBC3	J. HEROLD	280	263	4	4	1968	U	4	100	---	N	SB	3V	D	---	---	---	2600
137N094W35AAA	N. GUTENKUNST	50	0	60	---	---	S	---	30	---	N	SB	---	---	---	---	---	2608
137N095W01DCB1	G. ANTON	150	150	6	6	1913	U	---	---	---	N	SB	---	---	---	---	---	---
137N095W01DCB2	G. ANTON	14	0	48	---	---	K	---	1	---	N	GS	S	---	K	5	5.0	---
137N095W01DCB3	G. ANTON	25	25	6	6	1957	H	---	7	---	N	SB	I	---	---	---	---	2690
137N095W02BCD	J. KECK	100	---	---	---	---	K	---	---	---	N	SB	---	---	K	5	---	---

LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAILABLE	QM TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ALTITUDE OF L.S.D. (FT.)
137N095W02CAB	N.BIEL	35		0	48	--	K	--	27	--	N	SB	I	--	K	4	--	--
137N095W03AAB	P.MOREL	20		0	60	--	U	--	5	--	N	GS	--	--	--	--	--	--
137N095W05DCD1	P.MOREL	150		150	5	1947	U	--	60	--	N	SB	VV	--	K	5	--	2623
137N095W05DCD2	P.MOREL	145		139	4	1968	K	4	60	--	N	SB	I	D	K	5	--	2623
137N095W08ABA	P.MOREL	18		0	60	--	S	--	6	--	N	SB	--	--	--	--	--	--
137N095W08CCC1	C.MOREL	40		0	60	--	K	--	20	--	N	GS	--	--	K	6	--	--
137N095W08CCC2	C.MOREL	49		--	6	--	U	--	25	6-67	O	GS	--	--	--	--	--	2610
137N095W09DDA1	M.REINDEL	217		200	6	1947	K	--	20	--	N	SB	VV	--	K	5	9.5	--
137N095W09DDA2	M.REINDEL	250		200	2	1927	U	--	--	--	N	SB	3V	D	--	--	--	2667
137N095W10AAB	H.BIEL	163		127	6	1964	K	10	104	--	N	SB	VV	D	K	5	--	2650
137N095W11CAC	F.BAAR	20		0	96	1907	K	--	8	--	N	GV	--	--	K	5	--	--
137N095W11CBU1	F.BAAR	286		286	6	1960	U	--	226	--	N	SB	I	--	--	--	--	2717
137N095W11CBU2	F.BAAR	275		--	--	1969	U	--	--	--	N	--	D	--	--	--	--	2717
137N095W12BAB	N.BIEL	22		0	48	--	S	--	17	--	N	GS	VV	--	--	--	--	--
137N095W14AAA1	A.GABBERT	220		220	4	1915	K	--	190	--	N	SB	--	--	K	6	--	2715
137N095W14AAA2	A.GABBERT	72		59	6	1964	S	17	55	--	N	SB	I	D	C	5	--	2715
137N095W14CBB	H.BIEL	58		--	4	--	U	--	56	6-67	U	GS	--	--	--	--	--	2590
137N095W17DUB	J.PRANGF	120		120	18	--	H	--	--	--	N	SB	--	--	K	6	16.0	--
137N095W17DDU	W.SWC 3721	800		--	--	1969	U	--	--	--	N	--	--	--	VC	--	--	2700
137N095W18CCC1	P.KUNTZ	180		180	6	--	U	--	--	--	N	SB	--	--	--	--	--	--
137N095W18CCC2	P.KUNTZ	240		240	6	1964	H	--	110	--	N	SB	--	--	K	5	--	--
137N095W18DAU	P.MOREL	200		--	6	--	U	--	--	--	N	SB	--	--	K	5	--	12.0
137N095W20AD	AMERADA	10150		--	9	1962	U	--	--	--	N	--	--	--	--	--	--	2680
137N095W22CAC	L.KOPPINGER	215		--	4	1962	U	20	146	6-67	O	SB	VV	--	--	--	--	2702
137N095W22C8D	L.KOPPINGER	210		200	4	--	K	--	--	--	N	SB	VV	--	--	--	--	--
137N095W21BCC	M.RAAB JR.	202		152	4	1962	S	8	165	--	N	SB	VV	D	K	6	--	2706
137N095W21CCD1	M.RAAB JR.	60		0	18	--	U	--	45	--	N	GS	--	--	--	--	--	2670
137N095W21CCD2	M.RAAB JR.	100		100	4	1956	H	--	--	--	N	SB	--	--	--	--	--	2670
137N095W22ABC	H.BIEL	185		185	5	--	K	--	161	--	N	SB	--	--	--	--	--	--
137N095W23AAA	A.GABBERT	182		159	4	1964	S	8	156	--	N	SB	VV	D	--	--	--	2663
137N095W26ABC	E.KAUFMAN	170		170	4	1947	K	--	--	--	N	SB	I	--	K	5	--	--
137N095W26CCC	F.HENSEL	56		--	18	1928	U	--	44	6-67	O	SB	--	--	K	6	9.0	2730
137N095W28ARR	C.KOPPINGER	192		127	4	1962	U	17	90	--	N	SB	3V	D	--	--	--	2686
137N095W28AA1	C.KOPPINGER	25		0	--	--	U	100	9	--	N	GS	VV	--	--	--	--	2686
137N095W28AA2	C.KOPPINGER	500	25	0	4	1964	H	--	450	--	N	TA	VV	D	C	5	10.0	2686
137N095W29BD	PEL-TEX	8689		--	--	1966	U	--	--	--	N	--	--	--	--	--	--	2801
137N095W32ACR	W.URLACHER	7R		0	60	--	U	--	7	6-67	O	GV	--	--	--	--	--	2700
137N095W36ABU	A.KUHN	12		18	18	--	U	--	11	6-67	O	SB	--	--	--	--	--	2670
137N096W01C8C	F.KUNTZ	175		175	6	1952	U	--	--	--	N	SB	I	--	--	--	--	--
137N096W03CCD	A.BIEL	115		115	6	1966	H	25	2	--	N	SB	--	--	--	--	--	2585

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LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAILABLE	QW TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ALTITUDE OF LSD (FT.)
137N096W030CC	A. WEBER	150	--	6	1954	S	10	F	--	N	SB	--	--	K	6	9.0	2580	
137N096W04AAA	P. DUKART	100	--	18	1900	K	--	20	--	N	SB	--	--	K	6	8.5	--	
137N096W06AAB1	M. KRANK	34	0	48	--	S	--	12	--	N	SB	P	--	K	5	7.5	--	
137N096W06AAB2	M. KRANK	46	46	18	1954	S	--	26	--	N	SB	--	--	K	6	6.5	--	
137N096W060BA	F. KRANK	150	150	6	1964	K	--	45	--	N	SB	I	--	K	6	11.0	--	
137N096W08DC01	A. CIHA	236	236	6	1926	U	4	180	--	N	SB	P	--	K	5	--	2680	
137N096W08DC02	A. CIHA	1155	1155	6	1960	K	12	250	--	N	HC	VV	--	K	6	--	2680	
137N096W10BAB	A. BIEL	12	0	48	--	U	--	7	5-67	G	SB	--	--	--	--	--	2580	
137N096W10CC01	P. DUKART	18	18	18	--	H	4	8	--	N	SB	I	--	K	6	--	2595	
137N096W10CC02	P. DUKART	18	18	18	--	S	4	8	--	N	SB	I	--	K	6	6.5	2595	
137N096W10CC03	P. DUKART	27	27	18	1957	S	--	12	--	N	SB	1	--	--	--	--	--	
137N096W12AAA1	F. WALTER	24	0	48	--	S	4	12	--	N	22	95	--	K	5	--	2590	
137N096W12AAA2	F. WALTER	58	58	6	1950	H	--	30	--	N	SB	--	--	K	5	--	2590	
137N096W12BAA1	F. KUNTZ	170	170	6	1932	S	--	130	--	N	SB	--	--	K	5	--	--	
137N096W12BAA2	F. KUNTZ	100	68	18	1957	H	--	68	--	N	SB	I	--	K	5	--	--	
137N096W12BAA3	F. KUNTZ	250	--	4	1969	S	30	--	--	N	SB	VV	D	--	--	--	2615	
137N096W12CCC	I. KUNTZ	92	0	12	--	U	--	37	5-67	O	SB	--	--	--	--	--	2620	
137N096W13BDB	J. LEFDR	20	0	48	1910	U	--	2	5-67	O	SB	--	--	K	3	9.5	2630	
137N096W14BBB	A. BIEL	71	--	12	--	U	--	23	5-67	O	SB	--	--	--	--	9.0	2610	
137N096W14DBA1	C. KUNTZ	18	0	48	--	H	--	12	--	N	22	G	--	--	--	--	--	
137N096W14DBA2	C. KUNTZ	18	0	48	1905	K	--	12	--	N	22	G	--	K	4	--	--	
137N096W15CB	LADO PETROLEUM	5644	223	9	1969	U	--	--	--	N	--	--	--	--	--	--	2619	
137N096W16AAB1	F. DUKART	37	0	48	--	S	--	--	--	N	SB	1	--	K	5	--	--	
137N096W16AAB2	F. DUKART	25	0	48	--	S	--	--	--	N	22	G	--	--	--	--	--	
137N096W16AAB3	F. DUKART	35	0	48	--	S	--	--	--	N	SB	1	--	K	5	--	--	
137N096W16AAB4	F. DUKART	80	80	6	1951	H	--	--	--	N	SB	1	--	--	--	--	--	
137N096W16CDB1	D. STICKA	48	48	18	1958	S	--	10	--	N	S0	1	--	K	7	8.5	--	
137N096W16CDB2	D. STICKA	56	36	6	1966	H	15	6	--	N	SB	1	--	K	5	--	2610	
137N096W18DD01	L. STICKA	28	28	6	--	H	--	--	--	N	SB	--	--	--	--	--	--	
137N096W18DD02	L. STICKA	35	35	18	--	S	--	--	--	N	SB	--	--	--	--	--	--	
137N096W19CB01	J. WEILER	15	0	48	--	H	--	--	--	N	SB	VV	--	--	--	--	--	
137N096W19CB02	J. WEILER	228	228	4	1965	S	--	--	--	N	SB	1	--	K	5	--	--	
137N096W19CB03	J. WEILER	1100	--	3	1969	K	--	--	--	N	LH	--	D	C	6	--	2678	
137N096W20DB0	M. WANNER	30	30	18	1957	K	--	--	--	N	SB	1	--	K	5	--	--	
137N096W21ADB1	J. DUKART	33	--	48	1933	S	--	13	--	N	SB	1	--	K	4	--	--	
137N096W21ADB2	J. DUKART	42	--	18	1948	H	--	18	--	N	SB	1	--	K	5	--	--	
137N096W22BCC	V. FRANK	40	--	18	--	K	--	--	--	N	SB	VV	--	K	6	7.5	--	
137N096W22CCC1	NDSMC 3534	800	0	5	1967	U	--	--	--	N	--	GE	--	--	--	--	2640	
137N096W22CCC2	NDSMC 3534A	41	38	1	1967	U	--	14	10-67	M	SB	1V	--	C	5	9.0	2610	
137N096W24AAD	J. KUNTZ	31	0	60	--	U	--	23	5-67	O	SB	--	--	--	--	--	2710	

LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAILABLE	QM TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ALTITUDE OF LSD (FT.)
137N096W24CGC1	F.FRANK	20		0	48	1905	S	---	---	---	N	SB	VV	---	---	---	---	---
137N096W24CGC2	F.FRANK	22		22	12	---	H	---	---	---	N	SB	VV	---	K	5	---	---
137N096W250DB1	J.ILLICH	51		---	---	---	S	---	33	5-67	O	SB	---	---	---	---	---	2790
137N096W250DB2	J.ILLICH	40		40	6	---	H	---	---	---	N	SB	VV	---	K	3	---	---
137N096W268BB1	A.FRANK	20		0	48	1923	K	---	14	---	N	SB	VV	---	K	5	7.5	---
137N096W268BB2	A.FRANK	18		18	18	1959	S	---	12	---	N	SB	VV	---	---	---	7.0	---
137N096W268BB	P.WANNER	21		0	48	1899	U	---	12	5-67	O	SB	---	---	---	---	---	2680
137N096W268AA1	N.FRANK	35		35	18	---	H	---	27	---	N	SB	VV	---	K	4	---	---
137N096W268AA2	N.FRANK	40		0	48	1905	S	---	30	---	N	SB	VV	---	K	5	9.0	---
137N096W278AB1	J.STEIER	22		0	48	1909	S	---	10	---	N	SB	VV	---	K	6	---	---
137N096W278AB2	J.STEIER	20		20	6	---	H	---	18	---	N	SB	VV	---	K	5	---	---
137N096W288AA	F.WEILER	30		0	48	1907	K	---	24	---	N	SB	VV	---	K	5	7.5	---
137N096W288DA1	F.WEILER	19		0	110	1903	S	---	17	---	N	SB	VV	---	---	---	---	---
137N096W288DA2	F.WEILER	56		0	18	---	H	---	20	---	N	SB	1	---	K	6	---	---
137N096W288DA3	F.WEILER	40		0	48	---	U	---	---	---	N	SB	VV	---	---	---	---	---
137N096W288DA4	F.WEILER	96		96	6	1961	S	---	---	---	N	SB	VV	---	---	---	---	---
137N096W30CCD	J.HUCK	70		70	4	---	K	12	18	---	N	SB	VV	---	K	5	---	2800
137N096W318CC1	G.HUCK	70		0	18	1941	S	4	55	---	N	SB	---	---	K	5	---	2790
137N096W318CC2	G.HUCK	90		90	4	1964	H	---	60	---	N	SB	VV	---	---	5	---	---
137N096W328DD1	J.DENGEL	22		22	18	1938	H	8	14	---	N	SB	VV	---	K	4	7.5	2800
137N096W328DD2	J.DENGEL	30		18	18	1965	S	5	14	---	N	SB	VV	---	K	5	8.5	2800
137N096W338DC0	R.STEIER	20		0	48	1913	U	---	13	5-67	O	SB	---	---	---	---	---	2760
137N096W348BB1	H.BRINGMEYER	50		0	18	1937	H	---	41	---	N	SB	1	---	K	5	---	---
137N096W348BB2	H.BRINGMEYER	60		60	4	1966	S	8	41	---	N	SB	1	---	K	5	---	2715
137N096W348BB3	H.BRINGMEYER	1400	1400	0	4	1966	U	---	---	---	N	---	---	---	---	---	---	2720
137N096W348AB1	J.KATHREIN	25		0	48	1933	S	2	15	---	N	SB	VV	---	K	6	---	2755
137N096W348AB2	J.KATHREIN	140		140	4	1956	K	5	80	---	N	SB	1	---	K	6	6.5	---
137N096W348AB3	J.KATHREIN	140		---	4	1966	S	---	80	---	N	SB	1	---	K	6	---	2755
137N097W01ACD	C.KOSTELECKY	66		0	18	1936	K	---	---	---	N	SB	VV	---	K	6	---	---
137N097W02DAA	N.ULHEISER	36		---	---	---	H	---	---	---	N	SB	---	---	K	5	---	---
137N097W02DAC1	N.ULHEISER	22		20	48	1908	S	---	---	---	N	SB	VV	---	K	4	8.5	---
137N097W02DAC2	N.ULHEISER	36		36	18	---	S	---	---	---	N	SB	---	---	---	---	---	---
137N097W03DBB	C.MEDUNA	24		0	24	---	K	---	8	---	N	SB	---	---	K	5	---	---
137N097W088BA1	S.JILLEK	200		---	6	1959	H	---	140	---	N	SB	VV	---	K	5	---	---
137N097W088BA2	S.JILLEK	212		---	6	1962	S	---	152	---	N	SB	VV	---	K	5	8.5	---
137N097W099B	SOUTHFRN PRUD.	9302		---	---	1955	U	---	---	---	N	---	---	---	---	---	---	2678
137N097W10AAA	F.WANNER	44		44	18	1935	U	---	34	11-66	U	SB	---	---	---	---	---	2690
137N097W10CBA	M.WANNER	26		0	60	1908	H	---	6	---	N	SB	VV	---	K	5	---	---
137N097W13CC1	J.BINSTOCK	48		0	18	1935	S	---	28	---	N	SB	---	---	---	---	---	---

LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAILABLE	GW TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ALTITUDE OF LSD (FT.)
137N097M13CCC2	J.BINSTOCK	68		0	18	1945	S	2	18	--	N	SB	1	--	K	6	9.5	--
137N097M13CCC3	J.BINSTOCK	70		70	18	1961	H	--	20	--	N	SB	VV	--	K	6	--	--
137N097M13DUB	J.WEILER	170		170	6	1926	H	--	--	--	N	SB	1	--	K	6	--	--
137N097M14DCC	P.BINSTOCK	70		70	18	--	K	--	--	--	N	SB	1	--	K	6	--	--
137N097M18ABA2	L.FITTEKER	35		35	10	--	H	--	--	--	N	WR	VV	--	K	4	--	--
137N097M18CCD	J.KASBERG	34		--	12	--	S	--	24	11-68	O	GV	--	--	K	6	--	2800
137N097M20AAA	T.BRAUN	50		50	18	1913	K	--	--	--	N	GV	--	--	K	4	--	--
137N097M20DCA	H.KASBERG	52		0	60	1908	K	--	40	--	N	SB	VV	--	K	5	--	--
137N097M20DCD	H.KASBERG	32		0	60	1915	S	--	10	--	N	SB	VV	--	K	4	--	--
137N097M22AAR1	J.WANDLER	40		--	18	1946	S	--	15	--	N	SB	VV	--	K	4	8.5	--
137N097M22AAR2	J.WANDLER	60		--	18	1960	H	--	40	--	N	SB	--	--	K	5	--	--
137N097M22UAD1	P.BINSTOCK	18		--	18	1941	H	--	--	--	N	SB	--	--	--	--	--	--
137N097M22UAD2	P.BINSTOCK	68		0	12	1950	S	--	--	--	N	SR	1	--	K	4	7.5	--
137N097M22DAD3	P.BINSTOCK	135		--	6	1954	H	--	--	--	N	SB	VV	--	C	6	--	--
137N097M22DAD4	P.BINSTOCK	80		80	18	1961	S	--	--	--	N	SB	--	--	K	5	8.5	--
137N097M23CCC	NDSMC 3678	200		0	--	1968	U	--	--	--	N	--	--	GE	--	--	--	2684
137N097M24BCB1	V.HERAUF	40		40	18	--	S	--	--	--	N	SB	1	--	K	6	7.5	--
137N097M24RCR2	V.HERAUF	68		69	18	--	H	--	--	--	N	SB	VV	--	K	6	--	--
137N097M25ADC1	F.STDLZ	58		58	18	1959	H	--	--	--	N	SB	VV	--	K	5	--	--
137N097M25ADC2	F.STDLZ	82		--	6	1962	S	--	41	--	N	SB	1	--	K	5	--	--
137N097M25ADC3	F.STDLZ	230		--	6	1966	H	--	--	--	N	SB	1	--	K	5	--	--
137N097M26DCD	L.ROLLER	20		0	48	1921	U	--	11	11-66	O	SB	VV	--	--	--	--	2790
137N097M28AAA	J.SCHOCH	30		30	18	1916	S	--	--	--	N	SB	VV	--	K	3	--	--
137N097M28BDA1	J.SCHOCH	14		0	60	1915	S	--	10	--	N	SB	--	--	--	--	--	--
137N097M28BDA2	J.SCHOCH	127		127	18	1945	H	--	67	--	N	SB	--	--	K	5	--	--
137N097M29DBC1	F.FRIEDT	50		50	18	1948	S	--	30	--	N	SB	VV	--	--	--	--	--
137N097M29DBC2	F.FRIEDT	190		--	4	1957	H	--	--	--	N	SB	VV	--	K	5	--	--
137N097M29DBC3	F.FRIEDT	68		68	18	1958	S	--	12	--	N	SB	VV	--	K	6	--	--
137N097M30BBA	R.KIVIMAGI	125		125	6	1961	K	--	--	--	N	SB	VV	--	K	6	--	--
137N097M31BDD	G.EMLIS	255		255	4	1965	S	18	--	--	N	SB	VV	D	C	5	--	2755
137N097M34AAC1	R.SCHOCH	30		30	18	1918	S	--	--	--	N	SB	1	--	--	--	--	--
137N097M34AAC2	R.SCHOCH	24		24	24	1960	S	--	12	--	N	SB	1	--	K	6	--	--
137N097M34AAC3	R.SCHOCH	24		24	24	1961	H	--	12	--	N	SB	1	--	K	6	--	--
137N097M34BDD	J.WANDLER	75		75	18	1944	U	--	60	--	N	SB	1	--	--	--	--	--
137N097M34DDD	R.ROLLER	39		--	12	--	U	--	12	11-66	O	SB	--	--	K	6	7.5	2790
137N098W029AB	J.FISCHER	76		0	24	--	S	--	--	--	N	SB	--	--	--	--	--	2720
137N098W02CB01	J.DECKER	60		0	18	--	S	--	--	--	N	SB	--	--	K	7	--	2737
137N098W02CB02	J.DECKER	80		80	4	1964	K	--	--	--	N	SB	--	--	K	5	--	2738
137N098W02CCC	E.DLSON	60		60	18	--	K	--	--	--	N	SB	VV	--	K	5	--	2753
137N098W02DAD	F.FISCHER	72		72	18	1961	H	--	30	--	N	SB	VV	--	K	5	--	2746

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LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LUG AVAIL-ABLE	GW TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ALTI-TUDE OF LSD (FT.)
137N098W02DDA1	F. FISCHER	20		0	72	1904	S		15		N	SB						2740
137N098W02DDA2	F. FISCHER	165		165	4	1953	S		30		N	SB	F		K	5		2743
137N098W03DAA1	H. KNOPIK	65		60	18	1923	K		30		N	SB	P		K	5		2745
137N098W03DAA2	H. KNOPIK	54		54	18	1963	S		12		N	SB	VV					2740
137N098W04ADA	J. FISCHER	76		0	48	1910	K		6		N	SB	VV		K	5	9.0	2760
137N098W04BAC	B. LAMTZ	120		100	4	1963	K	20	50		N	SB	VV	D	C	4		2768
137N098W06DDC	P. SCHMIDT	61					U		45	10-66	O	SB			K	6	8.5	2792
137N098W07CHA1	C. BINSTOCK	19		0	24		U		10	10-66	O	SB						2764
137N098W07CBA2	C. BINSTOCK	30			18		U		12	10-66	O	SB			K	6	11.0	2768
137N098W10BBN1	C. EMMIL	60		60	18		U		10		N	SB						2743
137N098W10BBB2	C. EMMIL	120			4	1959	K	8	80		N	SB	VV		K	6		2746
137N098W10CDB	H. KNOPIK	43			18		U		16	10-66	O	SB			K	6		2766
137N098W11JAC	PLYMOUTH OIL	10470			9	1953	U				N							2785
137N098W12BBB	NDSMC 3693	740	800	734	2	1969	U		277	5-69	M	C	VV	Y	C	5	13.5	2744
137N098W14AAA	V. KUNTZ	110		90	4	1960	K				N	SB			K	4		2783
137N098W17CCC1	H. BURWICK	50		50	18	1948	S		38		N	SB			K	5	8.5	2810
137N098W17CCC2	H. BURWICK	117		117	4	1954	H				N	SB	I		K	5		2810
137N098W21CBC1	J. HOLM	78		0	18	1916	S		30		N	SB	I		K	5		2763
137N098W21CBC2	J. HOLM	80		80	4		K				N	SB			K	6	5.0	2762
137N098W22AAA	G. PETERSON	70			18	1952	K				N	SB	I		K	5		2835
137N098W22CDB	G. PETERSON	200			6	1923	H		75		N	SB	I					2755
137N098W22DDB1	G. PETERSON	200			6	1923	K				N	SB	I					2758
137N098W22DDB2	G. PETERSON	70				1946	H				N	SB	P		K	5		2755
137N098W24ABB1	G. EHLIS	200		200	6		S	3			N	SB	VV					
137N098W24ABB2	G. EHLIS	300			5	1961	K	30	170		N	SB	VV		K	5		2830
137N098W26CAB	S. BURWICK	130			18		H				N	SB			K	6		2780
137N098W28BAD	H. JACOBSON	98		98	24	1956	H		33		N	SB	P		K	6	9.0	2730
137N098W30BDB	H. BURWICK	91			12		U		37	10-66	O	SB						2722
137N098W30DAA	E. WENDLING	52		52	18	1925	U	3	25		N	SB	P		K	5		2700
137N098W30DAB	E. WENDLING	75		75	18	1940	U		35		N	SB	I					2710
137N098W31AAD	W. NICHOLS	62		0	18	1940	K		20		N	SB	I		K	6	9.5	2740
137N098W32CCC	E. SANDVIK	260			6	1963	K		100		N	ST	VV		K	5		2730
137N098W34BBC	W. MORRIS	40		40	18		K		22		N	SB			K	6		2690
137N098W35DAA	S. STOLZ	63			18	1915	U		28	10-66	O	SB	VV					2725
137N098W02ADD1	F. REISENAUER	40		40	18	1964	H		8		N	SB			K	5		2707
137N098W02ADD2	F. REISENAUER	40		40	18	1965	S		8		N	SB						2685
137N098W02DDA1	T. DECKER	30		30	18		U				N	SB			K	4		2700
137N098W02DDA2	T. DECKER	25		25	18	1964	K		9		N	SB			K	4		2700
137N098W03DBB	L. BINSTER	50			18	1926	S		15		N	SB	I		K	5	11.0	2667
137N098W05DCD	M. FALLON ESTATE						S				N	ST			K	6		2710

LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAILABLE	QW TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ALTI-TUDE OF LSD (FT.)
137N099W06CCC1	W.SCHWARTZ	40	--	18	1937	U	--	34	--	N	SB	--	--	--	--	--	--	2723
137N099W06CCC2	W.SCHWARTZ	80	--	6	1957	H	--	30	--	N	SB	1	--	K	6	--	--	2725
137N099W06CCC3	W.SCHWARTZ	52	52	18	1966	S	--	34	9-66	D	SB	1	--	K	6	--	--	2723
137N099W07AAA	J.DECKER	25	0	12	--	U	--	11	9-66	0	SB	--	--	C	--	--	--	2717
137N099W09ABA	N.UF	55	55	18	--	S	--	F	--	N	SB	--	--	C	5	9.0	--	2677
137N099W09BBB	NDSWC 3537	200	0	5	1967	U	--	--	--	N	--	--	Y	--	--	--	--	2724
137N099W106CA	N.DE	80	80	18	1927	S	--	3	--	N	SB	1	--	--	--	--	--	2690
137N099W106C1	N.DE	233	233	6	1946	H	--	--	--	N	SB	1	--	K	5	--	--	2685
137N099W106C2	N.DE	80	80	6	1965	S	--	F	--	N	SB	--	--	--	--	--	--	2682
137N099W106D	C.RAUN	90	0	--	1943	H	--	--	--	N	SB	1	--	--	--	--	--	2700
137N099W12ABB	G.FIGERE	88	--	18	--	S	--	24	10-66	0	SB	--	--	K	6	10.0	--	2728
137N099W12CBB	A.JUNDERLAND	--	--	18	1912	S	--	--	--	N	ST	--	--	K	6	10.0	--	2720
137N099W14AAA1	A.OULETTE	75	75	18	1946	S	--	--	--	N	SB	P	--	--	--	--	--	2762
137N099W14AAA2	A.OULETTE	70	70	18	1959	H	--	--	--	N	SB	VV	--	--	--	--	--	2763
137N099W15BB	NO.PUMP, BRAUN	9446	633	11	1957	U	--	--	--	N	--	--	--	--	--	--	--	2719
137N099W20CCD	P.SMITH	71	--	6	1965	K	--	25	--	N	SB	VV	--	K	5	9.0	--	2750
137N099W21HCB	R.BRINSTER	82	82	18	--	K	--	--	--	N	SB	--	--	K	6	--	--	2753
137N099W22CCC1	D.HECK	93	0	18	1941	K	--	40	--	N	SB	VV	--	K	6	--	--	2750
137N099W22CCC2	D.HECK	27	--	6	1962	H	3	14	--	N	SB	VV	--	K	6	--	--	2750
137N099W22DDC	A.HEIDT	58	--	18	1947	K	--	--	--	N	SB	--	--	K	6	--	--	2710
137N099W248CB	A.HECK	75	0	--	1948	K	--	--	--	N	SB	--	--	K	6	9.5	--	2745
137N099W24DDD	NDSWC 3679	224	300	218	1	1968	U	113	12-68	M	SB	1V	GE	C	6	10.5	--	2722
137N099W25AAA	M.SMITH	--	--	--	--	S	--	--	--	N	ST	--	--	K	6	9.5	--	2760
137N099W26ABB	A.HANSON	19	--	--	--	U	--	11	9-66	0	SB	--	--	K	4	--	--	2722
137N099W26DDC	M.CHASKA	70	--	6	--	S	--	37	10-66	0	SB	--	--	K	5	10.5	--	2712
137N099W28CBC	J.HECKER	34	--	18	--	U	--	8	9-66	0	SB	--	--	K	7	--	--	2738
137N099W32ABB	M.HEWSON	38	--	--	--	U	--	10	9-66	0	SB	--	--	--	--	--	--	2750
137N099W33CBB	B.HFCKER	65	65	16	1953	K	--	--	--	N	SB	1	--	K	6	9.5	--	2740
137N099W34AAA1	M.CHASKA	18	18	--	--	H	--	--	--	N	SB	--	--	K	4	--	--	2695
137N099W34AAA2	M.CHASKA	45	--	--	--	H	--	--	--	N	SB	--	--	--	--	--	--	2692
137N099W34AAA3	M.CHASKA	56	--	--	--	S	--	--	--	N	SB	--	--	K	5	--	--	2692
137N099W34AAA4	M.CHASKA	57	--	--	--	K	--	--	--	N	SB	--	--	K	5	--	--	2695
138N091W02CAA	C.SCHNEIDER	160	--	4	1950	K	--	90	--	N	ST	--	--	K	6	--	--	2355
138N091W06ADA	F.COGLON	90	90	6	1941	K	--	--	--	N	SB	--	--	K	5	--	--	2380
138N091W09ADC	C.KITZAN	30	0	48	--	K	--	5	--	N	SB	--	--	K	5	9.0	--	--
138N091W08CBB	R.KITZAN	40	0	48	--	K	--	8	--	N	SB	--	--	K	4	10.5	--	--
138N091W10HAD	C.MELCHIOR	204	204	2	1930	K	--	128	--	N	TR	--	--	K	6	--	--	2290
138N091W11DD	NDSWC 3704	300	--	--	1969	U	--	--	--	N	--	--	Y	--	--	--	--	2415
138N091W12AGF1	F.SCHNEIDER	30	28	18	--	U	--	10	--	N	SB	1	--	K	7	5.5	--	--
138N091W12AGC2	F.SCHNEIDER	15	15	18	--	U	--	10	--	N	SB	1	--	--	--	--	--	--

LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAILABLE	GM TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (° C)	ALTITUDE OF LSD (FT.)
138N091W128CC1	B.SCHNEIDER	12		0	48	1912	S	5	F	--	N	SH	1	--	K	6	7.5	2400
138N091W128CC2	B.SCHNEIDER	25		15	18	--	S	--	10	--	N	SB	1	--	--	--	--	--
138N091W128CC3	B.SCHNEIDER	28		15	18	1965	U	--	10	--	N	SB	1	--	--	--	--	--
138N091W128CC4	B.SCHNEIDER	50		15	18	1965	H	--	10	--	N	SB	1	--	K	6	--	--
138N091W138DB1	H.SCHNEIDER	15		0	48	--	S	--	--	--	N	SB	--	--	K	6	9.5	--
138N091W138DB2	H.SCHNEIDER	75	--		12	1946	S	--	70	--	N	SB	VV	--	K	3	10.5	2410
138N091W138DB3	H.SCHNEIDER	75	75		18	1963	H	--	--	--	N	SB	VV	--	K	4	--	--
138N091W14AA8	E.KITZAN	50	--		16	1951	U	--	10	--	N	SB	--	--	K	4	8.5	--
138N091W14DA1	H.KITZAN	38	38		18	1954	S	--	23	--	N	SB	P	--	K	4	11.0	--
138N091W14DA2	H.KITZAN	330	305		4	1957	K	4	130	--	N	TR	VV	--	K	5	--	2370
138N091W16DBA	T.STAIGER	114		114	4	1963	S	15	94	--	N	ST	VV	--	K	4	--	2300
138N091W18ABB1	A.KREIN	30		0	18	--	U	--	--	--	N	SB	--	--	K	6	10.5	--
138N091W18ABB2	A.KREIN	100		100	4	--	S	--	--	--	N	ST	--	--	P	5	--	2300
138N091W18CDB	M.DIEDE	56		--	12	--	U	--	31	7-67	O	SB	--	--	--	--	--	2320
138N091W228DA1	J.GONLON	60		0	48	--	S	--	--	--	N	ST	--	--	K	6	10.5	--
138N091W228DA2	J.GONLON	81		81	24	1967	K	10	49	--	N	TR	VV	--	K	5	13.5	2200
138N091W22CC6	A.AUCH	268		120	4	1950	K	10	14	--	N	TR	1	--	K	6	--	2220
138N091W26AAA	R.DIEDE	310		--	6	1925	K	--	--	--	N	TR	VV	--	K	5	--	2326
138N091W268BD	R.MEINLE	165		165	2	--	K	--	--	--	N	TR	--	--	K	6	9.5	2270
138N091W28A8D1	R.WINKLER	263		193	4	1963	S	20	110	--	N	TR	VV	D	--	--	--	2295
138N091W28A8D7	R.WINKLER	273		273	6	1964	H	10	108	--	N	TR	--	--	K	6	--	2290
138N091W28CCD1	R.MAYER	90		90	6	--	U	--	30	--	N	TK	1	--	--	--	--	2200
138N091W28CC82	R.MAYER	90		90	5	1960	H	10	30	--	N	TR	1	--	K	6	--	2210
138N091W30ABD1	E.SPRECHER	40		0	48	--	H	--	--	--	N	TR	VV	--	--	--	--	2201
138N091W30ABD2	E.SPRECHER	244		244	4	1952	U	15	75	--	N	TR	VV	D	--	--	--	2201
138N091W30ABD3	E.SPRECHER	540	560		4	1966	K	5	+12	3-68	U	C	VV	D	C	6	10.5	2201
138N091W32C8C	C.NANTT	59		59	24	1958	K	--	29	--	N	TR	VV	--	K	5	10.0	2140
138N091W34CCC1	A.RAAF	21		0	60	--	S	2	17	--	N	TR	VV	--	K	6	--	2150
138N091W34CCC2	A.RAAF	300		240	4	1947	K	--	92	--	N	TR	VV	--	K	5	--	2180
138N092W018CC1	H.WAGNER	44		44	24	1927	H	--	30	--	N	SB	VV	--	K	5	--	--
138N092W018CC2	H.WAGNER	35		--	24	--	S	--	25	--	N	SB	VV	--	--	--	--	--
138N092W01CCB1	C.WAGNER	43		0	24	1924	H	--	30	--	N	SB	VV	--	K	4	--	--
138N092W01CC87	C.WAGNER	35		0	60	--	H	--	12	--	N	SB	VV	--	K	4	--	--
138N092W01CC83	C.WAGNER	35		0	60	--	S	--	12	--	N	SB	VV	--	--	--	--	--
138N092W01CC84	C.WAGNER	35		0	48	--	S	--	12	--	N	SB	VV	--	--	--	--	--
138N092W01CC85	C.WAGNER	35		0	60	--	S	--	12	--	N	SB	VV	--	--	--	--	--
138N092W048BB1	L.HOFF	22		0	48	--	K	3	14	--	N	SB	VV	--	K	6	--	2370
138N092W048BB2	L.HOFF	195		--	--	1968	U	--	--	--	N	--	--	D	--	--	--	2342
138N092W048BB3	L.HOFF	370		--	6	1968	S	--	--	--	N	TR	--	--	K	5	--	2342
138N092W048BC	L.HOFF	50		50	18	--	S	1	20	--	N	SB	VV	--	--	--	--	2370

LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAILABLE	QW TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ALTITUDE OF LSD (FT.)
138N092W040AC1	T. ALPERT	20		0	48	1884	S	--	15	--	N	22	9S	--	--	--	--	--
138N092W040AC2	T. ALPERT	38	--	18	1954	H	--	14	--	--	N	22	9S	--	K	6	--	--
138N092W05AAA	USGS	125	--	--	1968	U	--	9	8-68	0	SB	--	G	--	--	--	2342	--
138N092W08HAB	W. SCHULZ	100	100	18	--	K	--	96	--	--	N	SB	V	--	K	6	8.5	2490
138N092W08CDB1	J. HUMMEL	130		6	1960	K	3	70	--	--	N	SB	1	--	K	6	--	2500
138N092W08CBB2	J. HUMMEL	100	100	6	1962	H	1	--	--	--	N	SB	--	--	K	6	--	2500
138N092W09CB	SKELLY, STIEG	8156	--	10	1958	U	--	--	--	--	N	--	--	--	--	--	--	2402
138N092W09CDB1	P. STIEG	28	0	60	--	H	--	7	--	--	N	SB	VV	--	--	--	--	--
138N092W09CDB2	P. STIEG	285	285	3	1953	S	--	180	--	--	N	TR	--	--	--	--	--	2385
138N092W10CDB	F. ZENTNER	72	72	24	1961	H	--	44	--	--	N	SB	VV	--	K	3	11.0	--
138N092W120DB1	L. RIXEN	18	18	24	1954	S	--	--	--	--	N	SB	1	--	K	4	7.0	--
138N092W120DB2	L. RIXEN	130	130	6	1962	H	9	--	--	--	N	TR	1	--	K	5	--	2300
138N092W14AB1	V. KUNTZ	28	28	18	1945	S	3	16	--	--	N	SB	VV	--	--	--	--	2280
138N092W14AB2	V. KUNTZ	128	128	6	1958	H	--	68	--	--	N	ST	VV	--	K	5	--	2390
138N092W14DBA	E. MISCHEL	16		0	1897	U	--	6	--	--	N	SB	VV	--	--	--	--	--
138N092W14DDC	E. MISCHEL	60	60	16	1957	H	8	30	--	--	N	ST	1	--	K	4	--	2285
138N092W16ACD	A. GOETZ	185	185	3	1950	K	--	143	--	--	N	ST	VV	--	K	5	11.0	2400
138N092W170BD	C. ALPERT	223		4	1963	K	12	120	--	--	N	TR	VV	0	C	6	--	2352
138N092W18BDD1	N. REHLING	15	0	60	--	S	--	11	--	--	N	--	1	--	K	7	6.5	--
138N092W18BDD2	N. REHLING	30	30	18	1948	S	--	23	--	--	N	22	G	--	--	--	--	--
138N092W21CCC	USGS	68	--	--	1968	U	--	16	8-68	0	22	PS	G	--	--	--	--	2185
138N092W23DB9	V. MESSER	67	67	24	1946	S	8	27	--	--	N	SB	VV	--	--	--	--	2330
138N092W24BA1	V. MESSER	41	--	18	1942	S	--	10	--	--	N	SB	1	--	--	--	--	--
138N092W24BA2	V. MESSER	41	41	6	1948	H	--	31	--	--	N	SB	1	--	K	4	--	2280
138N092W250CC1	E. CASPARY	29	29	18	1957	K	8	21	--	--	N	SB	1	--	K	3	--	2259
138N092W250CC2	E. CASPARY	29	29	18	1957	S	8	21	--	--	N	SB	1	--	--	--	--	2258
138N092W26BB8	E. MISCHEL	70	70	24	1965	S	20	50	--	--	N	TR	VV	--	--	--	--	2332
138N092W27BBD1	W. HARDMEYER	40	0	60	--	S	--	--	--	--	N	SB	1	--	--	--	--	2315
138N092W27BBD2	W. HARDMEYER	72	0	18	1958	H	--	48	--	--	N	SB	1	--	K	3	--	2315
138N092W28BCC	A. TRAUHMANN	26	--	18	--	U	--	17	6-67	0	SB	--	--	--	--	--	--	2183
138N092W28CCC	NDSMC 3705	100	--	--	1969	U	--	--	--	--	N	--	GE	--	--	--	--	2285
138N092W29BB8	J. RECH	29	0	36	--	U	--	26	6-67	0	SB	--	--	--	--	--	--	2190
138N092W30ADD1	J. SCHMIDT	25	25	8	1962	S	--	10	--	--	N	TR	VV	--	--	--	11.0	2203
138N092W30ADD2	J. SCHMIDT	40	0	60	--	K	--	36	--	--	N	TR	--	--	K	6	11.0	2206
138N092W30DCA1	A. GOETZ	46	0	48	1925	H	--	35	--	--	N	TR	--	--	K	6	--	2218
138N092W30DCA2	A. GOETZ	360	300	2	1943	S	--	--	--	--	N	TR	VV	--	K	5	10.0	2228
138N092W318CA	A. SCHREIBER	31	--	18	--	S	--	26	6-67	0	ST	--	--	--	--	--	--	2256
138N092W32AAD	J. GOETZ	70	70	18	--	K	--	0	--	--	N	ST	--	--	--	--	--	2324
138N092W32CDB	R. REBEL	18	18	24	--	K	--	0	--	--	N	SB	VV	--	K	6	7.5	2310
138N092W32DDD	NDSMC 3547	552	1100	546	2	1967	U	--	207	6-69	H	TR	2V	V	C	6	13.5	2352

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LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAILABLE	QM TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ALTI-TUDE OF LSD (FT.)
138N094W16DD0	M.DASSINGER	45		45	18	1925	K	--	25	--	N	SB	1	--	K	4	--	--
138N094W17LDC1	J.SCHWAL	32		0	60	--	K	4	28	--	N	SB	1	--	--	--	--	2440
138N094W17DC2	J.SCHWAL	300		0	--	1968	U	--	--	--	N	--	--	0	--	--	--	2447
138N094W19ACB1	J.KOLLING	200		--	6	1950	S	--	--	--	N	ST	--	--	K	6	--	--
138N094W19ACB2	J.KOLLING	200		--	6	1957	H	--	--	--	N	ST	--	--	K	5	--	--
138N094W19ACB3	J.KOLLING	536		--	4	1967	K	--	--	--	N	TR	VV	--	--	--	--	2470
138N094W21HCD	M.RASCHKE	9		0	60	--	U	--	3	6-67	0	SR	--	--	--	--	--	2500
138N094W22ABA1	S. ENGER	75		75	18	--	H	--	25	--	N	SR	1	--	K	5	--	--
138N094W22ABA2	S. ENGER	55		55	18	--	S	--	--	--	N	SR	1	--	--	--	--	--
138N094W22ABA3	S. ENGER	28		0	60	--	S	1	--	--	N	SR	1	--	--	--	--	--
138N094W22ABA4	S. ENGER	40		40	18	1934	U	3	15	--	N	SB	1	--	--	--	--	2510
138N094W22ABA5	S. ENGER	38		38	12	1965	H	2	14	--	N	SG	VV	--	K	3	8.5	--
138N094W22DDA2	S. ANTON	25		0	--	--	U	--	1	--	N	SB	--	--	--	--	--	--
138N094W22DDA3	S. ANTON	15		15	18	--	S	3	5	--	N	SG	VV	--	--	--	--	2490
138N094W22DDA4	S. ANTON	200		--	--	1952	H	--	165	--	N	ST	1	--	K	5	--	2410
138N094W24ADD1	P. HOLZ	20		0	48	--	H	--	5	--	N	SB	1	--	--	--	--	--
138N094W24ADD2	P. HOLZ	62		0	18	1940	S	--	40	--	N	SB	1	--	--	--	--	--
138N094W24ADD3	P. HOLZ	60		60	18	1952	S	--	40	--	N	SB	1	--	K	6	8.5	--
138N094W24CBR1	P. MAYER	50		50	18	1937	S	--	--	--	N	SR	1	--	--	--	--	--
138N094W24CBR2	P. MAYER	65		--	6	1947	H	--	--	--	N	SR	1	--	K	6	--	--
138N094W26ACA1	M. LEFOR	70		70	18	--	S	--	--	--	N	SR	1	--	--	--	--	--
138N094W26ACA2	M. LEFOR	40		40	6	1949	H	--	30	--	N	SR	1	--	K	4	--	--
138N094W26ACA3	M. LEFOR	70		--	18	1966	S	--	45	--	N	SR	1	--	--	--	--	--
138N094W26BBR1	P. LEFOR	25		0	60	--	S	--	13	6-67	0	SR	VV	--	K	5	--	2450
138N094W26BBR2	P. LEFOR	25		25	24	1948	H	--	16	--	N	SB	VV	--	K	5	--	--
138N094W26BBR3	P. LEFOR	30		30	18	1965	S	--	15	--	N	SR	VV	--	--	--	--	--
138N094W27CDU	A. LEFOR	26		0	60	--	U	--	3	6-67	0	SR	--	--	--	--	--	2680
138N094W28AAA1	C. ANTON	20		0	60	--	S	--	8	--	N	SR	VV	--	--	--	--	--
138N094W28AAA2	C. ANTON	32		0	72	--	U	--	8	--	N	SB	1	--	--	--	--	--
138N094W28AAA3	C. ANTON	70		70	6	1917	S	--	30	--	N	SB	VV	--	K	7	--	--
138N094W28AAA4	C. ANTON	46		46	6	1965	S	--	11	--	N	SB	VV	--	--	--	--	--
138N094W28AAA5	C. ANTON	425		425	6	1965	H	--	225	--	N	TR	VV	--	K	5	--	2480
138N094W32ADC1	J. ANTON	50		50	2	--	S	--	--	--	N	SB	1	--	K	5	9.0	--
138N094W32ADC2	J. ANTON	60		60	6	1952	H	--	57	--	N	SB	VV	--	K	5	--	--
138N094W34ADA1	M. WEHNER	18		0	60	--	U	--	8	--	N	SB	VV	--	--	--	--	--
138N094W34ADA2	M. WEHNER	30		0	60	--	U	3	26	--	N	SB	P	--	--	--	--	2480
138N094W34ADA3	M. WEHNER	73		73	18	1935	S	5	33	--	N	SB	1	--	K	6	8.5	2480
138N094W34DCB1	F. SCHROEDER	40		--	6	--	H	--	30	--	N	SB	--	--	--	--	--	--
138N094W34DCB2	F. SCHROEDER	20		0	60	--	S	4	10	--	N	SR	VV	--	--	--	--	2480
138N094W34DCB3	F. SCHROEDER	40		40	6	--	S	--	30	--	N	SB	--	--	K	5	8.5	--

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LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAIL-ABLE	GW TYPE	SPE-CIFIC CON-DUCT ANCE	TEM- PER- ATURE (°C)	ALTI- TUDE- OF L5D (FT.)
138N094W34DCB4	F. SCHROEDER	60		60	6	1966	S	8	40	--	N	SB	J	--	K	5	8.5	2480
138N095W04CCC	W. RIECKMAN	21		21	24	--	U	--	17	5-67	0	SB	--	--	--	--	--	2410
138N095W06RAA	NDSMC 3691	1000		0	--	1969	U	--	--	--	N	--	--	YC	--	--	--	2507
138N095W06CDB	TEXDIA KUBISHTA	8976		--	9	1957	U	--	--	--	N	--	--	--	--	--	--	2499
138N095W06DDD	J. KUBISHTA	30		30	18	1951	K	--	15	--	N	SB	VV	--	K	5	--	2420
138N095W07DCC	F. BTEL	85		0	18	1935	S	3	70	--	N	SB	VV	--	--	--	--	2482
138N095W08CAA1	H. RIECKMAN	115		115	6	--	H	--	--	--	N	SB	VV	--	K	5	--	2437
138N095W08CAA2	H. RIECKMAN	22		22	6	1964	S	--	--	--	N	SB	VV	--	K	6	--	2452
138N095W08C81	J. THEILEN	30		0	18	1922	S	--	--	--	N	SB	I	--	--	--	--	2460
138N095W08C82	J. THEILEN	127		127	8	1965	K	--	67	--	N	SB	I	--	K	5	--	2465
138N095W108B82	A. LEFUR	15		15	6	--	H	--	3	--	N	SB	VV	--	K	4	--	2395
138N095W118D1	P. STOLZ	58		58	18	1928	S	--	10	--	N	SB	I	--	K	5	9.5	2393
138N095W118DA2	P. STOLZ	60		60	18	1940	H	--	--	--	N	SB	VV	--	--	--	--	2403
138N095W118DA3	P. STOLZ	800		800	4	1963	H	12	60	--	N	C	VV	--	--	--	--	2405
138N095W118D	LADD PET., STOLZ	5229		195	9	1969	U	--	--	--	N	--	--	--	--	--	--	2432
138N095W14ADD	F. BAAR	43		0	48	--	S	--	14	5-67	0	SB	--	--	--	--	--	2470
138N095W14DD1	V. MUTH	54		54	24	1942	H	--	25	--	N	SB	P	--	K	5	--	--
138N095W14DD2	V. MUTH	54		--	24	1942	S	--	--	--	N	SB	P	--	K	6	--	--
138N095W17ABC1	F. LECH	38		38	18	--	S	--	--	--	N	SB	VV	--	K	4	--	2482
138N095W17ABC2	F. LECH	38		38	18	1963	H	--	18	--	N	SB	VV	--	K	4	--	2485
138N095W178CC	E. THEILEN	90		90	6	1965	K	--	50	--	N	SB	--	--	--	--	--	2577
138N095W178C	E. BTEL	112		110	6	1929	K	--	90	--	N	SB	VV	--	K	4	--	2547
138N095W18ABB	G. HERAUF	62		0	48	1905	H	--	57	--	N	SB	VV	--	K	5	--	2486
138N095W20CCD1	G. KOFFLER	185		185	4	--	S	--	100	--	N	SB	VV	--	K	6	--	2580
138N095W20CCD2	G. KOFFLER	200		200	4	1948	H	--	120	--	N	SB	VV	--	--	--	--	--
138N095W21DDC	NDSMC 3688	180		--	--	1968	U	--	--	--	N	--	--	GE	--	--	--	2536
138N095W22ACB1	P. RAAB	36		36	18	1945	S	--	28	--	N	SB	VV	--	K	6	--	2509
138N095W22ACB2	P. RAAB	66		66	6	1965	H	5	50	--	N	SB	VV	--	K	6	--	2506
138N095W228DA	P. RAAB	18		0	48	--	U	--	8	--	N	SB	VV	--	--	--	--	2502
138N095W22CCC	B. EGGERS	25		--	18	--	S	--	4	5-67	0	SB	--	--	--	--	--	2590
138N095W23DBA1	A. RAAB	12		0	48	1913	S	--	3	--	N	SB	VV	--	--	--	--	2516
138N095W23DBA2	A. RAAB	15		0	48	1943	S	3	11	--	N	SB	P	--	--	--	--	2512
138N095W23DBA3	A. RAAB	30		30	18	1948	S	--	24	--	N	SB	P	--	--	--	--	2512
138N095W23DBA4	A. RAAB	26		26	12	1948	H	--	12	--	N	9K	S	--	--	--	--	2520
138N095W23DBA5	A. RAAB	56		56	4	1965	S	10	10	--	N	SB	VV	--	--	--	--	2520
138N095W23DBA6	A. RAAB	410	420	380	4	1969	H	--	--	--	N	TR	LV	D	P	5	--	2520
138N095W27DCD	P. RECK	160		--	6	1950	K	--	--	--	N	SB	--	--	K	5	--	--

LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAILABLE	QM TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ALTITUDE OF LSD (FT.)
138N095W30CAC	R. ZENT	360		360	6	1965	K	--	--	--	N	ST	--	--	K	5	--	2585
138N095W30CBA1	D. NUTH	50		50	18	1946	U	--	30	--	N	SB	VV	--	--	--	--	--
138N095W30CBA2	D. NUTH	170		170	6	1964	K	12	--	--	N	SB	--	--	K	6	--	--
138N095W32CAC	C. STEIER	130		130	6	--	K	7	100	--	N	SB	VV	--	--	K	6	2650
138N095W32DBD	LUNMAN BROS.	136		136	6	1942	K	--	96	--	N	SB	VV	--	--	K	6	2670
138N095W34BDA	J. KECK	190		190	6	1920	K	--	--	--	N	SB	--	--	K	5	--	2600
138N095W34DAD1	L. SCHMIDT	45		45	18	1961	S	--	--	--	N	SB	I	--	--	--	--	--
138N095W34DAD2	L. SCHMIDT	45		45	18	1963	H	--	35	--	N	SB	I	--	--	K	6	--
138N095W35ADD1	P. WEISMANN	30		0	48	1917	S	--	25	--	N	GS	P	--	--	K	4	--
138N095W35ADD2	P. WEISMANN	30		30	6	1959	H	--	14	--	N	GS	P	--	--	K	4	--
138N096W01DDC	N. MILLER	65		65	18	1945	K	--	--	--	N	SB	VV	--	--	K	4	2462
138N096W02BBB1	N. FISHER	40		40	18	1947	S	--	20	--	N	SB	VV	--	--	K	4	2514
138N096W02BBB2	N. FISHER	20		20	6	1947	H	10	10	--	N	SB	VV	--	--	K	4	2513
138N096W02BBB3	N. FISHER	30		0	48	--	S	--	15	--	N	SB	VV	--	--	--	--	2505
138N096W02CBB	F. HATZENBUHLER	86		86	18	--	K	--	63	--	N	SB	VV	--	--	K	4	2498
138N096W02DCC	F. HATZENBUHLER	152		--	6	1967	U	--	45	5-67	0	SB	--	--	--	--	--	2516
138N096W02DDD	F. HATZENBUHLER	40		0	48	--	U	--	32	6-68	0	SB	--	--	--	--	--	2470
138N096W03BBB1	J. VOGEL	150		150	6	1948	U	--	--	--	N	SB	--	--	--	--	--	2585
138N096W03BBB2	J. VOGEL	220		220	4	1960	K	--	150	--	N	SB	--	--	--	K	5	2585
138N096W04ABR	DICKINSON	200		200	6	1951	C	--	--	--	N	SB	--	--	--	K	5	2593
138N096W05BBB1	L. KOSTELECKY	80		80	18	1947	U	3	65	--	N	GS	--	--	--	--	--	2537
138N096W05BBB2	L. KOSTELECKY	215		215	6	1962	K	15	70	--	N	SB	VV	--	--	K	5	2539
138N096W06RCR1	V. DVORAK	105		0	16	--	K	--	F	--	N	US	--	--	--	K	5	2529
138N096W06RCR2	V. DVORAK	19		0	6	1957	U	3	16	--	N	GV	VV	--	--	K	5	2528
138N096W07CDD	D. GRESSER	48		48	18	1945	S	--	24	--	N	GS	VV	--	--	--	--	2565
138N096W07DCC	G. HONDL	60		60	18	1957	S	--	30	--	N	GS	VV	--	--	--	--	2558
138N096W08CDD1	H. ALLEN	55		--	--	--	S	3	47	--	N	GS	--	--	--	K	3	2536
138N096W08CDD2	H. ALLEN	296		296	6	1965	K	--	116	--	N	SB	VV	--	--	P	5	2534
138N096W09DAD	A. KUHN	140		120	4	1966	K	--	40	--	N	SB	VV	D	--	K	4	2504
138N096W10DAD	G. STOLTZ	80		80	18	--	K	--	20	--	N	SB	VV	--	--	K	5	2490
138N096W11DDA	L. BERGER	60		0	18	1923	S	--	--	--	N	SB	VV	--	--	K	4	2467
138N096W11DDB1	L. BERGER	42		42	18	1945	H	--	--	--	N	SB	--	--	--	K	4	2460
138N096W11DDR2	L. BERGER	22		22	36	1964	S	3	10	--	N	SB	VV	--	--	--	--	2464
138N096W14AAA	J. FRENZEL	25		0	48	1907	U	--	18	5-67	0	SB	--	--	--	--	--	2452
138N096W14DAB1	J. DECKER	21		0	48	1902	K	4	18	--	N	SB	--	--	--	K	4	2450
138N096W14HAB2	J. DECKER	20		0	48	--	H	--	1	--	N	SB	--	--	--	--	--	2453
138N096W14DDD1	R. FRENZEL	30		0	48	1895	S	--	24	--	N	SB	VV	--	--	K	6	2462
138N096W14DDD2	R. FRENZEL	55		55	4	1964	H	6	--	--	N	SB	VV	--	--	K	4	--
138N096W15DBB1	M. DOLAJAK	65		65	6	--	H	60	22	--	N	SB	VV	--	--	K	4	2483
138N096W15DBB2	M. DOLAJAK	65		65	6	1963	H	60	22	--	N	SB	VV	--	--	K	4	2490

LUCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAM- ETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPN)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER- LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAIL- ABLE	GW TYPE	SPE- CIFIC CON- DUCT ANCE	TEM- PER- ATURE (°C)	ALTI- TUDE DF LSO (FT.)
138N096W15RRB3	M.DDLAJAK	60		60	6	1963	H	60	22	--	N	SH	VV	--	--	--	--	2487
138N096W15BBR4	M.DDLAJAK	65		65	6	1963	S	60	22	--	N	SH	VV	--	--	--	--	2490
138N096W16ADA	NDSMC 3536	55	170	52	1	1967	U	--	33	10-67	M	SB	2V	Y	C	5	9.5	2508
138N096W16CDC	J.MAUS	26		0	26	1916	K	--	--	--	N	SB	I	--	K	4	6.5	2525
138N096W17AAA1	F.DDLAJAK	20		0	48	1900	S	--	14	--	N	SP	VV	--	K	7	4.5	2522
138N096W17AAA2	F.DDLAJAK	40		40	18	1948	U	1	--	--	N	SR	--	--	K	6	7.0	2524
138N096W17AAA3	F.DDLAJAK	180		180	6	1952	H	--	--	--	N	SB	VV	--	K	5	--	2522
138N096W17AAA4	F.DDLAJAK	130		130	6	1962	S	--	--	--	N	SB	--	--	K	5	7.5	2522
138N096W18ABB1	G.HOND	30		0	60	1916	H	--	15	--	N	CV	--	--	K	3	--	2557
138N096W18ABB2	G.HOND	60		60	18	1963	S	--	40	--	N	GS	VV	--	K	3	7.5	2558
138N096W18BAA1	D.GRESSER	28		0	72	1901	K	--	11	--	N	GV	P	--	K	4	--	2563
138N096W18BAA2	D.GRESSER	28		0	72	1937	H	--	14	--	N	GV	P	--	--	--	--	2562
138N096W20AAD1	L.STOCKERT	14		0	48	1896	S	--	4	--	N	GV	--	--	--	--	--	2531
138N096W20AAD2	L.STOCKERT	28		28	18	--	S	--	--	--	N	GS	VV	--	K	4	7.5	2530
138N096W20AAD3	L.STOCKERT	18		--	18	1958	H	--	--	--	N	GV	--	--	P	5	--	2532
138N096W20AAD4	L.STOCKERT	16		16	18	1964	S	--	--	--	N	GV	--	--	P	5	--	2532
138N096W20AAD5	L.STOCKERT	30		30	6	1966	S	--	--	--	N	GS	--	--	--	--	--	2530
138N096W21ADA1	J.DDLAJAK	160		--	4	1907	H	--	40	--	N	SB	--	--	K	6	--	2592
138N096W21ADA2	J.DDLAJAK	80		80	6	1966	U	--	--	--	N	SB	I	--	--	--	--	--
138N096W210DD1	V.DDLAJAK	160		160	6	1950	K	--	80	--	N	SH	VV	--	C	5	--	2584
138N096W210DD2	NDSMC 3535	201	400	198	--	1967	U	--	109	12-67	M	SB	2V	Y	--	--	--	2607
138N096W22DAA	J.OECKER	40		40	18	1962	S	--	15	--	N	SH	I	--	--	--	--	2512
138N096W230BB1	P.OLMEISER	23		0	48	1919	S	--	--	--	N	SB	VV	--	--	--	--	2475
138N096W230BB2	P.OLMEISER	40		40	18	1963	S	--	--	--	N	SB	VV	--	--	--	--	2475
138N096W230BB3	P.OLMEISER	30		30	6	1963	H	--	--	--	N	SB	--	--	K	4	--	2475
138N096W25BAC1	M.FRENZEL	35		35	18	1929	H	--	20	--	N	SB	VV	--	K	5	--	--
138N096W25BAC2	M.FRENZEL	35		35	18	1945	S	--	20	--	N	SR	VV	--	K	5	--	--
138N096W25BAC3	M.FRENZEL	35		35	18	1950	S	--	20	--	N	SR	VV	--	K	5	9.0	--
138N096W26AAC1	F.FRENZEL	100		100	4	1949	S	--	40	--	N	SB	P	--	--	--	--	--
138N096W26AAC2	F.FRENZEL	100		100	4	1965	H	--	40	--	N	SB	P	--	K	4	--	--
138N096W27CCD	M.FRITZ	60		60	6	1966	K	--	--	--	N	SB	I	--	K	5	--	--
138N096W27DDO	L.BINSTOCK	55		55	18	1964	H	--	--	--	N	GS	--	--	K	5	--	--
138N096W28AAA	NDSMC 3535A	192	270	189	1	1969	U	--	87	5-69	M	SB	VV	GD	C	5	8.5	2594
138N096W30HAB	J.WALBAUM	61		61	18	1949	S	--	41	--	N	SB	I	--	--	--	--	2690
138N096W32HDA	J.ULMEISER	180		180	6	1947	K	--	90	--	N	SB	VV	--	K	5	8.5	--
138N096W320DB1	J.SCHANK	33		0	48	1906	H	--	20	--	N	SH	--	--	K	6	--	--
138N096W32DDP2	J.SCHANK	30		30	18	--	S	--	12	--	N	SR	--	--	K	4	--	--
138N096W33ADD1	M.STTCKA	64		--	--	1949	U	--	--	--	N	SB	--	--	--	--	--	--

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LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAIL-ABLE	QW TYPE	SPE-CIFIC CONDUCTANCE	TEMPERATURE (°C)	ALTI-TUDE OF LSD (FT.)
138N096W33A0D2	M. STICKA	92		80	4	1949	K	8	35		N	SH	1		K	5		2570
138N096W33D0A	NDSMC 3720	200				1969	U				N			Y				2528
138N096W34C0A1	S. FILIPI	25		0	48		S		10		N	SB	VV		K	5	6.5	
138N096W34C8A2	S. FILIPI	36		36	18	1952	S		10		N	SB	VV					
138N096W34C8A3	S. FILIPI	40		40	18	1962	H		10		N	SH	VV		K	4		
138N096W35ACC1	V. DOLFCHEK	60		60	18	1928	H		40		N	SB	1		K	5		
138N096W35ACC2	V. DOLFCHEK	65		65	18	1957	S		35		N	SB	P				9.5	
138N096W35BAA	V. DOLECHEK	90		50	18	1960	H		20		N	SB	VV		K	5		
138N097W02A0D1	F. OUKROP	32		0	60	1918	U		30	7-67	U	SR	1					2564
138N097W02A0D2	F. OUKROP	132			4	1963	H	30			N	SB	VV		C	5	9.0	2575
138N097W02A0D3	F. OUKROP	150		120	4	1964	S	100			N	SB	VV	D	K	4	8.5	2560
138N097W02R0B	P. DECKER	165		165	4	1965	K				N	SB	VV	D	K	5		2545
138N097W02CC1	M. HONDL	19		0	60	1936	H		5		N	GV			K	5	5.5	2590
138N097W02CC2	M. HONDL	32		32	18	1946	S				N	GS			K	4	7.5	2590
138N097W03D00	M. HONDL	32			18	1946	S				N	GS						2590
138N097W04BCC1	A. PRIVRATSKY	22		0	18		S		6		N	GV			K	4	7.5	
138N097W04BCC2	A. PRIVRATSKY	22		22	18	1963	H		6		N	GV	VV		K	3		
138N097W04CCC	A. DVORAK	110		0	18	1925	K		98		N	SH	VV		K	5	7.5	
138N097W07C0C1	E. EBERTS JR.	35		35	18	1945	S		15		N	WR						2670
138N097W07C0C2	E. EBERTS JR.	30		30	18	1945	H		15		N	WR						
138N097W07D0D	NDSMC 21-748	360		0		1962	U				N			GE				2647
138N097W08B0B	V. VEVERKA	12		12	36	1962	K		2		N		G		K	4	7.5	
138N097W10AAA	A. DECKER	30		30	18	1961	K				N	SB	1		K	5	9.5	2590
138N097W10DCC1	A. HATZENBUHLER	15		0	60	1913	H		8		N	Z2	G		K	5	5.5	2600
138N097W10DCC2	A. HATZENBUHLER	60		60	18	1961	S		28		N	GS			K	5	8.5	2600
138N097W1108B	L. DECKER	30		30	18	1956	S				N	GV	VV					
138N097W12D0C	G. HONDL	90		90	18	1934	S		554	12-66	U	GS					7.0	2 94
138N097W14A0A1	M. FISHER	32		32	6	1947	H		12		N	WR	VV		K	5		2670
138N097W14A0A2	M. FISHER	165		150	2	1956	S		85		N	GV			K	4		2670
138N097W14B0A1	F. KOSTELECKY	14		0			H		9		N	WR			K	4		
138N097W14B0A2	F. KOSTELECKY	42		42	18	1962	S		8		N	WR	VV		K	5		2690
138N097W18ACC1	A. EBERTS	80		80	6		S		30		N	WR						2765
138N097W18ACC2	A. EBERTS	65		65	18	1945	K		35		N	WR			K	5		
138N097W18D0	ATLANTIC EBERTS	9096				1959	U				N							2716
138N097W20B0D1	E. HERAUF	86		86	18	1938	S		20		N	SB	VV					2656
138N097W20B0D2	E. HERAUF	100			18	1954	H		20		N	SB	VV		K	5		2656
138N097W20B0D3	E. HERAUF	85			5	1967	S	50			N	SB	VV	D				2656
138N097W22C0A1	J. SIMEK	12		0	60	1900	H		4		N	GV	VV					2700
138N097W22C0A2	J. SIMEK	24		18	18	1948	S	3	14		N	GV	VV					2700
138N097W22C0A3	J. SIMEK	140		140	4	1960	K		100		N	GV	VV		K	5		

LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAILABLE	QW TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ALTITUDE OF LSD (FT.)
138N097W22CDC	W.FROEHLICH	125	--	18	18	1945	U	--	--	--	N	SB	VV	--	--	--	--	--
138N097W24ACC1	R.HEIDT	60	60	18	18	1938	S	--	--	--	N	GS	--	--	--	--	--	2610
138N097W24ACC2	R.HEIDT	34	34	18	18	1946	H	--	--	--	N	GV	--	--	K	6	--	2610
138N097W24ACC3	R.HEIDT	73	73	18	18	1956	S	--	--	--	N	GS	--	--	--	--	--	2600
138N097W24BDD	R.HEIDT	24	0	72	72	1938	K	--	8	--	N	GV	--	--	K	4	--	2603
138N097W24CAA1	J.WOLBAUM	30	0	60	60	1910	K	--	26	--	N	GV	VV	--	K	6	--	2609
138N097W24CAA2	J.WOLBAUM	30	30	18	18	--	S	--	16	--	N	GV	--	--	--	--	--	2602
138N097W24CAA3	J.WOLBAUM	40	--	18	18	1950	S	--	74	--	N	GV	--	--	--	--	--	2600
138N097W26ABB	M.DECKER	48	--	18	18	--	U	--	13	12-66	O	GV	--	--	--	--	--	2690
138N097W27BBB	W.FROEHLICH	30	30	18	18	--	U	--	--	--	N	GV	--	--	--	--	--	2685
138N097W28AAA	M.DECKER	30	30	18	18	--	S	--	--	--	N	WR	--	--	--	--	--	--
138N097W28AAB	M.DECKER	30	30	18	18	--	S	--	--	--	N	WR	--	--	--	--	--	--
138N097W28AAD1	M.DECKER	30	30	18	18	--	S	--	--	--	N	WR	--	--	--	--	--	--
138N097W28AAD2	M.DECKER	30	30	18	18	--	S	--	--	--	N	WR	--	--	--	--	--	--
138N097W28AAD3	M.DECKER	30	30	18	18	--	H	--	--	--	N	WR	--	--	K	4	--	--
138N097W28BDD1	A.DORRITSCH	60	0	18	18	1950	S	--	30	--	N	WR	--	--	--	--	--	2800
138N097W28BDD2	A.DORRITSCH	50	50	18	18	1957	H	--	35	--	N	WR	--	--	K	5	--	--
138N097W32CBC	E.PALASMA	9	0	12	12	--	U	--	6	12-66	O	GV	--	--	--	--	--	2680
138N097W32DCD	F.BEZDICEK	20	--	18	18	--	U	--	12	12-66	O	GV	--	--	K	7	6.5	2690
138N098W018BB1	A.EBERTS	60	--	18	18	--	U	--	30	--	N	SB	--	--	--	--	--	2600
138N098W018BB2	A.EBERTS	300	300	6	6	1945	S	--	150	--	N	SB	--	--	K	6	--	2600
138N098W018BC	A.EBERTS	80	80	6	6	1963	S	--	40	--	N	GV	--	--	--	--	--	--
138N098W02ADD	A.KHORMA	32	32	12	12	--	U	--	12	9-66	O	SB	--	--	--	--	--	2600
138N098W02BCC1	E.LUPTAK	72	72	18	18	1940	S	--	62	--	N	SB	1	--	K	7	9.5	2616
138N098W02BCC2	E.LUPTAK	130	--	4	4	1949	H	--	110	--	N	SB	--	--	K	6	--	2606
138N098W03ADD	E.LUPTAK	46	46	18	18	--	S	--	20	9-66	O	SH	--	--	--	--	--	2612
138N098W03CCG	N.P.DX360-22	140	0	--	--	1962	U	--	--	--	N	--	D	--	--	--	--	2590
138N098W04ADA	V.PRAUS	72	72	18	18	1929	S	--	35	--	N	SB	1	--	--	--	--	2623
138N098W04DD1	V.PRAUS	30	30	18	18	1954	U	--	15	--	N	SB	--	--	--	--	--	2610
138N098W04DD2	V.PRAUS	57	--	5	5	1960	H	--	--	--	N	SB	1	--	K	5	--	2612
138N098W05BBB	F.HURT	67	67	18	18	1949	K	--	16	--	N	SB	VV	--	K	5	--	2578
138N098W078B1	A.WAGNER	78	--	5	5	1952	K	16	30	--	N	SB	1	--	K	5	--	2585
138N098W078B2	A.WAGNER	52	--	18	18	1952	S	26	17	--	N	SB	--	--	K	6	12.0	2582
138N098W078CA	A.WAGNER	48	48	18	18	1950	S	--	31	--	N	SB	1	--	K	4	10.5	2583
138N098W078CB	A.WAGNER	36	36	18	18	--	H	--	16	--	N	SB	VV	--	K	5	--	2575
138N098W08AC01	S.METZ	--	--	--	--	--	K	--	15	--	N	SB	--	--	K	4	11.0	2590
138N098W08ACD2	S.METZ	28	--	18	18	--	U	--	14	9-66	O	SB	--	--	--	--	--	2590
138N098W10AAA	N.HUSCHKA	60	--	12	12	1910	H	--	--	--	N	SB	--	--	K	6	--	2610
138N098W10AAC	N.HUSCHKA	204	204	6	6	1952	S	4	--	--	N	SB	1	--	K	5	15.0	2602
138N098W12AAA1	A.FISHER	14	0	60	60	--	H	--	--	--	N	WR	--	--	K	4	12.0	--

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138N098W12AA7	A. FISHER	14		0	60	--	S	--	--	--	N	WR	--	--	--	--	--	--
138N098W15AAD1	A. PRIVRATSKY	75		--	18	1933	U	--	--	--	N	SR	--	--	--	--	--	2642
138N098W15AAD2	A. PRIVRATSKY	160		--	4	1952	H	--	10	--	N	SR	--	--	K	5	--	2642
138N098W158B	HUNT, PRIVRATSKY	12204		--	--	1955	U	--	--	--	N	--	--	--	--	--	--	2641
138N098W198CC3	J. SCHMIDT	93	93	93	36	1955	S	--	60	--	N	SB	1	--	K	6	9.0	2634
138N098W198CC4	J. SCHMIDT	30	30	36	36	1961	H	--	14	--	N	SB	VV	--	K	4	10.5	2653
138N098W20CBB	J. SCHMIDT	32	--	12	12	1963	S	--	14	9-66	0	SB	VV	--	--	--	2672	
138N098W22DAC	A. KUVASH	37	37	48	48	1928	U	--	--	--	N	GS	--	--	--	--	2697	
138N098W240AA1	UBRITSCHKWISCH	30	--	18	18	1952	S	3	20	--	N	WR	--	--	K	6	12.0	2790
138N098W240AA2	UBRITSCHKWISCH	180	180	6	6	1960	K	10	120	--	N	GS	--	--	K	4	--	2790
138N098W240DD1	A. HUSCHKA	206	--	6	6	1949	U	--	--	--	N	SB	VV	--	--	--	--	2790
138N098W240DD2	A. HUSCHKA	251	--	6	6	1961	K	40	50	--	N	SB	VV	--	K	5	12.0	2790
138N098W26CC1	F. PRIVRATSKY	85	61	18	18	1942	K	3	60	--	N	GS	VV	--	--	--	--	2750
138N098W26CC2	F. PRIVRATSKY	213	--	4	4	1950	K	7	60	--	N	SB	VV	--	--	--	--	2750
138N098W27ADD1	R. BINSTOCK	80	0	18	18	1936	H	--	--	--	N	GS	VV	--	K	4	--	2740
138N098W27ADD2	R. BINSTOCK	190	190	6	6	1958	S	--	60	--	N	SH	VV	--	K	3	--	2742
138N098W29DAC1	P. MEDUNA	35	35	18	18	--	K	--	4	--	N	GV	--	--	K	5	--	2765
138N098W29DAC2	P. MEDUNA	35	0	18	18	--	S	--	6	--	N	GV	--	--	--	--	--	2765
138N098W30AAD	P. MEDUNA	90	--	6	6	1951	S	--	15	--	N	SB	P	--	--	--	--	2745
138N098W31DCC1	R. BAHLEY	28	0	24	24	1933	U	--	18	--	N	GV	6V	--	--	--	--	2755
138N098W31DCC2	R. BAHLEY	50	50	18	18	1940	S	--	25	--	N	SB	--	--	K	5	--	2755
138N098W31DCC3	R. BAHLEY	290	--	6	6	1960	H	--	170	--	N	SB	1	--	K	5	--	2755
138N098W33AAA	F. BINSTOCK	78	78	18	18	--	K	--	30	--	N	GV	VV	--	K	3	--	2760
138N098W33AAC	F. BINSTOCK	190	190	6	6	1962	S	--	90	--	N	SB	--	--	--	--	--	2755
138N098W34AAA	C. BINSTOCK	72	72	18	18	--	K	--	--	--	N	GS	--	--	K	3	11.5	2735
138N098W36ACC1	L. HONDL	72	72	18	18	1952	H	--	55	--	N	GS	--	--	K	4	--	2720
138N098W36ACC2	L. HONDL	82	82	18	18	1959	S	--	--	--	N	GS	--	--	K	4	10.5	2720
138N099W01CRB	N. FUSCHER	255	255	4	4	1965	H	28	--	--	N	SB	3V	D	K	5	--	2570
138N099W02DBA1	E. WOLF	45	45	12	12	1946	H	--	--	--	N	SB	1	--	--	--	--	2587
138N099W02DBA2	E. WOLF	60	60	18	18	--	S	--	--	--	N	SB	--	--	K	5	9.0	2575
138N099W04DCR1	R. KUNTZ	50	0	48	1900	S	--	--	10	--	N	SB	VV	--	--	--	--	2614
138N099W04DCR2	R. KUNTZ	50	0	18	1944	S	--	--	15	--	N	SB	1	--	K	6	9.0	2617
138N099W04DCR3	R. KUNTZ	60	--	18	1953	H	--	--	45	--	N	SB	VV	--	K	5	--	2614
138N099W06ADA1	R. & S. KUNTZ	58	33	18	18	1951	H	--	27	--	N	SB	VV	--	K	5	--	2652
138N099W06ADA2	R. & S. KUNTZ	59	--	18	1964	S	--	--	50	--	N	SB	VV	--	K	4	10.0	2653
138N099W06ADA3	R. & S. KUNTZ	59	--	18	1964	K	--	7	12	--	N	SE	VV	--	K	6	--	2647
138N099W07DAC	N. FUGERE	38	0	18	1960	S	--	--	16	--	N	SR	1	--	--	--	--	2645
138N099W08ADD	C. KUNTZ	185	185	6	1962	S	--	--	--	--	N	SB	1	--	K	6	9.5	2642
138N099W08CB1	D. FUGERE	22	22	6	1942	S	--	--	18	--	N	SB	1	--	K	6	--	2643
138N099W08CB2	D. FUGERE	40	0	18	1956	S	--	--	16	--	N	SR	--	--	K	7	8.5	2640

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138N099W08DAD	H.TESSIER	200	--	6	1958	H	--	--	--	--	N	SB	1	--	--	--	--	2630
138N099W08DDA	H.TESSIER	80	--	0	24	--	S	--	--	--	N	SB	--	--	C	7	7.5	2633
138N099W09C8	SUN, BEAUDOIN I	9562	--	--	1954	U	--	--	--	--	N	SB	--	--	--	--	--	2630
138N099W12CCB1	S.KESSLER	45	45	16	--	H	--	--	--	--	N	SB	--	--	K	6	--	2593
138N099W12CGH2	S.KESSLER	65	--	4	1960	S	--	--	--	--	N	SB	1	--	K	5	10.5	2593
138N099W14DDO1	A.DORVAL	62	62	18	1961	S	--	40	--	--	N	SB	1	--	--	--	--	2620
138N099W14DDO2	A.DORVAL	47	47	18	1965	H	--	27	--	--	N	SB	VV	--	K	5	--	2632
138N099W17AAA	NDSWC 3538	200	0	5	1967	U	--	--	--	--	N	SB	--	--	Y	--	--	2645
138N099W178AA	M.FALLON	12	--	6	--	U	--	4	9-66	--	O	SB	--	--	--	--	--	2642
138N099W19hDA1	M.MILLER	68	68	24	1956	S	--	--	--	--	N	SB	VV	--	--	--	--	2700
138N099W198DA2	M.MILLER	72	--	8	1961	H	--	27	--	--	N	SB	VV	--	K	6	10.5	2700
138N099W20ABA	H.BRAATEN	60	--	5	1961	K	--	12	--	--	N	SB	VV	--	K	4	9.0	2675
138N099W23AAA	V.KUBISCHTA	52	52	24	1933	K	--	27	--	--	N	SE	VV	--	K	4	10.0	2682
138N099W24CCC	NOSWC 3690	833	840	756	2	1968	U	--	212	12-68	M	CL	2V	YC	C	4	11.5	2620
138N099W24DAA	V.WEIGUM	30	30	6	--	K	--	--	--	--	N	GS	VV	--	K	4	10.5	2673
138N099W25BD	SKELLY, WEIGUM I	9402	--	--	1957	U	--	--	--	--	N	--	--	--	--	--	--	2632
138N099W26AA81	H.RIDL	28	0	18	1934	H	--	15	--	--	N	22	8G	--	--	--	--	2623
138N099W26AA82	H.RIDL	58	58	18	1954	S	--	--	--	--	N	SB	--	--	--	--	--	2623
138N099W27C8B1	H.EMIL	65	65	18	1968	H	--	45	--	--	N	SR	1	--	K	6	--	2662
138N099W27C8B2	H.EMIL	70	70	18	1963	S	--	25	--	--	N	SB	1	--	K	6	9.5	2660
138N099W28ABB1	F.HERAUF	80	80	18	1945	S	--	60	--	--	N	SB	--	--	K	6	10.0	2688
138N099W28ABB2	F.HERAUF	80	80	18	1946	S	3	60	--	--	N	SB	--	--	--	--	--	2686
138N099W28ABB3	F.HERAUF	60	60	18	1950	H	--	52	--	--	N	SB	--	--	K	6	--	2692
138N099W29DAD	P.HUTZENBILER	55	0	18	1946	H	--	--	--	--	N	SB	1	--	K	6	10.5	2695
138N099W29UDA	P.HUTZENBILER	70	--	18	1951	H	--	12	--	--	N	SB	1	--	K	6	--	2696
138N099W32AAC	C.MOLM	48	0	12	--	U	--	38	9-66	--	O	SB	--	--	--	--	--	2700
138N099W32DDD	C.MOLM	215	215	5	1965	K	7	155	--	--	N	SB	--	--	K	5	9.5	2697
138N099W33CDC	J.HUTZENBILER	240	--	4	1964	H	8	100	--	--	N	SB	VV	--	K	5	--	2689
138N099W33CDD	J.HUTZENBILER	120	--	3	1955	S	45	35	--	--	N	SB	1	--	K	6	12.0	2687
138N099W34D8C	L.HUTZENBILER	40	0	12	1955	U	--	--	--	--	N	SR	--	--	--	--	--	2649
138N099W34DCB1	L.HUTZENBILER	40	0	12	1946	S	3	15	--	--	N	SB	--	--	K	6	10.5	2640
138N099W34DCB2	L.HUTZENBILER	40	0	12	1947	U	3	10	--	--	N	SB	--	--	--	--	--	2648
138N099W35AAC	J.DECKER	60	60	18	--	K	--	--	--	--	N	SB	1	--	K	6	10.5	2643
138N099W35BCA1	P.DECKER	40	0	18	1934	S	--	--	--	--	N	SB	VV	--	K	6	--	2643
138N099W35HCA2	P.DECKER	36	--	18	1938	I	--	10	--	--	N	SB	--	--	--	--	--	2643
138N099W35HCA3	P.DECKER	25	25	18	1963	H	--	11	--	--	N	SB	--	--	--	--	--	2643
138N099W35HCA4	P.DECKER	50	50	18	1963	U	--	20	--	--	N	SB	1	--	--	--	--	2645
139N091W01ADD	E.TERRAS	132	--	4	--	K	--	--	--	--	N	ST	--	--	--	--	--	2230
139N091W02ADD	E.TERRAS	487	487	4	1950	S	4	70	--	--	N	TR	VV	--	K	5	8.5	2280
139N091W028AA	E.TERRAS	5	--	0	1915	U	--	5	10-57	--	I	SB	--	--	--	--	--	2237

LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAILABLE	OW TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ALTITUDE OF LSD (FT.)
139N091W0588B	T. NEIDHARDT	100	306	80	--	1958	S	4	--	--	N	SB	I	D	--	--	--	2358
139N091W07ABD	R. FIX	65	--	65	2	1967	H	6	--	--	N	SB	VV	--	--	--	--	--
139N091W09DDA2	R. WALTH	15	--	0	54	1917	K	10	11	--	N	SB	I	--	K	4	6.0	--
139N091W10AAC	J. TERRAS	150	--	150	2	1910	K	--	75	--	N	FR	I	--	K	6	11.0	2280
139N091W110CD1	N.D.HWY.DEPT.	1837	1900	1717	6	1967	U	--	307	--	N	FR	VV	JE	--	--	--	2432
139N091W110CD2	N.D.HWY.DEPT.	1800	--	1512	4	1969	H	--	390	--	N	FR	VV	Y	C	--	--	2432
139N091W12AAR1	R. SCHNEIDER	70	--	0	48	--	U	--	--	--	N	SH	--	--	--	--	--	--
139N091W12AAB7	R. SCHNEIDER	30	--	0	48	--	S	--	--	--	N	SB	--	--	--	--	--	--
139N091W12AAB5	R. SCHNEIDER	132	--	132	4	--	H	--	--	--	N	ST	VV	--	K	6	--	2280
139N091W14ABA	A. TERRAS	68	--	--	24	1965	K	--	34	--	N	SB	--	--	K	5	--	--
139N091W16CCA	R. REICH	365	--	--	4	1966	S	--	200	--	N	FR	--	--	--	--	--	2480
139N091W18ACD	N.P.RMY.	0	327	--	0	1927	U	--	252	--	N	FR	VV	D	--	--	--	2418
139N091W18ADD1	J. HAAG	110	--	109	2	--	U	1	61	6-68	M	SB	VV	--	--	--	--	2415
139N091W18ADD2	J. HAAG	100	--	100	2	1953	U	D	90	--	N	SR	VV	--	K	6	8.5	2415
139N091W18ADD3	J. HAAG	600	--	600	4	1962	H	5	250	--	N	TR	VV	--	K	5	--	2415
139N091W19ABA	F. FISHER	180	--	--	4	--	K	--	130	--	N	ST	--	--	P	6	--	2380
139N091W19CCF	USBR	25	--	0	--	1957	U	--	10	3-57	U	SB	--	G9	--	--	--	2392
139N091W19DDA	USBR	25	--	0	--	1957	U	--	>25	8-57	0	--	--	G9	--	--	--	2480
139N091W210GB	R. REICH	280	--	--	7	1940	K	--	120	--	N	TR	--	--	K	6	--	2400
139N091W210DU	NDSWC 3665	300	--	290	1	1968	U	--	167	6-69	M	TR	2V	GE	C	6	9.5	2412
139N091W24ABB	I. DRAER	60	--	--	--	--	H	--	--	--	N	SB	--	--	K	6	10.0	--
139N091W24CDD1	R. HEINLE	40	--	40	6	1920	S	--	20	--	N	SB	I	--	K	6	10.5	--
139N091W24CDD2	R. HEINLE	250	--	250	4	1964	H	--	100	--	N	ST	VV	--	K	6	--	2300
139N091W24IAA	USBR	16	--	0	--	1957	U	--	--	--	N	--	--	G	--	--	--	2448
139N091W27ACC	W. EBEL	4	--	0	36	--	U	--	3	6-67	D	SB	--	--	--	--	--	2380
139N091W27CDB	E. HUCHMALTER	73	--	--	36	1908	U	--	16	6-67	0	--	--	--	--	--	--	2360
139N091W28AAC1	D. DIEDE	250	--	--	2	1930	S	--	100	--	N	ST	--	--	K	5	11.0	2380
139N091W28AAC2	D. DIEDE	250	--	--	2	1925	H	--	100	--	N	ST	--	--	K	5	--	--
139N091W290B1	C. WANNEK	135	--	135	2	--	H	5	--	--	N	SB	--	--	K	6	--	2420
139N091W290B2	C. WANNEK	143	--	143	2	1965	S	5	130	--	N	SB	VV	--	K	6	--	--
139N091W30GAR1	S. KRENZEL	190	--	190	2	1950	S	1	175	--	N	ST	VV	--	--	--	--	2400
139N091W30IAB2	S. KRENZEL	220	--	220	2	1952	H	1	150	--	N	ST	VV	--	K	6	--	2400
139N091W33ACD1	M. DIEDE	188	--	188	2	1926	H	--	--	--	N	TR	V	--	K	6	--	2343
139N091W33ACD2	M. DIEDE	212	--	91	2	1963	S	2	170	3-63	N	TR	1V	D	K	6	--	2343
139N091W33C8C1	J. HEINLE	30	--	0	60	--	S	--	20	--	N	SB	P	--	K	7	10.5	--
139N091W33C8C2	J. HEINLE	180	--	140	4	1949	H	--	60	--	N	ST	P	--	K	6	--	2330
139N091W34ADA	J. DIEDE	34	--	0	60	1890	U	--	22	6-67	0	SB	I	--	--	--	--	2370
139N091W35ACA1	R. KITZAN	30	--	30	18	1912	H	--	12	--	N	SB	--	--	K	7	8.5	--
139N091W35ACA2	R. KITZAN	8	--	8	24	1966	S	--	4	--	N	SB	--	--	--	--	--	--
139N091W350DA	A. KITZAN	214	--	--	6	1961	K	--	100	--	N	ST	--	--	K	5	--	2390

LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER REAKING MATERIAL	LOG AVAIL-	QW TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ALTITUDE OF LSD (FT.)
1394092W0288H1	R. SCHNELL	60		24	24	--	S	--	--	--	N	SB	--	--	--	--	--	2273
1394092W0288H2	R. SCHNELL	255		--	6	1959	K	3	200	--	N	TR	VV	--	K	5	--	2273
1394092W04ADA	P. LEHMAN	135		115	6	1953	K	5	40	--	N	SB	1	--	K	5	--	2520
1394092W054AB	RICHARDSON	40		--	96	--	P	25	25	--	N	SB	1	--	C	5	7.5	2336
1394092W05ACD	P. AMAN	180		--	--	--	K	--	--	--	N	SB	--	--	P	8	--	--
1394092W05CCD	J. TIMMERMAN	82		--	2	1947	K	3	72	11-49	U	SB	--	--	--	--	--	2460
1394092W05DAB	NDSWC 319	570		0	5	1950	U	--	--	--	N	--	--	G	P	5	--	2448
1394092W05DAC	J. HERMAN	125		78	18	--	K	--	74	6-50	U	SB	1	--	C	7	--	2470
1394092W05DBB	RICHARDSON	640		600	8	1959	P	55	--	--	N	FR	VV	--	C	5	10.0	2470
1394092W05DCA	NDSWC 321	854		0	5	1950	U	--	--	--	N	--	--	G	P	5	--	2448
1394092W05DDA	NDSWC 320	130		0	5	1950	U	--	--	--	N	--	--	G	--	--	--	2450
1394092W05DDR	E. ALPERT	85		85	18	1925	K	4	62	12-49	U	SB	VV	--	--	--	--	2450
1394092W08ABH1	J. ERDLE	90		0	36	1914	S	3	66	11-49	U	SB	1	--	--	--	--	2460
1394092W08ABH2	J. ERDLE	91		71	4	1966	H	4	60	--	N	SB	1	D	K	4	--	2460
1394092W09BBH	Z. MUGGLI	98		--	--	1894	K	--	92	--	N	SB	--	--	--	--	--	--
1394092W10AAD	R. GRESS	90		--	18	1919	K	--	65	--	N	SB	--	--	--	--	--	2450
1394092W11ABC	F. HOFF, JR.	80		--	6	1967	S	--	20	--	N	SB	--	--	--	--	--	--
1394092W11ACC	F. HOFF	80		--	6	1947	S	--	60	--	N	SB	--	--	--	--	--	--
1394092W11DCC	F. HOFF	55		--	6	1919	K	--	--	--	N	SB	1	--	--	--	--	--
1394092W13BRD	F. HOFF, JR.	80		--	6	--	S	--	20	--	N	SB	--	--	--	--	--	--
1394092W13CDD1	C. WAHLERS	40		--	--	1948	S	--	--	--	N	SB	--	--	--	--	--	--
1394092W13CDD2	C. WAHLERS	80		--	--	1947	H	--	--	--	N	SB	--	--	--	--	--	--
1394092W14FAA1	J. BARTH	--		--	--	1941	K	--	30	8-49	U	SB	--	--	--	--	--	2430
1394092W14SAA2	J. BARTH	45		--	18	--	H	--	30	--	N	SB	--	--	K	4	--	--
1394092W17RAB1	V. KOPP	36		--	24	1946	H	4	20	11-49	U	SB	--	--	--	--	--	2450
1394092W17UAB2	V. KOPP	42		--	40	--	S	1	17	8-49	U	SB	--	--	--	--	--	2450
1394092W17UDB	USGS	68		--	--	1968	U	--	--	--	N	--	--	G	--	--	--	2439
1394092W18BAB	A. SATTLER	16		0	50	--	K	--	8	8-49	U	SB	--	--	--	--	--	2470
1394092W18BAB	H. HUNKE	--		0	40	--	K	--	15	8-49	U	SB	--	--	--	--	--	2480
1394092W18CCC	UNION, SCHANK	7254		671	8	1969	U	--	--	--	N	--	--	--	--	--	--	2449
1394092W18DDH1	C. RUMMEL	14		--	--	--	S	--	5	--	N	SB	--	--	--	--	--	--
1394092W18DDH2	C. RUMMEL	60		--	--	--	K	--	40	--	N	SB	--	--	--	--	--	--
1394092W20BAR	J. PALM	18		24	24	1941	K	--	14	8-49	U	SB	--	--	--	--	--	2410
1394092W22CBB	L. HOFF	27		--	--	--	H	--	15	--	N	SB	--	--	--	--	--	--
1394092W22DUA	USGR	16		0	--	1957	U	--	>16	2-57	U	SB	--	G	--	--	--	2408
1394092W23DDU	J. MISCHEL	35		--	18	1935	K	--	8	8-49	U	SB	1	--	--	--	--	2390
1394092W24DAD	P. PALM	12		0	36	--	U	--	5	8-49	U	SB	--	--	--	--	--	2390
1394092W25BBH	NDSWC 3703	380		--	--	1969	U	--	--	--	N	--	--	Y	--	--	--	2378
1394092W26ADA1	A. RIXEN, JR.	22		0	36	1895	H	--	4	--	N	SB	1	--	--	--	--	--
1394092W26ADA2	A. RIXEN, JR.	16		--	18	1928	S	--	4	--	N	SB	1	--	--	--	--	--

LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAM- ETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER- LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAIL- ABLE	OW TYPE	SPE- CIFIC CON- DUCT- ANCE	TEM- PER- ATURE (°C)	ALTI- TUDE- OF LSO (FT.)
139N092W278CB	M. MELCHIOR, JR.	37	--	--	--	--	--	36	8-69	G	SB	--	--	--	--	--	--	2470
139N092W288BB	F. RUMFEL	308	278	4	1965	K	10	158	--	N	ST	VV	--	K	5	--	--	2470
139N092W29AAA	NDSWC 394E	240	0	5	1967	U	--	--	--	N	--	--	Y	--	--	--	--	2397
139N092W32CAD	E. HOFF	30	--	--	--	K	--	--	--	N	SB	--	--	--	--	--	--	--
139N092W34AAC	F. MELCHIOR	285	285	2	1932	K	--	90	--	N	TR	--	--	K	5	--	--	2400
139N092W35BBA	P. RAEK	225	--	--	1947	K	--	--	--	N	ST	VV	--	--	--	--	--	2370
139N092W36AAA	M. ROEHM	--	--	18	--	S	--	44	8-69	O	SB	--	--	--	--	--	--	2390
139N092W36JCD	M. ROEHM	--	0	18	--	U	--	13	8-69	U	SB	--	--	--	--	--	--	2350
139N093W03A01	F. MISCHSEL	50	--	3	1943	K	6	13	--	N	SB	--	--	--	--	--	--	2480
139N093W03AD2	F. MISCHSEL	115	--	2	1962	H	--	40	--	N	SB	1	--	K	4	--	--	2480
139N093W03AD3	F. MISCHSEL	115	--	6	1963	S	--	40	--	N	SB	1	--	--	--	--	--	2480
139N093W04AB8	A. GABE	315	--	2	1948	K	--	265	--	N	ST	VV	--	--	--	--	--	2480
139N093W10ADD	S. BOBB	80	--	18	--	U	--	42	8-69	U	SB	--	--	--	--	--	--	2480
139N093W11LAD4	R. PFLPSEN	40	--	--	--	K	--	16	--	N	SB	--	--	--	--	--	--	--
139N093W1188C	UNION PFLPSEN	8377	658	9	1968	U	--	--	--	U	--	--	--	--	--	--	--	2443
139N093W12CCC	S. BOBB	36	--	--	1890	H	--	22	8-69	O	SB	--	--	--	--	--	--	2490
139N093W120DB	H. HURK	80	--	--	--	K	--	54	--	N	SB	--	--	--	--	--	--	--
139N093W13HCB	J. MAGSTADT	30	--	6	--	K	--	--	--	N	SB	--	--	--	--	--	--	--
139N093W180BD1	L. BRAND	90	90	15	1930	S	4	50	--	N	SO	VV	--	K	4	--	--	2420
139N093W180BD2	L. BRAND	115	95	6	1958	H	20	15	--	N	SR	P	--	K	5	--	--	2420
139N093W19CCB	USBR	24	0	--	1957	U	--	--	--	N	--	--	69	--	--	--	--	2449
139N093W19DAB	H. STANGER	35	0	40	--	K	--	24	--	N	SB	--	--	--	--	--	--	--
139N093W22ACC	R. MARCUSEN	56	--	18	--	K	--	26	--	N	SB	--	--	--	--	--	--	--
139N093W23ACD	W. JESPERSON	250	--	--	--	K	--	40	--	N	ST	VV	--	--	--	--	--	2485
139N093W268BB	L. JESPERSON	50	--	--	--	U	--	35	--	N	SB	--	--	--	--	--	--	--
139N093W26DDC	J. HARDMEYER	28	16	6	1967	K	12	4	--	N	SB	6V	D	K	6	--	--	2447
139N093W27AAA	NDSWC 3686	687	720	681	2	1968	U	--	284	12-68	M	TR	1V	Y	C	5	--	2466
139N093W278CB	M. MARCUSEN	42	--	--	--	K	--	28	--	N	SB	--	--	--	--	--	--	--
139N093W28AAD	L. MARCUSEN	42	--	--	--	K	--	28	--	N	SB	--	--	--	--	--	--	--
139N093W30RAD7	R. STANGER	67	0	18	1919	S	--	--	--	N	SB	--	--	K	4	7.0	--	--
139N094W02AAB1	J. OUKROP	52	52	18	1943	K	4	30	--	N	SB	P	--	K	6	--	--	--
139N094W02AAB2	J. OUKROP	52	52	4	1962	H	4	--	--	N	SB	P	--	--	--	--	--	--
139N094W02CBC	J. THEILEN	91	91	24	1962	K	8	40	--	N	SB	1	--	K	6	--	--	--
139N094W03CCC	A. MARTIN	45	45	18	1959	H	--	17	--	N	SB	1	--	K	6	--	--	--
139N094W07CBD1	H. KOLLER	300	--	4	1965	S	--	17	--	N	TR	--	D	--	--	--	--	2303
139N094W07CBD2	H. KOLLER	64	44	4	1967	H	8	16	7-67	O	SB	VV	--	--	--	--	--	2302
139N094W08BDD	A. HAICH	20	20	24	1947	K	--	8	--	N	SB	1	--	K	4	--	--	--
139N094W08CDD	R. P. RAY	0	--	0	1928	U	--	--	--	N	SB	P	D	--	--	--	--	2349
139N094W08DB1	R. LAUB	100	100	18	--	U	--	--	--	N	SB	--	--	--	--	--	--	--
139N094W08DR2	R. LAUB	650	670	--	4	1964	K	--	--	N	TR	VV	D	C	5	11.5	--	2385

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LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAILABLE	QW TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ALTITUDE OF LSD (FT.)
139N094W08DCC1	BIRDSALL ELEV.	51	--	--	--	--	U	--	38	3-67	0	SB	--	--	--	--	--	2354
139N094W08DCC2	P.DASSINGER	60	60	18	18	1930	H	--	35	--	N	SB	--	--	--	--	--	--
139N094W08DCC3	J.REILLY	60	60	6	6	1964	H	--	--	--	N	SB	1	--	K	5	--	--
139N094W08DCC4	GLADSTONE PARK	70	--	6	6	--	H	--	45	3-67	0	SB	--	--	--	--	--	2359
139N094W10BR01	A.MARTIN	20	0	48	--	--	S	--	14	--	N	SB	1	--	K	6	6.0	--
139N094W10H8B2	A.MARTIN	45	45	18	18	1944	S	--	39	--	N	SB	1	--	--	--	--	--
139N094W11CDA1	G.MOORE	180	180	8	8	--	U	--	80	--	N	SB	VV	--	--	--	--	2440
139N094W11CDA2	G.MOORE	150	100	6	6	1965	K	5	--	--	N	SB	VV	--	K	6	--	2440
139N094W12BBB	M.GERHARDT	153	--	18	18	1934	U	--	--	--	N	SB	--	--	--	--	--	--
139N094W14ACC1	L.MOORE	100	100	6	6	1948	H	20	50	--	N	SB	VV	--	K	6	--	2450
139N094W14ACC2	L.MOORE	45	--	18	18	1956	U	--	--	--	N	SB	VV	--	--	--	--	2450
139N094W14ACC3	L.MOORE	15	0	36	36	1960	S	--	7	--	N	SB	1	--	--	--	--	2450
139N094W14ACC4	L.MOORE	160	160	4	4	1967	H	--	9	--	N	SB	--	--	K	6	--	2450
139N094W14DCB	F.WIEGLANDA	24	0	28	28	1941	K	--	--	--	N	--	--	--	K	5	--	--
139N094W15CC1	J.FOCHT	50	--	18	18	1928	H	--	--	--	N	SB	P	--	K	5	4.0	--
139N094W15CC2	J.FOCHT	90	80	4	4	1965	H	--	--	--	N	SB	--	--	K	5	--	--
139N094W17AAB1	GLADSTONE SCHL.	40	40	18	18	--	T	--	--	--	N	SB	--	--	K	5	--	--
139N094W17AAB2	R.OF C.	50	50	6	6	--	H	--	17	--	N	SB	VV	--	--	--	--	--
139N094W17AC1	H.WEBER	55	55	18	18	--	H	--	40	--	N	SB	VV	--	--	--	--	--
139N094W17AC2	N.SCHWEIGER	50	50	18	18	1948	H	--	32	--	N	SB	VV	--	K	5	--	--
139N094W17AAC3	J.TORMASCHY	47	--	36	36	1964	H	8	32	--	N	SB	P	--	K	4	--	--
139N094W17AAC4	R.BROST	56	--	24	24	1964	H	8	--	--	N	SB	P	--	K	5	--	--
139N094W17AAD1	R.BROST	45	0	48	48	--	H	--	35	--	N	SB	P	--	K	5	--	--
139N094W17AAD2	A.WALERI	40	0	48	48	1930	H	--	37	--	N	SB	VV	--	--	--	--	--
139N094W17AAD3	P.DASSINGER	39	--	48	48	1935	U	8	30	--	N	SB	--	--	--	--	--	--
139N094W17AAD4	J.WANNER	52	52	18	18	1950	H	4	38	--	N	SB	VV	--	--	--	--	--
139N094W17ABA	GLADSTONE SCHL.	800	800	6	6	1962	T	--	400	--	N	TC	VV	--	K	5	--	2350
139N094W17ABR1	GLADSTONE HAR	60	60	18	18	--	H	--	--	--	N	TR	VV	--	--	--	--	--
139N094W17ABB2	FARMERS' UNION	45	--	48	48	1935	H	--	--	--	N	SB	--	--	K	5	--	--
139N094W17ABB3	C.WEILER	60	0	--	--	1935	H	--	--	--	N	SB	--	--	K	5	--	--
139N094W17ABD	GLADSTONE PRSH.	670	630	4	4	1965	H	--	--	--	N	TR	VV	D	K	5	--	2348
139N094W17ACK	J.TORMASCHY	30	0	60	60	1935	K	--	25	--	N	G	G	--	K	5	5.5	--
139N094W19CAB1	P.WANNER	100	100	5	5	1957	U	--	40	--	N	SB	1	--	--	--	--	--
139N094W19CAB2	P.WANNER	52	52	18	18	1959	K	7	37	--	N	SB	1	--	P	5	--	--
139N094W20CBB	NDSWC 3699	80	77	1	1	1969	U	--	>80	6-69	0	--	--	Y	--	--	--	2479
139N094W20DRC	USHR	35	0	--	--	1957	U	--	35	--	N	--	--	G9	--	--	--	2475
139N094W20DCC	NDSWC 3698	90	160	87	1	1969	U	--	>90	6-69	0	--	--	GE	--	--	--	2488
139N094W22DCA	USHR	25	0	--	--	1957	U	--	18	9-57	0	--	--	G9	--	--	--	2272
139N094W23CDA	USBR	16	0	--	--	1957	U	--	>16	--	N	--	--	G	--	--	--	2374
139N094W23DCC	NDSWC 3543	570	800	567	2	1967	U	--	143	12-67	H	TR	25	Y	C	5	11.5	2362

LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LUG AVAILABLE	OW TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ALTI-TUDE OF LSD (FT.)
139N094W23DDA	USBR	30		0	--	1957	U	--	>30	8-57	0	--	--	G9	--	--	--	2340
139N094W248CD1	M.HEROLD	15		0	48	1900	U	--	10	--	N	SB	P	--	K	7	41.0	--
139N094W248CD2	M.HEROLD	43		43	24	1945	K	--	15	--	N	SB	P	--	K	6	7.0	--
139N094W26AAB1	C. MOORE	23		23	6	1912	H	--	20	--	N	22	G	--	K	6	--	--
139N094W26AAB2	C. MOORE	35		35	18	1932	S	--	20	--	N	SB	P	--	K	6	6.0	--
139N094W26CRR	J. BROST	40		40	18	1932	U	--	39	--	N	SB	--	--	K	6	--	--
139N094W288CC	MOSWC 3700	81	140	78	1	1969	U	--	>81	6-69	0	--	GE	--	--	--	2483	--
139N094W31RAA2	A. BAAR	100		100	6	1949	H	--	40	--	N	SR	1	--	K	5	--	2420
139N094W317AA3	A. BAAR	240		--	6	1958	H	--	60	--	N	TR	1	--	K	6	--	2420
139N094W320DD1	BIRDSALL RANCH	50		50	18	1955	S	--	38	--	N	SB	n	--	K	6	6.5	2340
139N094W320DD2	BIRDSALL RANCH	50		50	18	1960	S	--	15	--	N	SB	VV	--	--	--	--	2340
139N094W320DD3	BIRDSALL RANCH	100		100	18	1960	U	--	30	--	N	ST	VV	--	--	--	--	2340
139N094W320DD4	BIRDSALL RANCH	63		23	4	1963	K	--	6	--	N	SB	VV	D	--	--	--	2340
139N094W320DD5	BIRDSALL RANCH	60		60	6	1966	S	--	8	--	N	SB	1	--	K	5	7.5	2340
139N094W33AAB1	L. STEIN	10		0	48	--	S	--	5	--	N	SB	VV	--	--	--	--	--
139N094W33AAB2	L. STEIN	10		0	48	--	S	--	7	--	N	SB	VV	--	--	--	--	--
139N094W33AAB3	L. STEIN	12		12	18	--	S	--	7	--	N	SB	VV	--	K	6	--	--
139N094W33AAB4	L. STEIN	11		0	48	--	S	--	7	--	N	SB	VV	--	--	--	--	--
139N094W336BA1	H. CANDEE	52		52	18	1925	S	--	37	--	N	ST	P	--	K	4	6.5	--
139N094W336BA2	H. CANDEE	63		63	18	1963	H	--	43	--	N	ST	P	--	K	5	--	--
139N094W34ABU1	D. KIRSCH	76		76	18	1930	S	--	36	--	N	ST	1	--	K	5	8.5	2300
139N094W34ABU2	D. KIRSCH	70		70	18	1930	S	--	30	--	N	ST	VV	--	K	6	8.5	2300
139N094W34ABU3	D. KIRSCH	70		70	6	1930	H	--	30	--	N	ST	1	--	K	5	--	2300
139N094W34UB8	LADD PETROLEUM	5402		226	9	1969	U	--	--	--	N	--	--	--	--	--	--	2367
139N094W35AAB1	P. KAUFMAN	15		--	8	--	S	--	--	--	N	--	--	--	--	--	--	--
139N094W35AAB2	P. KAUFMAN	100		100	18	1934	H	--	40	--	N	TR	F	--	K	6	--	2200
139N095W01ABD1	E. TOPMASCHY	100		80	6	1966	U	9	45	--	N	SB	VV	D	--	--	2394	--
139N095W01ABD2	E. TOPMASCHY	240		210	4	1967	H	8	100	--	N	SB	VV	D	--	--	2394	--
139N095W01AUB	E. TOPMASCHY	90		90	12	1967	S	--	70	--	N	SB	VV	--	--	--	--	--
139N095W01DAB	N.D. HWY. DEPT.	120		0	0	1967	U	20	--	--	N	SB	1	D	P	5	--	2323
139N095W01DDA	N.D. HWY. DEPT.	1776	1810	--	4	1966	H	50	20	--	N	FH	VV	D	C	6	22.0	2312
139N095W02AAB1	J. WANNER	33		33	18	--	K	--	15	--	N	SB	VV	--	K	4	--	--
139N095W02AAB2	J. WANNER	38		38	18	1950	S	--	18	--	N	SB	VV	--	--	--	--	--
139N095W02AAB3	J. WANNER	60		60	18	1952	U	--	30	--	N	SE	--	--	P	5	--	--
139N095W02AAB4	J. WANNER	60		40	6	1960	H	--	20	--	N	SE	VV	--	--	--	--	--
139N095W04CBB	A. WANNER	121		--	6	--	K	--	30	--	N	SB	VV	--	P	5	--	2495
139N095W06CCB	D. HOYT	210		--	4	--	H	--	85	--	N	SB	1	--	--	--	--	2483
139N095W06CCC	J. SCHNEIDER	130		--	4	--	K	3	100	--	N	SB	--	--	--	--	--	2450
139N095W06DCC	L. GERBER	925		--	4	--	K	--	82	--	N	CL	VV	--	--	--	--	2430
139N095W07AAD	T. HINEK	814		--	4	--	K	--	15	--	N	CL	VV	--	--	--	--	2350

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LOCAL WELL NUMBER	OWNER	DIAM- ETER (IN.)	CASING DEPTH (FT.)	DRILLED DEPTH (FT.)	DATE DILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE OF WATER MEAS- UREMENTS	FREQUENCY OF WATER LEVEL MEAS- UREMENTS	MAJOR AQUIFER	MATER- IAL WATER	LOG- GAP TYPE	CON- DUC- TIVE- NESS (C)	SPC- IFIC RES- ISTANCE (FT.)
13909508ACD	J.RODIF	18	0	41	---	H	---	29	---	N	SH	VV	---	---	2337
13909510CC3	E.MANNER	18	80	130	1965	H	---	24	---	N	SB	ST	---	---	2310
13909511DCD	E.MANNER	60	---	120	1965	S	8	F	---	N	ST	---	---	---	2300
139095178AC	HUSKY BRIGGET	6	---	650	1961	N	---	250	---	N	TA	---	---	---	2405
139095178AB	A.MESSINA	18	93	105	1949	H	---	83	---	N	SD	VV	---	5	2430
139095198AB1	J.KEISENAUER	6	---	100	---	H	---	65	---	N	SD	VV	---	---	2430
139095198AB2	J.KEISENAUER	18	---	60	1957	S	---	45	---	N	SB	---	---	---	2430
139095198AB8	USBR	0	---	25	---	U	---	>25	---	N	---	---	G	---	2492
139095208BB	NOSMC 5-748	0	---	325	1962	U	---	---	---	N	---	---	---	---	2495
139095208AD1	N.SCHWALTZ	4	110	179	---	K	---	80	---	N	SB	I	---	---	2475
139095208AD2	N.SCHWALTZ	18	---	90	---	H	---	70	---	N	SB	---	---	---	---
139095208DD1	P.KEISENAUER	18	0	40	---	U	---	14	---	N	SB	VV	---	---	2490
139095218CB1	P.MDLF	54	0	15	---	U	---	---	---	N	SD	---	---	---	2430
139095218CB2	P.MDLF	6	---	215	---	H	---	115	---	N	SB	I	---	---	2440
139095218CB3	P.MDLF	18	---	400	1969	U	---	20	---	N	SH	VV	---	---	2435
13909521DD01	NOSMC 3697A	1	---	190	1969	U	---	102	6-69	N	SH	VV	G	9.5	2443
139095220DD	J.MANNER	18	0	72	1921	K	---	37	---	N	SH	---	---	---	2420
13909525CC	P.MANNER	22	0	20	1930	S	---	20	---	N	SH	VV	---	---	2660
139095268AA1	J.MANNER	18	95	197	1947	H	---	56	---	N	SH	I	---	---	2660
139095268AA2	J.MANNER	6	---	20	---	S	---	---	---	N	SH	VV	---	---	2410
139095268DA1	P.MANNER	0	---	175	1964	H	---	80	---	N	ST	VV	---	---	2410
139095268DA2	P.MANNER	165	---	175	---	H	---	---	---	N	ST	VV	---	---	2410
139095288AA1	P.KEISENAUER	18	---	95	---	H	---	70	---	N	SH	VV	---	---	2465
139095288AA2	P.KEISENAUER	6	---	125	---	K	---	85	---	N	SH	VV	---	---	2470
139095310BC	F.SCHMIDT	18	---	65	---	S	---	20	---	N	SH	VV	---	---	2475
139095328BA1	F.SCHMIDT	96	0	40	---	S	---	15	---	N	SH	VV	---	---	2478
139095328BA2	F.SCHMIDT	6	---	90	---	K	---	30	---	N	SH	VV	---	---	2478
139095340AD1	C.MILLER	85	---	85	---	H	---	---	---	N	GS	---	---	---	2725
139095340AD2	C.MILLER	18	95	105	---	S	---	---	---	N	US	---	---	---	2725
139095340BD	ENCO	4	640	615	1968	C	15	280	---	N	TR	VV	DE	---	2420
139095340CC	J.KALISCH	5	---	140	---	N	---	---	---	N	SH	---	---	---	2450
139096027MA	NOSMC 16-748	0	0	231	1962	U	---	---	---	N	---	GE	---	---	2440
139096038 1	DICKINSON	6	---	202	---	U	---	185	---	N	SH	VV	---	---	2430
139096038 2	DICKINSON	8	---	252	1962	U	---	420	---	N	SH	VV	---	---	2430
139096080BC1	DICKINSON	10	---	196	---	P	---	100	---	D	SH	VV	---	---	2437

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LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAILABLE	GW TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ALTI-TUDE OF L.S.D. (FT.)
139N096W0380C2	DICKINSON	182			8	1930	P	105	128	4-44	0	S6	VV					2442
139N096W0380C3	DICKINSON	191			8		U		128	4-44	I	SR	V					2441
139N096W0388D1	DICKINSON	191			12	1930	U	100	106	4-44	0	SB	VV					2433
139N096W0388D2	DICKINSON	170			8		P	50	97	4-44	0	S6	V					2430
139N096W038CB	DICKINSON	160		130	8		U		92	8-58	I	SB						2435
139N096W03HDD	J. OTT	190		115	4	1966	H	30			N	SR	VV	D				2440
139N096W03CCC	N.P. RMY.	1793				1897	U				N		D					2414
139N096W03CDA	CLOVERDALE CHY.	95	200	80	4	1965	N	40	42		N	SB	VV	D				2420
139N096W03DC	G. CLARKE	40			24						N	21	A		K	5		2415
139N096W04ACA	DICKINSON	154			12	1937	P	65	91	4-44	0	SR	VV		C	6		2441
139N096W04ACB1	DICKINSON	135			12	1939	P	124	48	5-44	0	SB	VV		K	5		2341
139N096W04ACB2	DICKINSON	140			12	1939	P	130	51	5-44	0	S6	VV					2445
139N096W04ACA	V. MEDUNA	60			18						N	SB			K	6		2417
139N096W040CA	DICKINSON ICE	130				1916	U				N	SB			C	5		2417
139N096W05DCB	NDSWC 10-748	147		0	0	1962	U				N			GE				2460
139N096W06AAA	NDSWC 1-748	168		0	0	1962	U		13	8-62	0			GE				2455
139N096W06CDD	A. SHJEFLD	87			12		K		32		N	SB	VV					2475
139N096W08AC	N.P. RMY.	16					H				N	22	A		K	4		2419
139N096W08ACB	NDSWC 9-748	84		0	0	1962	U				N			GE				2420
139N096W08BCA	USBR	32		0		1945	U		18	11-45	0	SB		G				2419
139N096W08BCD	USBR	62		0		1945	U		4	11-45	0	SB		G				2392
139N096W08BD	R. SMETT	20			24		H				N	21	A		K	4		2408
139N096W08CAB	USBR	52		0		1946	U		0	1-46	0	SB		G				2389
139N096W08CBA	USBR	68		0		1945	U		5	12-45	0	SR		G				2400
139N096W08CDD	W. KESTING	131			5		H				N	SB			K	6		2450
139N096W080BB1	S. FITZLOFF	20			24		H				N	21	A		P	4		2403
139N096W080BB2	D. HALSTAD	67			4	1965	H	14	20		N	SB	VV	D	K	4		2400
139N096W080BD	E. WOLFE	115			4	1965	H	25			N	SB	VV	D	K	5		2400
139N096W080CA	A. GAYDA	34			24		H				N	21	A		K	5		2398
139N096W080CC	NDSWC 8-748	357		0		1962	U	55	F		N	SR	I	GE	P	5		2395
139N096W09RA	C. POLANSKI						K				N	21	A		K	5		
139N096W09RB	NDSWC 7-748	189		0		1962	U				N			GE				2428
139N096W09BD	L. USURNE	620	630	620	4	1965	C				N	TR	VV	DE	C	5	13.5	2410
139N096W09DA	C. HUTZENBILER	30			18		H		15		N	21	A		P	6		
139N096W10BAC	F. BADINGER	57			4	1965	H				N	SB	VV	D				2380
139N096W10B4D	L. FICEK	55			4	1965	H		12		N	SB	VV					2380
139N096W10DDR	J. KRANK	45			24		U		25	9-46	0	SR						2465
139N096W11CB1	QUEEN CITY PKG.	70			3		H				N	21	A		K	4		2387
139N096W11CB2	QUEEN CITY PKG.				48		N				N	21	A		K	6		
139N096W11CCA	F. BRAUN	40			18		H				N	21	A		K	5		

LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAILABLE	QM TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ALTITUDE OF LSD (FT.)
139N096W124BD	W. JOHNSON	25			24		S		20		N	21	A		C	6		
139N096W12BBH	H. STRUCK	52			24	1946	U		50	12-67	M	SB				6		2410
139N096W14ABA	W. JOHNSON	81			12		U		68	10-66	B	SB				6		2432
139N096W148BA	G. GRESS				24		S		47	9-46	G	SB			P	6		2415
139N096W13DBG	P. & R. MEYER						H				N	SB			P	6		
139N096W16AAA	P. PRIVRATSKY										N	SB			P	6		
139N096W16BBB	DICKINSON	30			18		U				N	SB						2450
139N096W16DD1	STEFFES CH. FRN.	120			4		H		30		N	SB	VV					2476
139N096W16DD2	NOSWC 3695	400				1969	U				N			Y				2485
139N096W17AD	A. KESTING				48		H				N	SB			P	5		
139N096W17CDD	J. ZASTOUPIL	91			4		H		36		H	SB	VV					2470
139N096W17DDD	F. MEYER	95			6	1957	K		75		N	SB	VV					2483
139N096W19ADA	USBR	16		0		1957	U		>16	3-57	N			G				2478
139N096W19DDA	A. PRIVRATSKY	120			6		K		77		N	SB	VV					2497
139N096W20ADR	USBR	25		0		1957	U		>25		N			G9				2490
139N096W20ADD	S. HANDL	60					K		50		N	SB	VV					
139N096W21BCB	USBR	24		0		1957	U		>24		N			G9				2516
139N096W22BCC1	USBR	25		0		1957	U		>25		N			G9				2452
139N096W22BCC2	A. WOSPKA	101			4		K		70		N	SB	VV					2452
139N096W23BCC	NOSWC 3696	194	220	188	1	1969	U		81	6-69	M	SB	2V	YC	C	5	10.5	2485
139N096W25CBR	MRS. C. FISHER	50					U				N	SB						2515
139N096W26DAA1	N. SCHMIDT	140			4		H		100		N	SB	VV					2515
139N096W26DAA2	N. SCHMIDT	182			4	1963	H		60		N	SB	VV	D	K	5		2518
139N096W26DAD	N. SCHMIDT	50			18		S		30		N	SB	VV					2510
139N096W26DRC1	J. FRENZEL	140			6		H		90		N	SB	VV					2643
139N096W26DRC2	J. FRENZEL	40			18		S		30		N	GS	VV					2643
139N096W27BCD	L. KRANK	130			6		K		110		N	SB			P	5		2513
139N096W28C9D	L. KOSTELECKY	135			4	1930	K		107		N	SB	VV					2523
139N096W28D9C	J. KRANK	160			5		K		130		N	SB	VV					2542
139N096W28DDD	NOSWC 18-748	210		0		1962	U				N			G				2560
139N096W30CDA1	A. HONDL	89			18		U				N	GS						2542
139N096W30CDA2	A. HONDL	140			6		K				N	SB						2543
139N096W328BA	R. KOSTELECKY	146			6		K		129		N	SB	VV					2560
139N096W32DCA	A. KOSTELECKY	130			4		K		100		N	SB	VV					2553
139N096W33ABA	E. KOSTELECKY	140					K				N	SB	VV					2553
139N096W34ACD	G. STOLTZ	42			18		S		28		N	SB						2536
139N096W34DBA1	W. SCHMIDT	65			24	1900	K		35		N	SB	VV		P	4		2518
139N096W34DBA2	W. SCHMIDT	40		0	48		U		30		N	SB						2518
139N097W01DDA	J. KUBISCHTA	50			30		K		34	9-46	G	SB			C	4		2473
139N097W01DDO	NOSWC 17-748	231		0	5	1962	U				N			GE				2456

LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAILABLE	QW TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ALTITUDE OF LSD (FT.)
139N097W02CAD	C. STEFFAN	60	--	18	--	--	K	--	--	--	N	SB	I	--	--	--	--	--
139N097W02DBB	M. JAEGER	48	--	24	--	1924	K	--	22	--	N	SB	9S	--	--	--	--	--
139N097W0JAA	R. PAZOUKEK	135	--	5	--	--	K	--	20	--	N	SB	I	--	--	--	--	--
139N097W03BA	N.P. DX360-B	20	0	--	--	1961	U	--	--	--	N	--	G	--	--	--	--	2545
139N097W05DD1	E. KOSTELECKY	82	18	18	--	--	S	--	52	--	N	SB	VV	--	K	6	--	--
139N097W05DD2	E. KOSTELECKY	120	120	6	1964	H	--	40	--	--	N	SB	I	--	K	5	--	--
139N097W06BCB	P. MULARCHEK	24	24	24	1945	H	--	15	--	--	N	SB	I	--	K	6	--	--
139N097W08CD1	I. KOSTELECKY	55	55	18	1946	H	--	30	--	--	N	SB	I	--	K	5	--	--
139N097W08CD2	I. KOSTELECKY	52	52	4	1959	S	--	2	F	--	N	SB	--	--	--	--	--	2495
139N097W08CD3	I. KOSTELECKY	75	75	4	1961	S	--	35	--	--	N	SB	I	--	K	6	--	--
139N097W10ACD	W. RIDL	60	--	18	--	--	K	--	25	--	N	SB	I	--	--	--	--	--
139N097W10DAB	M. HELLMAN	52	--	24	--	--	K	--	23	--	N	SB	VV	--	P	6	--	--
139N097W10DRU	E. RIDL	50	--	18	--	--	S	--	25	--	N	SB	--	--	--	--	--	--
139N097W10DDO	E. RIDL	40	--	36	--	--	S	--	35	9-46	O	SB	--	--	C	6	--	2435
139N097W12ADD	W. PRIVATSKY	40	--	24	--	--	S	--	26	9-46	O	SB	--	--	--	--	--	2445
139N097W13BB	U.S.A.	34	--	24	1921	U	--	30	--	--	N	SB	--	--	C	4	--	--
139N097W14DAB	U.S.A.	30	--	5	--	--	K	--	24	9-46	I	21	S	--	C	6	--	2420
139N097W15AD	W. PRIVATSKY	40	--	24	--	--	K	--	25	9-46	O	21	A	--	--	--	--	2430
139N097W17DAA1	H. DVORAK	260	260	4	--	--	H	--	20	--	N	SB	I	--	K	5	--	2490
139N097W17DAA2	H. DVORAK	115	115	4	1963	S	--	F	--	--	N	SB	I	--	K	5	--	2490
139N097W18BBB	J. ADAMSKI	65	65	18	--	--	K	--	--	--	N	SB	--	--	K	6	--	--
139N097W19BBB	J. ADAMSKI	19	18	18	--	--	U	--	13	1-67	O	SB	--	--	--	--	--	2570
139N097W20BC	HUNT, KUORNA 1	9523	252	9	1954	U	--	--	--	--	N	--	--	--	--	--	--	2577
139N097W20CAC	UNITON, KUORNA	12180	1090	10	1967	U	--	--	--	--	N	--	--	--	--	--	--	2547
139N097W20CC1	V. KUORNA	104	104	6	1928	K	7	44	--	--	N	SB	--	--	K	6	--	--
139N097W20CC2	V. KUORNA	16	0	72	--	--	H	--	8	--	N	SB	--	--	--	--	--	--
139N097W20DAD	NDSMC 3694	400	--	--	1969	U	--	--	--	--	N	--	--	Y	--	--	--	2504
139N097W21DDD	NDSMC 23-748	315	0	5	1962	U	--	--	--	--	N	--	--	GE	--	--	--	2509
139N097W22AAA1	J. KE. STRANSKY	65	--	24	1928	U	2	61	--	--	N	SB	VV	--	--	--	--	2468
139N097W22AAA2	J. KE. STRANSKY	98	83	4	1963	H	30	58	--	--	N	SB	VV	D	C	5	--	2468
139N097W22BBB	A. KREHLICK	24	--	36	1908	K	--	22	9-46	O	SB	--	--	--	--	--	--	2490
139N097W22CAC1	G. WELER	12	--	40	--	--	S	--	10	--	N	SB	VV	--	--	--	--	--
139N097W22CAC2	G. WELER	15	--	8	--	--	H	--	10	--	N	SB	VV	--	P	6	10.0	--
139N097W23RBB	A. KELLER	63	--	18	--	--	H	--	--	--	N	SB	VV	--	--	--	--	--
139N097W23RCC2	F. KLEIN	18	--	48	--	--	S	--	0	--	N	SB	VV	--	--	--	--	--
139N097W23CDD	L. ZASTOUPIL	60	--	18	--	--	K	--	--	--	N	SB	--	--	--	--	--	--
139N097W24ADB	USBR	24	0	--	1957	U	--	5	8-57	O	SB	I	G9	--	--	--	--	2423
139N097W24ACB	USBR	16	0	12	1957	U	--	716	--	--	N	--	G	--	--	--	--	2449
139N097W24CCC	NDSMC 4-748	336	0	5	1962	U	--	--	--	--	N	--	GE	--	--	--	--	2475
139N097W24DCA	FREED & MURTHA	48	--	18	--	--	H	--	27	8-62	O	SB	VV	--	P	--	--	2453

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LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAILABLE	QM TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ALTITUDE OF LSD (FT.)
139N097M26DD0	J.ZASTOUPIL	18	--	36	--	--	K	--	15	--	N	GS	VV	--	--	--	--	2478
139N097M28AAA1	T.PRAUS	28	28	18	--	--	H	--	23	--	N	SB	VV	--	K	4	--	--
139N097M28AAA2	T.PRAUS	20	20	18	--	--	S	--	5	--	N	SB	--	--	--	--	--	--
139N097M28DAA	T.PRAUS	65	65	6	1961	--	S	--	--	--	N	SB	VV	--	--	--	--	--
139N097M30AAB1	J.PERZINSKI	35	35	18	1935	--	S	--	--	--	N	SB	--	--	K	6	--	--
139N097M30AAB2	J.PERZINSKI	45	45	18	1935	--	K	--	--	--	N	SB	--	--	K	6	--	--
139N097M30CAD	A.KUORNA	200	200	6	1955	--	K	--	--	--	N	SB	--	--	K	5	--	2675
139N097M33DD0	ND SWC 22-748	360	0	5	1962	--	U	--	--	--	N	--	GE	--	--	--	--	2529
139N097M34AC1	J.CLARYS	15	--	24	--	--	H	--	13	--	J	GV	--	--	--	--	--	--
139N097M34AC2	J.CLARYS	18	--	12	--	--	H	--	15	--	N	GV	VV	--	P	5	12.5	--
139N097M34ADC	J.CLARYS	34	--	18	--	--	S	--	27	--	N	GS	VV	--	--	--	--	--
139N098W01AAA	N.P.DX360-10	140	0	--	1961	--	U	--	--	--	N	--	G	--	--	--	--	2540
139N098W02CDB	A.STRIETZ	85	85	12	1935	--	K	--	50	--	N	SB	VV	--	K	6	10.5	2550
139N098W02DD0	P.HERAUF	60	60	4	--	--	K	--	20	--	N	SB	--	--	K	6	--	2490
139N098W03AD	T.JORDAN,N.P.1	8214	0	--	1965	--	U	--	--	--	N	--	--	--	--	--	--	2538
139N098W03DAA	N.P.DX360-27	125	0	--	1962	--	U	--	--	--	N	--	D	--	--	--	--	2545
139N098W05AAA	N.P.DX360-28	140	0	--	1962	--	U	--	--	--	N	--	D	--	--	--	--	2585
139N098W05DD	CARDINAL,16-5NP	8167	8176	8028	6	1968	U	--	--	--	N	--	--	--	--	--	--	2513
139N098W06ACC	W.ZARAK	50	--	4	1962	--	S	7	30	--	N	SB	VV	--	K	6	--	2522
139N098W06ADD	W.ZARAK	75	--	24	1947	--	H	--	15	--	N	SB	VV	--	K	6	--	2510
139N098W06BCC	W.ZARAK	50	50	4	1964	--	S	7	20	--	N	SB	--	--	--	--	--	2500
139N098W06CDA	G.ZARAK	89	70	4	1965	--	H	12	29	--	N	SB	VV	D	K	6	--	2515
139N098W07AAD	T.SANDERS	16	16	24	1912	--	K	--	10	--	N	22	G	--	K	6	--	2525
139N098W08AAA	W.ZARAK	135	135	4	1962	--	H	--	20	--	N	SB	I	--	--	--	--	2520
139N098W08ADC	W.ZARAK	110	90	4	1967	--	S	30	110	--	N	SB	VV	D	--	--	--	2520
139N098W08ADD	W.ZARAK	36	--	12	--	--	U	--	28	8-66	U	SB	--	--	K	6	10.5	2520
139N098W09ABB1	L.MEDUNA	70	70	6	--	--	H	--	--	--	N	SB	VV	--	K	5	--	2505
139N098W09ABB2	L.MEDUNA	60	60	6	--	--	S	--	--	--	N	SB	VV	--	K	6	--	2495
139N098W10ADC1	L.MEDUNA	60	60	18	1956	--	H	--	--	--	N	SB	VV	--	K	5	--	2512
139N098W10ADC2	L.MEDUNA	56	56	18	1957	--	S	--	--	--	N	SB	VV	--	K	5	9.5	2500
139N098W10BAB1	L.WAGNER	70	70	18	1949	--	S	--	10	--	N	SB	--	--	K	6	9.5	2520
139N098W10BAB2	L.WAGNER	150	150	6	1956	--	K	--	--	--	N	SB	I	--	K	5	--	2520
139N098W10DBA	L.MEDUNA	32	32	18	1960	--	U	--	--	--	N	SB	VV	--	--	--	--	2520
139N098W10DD	SHELL-MEDUNA	9200	--	--	1967	--	U	--	--	--	N	--	--	--	--	--	--	2502
139N098W12CAC	SO.HEART SCHOUL	72	72	18	--	--	T	--	38	--	N	SB	I	--	K	5	--	--
139N098W12CCA1	G.HOFFMAN	57	--	16	1931	--	H	--	22	--	N	SB	I	--	K	6	--	--
139N098W12CCA2	J.KASSIAN	65	65	12	--	--	H	--	56	--	N	SB	I	--	K	6	12.0	--
139N098W12CCA3	P.KUNTZ	49	49	18	1952	--	H	--	19	--	N	SB	I	--	K	5	--	--
139N098W12CCA4	A.PACHL	49	49	6	1961	--	H	--	--	--	N	SB	I	--	K	6	--	--
139N098W12CDA1	J.HAVERLOCK	60	60	4	1949	--	H	--	24	--	N	SB	I	--	K	7	--	--

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LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAILABLE	QW TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ALTITUDE-OF LSD (FT.)
139N098W12C0A2	SCHWARTZBURGER	60		60	6	1962	H	--	--	--	N	SH	1	--	K	5	14.0	--
139N098W12C0B1	C.KUDRNA	60		--	6	--	H	--	30	--	N	SB	1	--	K	5	--	--
139N098W12C0B2	L.HINSTOCK	53		53	18	--	H	--	18	--	N	SB	1	--	K	6	--	--
139N098W12C0B3	H.RAMBUSEK	50		50	18	1955	H	--	17	--	N	SB	1	--	K	6	--	--
139N098W12C0B4	D.KUDRNA	50		50	5	1960	H	5	25	--	N	SB	1	--	K	5	--	2490
139N098W12C0B5	G.HECKER	60		60	4	1963	H	--	35	--	N	SB	1	--	K	5	--	--
139N098W12C0C	M.ADAMSKI	65		65	8	--	H	7	--	--	N	SE	1	--	K	5	--	--
139N098W12C0D	FARMERS UNION	90		90	5	1963	C	5	20	--	N	SB	1	--	K	5	--	2490
139N098W12C0E1	N.P.RMY.	0	424	--	--	1905	U	--	--	--	N	--	--	D	--	--	--	2488
139N098W12C0E2	N.P.RMY.	0	40	0	34	1929	U	--	--	--	N	SB	1	--	--	--	--	2488
139N098W12C0E3	N.P.RMY.	46		42	6	1955	H	--	20	--	N	SB	1	--	C	6	6.0	--
139N098W13AA1	M.WENDEL	65		65	4	1953	H	--	22	--	N	SB	1	--	K	5	--	--
139N098W13AA2	J.METZ	50		50	6	1963	H	--	1	--	N	SB	--	--	K	5	--	2480
139N098W13AA3	L.ADAMSKI	54		49	4	1965	H	--	18	--	N	SB	1	--	K	6	--	--
139N098W13AB1	E.HFOT	60		60	4	--	H	--	--	--	N	SB	1	--	K	5	--	--
139N098W13AB2	CATHOLIC CHURCH	100		6	6	1948	H	--	30	--	N	SB	1	--	K	6	--	--
139N098W13AB3	J.PRAUS	60		60	4	1960	H	--	30	--	N	SB	1	--	--	--	--	--
139N098W13BB1	S.RIDL	70		--	6	1952	H	--	30	--	N	SB	1	--	K	6	--	--
139N098W13BB2	S.RIDL	65		--	6	1964	S	--	30	--	N	SB	1	--	K	5	11.0	--
139N098W13CC	T.PERZINSKI	45		45	4	1964	K	--	--	--	N	SB	1	--	K	5	--	--
139N098W13DD	NDSMC 3540	431	900	428	1	1967	U	--	165	12-67	M	TR	7V	Y	C	5	11.0	2517
139N098W14BB	J.PAVEL	--		--	--	--	U	--	--	--	N	SB	--	--	K	6	11.5	2510
139N098W15DD	J.PERDAENS	76		76	6	1960	H	--	54	--	N	SB	1	--	K	5	--	2510
139N098W16CC	J.KUYLEN	128		128	6	1964	S	--	25	--	N	SB	WV	--	K	5	--	2560
139N098W18CC	A.WDLF	100		100	18	1952	K	--	--	--	N	SH	1	--	K	6	--	2627
139N098W19CB1	NDSMC 3692	320		--	--	1969	U	--	--	--	N	--	--	YC	--	--	--	2625
139N098W19CB2	NDSMC 3692A	80		74	1	1969	U	--	70	5-69	N	SB	WV	--	--	--	--	2625
139N098W19CC	L.ANDERSON	65		65	18	1911	U	--	50	--	N	SB	1	--	--	--	--	2610
139N098W19DC	N.P.OX360-19	180		0	--	1962	U	--	--	--	N	--	--	D	--	--	--	2660
139N098W20BA	N.P.OX360-16	201		0	--	1962	U	--	--	--	N	--	--	D	--	--	--	2620
139N098W21AD	USBR	24		0	--	1957	U	--	>24	--	N	--	--	G9	--	--	--	2540
139N098W21AD	N.P.OX360-17	160		0	--	1962	U	--	--	--	N	--	--	D	--	--	--	2562
139N098W21AR	J.KUYLEN	96		--	6	1952	H	--	30	--	N	SH	WV	--	K	6	--	2562
139N098W21CC	N.P.OX360-18	140		0	--	1962	U	--	--	--	N	--	--	D	--	--	--	2585
139N098W22AA	USBR	56		0	--	1957	U	--	18	3-57	O	SB	1	G9	--	--	--	2498
139N098W22BB1	J.PERDAENS	72		72	18	1931	S	--	32	--	N	SB	WV	--	K	6	--	2502
139N098W22BB2	J.PERDAENS	86		86	18	1936	H	--	40	--	N	SB	WV	--	K	6	--	2508
139N098W22DDA1	J.PERDAENS	70		70	6	1964	H	--	20	--	N	SB	1	--	K	6	--	2500
139N098W22DDA2	J.PERDAENS	48		48	4	1965	U	18	--	--	N	SB	1	D	--	--	--	2504
139N098W23BC	J.PERDAENS	28		28	18	1956	S	--	8	--	N	21	S	--	--	--	--	2500

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LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAILABLE	QM TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ALTI-TUDE-OF L50 (FT.)
1394098W248C0	N.P. DX360-25	140		0	--	1962	U	--	--	--	N	--	D	--	--	--	--	2570
1394098W24DDR	L. KUORNA	120		120	6	1963	K	4	--	--	N	SB	VV	--	K	5	--	--
1394098W25CDR	E. EBERTS	11		0	18	--	U	--	8	8-66	O	SB	--	--	--	--	--	2590
1394098W2488C	P. WAGNER	92		92	4	1964	K	--	--	--	N	SB	1	--	K	5	--	2568
1394098W278CD1	A. KUYLEN	27		--	18	1958	H	--	15	--	N	21	S	--	K	6	--	2580
1394098W278CD2	A. KUYLEN	180		--	6	1955	S	--	80	--	N	SB	1	--	K	5	--	2585
1394098W29CC1	R. KOOREN	36		0	18	1946	H	--	28	--	N	SB	VV	--	K	4	9.5	2552
1394098W29CC2	R. KOOREN	36		0	18	1946	S	--	14	--	N	SB	VV	--	K	4	9.5	2550
1394098W308AB	C. LUND	100		--	18	1915	U	--	50	--	N	SB	VV	--	--	--	--	2610
1394098W308CC	V. HINSTOCK	64		0	18	--	K	--	44	--	N	SB	VV	--	K	6	--	2590
1394098W3188B	N.P. DX360-20	80		0	--	1962	U	--	--	--	N	--	D	--	--	--	--	2600
1394098W31DC1	N.P. DX360-23	130		0	--	1962	U	--	--	--	N	--	D	--	--	--	--	2578
1394098W32AA1	P. EMMIL	40		23	18	1941	S	--	18	--	N	SB	1	--	K	6	--	2560
1394098W32AA2	P. EMMIL	40		--	6	1958	H	--	13	--	N	SB	1	--	K	5	--	2558
1394098W33AAD	N.P. DX360-21	250		0	--	1962	U	--	--	--	N	--	D	--	--	--	--	2640
1394098W33CCB	N.P. DX360-26	170		0	--	1962	U	--	--	--	N	--	D	--	--	--	--	2610
1394098W3548A	N.P. DX360-24	160		0	--	1962	U	--	--	--	N	--	D	--	--	--	--	2580
1394098W3588C1	J. BLOOD	90		--	18	1945	S	--	60	--	N	SB	1	--	K	6	11.0	2555
1394098W3588C2	J. BLOOD	100		100	4	1949	K	4	58	--	N	SB	1	--	K	5	--	2560
1394099W01ADC	A. HIBL	120		120	6	1962	K	--	--	--	N	SB	1	--	K	6	--	2520
1394099W0288D	R. BOLTZ	63		63	5	1960	K	110	13	--	N	SB	VV	--	K	6	--	2554
1394099W03CC1	R. NEWTON	49		49	18	--	H	--	--	--	N	SB	VV	--	K	6	--	2558
1394099W03CC2	R. NEWTON	39		--	18	1960	S	--	25	--	N	SB	1	--	K	6	9.5	2556
1394099W048DC	BELFIELD	81		--	8	1959	U	60	--	--	N	SB	1	--	P	6	--	2573
1394099W04CAC	UNION CARBIDE	75		75	6	1964	M	--	--	--	N	SB	1	--	--	--	--	2567
1394099W048C1	BELFIELD	81		--	8	1955	U	40	47	6-68	U	SB	1	--	P	6	--	2563
1394099W048C2	BELFIELD	44		--	8	1957	U	--	40	--	N	SB	--	--	--	--	--	2563
1394099W058BC	BELFIELD 1	680	720	--	6	1961	P	40	280	--	N	TR	VV	DE	P	5	12.0	2575
1394099W05ADC	BELFIELD 2	661	695	640	6	1962	P	65	--	--	N	TR	VV	DE	K	5	16.5	2575
1394099W06AAD1	R. HOFFMAN	38		--	12	--	U	--	14	8-66	O	SB	--	--	--	--	--	2625
1394099W06AAO2	M. HOFFMAN	85		--	24	1913	S	--	90	--	N	SB	1	--	K	6	9.5	--
1394099W06CAD	J. LOWENSTEIN	80		--	12	--	U	--	11	8-66	D	SB	--	--	--	--	--	2653
1394099W07AAA	R. NEWTON	112		--	4	1950	K	--	60	--	N	SB	1	--	--	--	--	2655
1394099W088D1	N. FROELICH	50		50	24	1943	S	--	14	--	N	SB	1	--	K	6	11.0	2600
1394099W088D2	N. FROELICH	100		85	6	1961	H	--	30	--	N	SB	--	--	K	6	--	2590
1394099W10AAB1	F. KADRNAS	45		45	16	1955	H	--	--	--	N	SB	P	--	K	6	--	2550
1394099W10AAB2	F. KADRNAS	60		52	16	--	S	--	30	--	N	SB	1	--	K	5	--	2540
1394099W11AAA	T. SAVAGEAU	38		--	4	--	K	--	14	--	N	SB	1	--	K	6	--	2522
1394099W1188B1	J. BUCKMAN	30		0	18	1918	U	--	24	--	N	SB	1	--	--	--	--	2544
1394099W1188B2	J. BUCKMAN	60		--	4	1949	K	--	25	--	N	SB	1	--	K	6	--	2546

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LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAIL-ABLE	QM TYPE	SPE-CIFIC CON-DUCT ANCE	TEMP-ER-ATURE (°C)	ALTI-TUDE-OF LSD (FT.)
139N099W128BA	J. RIDL	78		78	4	1965	S	12	28	--	N	SB	1	D	K	6	10.5	2543
139N099W128BB	J. RIDL	78		78	4	1951	U	12	28	--	N	SB	1	--	--	--	--	2543
139N099W14CAA1	W. RICHARD	65		65	18	1908	S	--	--	--	N	SB	1	--	K	6	12.0	2555
139N099W14CAA2	W. RICHARD	65		--	18	1948	H	--	45	--	N	SB	1	--	K	6	--	2558
139N099W15CAC	W. RICHARD	60		60	24	1918	S	--	--	--	N	SB	--	--	--	--	--	2570
139N099W15DAB1	W. RICHARD	70		0	24	1926	K	--	20	--	N	SB	--	--	--	--	10.5	2563
139N099W15DAB2	W. RICHARD	80		--	24	1962	S	--	20	--	N	SB	--	--	--	--	--	2563
139N099W16BR	TEMN. GAS	9609		0	9	1959	U	--	--	--	N	--	--	--	--	--	--	2631
139N099W17CDB	J. DIETZ	38		38	18	1963	S	--	26	--	N	SB	--	--	--	--	--	2625
139N099W17DAC1	P. KESSEL	18		18	18	1928	U	--	18	--	N	SB	1	--	--	--	--	2605
139N099W17DAC2	P. KESSEL	420		--	5	1962	H	8	200	--	N	ST	VV	--	K	5	--	2630
139N099W18CCC1	C. DULETSKY	40		40	18	1916	U	--	--	--	N	SB	1	--	--	--	--	2632
139N099W18CCC2	C. DULETSKY	20		0	96	1937	K	--	--	--	N	SB	P	--	K	6	11.5	2630
139N099W20ABU	M. KOLEDEJCHUK	21		0	48	--	U	--	11	n-66	G	SB	--	--	K	5	9.5	2582
139N099W20B0R1	J. DIETZ	30		0	18	1945	S	--	15	--	N	SB	1	--	K	7	12.5	2602
139N099W20B0B2	J. DIETZ	29		29	18	1948	H	--	14	--	N	SB	1	--	K	6	--	2605
139N099W20CBC	USBR	24		0	--	1957	U	--	>24	--	N	--	--	G9	--	--	--	2611
139N099W20DAC	USBR	30		0	--	1957	U	--	>30	--	N	--	--	G9	--	--	--	2604
139N099W21C8C	USBR	24		0	--	1957	U	--	>24	--	N	--	--	G9	--	--	--	2611
139N099W21CCC	NDSMC 3539	361	950	358	1	1967	U	--	192	12-67	N	TR	15	Y	C	5	11.0	2620
139N099W21DAD	USBR	16		0	--	1957	U	--	>16	--	N	--	--	G	--	--	--	2702
139N099W23DAD	USBR	25		0	--	1957	U	--	>25	--	N	--	--	G9	--	--	--	2647
139N099W24AB8	E. CINDER	--		--	--	--	S	--	--	--	N	ST	--	--	K	5	11.0	2611
139N099W24DCC	W. HANEL	65		0	12	--	U	--	11	0-66	O	SB	--	--	K	4	--	2609
139N099W30DAA	V. BINSTOCK	250		250	4	1956	H	--	--	--	N	ST	--	--	K	5	--	2651
139N099W32DDC	A. BILLMAN	--		--	--	--	H	--	--	--	N	ST	--	--	K	6	10.0	2670
139N099W33CC81	M. ZASTOUPIL	85		0	12	--	S	--	75	--	N	SB	1	--	K	5	9.5	2683
139N099W33CC92	M. ZASTOUPIL	85		85	18	1955	H	--	75	--	N	SB	1	--	K	5	--	--
139N099W34AAA	M. KNOPIK	74		0	18	1933	K	--	40	--	N	SB	P	--	K	6	--	2632
139N099W34CB1	A. FROELICH	25		0	48	--	H	--	20	--	N	SB	--	--	--	--	--	2602
139N099W35AC82	A. FROELICH	50		50	18	1947	S	--	25	--	N	SB	--	--	--	--	--	2600
140N091W02CDA	SCHMALENBERGER	68		53	24	1965	S	2	48	--	N	31	S	--	--	--	--	--
140N091W02CDD1	SCHMALENBERGER	40		0	50	1891	S	--	35	--	N	31	S	--	K	5	9.5	--
140N091W02CDD2	SCHMALENBERGER	25		0	48	--	S	--	21	--	N	31	S	--	--	--	--	--
140N091W02CDD3	SCHMALENBERGER	75		56	4	1959	H	6	35	--	N	--	S	--	K	6	--	--
140N091W02DDA	USGS	30		--	--	1968	U	--	--	--	N	--	--	G	--	--	--	2143
140N091W03FAA	NDSMC 3551	210		0	--	1967	U	--	F	10-67	O	--	--	Y	--	--	--	2031
140N091W04ABR1	E. KRUGER	20		0	48	--	H	--	15	--	N	31	S	--	K	6	--	--
140N091W04ABR2	E. KRUGER	30		--	24	--	S	--	20	--	N	31	S	--	--	--	--	--
140N091W04AB8	USGS	76		--	--	1968	U	--	--	--	N	--	--	G	--	--	--	2103

LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAM- ETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER- LEVEL MEASURE- MENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAIL- ABLE	GW TYPE	SPE- CIFIC CON- DUCT ANCE	TEM- PER- ATURE (°C)	ALTI- TUDE- OF LSD (FT.)
140N091W04CAA	SCHMALENBERGER	48	--	--	--	--	S	--	21	8-49	G	SB	--	--	--	--	--	2250
140N091W05UPC	SCHMALENBERGER	156	--	156	4	1962	S	3	116	--	N	SB	1	--	K	6	11.0	2300
140N091W06BBB	USGS	125	--	--	--	1968	U	--	26	R-AB	G	BT	G	--	--	--	--	2061
140N091W09ACC	SCHMALENBERGER	110	--	110	5	1961	H	3	92	--	N	SB	VV	--	K	6	--	--
140N091W09CBC	SCHMALENBERGER	200	--	200	4	1966	S	10	140	--	N	TR	--	--	P	6	--	2190
140N091W12CCN1	V.GLASS	30	0	60	60	1888	S	--	25	--	N	--	S	--	K	6	9.0	--
140N091W12CE2	V.GLASS	30	0	48	48	1928	H	--	24	--	N	--	S	--	K	6	--	--
140N091W12D0C1	H.GLASS	49	0	60	60	1932	S	--	46	--	N	--	S	--	--	--	--	2080
140N091W12D0C2	H.GLASS	55	55	24	24	1938	S	--	49	--	N	--	S	--	--	--	--	2080
140N091W12D0C3	H.GLASS	250	--	250	6	1964	H	--	30	--	N	TR	VV	--	K	6	--	2080
140N091W13AAA	USGS	30	--	--	--	1968	U	--	--	--	N	--	--	G	--	--	--	2102
140N091W13CAA	P.KRUENZEL	20	--	60	60	1940	--	--	6	--	N	--	--	--	--	--	--	--
140N091W13DDA	USGS	127	--	--	--	1968	U	--	4	B-68	G	52	65	G	--	--	--	2070
140N091W14FC1	J.SCHEUFFLE	56	56	18	18	--	U	--	--	--	N	52	VV	--	K	6	10.5	2090
140N091W14GC2	J.SCHEUFFLE	56	56	6	6	1952	H	--	49	--	N	52	S	--	--	--	--	2090
140N091W14C0C3	J.SCHEUFFLE	70	70	6	6	1958	K	--	38	--	N	52	S	--	K	6	--	2090
140N091W15ADD	NDS&C 3702	200	--	--	--	--	U	--	--	--	N	--	--	Y	--	--	--	2097
140N091W16DDJ1	A.KNOPP	27	0	48	48	--	U	--	--	--	N	SB	1	--	--	--	--	--
140N091W16DDJ2	A.KNOPP	30	0	60	60	--	S	--	25	--	N	SB	1	--	K	6	9.5	--
140N091W20C0B1	R.MAAS	30	0	60	60	1900	S	--	28	--	N	SB	1	--	--	--	--	--
140N091W20C0B3	R.MAAS	168	168	6	6	1961	H	8	88	--	N	TR	1	--	K	5	--	2320
140N091W23ACD2	A.DUCKWITZ	60	60	6	6	1961	K	--	25	--	N	SB	--	--	K	6	--	2280
140N091W24CDD	R.TREIBER	140	140	4	4	1961	S	7	80	--	N	SU	--	--	--	--	--	2350
140N091W24DAD	USGS	50	--	--	--	1968	U	--	--	--	N	--	--	G	--	--	--	2029
140N091W25DCD	G.TREIBER	140	140	2	2	1929	S	2	80	--	H	ST	VV	--	K	6	--	2250
140N091W26DCC1	H.KLEIN	17	0	60	60	1929	S	3	11	--	N	SB	VV	--	--	--	--	2300
140N091W26DCC2	H.KLEIN	160	160	4	4	1934	K	--	60	--	N	ST	--	--	--	--	--	2300
140N091W28DCC1	L.STEINGRUEBER	22	0	48	48	--	H	--	15	--	N	SB	VV	--	K	6	11.5	--
140N091W28DCC2	L.STEINGRUEBER	18	0	48	48	--	S	--	10	--	N	SB	VV	--	--	--	--	--
140N091W28DCC3	L.STEINGRUEBER	20	20	5	5	1962	U	--	14	--	N	SB	P	--	--	--	--	--
140N091W28DCC4	L.STEINGRUEBER	20	20	6	6	1964	S	--	9	--	N	SB	P	--	--	--	--	--
140N091W29CCD1	P.FUCHS	20	0	60	60	1926	U	--	--	--	N	SB	F	--	--	--	--	2400
140N091W29CCD2	P.FUCHS	480	480	4	4	1961	K	4	160	--	N	TK	1	--	K	6	--	2400
140N091W30CAA1	J.DICK	35	0	60	60	1912	S	--	30	--	N	SB	VV	--	K	7	10.0	--
140N091W30CAA2	J.DICK	125	125	6	6	1939	S	4	65	--	N	SB	P	--	K	7	10.5	2450
140N091W30CDH	J.DICK	440	395	4	4	1968	S	15	200	--	N	TR	VV	YC	--	--	--	2398
140N091W32AAC1	G.FUCHS	40	40	24	24	--	H	--	30	--	N	SB	--	--	K	7	10.0	2340
140N091W32AAC2	G.FUCHS	35	35	18	18	--	S	--	10	--	N	SB	--	--	--	--	--	2340
140N091W37AAC3	G.FUCHS	60	60	24	24	--	S	--	40	--	N	SB	--	--	K	6	--	2340
140N091W34CBA	G.BUELOW	15	0	48	48	1935	U	--	7	6-67	G	SB	--	--	K	7	8.5	2280

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LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAILABLE	GW TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ALTITUDE OF LSD (FT.)
140N091W34DCB1	D.WALTH	25	--	0	48	--	S	--	10	--	N	SB	P	--	--	--	--	2280
140N091W34DCD2	D.WALTH	20	--	0	60	--	H	--	10	--	N	SB	VV	--	K	6	9.5	2280
140N091W34DCD3	D.WALTH	25	--	0	36	--	S	--	10	--	N	SB	P	--	--	--	--	2280
140N091W34LUB4	D.WALTH	114	--	114	4	1938	S	--	70	--	N	ST	V	--	--	--	--	2280
140N091W34DCB5	D.WALTH	128	--	128	6	1962	H	--	15	--	N	ST	--	--	K	6	--	2280
140N091W35ABH	H.KLEIN	18	--	0	60	--	S	5	10	--	N	SB	--	--	--	--	--	--
140N091W35BBA	G.DPP	20	--	0	48	--	S	--	10	6-67	U	SB	--	--	--	--	--	2300
140N091W36ABA	R.TREIBER	140	--	140	4	1961	S	7	80	--	N	TR	--	--	--	--	--	2330
140N092W01UA4	NDSWC 3550	101	160	98	1	1967	U	--	15	10-67	M	52	9S	Y	C	6	7.5	2035
140N092W01CGD1	N.MESSER	20	--	--	--	1900	K	--	10	--	N	--	--	--	--	--	--	2100
140N092W01CGD2	N.MESSER	100	--	90	4	1956	K	--	6	--	N	TR	L	--	K	6	9.5	2100
140N092W02DBR1	V.MESSER	29	--	--	--	1918	K	--	15	--	N	TR	L	--	--	--	--	2100
140N092W02DBR2	V.MESSER	23	--	23	8	1949	K	--	15	--	N	TR	--	--	--	--	--	--
140N092W03AAA	USGS	60	--	--	--	1968	U	--	38	8-68	O	SB	F	G	--	--	--	2074
140N092W04AAA	USGS	22	--	--	--	1968	U	--	--	--	N	--	--	G	--	--	--	2053
140N092W04HAA	USGS	20	--	--	--	1968	U	--	--	--	N	--	--	G	--	--	--	2073
140N092W04BBB	USGS	107	--	--	--	1968	U	--	15	8-68	O	52	S	G	--	--	--	2066
140N092W05AAA	USGS	20	--	--	--	1968	U	--	--	--	N	--	--	G	--	--	--	2070
140N092W05DBA	USGS	27	--	--	--	1968	U	--	--	--	N	--	--	G	--	--	--	2127
140N092W06AAB1	N.MUGGLI	50	--	50	12	1942	S	--	18	8-49	O	50	VV	--	--	--	--	2220
140N092W06AAB2	N.MUGGLI	42	--	--	12	1945	U	--	--	--	N	SB	--	--	--	--	--	--
140N092W06ADA	USGS	110	--	--	--	1968	U	--	--	--	N	--	--	G	--	--	--	2148
140N092W06JAA	NDSWC 3549	278	360	272	1	1967	U	--	11	12-67	M	52	3S	Y	C	6	8.5	2095
140N092W06DAD	USGS	70	--	--	--	1968	U	--	--	--	N	--	--	G	--	--	--	2122
140N092W07DAA1	L.RENNER	80	--	70	4	1942	S	4	40	--	N	SB	L	--	--	--	--	2160
140N092W07DAA2	L.RENNER	510	--	490	6	1963	K	10	100	--	N	TR	VV	--	K	5	--	2180
140N092W070DD	NDSWC 3544	200	--	0	5	1967	U	--	--	--	N	--	--	Y	--	--	--	2195
140N092W10ADH1	M.ERHARDT	60	--	--	--	--	H	--	40	--	N	ST	--	--	K	6	--	2100
140N092W10ADH2	M.ERHARDT	120	--	--	6	1958	S	--	50	--	N	TR	--	--	K	6	9.0	2100
140N092W12ADA	J.FORSTER	180	--	180	2	1928	K	5	1	--	N	TR	--	--	K	6	--	2095
140N092W12CDJ	J.MILLER	30	--	--	14	--	K	--	15	8-49	O	TR	--	--	--	--	--	2150
140N092W14ACC1	E.HOFF	430	--	--	2	1928	S	--	100	--	N	TR	VV	--	--	--	--	2109
140N092W14ACC2	E.HOFF	424	--	--	4	1950	K	50	40	--	N	TR	VV	D	C	5	10.5	2109
140N092W17CBB	F.ENDERLE	60	--	--	4	1961	S	5	--	--	N	--	--	--	--	--	--	--
140N092W18ADJ	J.ENDERLE	300	--	--	5	--	H	--	--	--	N	TR	--	--	--	--	--	2180
140N092W18CDC	L.RENNER	80	--	80	18	1958	H	4	72	--	N	SB	L	--	K	5	9.0	2260
140N092W20ACC	M.FELLER	150	--	150	6	1966	S	2	--	--	N	TR	L	--	K	6	9.5	2200
140N092W20CCD	R.WANNER	10	--	0	40	1942	S	--	4	8-49	O	22	G	--	--	--	--	2190
140N092W20DBB	M.FELLER	23	--	23	18	1945	U	--	6	5-68	I	ST	--	--	--	--	--	2200
140N092W20DDO	F.FELLER	17	--	0	30	--	--	--	8	8-49	O	--	--	--	--	--	--	2260

DB

LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAILABLE	QM TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ALTITUDE OF LSD (FT.)
140N092W218AC	A. HOFF	--	--	--	11	1945	U	--	23	8-49	0	ST	--	--	--	--	--	2250
140N092W21CAC	A. HOFF	125	--	--	18	1920	S	--	93	--	N	ST	1	--	--	--	--	2320
140N092W22DAA	F. MESSER	395	--	--	6	1965	K	--	300	--	N	TR	--	--	K	5	10.0	2290
140N092W26DRA1	V. FORMASCHY	7	--	--	40	--	U	--	0	8-49	0	SB	--	--	--	--	--	2200
140N092W26DRA2	V. FORMASCHY	170	--	170	2	1957	K	--	--	--	N	TR	--	--	K	6	--	2000
140N092W30DAC	J. FORSTER	70	--	--	18	1945	K	--	--	--	N	SB	P	--	--	--	--	2280
140N092W30DAD	J. FORSTER	16	--	--	42	1946	K	--	8	8-49	0	22	C	--	--	--	--	2260
140N092W31CDA	BENEDICT, PRIORY	1100	--	--	--	1967	T	--	--	--	N	LH	VV	--	C	6	13.5	2490
140N092W34AJC	J. BOESPFLUG	72	--	0	36	--	U	--	15	8-49	0	SB	J	--	--	--	--	2220
140N092W34AAA	J. BOESPFLUG	435	--	400	5	1963	K	8	300	--	N	TR	VV	--	C	5	10.5	2222
140N093W03A0C1	S. ELIS	70	--	--	--	1909	S	--	66	--	N	SB	VV	--	--	--	--	--
140N093W03A0C2	S. ELIS	68	--	--	--	--	H	--	64	--	N	SB	--	--	--	--	--	--
140N093W03A0C3	S. ELIS	80	--	--	18	1947	K	--	60	--	N	SB	VV	--	--	--	--	--
140N093W04ADA	B. VANDERSLOOT	49	--	0	18	1919	S	--	18	--	N	SB	--	--	--	--	--	--
140N093W05DAB	S. BERNHARDT	123	--	--	18	1940	S	--	90	--	N	SB	--	--	--	--	--	2270
140N093W09BB	CONTINENTAL	11742	--	--	--	1964	U	--	--	--	N	--	--	--	--	--	--	--
140N093W09BBB1	C. STOKEN	20	--	0	18	1919	D	--	12	--	N	SB	--	--	--	--	--	2277
140N093W09BBB2	C. STOKEN	43	--	--	--	--	K	--	32	--	N	SB	--	--	--	--	--	--
140N093W09BUC	NDSMC 3684	509	700	503	2	1968	U	--	154	12-69	H	TR	--	--	--	--	--	--
140N093W10AAD	M. JURGENS	83	--	--	18	1907	K	--	80	--	N	SB	2V	Y	C	6	10.5	2274
140N093W10BCA	H. TAMMEN	40	--	--	16	1939	K	--	20	--	N	SB	--	--	--	--	--	--
140N093W10C0D1	G. GULLICKSON	76	--	0	18	1914	S	--	17	8-49	0	SB	1	--	--	--	--	--
140N093W10C0D2	G. GULLICKSON	26	--	--	48	1926	H	--	--	--	N	SB	--	--	--	--	--	2200
140N093W15G0D	A. KOLAR	50	--	--	24	1938	S	--	41	--	N	SB	--	--	--	--	--	--
140N093W16C8B	A. STOKEN	150	--	--	18	1917	K	--	125	--	N	SB	--	--	--	--	--	2440
140N093W17ABC	H. MYRON	75	--	0	18	--	S	--	40	--	N	SB	VV	--	--	--	--	--
140N093W18ADD	M. SFVERSON	168	--	35	4	1956	K	5	112	--	N	SB	1	--	K	5	--	2350
140N093W21BAB	H. URLACHER	56	--	56	18	1947	K	--	46	--	N	SB	--	--	--	--	--	--
140N093W24CCC	E. BREUM	126	--	--	6	1907	K	--	121	-48	N	ST	1	--	--	--	--	2360
140N093W25A0F.1	E. FORSTER	60	--	60	14	--	U	--	26	8-49	0	ST	VV	--	--	--	--	2280
140N093W25A0B2	E. FORSTER	60	--	--	18	--	S	--	60	--	N	ST	VV	--	--	--	--	--
140N093W26ACC	I. STEIERS	80	--	--	--	--	S	--	--	--	N	SB	--	--	--	--	--	2280
140N093W26CDD	P. MUGGLI	98	--	--	--	--	K	--	37	8-49	0	SB	--	--	--	--	--	2520
140N093W32ADA	NDSMC 3548	1040	--	0	--	1967	U	--	--	--	N	--	--	Y	--	--	--	2510
140N093W33AAA	TAYLOR SCHOOL	740	--	--	4	1961	T	--	140	--	N	TR	--	--	--	--	--	2498
140N093W33B0A.1	KISSE	167	--	167	2	1952	H	4	137	--	N	SB	VV	--	K	4	--	2494
140N093W33B0A.2	N. P. RMY	170	--	164	6	1955	H	4	120	--	N	SB	1	D	C	5	--	2491
140N093W33B0B.1	N. P. RMY	0	--	--	0	1928	U	--	--	--	N	SB	8P	--	--	--	--	2492
140N093W33B0B.2	L. JACUBS	32	25	32	18	--	H	--	--	--	N	SB	--	--	--	--	--	2497
140N093W34ACC	F. ZIMMERMAN	60	--	--	18	1900	S	--	40	--	N	SB	1	--	--	--	--	--

LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAILABLE	QW TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ALTITUDE OF LSD (FT.)
140N093W34HCC1	H. LARSON	22	--	24	--	--	U	--	6	8-49	D	SB	--	--	--	--	--	2480
140N093W34RCC2	H. LARSON	162	--	--	--	1948	K	--	100	--	N	SB	P	--	--	--	--	2480
140N093W34DBB	H. HUTCHINSON	80	0	18	--	--	S	8	40	--	N	SB	--	C	7	9.0	2512	
140N094W03DDU1	NDSWC 3701	300	--	--	--	1969	U	--	--	--	N	--	--	Y	--	--	--	2232
140N094W03DDU2	NDSWC 3701A	140	134	1	--	1969	U	--	56	6-69	M	SB	VV	--	C	6	9.5	2232
140N094W04CDB	M. TORMASCHY	30	30	18	18	1938	S	6	20	--	N	SD	--	--	--	--	--	--
140N094W05DDP	J. SICKLER	90	90	18	--	--	K	--	--	--	N	SD	VV	--	K	6	--	2260
140N094W08DBA	F. HAICH	80	80	18	18	1930	K	--	35	--	N	SB	--	--	--	--	--	2190
140N094W10BBH1	A. SCHMIDT	34	0	60	--	--	U	--	78	8-66	O	SB	--	--	--	--	--	--
140N094W10BBH2	A. SCHMIDT	51	--	18	18	1958	H	--	--	--	N	SB	VV	--	K	6	--	--
140N094W10RH01	A. SCHMIDT	35	0	60	--	--	S	--	--	--	N	SB	--	--	K	6	10.0	--
140N094W10RH02	A. SCHMIDT	6	6	12	12	1958	U	--	3	8-66	O	SB	--	--	K	7	15.5	2180
140N094W10DAA	P. KOFFLER	25	25	18	--	--	H	--	21	--	N	SB	1	--	K	6	14.5	--
140N094W11DCC	K. DOHRMANN	160	160	4	4	1963	S	6	--	--	N	SB	VV	--	--	--	--	--
140N094W14AA	SUN, DOHRMANN 1	5475	--	--	--	1968	U	--	--	--	N	--	--	--	--	--	--	2244
140N094W14DAA1	K. DOHRMANN	100	100	5	5	1947	U	2	80	--	N	SD	1	--	--	--	--	2255
140N094W16DAA2	K. DOHRMANN	443	--	5	5	1965	K	9	203	--	N	TR	VV	--	K	5	--	2255
140N094W18BBD	V. FICHTER	35	--	12	--	--	U	--	18	6-66	U	SB	--	--	K	4	10.5	2430
140N094W18CDA	M. TORMASCHY	50	50	36	1933	5	H	--	45	--	N	SB	1	--	K	5	9.0	--
140N094W18CDF	M. TORMASCHY	50	50	18	--	--	H	A	47	--	N	SB	1	--	K	5	--	--
140N094W21BCC1	F. MUECKE	67	67	18	18	1926	H	--	52	--	N	SD	VV	--	K	5	--	--
140N094W21BCC2	F. MUECKE	70	70	18	1936	1936	S	--	55	--	N	SB	VV	--	K	6	7.5	--
140N094W22DCC1	R. DOHRMANN	45	45	6	--	--	H	--	--	--	N	SB	VV	--	K	5	--	--
140N094W22DCC2	R. DOHRMANN	30	30	12	1945	1945	S	--	20	--	N	--	--	--	--	--	--	--
140N094W26DAD1	H. JURGENS	70	70	18	--	--	H	--	60	--	N	SD	--	--	K	6	--	--
140N094W26DAD2	H. JURGENS	70	70	18	--	--	S	--	60	--	N	SB	--	--	--	--	--	--
140N094W27BAD1	C. DOHRMANN	75	75	12	1940	1940	S	--	--	--	N	SB	VV	--	--	--	--	--
140N094W27HAD2	C. DOHRMANN	75	75	12	1946	1946	K	--	--	--	N	SD	1	--	K	6	--	--
140N094W29AD	SINCLAIR, MUECKE	11080	--	--	--	1958	U	--	--	--	N	--	--	GB	--	--	--	2417
140N094W29ADC1	J. MUECKE	100	100	18	1910	1910	H	--	--	--	N	SB	VV	--	K	4	8.5	--
140N094W29ADC2	J. MUECKE	96	96	18	1955	1955	S	--	--	--	N	SB	VV	--	--	--	--	--
140N094W29DBA	J. MUECKE	18	0	48	1910	1910	S	--	1	--	N	SB	VV	--	--	--	--	--
140N094W30CCC1	R. FICHTER	80	80	12	--	--	H	--	--	--	N	SB	VV	--	K	5	10.5	--
140N094W30CCC2	R. FICHTER	160	--	4	1961	1961	S	3	100	--	N	SB	1	--	K	5	10.5	--
140N094W31BBD	R. FICHTER	25	25	18	1964	1964	S	--	4	--	N	SB	VV	--	--	--	--	--
140N094W32ACC	P. WEHNER	38	38	18	1926	1926	K	3	16	--	N	SB	VV	--	--	--	8.5	--
140N094W32BHC	P. TORMASCHY	32	12	6	1966	1966	S	8	14	--	N	SB	VV	D	C	6	6.5	2454
140N094W32CG1	P. TORMASCHY	20	20	48	--	--	H	--	12	--	N	SB	1	--	K	3	--	--
140N094W32CG2	P. TORMASCHY	22	22	48	--	--	S	--	8	--	N	SB	1	--	K	6	8.5	--
140N094W34CDD	E. TORMASCHY	60	60	24	--	--	K	--	--	--	N	SB	VV	--	K	4	7.5	--

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LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAIL-	QN TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (° C)	ALTITUDE OF LSD (FT.)
140N094W35CDC	J.KRANK	54		54	12		U		36	8-66	M	SB						2470
140N095W02ABU1	A.KADRMAS	100		100	18		K				N	SB	VV		K	6		2370
140N095W02ABD2	A.KADRMAS	124		124	5	1948	H				N	SR	VV		K	6		2390
140N095W02CCC	H.KADRMAS	147		147	6		K		80		N	SB	I		K	5	5.5	2495
140N095W01ACR	L.KADRMAS	140					U				N	SB	I					2520
140N095W03CDB	V.KADRMAS	60		0	18	1929	K		47		N	SB	I		K	5	6.0	2455
140N095W04CCB	G.SYKORA	35			6		K		20		N	22	R					2415
140N095W0580A1	L.BARTA	38			6		U	1	30		N	SB	VV					2425
140N095W0580A2	L.BARTA	48			4	1958	K		17		N	22	R					2425
140N095W0580A3	L.BARTA	25		0	48		S				N	22	R		P	5		2425
140N095W079DA	B.SVIHL	25			18		H		2		N	22	R					2395
140N095W08AAA	NDSWC 3681	160		80	4	1968	U		20	12-68	C	SR	2V	Y	C	4		2419
140N095W08ODC	L.SYKORA	56			18		H		23		N	SB	I					2402
140N095W09886	NDSWC 3680	316	360	299	4	1968	U		123	12-68	C	SR	2V	Y	C	4		2416
140N095W09DCD	M.BADINGER	68			6		K		38		N	SB						2402
140N095W118CC	C.FATMAN	40		0	18	1925	K		20		N	SB	I		K	5		2465
140N095W11CBD1	L.FATMAN	32		32	18	1946	H		17		N	SB	VV		K	4	5.0	2450
140N095W11CBD2	L.FATMAN	40		40	18	1962	S		26		N	SB	VV		K	4	6.0	2450
140N095W120CB1	M.REBEL	40		0	48		S		10		N	SB	VV		K	6	6.5	
140N095W120CB2	M.REBEL	113		113	6	1965	H	3	73		N	SB	VV		K	6		
140N095W1488R1	R.KOVASH	33		33	18		S		13		N	SB	VV		K	6		2458
140N095W1488R2	R.KOVASH	0			0		U				N	SB	VV					2460
140N095W1488R3	R.KOVASH	52		52	18	1960	H		36		N	SB	VV		K	4		2468
140N095W1584C	A.JILEK	90		90	18		K		30		N	SB			K	5		2460
140N095W17CCC	V.SEMERAD	35		0	72		K				N	SB						
140N095W18ABC	V.PIRKL	90			24		K		77		N	SB						
140N095W18CDD	R.SVIHL	90			30		K	D	65		N	SB	I		P	5		2496
140N095W18DDC	V.SEMERAD	70		0	18		U		50		N	SB	VV					2467
140N095W198AA	R.SVIHL	75			6		S				N	SB	I					2496
140N095W19CDB	R.JILEK	120			5		S		95		N	GS						2575
140N095W20DAB	J.BETLAF	35			24		K	3	30		N	SB	VV					2448
140N095W22BBD	VERSIPIPI SCHDUL	120					H				N	22	R					2500
140N095W22BCC	A.FISHER	20		20	6	1963	H				N	SB	I		K	5		
140N095W22CBB1	A.FISHER	20		10	18	1947	H		16		N	22	S		K	5		2350
140N095W22CBB2	A.FISHER	20		20	18	1953	K		5		N	22	S					2350
140N095W22CBB3	A.FISHER	15		15	6	1961	H	4	8		N	22	R					2350
140N095W24ADD	J.TORMASCHY	37		0	54		U		28	3-67	I	SB			K	4	6.5	2480
140N095W26CDE	NDSWC 3541	220		0	5	1967	U				N			Y				2341
140N095W26DDB1	A.LUHMANN	110		110	6		S				N	SB			K	6		
140N095W26DDB2	A.LUHMANN	60		60	18	1951	H				N	SB			K	5		

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LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAILABLE	QW TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ALTITUDE OF LSD (FT.)
140N095W26DD13	A. LUMMAN	60	--	--	18	1959	S	--	42	--	N	SB	--	--	--	--	--	--
140N095W28ADA	A. FISHER	120	--	120	6	--	S	4	--	--	N	SB	--	--	K	6	7.0	2445
140N095W28CAC1	W. GUSTAFSON	22	--	--	8	--	H	--	16	--	N	SB	VV	--	--	--	--	2460
140N095W28CAC2	W. GUSTAFSON	50	--	--	18	--	S	--	25	--	N	SB	--	--	--	--	--	2470
140N095W29CDB1	R. JILEK	50	--	--	14	--	H	--	30	--	N	SB	VV	--	--	--	--	2492
140N095W29CDB2	R. JILEK	296	--	--	5	--	K	--	160	--	N	SB	I	--	--	--	--	2492
140N095W31PCB	JORDAN, DECKER I	7921	--	615	9	1969	U	--	--	--	N	--	--	--	--	--	--	2484
140N095W31CDB1	C. DECKER	76	--	--	6	--	K	--	53	--	N	SB	VV	--	--	--	--	2502
140N095W31CDB2	C. DECKER	80	--	--	18	--	U	--	--	--	N	SB	VV	--	--	--	--	2500
140N095W31CDB3	C. DECKER	78	--	--	6	--	S	--	58	--	N	SB	VV	--	--	--	--	2498
140N095W32CB01	J. KRAUS	90	--	--	16	--	K	--	80	--	N	SB	VV	--	--	--	--	2526
140N095W32CB02	J. KRAUS	85	--	--	4	--	H	--	62	--	N	SB	VV	--	--	--	--	2528
140N095W34AAA	N. REISENAUER	49	--	49	18	--	K	--	--	--	N	SB	--	--	K	5	--	2385
140N095W36ADD1	E. LAWRENCE	46	--	46	18	1928	S	--	16	--	N	SB	I	--	K	5	6.5	--
140N095W36ADD2	E. LAWRENCE	65	--	65	18	1950	K	--	30	--	N	SB	I	--	K	5	--	--
140N096W01DBB1	L. RIDL	86	--	--	6	--	K	--	25	--	N	SB	--	--	--	--	--	2433
140N096W01DBB2	L. RIDL	105	--	--	4	1965	K	50	--	--	N	SB	I	D	K	4	--	2433
140N096W02DAC	J. VRANA	25	--	--	18	--	H	--	17	--	N	22	R	--	P	4	--	2422
140N096W03ADD	J. HONDL	40	--	--	18	--	S	--	20	--	N	22	G	--	P	6	--	--
140N096W03CGB	USGS	18	--	--	--	1968	U	--	--	--	N	--	--	G	--	--	--	2467
140N096W03BCL1	USGS	40	--	--	--	1968	U	--	--	--	N	--	--	G	--	--	--	2462
140N096W03BCL2	NDSMC 14-748	231	--	--	--	1962	U	--	--	--	N	--	--	GE	--	--	--	2470
140N096W03CCB	USGS	55	--	--	--	1968	U	--	14	9-68	N	22	6S	G	--	--	--	2448
140N096W03DAB	J. HONDL	14	--	--	48	--	H	--	7	--	N	22	R	--	--	--	--	2443
140N096W04BBA1	A. FICEK	30	--	0	60	--	K	--	--	--	N	??	S	--	--	--	--	--
140N096W04BBA2	A. FICEK	60	--	--	4	1961	H	--	50	--	N	SB	I	--	--	--	--	2502
140N096W04CCC	NDSMC 3683	20	--	0	--	1968	U	--	--	--	N	--	--	G	--	--	--	2434
140N096W04DDD	L. FICEK	35	--	--	18	--	K	--	15	--	N	22	--	--	--	--	--	2432
140N096W05DDA	NDSMC 3682	70	--	0	--	1968	U	--	--	--	N	--	--	G	--	--	--	2438
140N096W05DDB	R. KADRAS	45	--	--	18	--	K	--	5	--	N	SB	I	--	--	--	--	2493
140N096W08AA0	J. PAVLISH	25	--	--	18	--	H	--	13	--	N	SB	--	--	--	--	--	2440
140N096W08CDA1	J. KAINZ	90	--	--	18	--	U	--	19	8-62	N	SB	--	--	--	--	--	2490
140N096W08CDA2	J. KAINZ	150	--	--	6	--	K	--	90	--	N	SB	I	--	P	5	--	2490
140N096W09AAA1	E. FISHER	12	--	--	60	--	U	--	7	--	N	22	R	--	--	--	--	2431
140N096W09AAA2	E. FISHER	35	--	--	18	--	H	--	7	--	N	22	R	--	--	--	--	--
140N096W09BCL1	J. KRALICEK	38	--	--	18	--	H	--	18	--	N	SB	I	--	--	--	--	2452
140N096W09BCL2	J. KRALICEK	42	--	--	18	--	S	--	24	--	N	SB	I	--	--	--	--	2452
140N096W10CB3	USGS	75	--	--	--	1968	U	--	0	9-68	N	22	S	G	--	--	--	2423
140N096W10CCH	USGS	100	--	--	--	1968	U	--	9	9-68	N	SB	7V	G	--	--	--	2450
140N096W10DBU1	E. DVORAK	27	--	--	18	--	H	--	20	--	N	--	P	--	--	--	--	2451

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LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAILABLE	QW TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ALTITUDE OF LSD (FT.)
140N096W10DRB2	E. DVORAK	98	--	6	--	--	K	--	35	--	N	SB	--	--	--	--	--	2491
140N096W12HAB	M. REBENSOUK	85	--	24	--	--	K	--	70	--	N	SB	--	--	--	--	--	2440
140N096W12CCA	A. PAVLICEK	70	--	18	--	--	K	--	45	--	N	SB	--	--	--	--	--	2456
140N096W13CCA1	V. RIDL	150	--	6	--	--	H	--	30	--	N	SB	VV	--	P	7	--	2478
140N096W13CCA2	V. RIDL	87	--	6	--	--	K	--	24	--	N	SB	I	--	K	5	--	2478
140N096W14ABB1	A. WOLFE	15	--	48	--	--	S	--	3	--	N	SB	I	--	--	--	--	2466
140N096W14ABB2	A. WOLFE	61	--	18	--	--	K	--	29	--	N	SB	I	--	--	--	--	2466
140N096W15GB	R. KADRMAS	200	--	6	--	--	K	--	--	--	N	SB	I	--	--	--	--	2497
140N096W16DC	M. AM. ROY.-CARD.	8062	--	590	9	1969	U	--	--	--	N	--	--	--	--	--	--	2498
140N096W18DD1	J. MILLER	60	--	6	--	--	S	--	20	--	N	SB	--	--	--	--	--	2535
140N096W18DD2	J. MILLER	35	--	18	--	--	H	3	25	--	N	SB	VV	--	--	--	--	2535
140N096W18DBA1	M. MILLER	25	0	60	--	--	S	--	15	--	N	SB	VV	--	--	--	--	2530
140N096W18DBA2	M. MILLER	25	--	8	--	--	H	--	15	--	N	SB	VV	--	--	--	--	2530
140N096W19CC	NDSMC 13-748	168	--	--	--	1962	U	--	--	--	N	--	--	GE	--	--	--	2568
140N096W20BDC1	J. EHRLMANTRAUT	128	--	6	--	--	K	--	100	--	N	SB	--	--	--	--	--	2580
140N096W20BDC2	J. EHRLMANTRAUT	135	--	5	--	--	H	--	100	--	N	SB	--	--	P	5	--	2580
140N096W20DD	NDSMC 20A-748	315	--	--	--	1962	U	--	--	--	N	--	--	GE	--	--	--	2512
140N096W21CCC1	A. WOCK	75	--	6	--	--	K	--	--	--	N	SB	VV	--	P	5	--	2512
140N096W21CCC2	A. WOCK	92	--	62	4	1965	K	22	--	--	N	SB	VV	D	K	4	--	2512
140N096W21DD4	NDSMC 15A-748	231	--	--	--	1962	U	--	--	--	N	--	--	GE	--	--	--	2525
140N096W22CCC	W. HEWSON	--	--	--	--	--	S	--	--	--	N	ST	--	--	P	6	--	2510
140N096W23DA	A. JILEK	170	--	5	--	--	K	--	70	--	N	SB	I	--	--	--	--	2525
140N096W23DC	CONTINENTAL, J-R	7973	590	9	--	1967	U	--	--	--	N	--	--	--	--	--	--	2562
140N096W23DD	JOB CORPS 1	180	150	7	--	1957	P	12	99	--	N	SB	VV	--	C	5	10.0	2553
140N096W23DD	C. RIDL	120	--	4	--	--	K	--	90	--	N	SB	VV	--	--	--	--	2553
140N096W24DBA1	A. RIDL	130	--	4	--	--	H	--	--	--	N	SB	--	--	--	--	--	2548
140N096W24DBA2	A. RIDL	55	--	24	--	--	S	--	7	--	N	SB	VV	--	--	--	--	2552
140N096W26AB	JOB CORPS 2	180	170	8	--	--	P	17	129	--	N	SB	VV	--	C	5	--	2600
140N096W26CCB1	W. HEWSON	40	--	18	--	--	S	--	--	--	N	SB	--	--	P	7	--	2474
140N096W26CCB2	W. HEWSON	60	--	18	--	--	H	--	--	--	N	SB	--	--	--	--	--	2474
140N096W26DCC1	H. FICEK	55	--	6	--	--	K	--	33	--	N	SB	--	--	--	--	--	2526
140N096W26DCC2	H. FICEK	25	0	48	--	--	S	--	--	--	N	SB	--	--	--	--	--	--
140N096W27DD	NDSMC 6-748	378	--	--	--	1962	U	--	7	8-62	O	--	--	GE	--	--	--	2466
140N096W28ADA	A. PRIBYL	165	--	6	--	--	K	--	--	--	N	SB	IV	--	P	6	--	2535
140N096W28DDC	A. SCHMINDT	100	--	6	--	--	K	--	50	--	N	SB	VV	--	P	6	--	2487
140N096W29DC	NDSMC 12-748	210	--	--	--	1962	U	--	--	--	N	--	--	GE	--	--	--	2500
140N096W29DD1	L. FILIPI	89	--	--	--	--	H	--	10	--	N	SB	VV	--	P	6	--	2468
140N096W29DD2	L. FILIPI	50	--	18	--	--	S	--	10	--	N	SB	VV	--	--	--	--	2468
140N096W30ADD	NDSMC 24-748	210	--	--	--	1962	U	--	--	--	N	--	--	GE	--	--	--	2503
140N096W31DCA	P. FRENZEL	40	--	--	--	--	K	--	33	--	N	SB	--	--	P	2	--	2485

LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAILABLE	QW TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ALTITUDE OF LSD (FT.)
140N096W31CAA1	J.KAORMAS	65	--	18	--	--	S	--	18	--	N	SB	VV	--	P	3	--	--
140N096W31CAA2	J.KAORMAS	62	--	18	--	--	H	--	18	--	N	SB	VV	--	--	--	--	2485
140N096W31DA	ATLANTIC	7877	7784	6	1958	U	--	--	--	--	N	--	--	--	--	--	--	2488
140N096W31DBB	MDSWC 11-748	168	--	--	1962	U	--	--	--	--	N	--	--	GE	--	--	--	2478
140N096W32BC	FELMONT-ATLANTIC	9100	8690	6	1957	U	--	--	--	--	N	--	--	Y	--	--	--	2516
140N096W32DDD1	STATE OF N.DAK.	75	--	6	1922	U	--	--	55	--	N	SB	VV	--	P	5	--	--
140N096W32DDD2	STATE OF N.DAK.	85	--	--	--	S	--	--	20	--	N	SB	--	--	P	5	--	2458
140N096W33AAA	MDSWC 25-748	231	--	--	1962	U	--	--	--	--	N	--	--	GE	--	--	--	2510
140N096W34BCC	G.HEWSON	140	--	6	--	K	--	--	120	--	N	SB	VV	--	--	--	--	2467
140N096W35CDC	J.SHINAGLE	200	--	5	--	H	--	--	--	--	N	SB	--	--	K	6	--	2508
140N096W36BCC1	G.HEWSON	55	--	18	--	U	--	--	3	--	N	SB	--	--	--	--	--	2490
140N096W36BCC2	G.HEWSON	230	--	6	1962	S	--	--	16	--	N	SB	1	--	--	--	--	2490
140N097W01BCA	F.SAETZ	50	--	24	--	K	--	--	30	--	N	SB	1	--	--	--	--	2478
140N097W02AAA	E.RAMBOUSEK	25	0	48	--	H	--	--	7	--	N	--	S	--	P	6	--	2452
140N097W03ADD	N.P. DX360-3	190	0	--	1961	U	--	--	--	--	N	--	G	--	--	--	--	2529
140N097W04ACA1	R.BREN	85	85	18	--	K	--	--	50	--	N	SB	P	--	--	--	--	2490
140N097W04ACA2	R.BREN	85	85	18	1964	H	--	--	50	--	N	SB	P	--	K	5	6.5	2490
140N097W04ACD	R.BREN	40	40	18	1963	U	--	--	20	--	N	SB	--	--	--	--	--	2490
140N097W04CCA2	A.ADAMSKI	20	20	18	--	H	--	--	12	--	N	SB	VV	--	--	--	--	--
140N097W04CCA3	A.ADAMSKI	18	--	24	--	S	--	--	8	--	N	SB	VV	--	K	4	--	--
140N097W04CCA4	A.ADAMSKI	28	28	24	--	U	--	--	8	--	N	SB	VV	--	--	--	--	--
140N097W04CCA5	A.ADAMSKI	21	21	6	1962	H	--	--	10	--	N	SB	VV	--	--	--	--	--
140N097W05ABA	N.P. DX360-29	210	--	--	1961	U	--	--	--	--	N	--	G	--	--	--	--	2544
140N097W05CBC	A.RAMBOUSEK	20	0	60	--	U	--	--	15	--	N	SB	VV	--	--	--	--	--
140N097W05CCD	A.RAMBOUSEK	20	0	60	--	U	--	--	15	--	N	SB	VV	--	--	--	--	--
140N097W06DAC1	A.RAMBOUSEK	18	0	60	1887	S	--	--	13	--	N	SB	VV	--	K	6	6.5	--
140N097W06DAC2	A.RAMBOUSEK	16	0	72	--	U	--	--	--	--	N	SB	VV	--	--	--	--	--
140N097W06DAC3	A.RAMBOUSEK	30	30	18	1966	H	--	--	10	--	N	SB	VV	--	K	6	7.0	--
140N097W07DDD	N.P. DX360-2	180	--	--	1961	U	--	--	--	--	N	--	G	--	--	--	--	2595
140N097W08CBD1	N.HAVELKA	20	0	72	1898	H	--	--	10	--	N	SB	--	--	K	6	--	--
140N097W08CBD2	N.HAVELKA	160	160	6	1913	S	--	--	--	--	N	SB	VV	--	K	6	--	--
140N097W09AAA	N.P. DX360-12	200	--	--	1961	U	--	--	--	--	N	--	G	--	--	--	--	2565
140N097W10CCD	G.HAVELKA	85	--	18	--	K	--	--	--	--	N	SB	--	--	--	--	--	--
140N097W11388A	N.P. DX360-14	219	--	--	1961	U	--	--	--	--	N	--	G	--	--	--	--	2543
140N097W113DDC	J.RAMBOUSEK	30	--	18	--	K	--	--	15	--	N	SB	1	--	--	--	--	2558
140N097W14AAA1	A.SCHMIDT	40	--	18	--	S	--	--	35	--	N	SB	--	--	--	--	--	2535
140N097W14AAA2	A.SCHMIDT	180	--	4	--	K	--	--	70	--	N	SB	VV	--	--	--	--	2535
140N097W18AAC1	R.MARSH	54	54	18	--	S	--	--	20	--	N	SB	VV	--	--	--	--	--
140N097W18AAC2	R.MARSH	54	54	18	--	S	--	--	20	--	N	SB	VV	--	--	--	--	--
140N097W18ACA	R.MARSH	29	29	4	1959	H	--	--	11	--	N	SB	P	--	K	5	--	--

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LOCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAILABLE	QM TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ALTITUDE OF LSD (FT.)
140N097W1888A	I. TUHY	40		40	18		K		1		N	SB			K	4		
140N097W1988A	N.P. DX360-11	190				1961	U				N	SB		G				2574
140N097W20CCD	A. RIDL	71	71	4	4	1964	S				N	SB	1	D	C	6	8.5	2554
140N097W21A8D	N.P. DX360-7	233				1961	U				N	SB		G				2610
140N097W21DBD1	F. MARSH	26	0	36	1913		U		16		N	SB	VV					
140N097W21DBD2	F. MARSH	122	120	18	18	1927	U		75		N	SB	VV					
140N097W21DBD3	F. MARSH	87	87	18	18		H		20		N	SB	VV					
140N097W21DBD4	F. MARSH	212	192	4	4	1965	S		40		N	SB	VV		K	6		
140N097W23CCD1	F. KAISERSHOT	65					H		55		N	SB						
140N097W23CCD2	F. KAISERSHOT	100		18			H		76		N	SB	VV					
140N097W23CCD3	F. KAISERSHOT	135		6			S				N	SB	1					
140N097W24HC4	A. ANTON	15	0	72			S		10		N	GV						2600
140N097W248D8	A. ANTON	28		72			K				N	GV						2593
140N097W24CD81	M. ZAHRADNIK	38					K		11		N	GS	VV					2585
140N097W24CD82	M. ZAHRADNIK	58		18			K		11		N	GS	VV		P	5		2585
140N097W24CD83	M. ZAHRADNIK	79		6			K		11		N	SB	VV					2585
140N097W24DAC1	J. RIDL	34					K		28		N	GS	VV					2557
140N097W24DAC2	J. RIDL	72		6			K		28		N	SB	VV					2557
140N097W24DAC3	J. RIDL	40		12			K		28		N	GS	VV		P	4		2557
140N097W25DA4	NDSMC 19-746	210		5	1962		U				N			GE				2540
140N097W28CRD	J. RIDL	21	0	60	1905		U		15	1-67	0	SB	P					2510
140N097W29BCC	N.P. DX360-5	195				1961	U				N			G				2577
140N097W31HCR	J. STEFFAN			40	18		U				N	SB			K	5		
140N097W32CCA1	B. ZASTOUPIL	40		0	72		K		15		N	SB	VV		K	7		
140N097W32CCA2	B. ZASTOUPIL	30		0	72		K		15		N	SB	VV		K	7		
140N097W32CCA3	B. ZASTOUPIL	40	40	18			S		30		N	SB						
140N097W32CCA4	B. ZASTOUPIL	150		6	6	1963	H		50		N	SB	1					
140N097W338B8	N.P. DX360-15	170				1961	U				N			G				2542
140N097W33DCD	N.P. DX360-9	206				1961	U				N			G				2585
140N097W34RCA1	N. ZANDER	36		18			K	D	10		N	SB			P	5		
140N097W346CA7	N. ZANDER	220	200	4	4	1966	S		15		N	SB	VV	D	K	5		2494
140N097W34RDB	N. ZANDER	36	36	18			H		16		N	SB			K	5		2480
140N097W34DD	SHELL, ZAHRADNIK	9105	9100	5	5	1966	U				N							2465
140N097W35AAA	L. KARSKY	65		18			K		40		N	SB	1					2560
140N097W35BAB	N.P. DX360-6	170				1961	U				N			G				2573
140N097W35C88	N.P. DX360-1	140				1961	U				N			S				2494
140N097W36CCD	NDSMC 3-748	312		5	5	1962	U				N			GE				2510
140N098W01AAA1	N.P. DX360-13	200	0			1961	U				N			G				2569
140N098W01AAA2	C. PAVLISH	118	118	4	4	1962	K				N	SB			K	6	8.5	2700
140N098W01DCC1	H. DUKKOP	195		0	0	1927	U				N	SB	1					2649

LOCAL WELL NUMBER	(WELLER)	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER-BEARING MATERIAL	LOG AVAILABLE	OW TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ALTI-TUDE-OF LSD (FT.)
140N098W01DCC2	H. GURKOP	36	--	18	1947	H	--	26	--		N	SB	--	--	--	--	--	--
140N098W01DCC3	H. GURKOP	210	210	--	1964	K	--	--	--		N	SB	--	C	--	6	17.0	2649
140N098W02DBB	N.P. DX360-35	230	--	--	1962	U	--	--	--		N	--	G	--	--	--	--	2620
140N098W02CAD	A. KUNTZ	54	54	12	1943	S	--	42	--		N	SB	--	--	K	6	6.0	2592
140N098W02CAD1	A. KUNTZ	69	69	18	1949	S	--	25	--		N	SB	--	--	K	6	10.5	--
140N098W02CD42	A. KUNTZ	223	223	4	1963	H	--	85	--		N	SB	--	--	K	6	11.5	2600
140N098W03AAC1	S. FRANK	60	60	24	1942	K	6	16	--		N	SB	1	--	--	--	--	
140N098W03AAC2	S. FRANK	72	72	21	1953	S	--	20	--		N	SB	VV	--	--	--	--	
140N098W03DAA	A. KUNTZ	83	83	19	1955	S	--	8	--		N	SB	--	--	--	--	--	
140N098W03DDA	R. KUNTZ	103	103	12	1962	S	--	77	8-66		O	SB	VV	--	K	6	6.0	2551
140N098W04ARB	S. FRANK	80	80	18	--	S	--	19	8-66		O	SB	--	--	K	5	8.5	2572
140N098W06AAC1	J. KASSIAN	28	0	72	1931	H	--	26	--		N	SB	VV	--	K	5	--	2638
140N098W06AAC2	J. KASSIAN	145	--	4	1964	K	--	100	--		N	SB	VV	D	K	5	9.0	2636
140N098W06AAC3	J. KASSIAN	40	--	18	1964	S	--	12	--		N	SB	--	--	--	--	--	2633
140N098W06AGA	E. TARABA	79	79	18	1959	K	--	70	--		N	SB	VV	--	K	6	--	2611
140N098W06DCC1	R. VULEFSKY	40	40	18	1952	H	2	32	--		N	SB	1	--	K	5	--	2622
140N098W06DCC2	R. VULEFSKY	180	180	6	1958	S	8	110	--		N	SB	VV	--	K	6	--	2625
140N098W07AAD	A. ZALESKY	42	--	18	1945	U	--	20	--		N	SB	--	--	--	--	--	2613
140N098W09BBC1	A. ZALESKY	24	0	96	1908	H	--	20	--		N	SB	--	--	K	3	--	2610
140N098W09BBC2	A. ZALESKY	44	44	18	1940	S	--	--	--		N	SB	--	--	--	--	--	2628
140N098W09BBC3	A. ZALESKY	44	44	18	1955	H	--	20	--		N	SB	--	--	K	6	--	2628
140N098W09DD8	L. ROMANSKY	11	11	--	--	U	--	9	8-66		O	SB	--	--	--	--	--	2570
140N098W10DAA1	S. JILEK	24	24	54	1914	U	--	--	--		N	SB	--	--	K	6	9.0	2642
140N098W10DAA2	S. JILEK	27	27	12	--	H	--	13	8-66		U	SB	--	--	K	5	--	2630
140N098W12RAA1	A. KUBAS	22	0	48	1890	Z	--	--	--		N	SB	--	--	--	--	--	--
140N098W12RAA2	A. KUBAS	25	--	--	1945	H	--	16	--		N	SB	--	--	K	4	--	--
140N098W14ACD	L. TUHY	93	93	18	1955	H	--	58	8-66		O	SB	VV	--	K	6	11.0	2662
140N098W18BCD1	R. MANN	50	--	--	--	H	--	--	--		N	SB	--	--	K	5	--	2557
140N098W18BCD2	R. MANN	60	--	--	1962	S	--	--	--		N	SB	--	--	--	--	--	2557
140N098W18CA3	R. MANN	60	--	--	1956	S	--	--	--		N	SB	--	--	--	--	--	2554
140N098W19AAB1	W. TOMCHUK	80	--	12	1945	U	2	40	--		N	SB	--	--	--	--	--	2545
140N098W19AAB2	W. TOMCHUK	35	35	6	1961	S	3	--	--		N	SB	1	--	--	--	--	2552
140N098W19AAB3	W. TOMCHUK	150	100	6	1966	H	40	20	--		N	SB	VV	D	K	6	12.0	2555
140N098W19ABA	W. TOMCHUK	73	73	6	1965	U	3	23	--		N	SB	--	--	K	5	--	2562
140N098W22CDA	V. TUHY	61	61	12	--	S	--	17	8-66		O	SB	1	--	--	--	--	2525
140N098W23AAB1	V. TUHY	80	80	12	1942	S	--	7	8-66		O	SB	VV	--	K	6	10.0	2565
140N098W23AAB2	V. TUHY	27	27	18	1952	H	--	22	--		N	SB	VV	--	K	6	10.5	2565
140N098W23AAB3	N.P. DX360-4	210	--	--	1961	U	--	--	--		N	--	G	--	--	--	--	2602
140N098W23BBA	H. HUSKA	70	70	6	1960	S	--	68	--		N	SB	1	--	K	6	--	2555
140N098W24BCD	V. PAVLISH	40	40	18	1962	S	4	18	--		N	SB	P	--	--	--	--	--

LUCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER REARING MATERIAL	LOG AVAIL-ABLE	QW TYPE	SPE-CIFIC CON-DUCT ANCE	TEM-PER-ATURE (°C)	ALTI-TUDE-OF LSO (FT.)
140N098W24BDC1	V. PAVLISH	33		0	72	1903	S	--	23	--	N	SH	VV	--	--	--	--	--
140N098W24BDC2	V. PAVLISH	63		0	18	1931	H	--	40	--	N	SB	VV	--	K	5	6.0	--
140N098W24CDA	R. CHOKNE	81		81	18	1958	H	--	20	--	N	SB	VV	--	K	5	--	--
140N098W24GCA1	B. PAVLISH	50		50	18	1964	S	--	--	--	N	SB	VV	--	K	6	6.0	--
140N098W24GCA2	B. PAVLISH	76		76	12	1960	H	2	30	--	N	SB	VV	--	K	6	--	--
140N098W25ABH1	F. JEARMCHUK	25		25	24	1928	H	--	15	--	N	GS	VV	--	--	--	--	--
140N098W25ABH2	F. JEARMCHUK	46		46	18	1955	H	1	11	--	N	GS	P	--	K	6	9.0	--
140N098W25ABH3	F. JEARMCHUK	270		270	3	1954	S	--	200	--	N	SB	1	--	K	6	10.5	--
140N098W26CCD1	V. WALTER	46		34	18	1923	H	--	24	--	N	SB	1	--	K	6	--	2532
140N098W26CCD2	V. WALTER	43		43	18	1962	S	--	33	--	N	SB	1	--	K	--	--	2540
140N098W26DBB1	T. RIDL	153		153	6	1916	S	--	100	--	N	SB	1	--	K	6	9.0	2577
140N098W26DBB2	T. RIDL	18		18	6	1956	H	A	10	--	N	--	--	--	K	5	8.5	2572
140N098W27AAC	R. CHOKNE	47		0	--	1928	U	--	22	8-66	O	SB	VV	--	--	--	--	2512
140N098W29BBU1	M. OBACH	21		0	48	1925	K	--	5	--	N	SB	1	--	K	4	--	2572
140N098W29BBU2	M. OBACH	15		0	48	1958	S	--	5	--	N	SB	1	--	K	5	--	2570
140N098W32AAA	A. ORBANSKY	54		--	12	--	U	--	23	8-66	O	SB	--	--	K	4	10.5	2525
140N098W32CCA	E. JABLONSKY	120		120	4	1960	K	--	--	--	N	SB	--	--	K	6	--	2590
140N098W32CCD	E. JABLONSKY	143	160	117	4	1967	S	15	--	--	N	SB	VV	O	--	--	--	2580
140N098W33BD	SKELLY, MERRILL	9322		0	--	1958	U	--	--	--	N	--	--	--	--	--	--	2511
140N098W35BBA	C. WALTER	90		90	4	1959	H	--	40	--	N	SB	1	--	K	6	--	2520
140N099W02BBA	N. BARABASH	34		0	60	1908	K	--	30	--	N	SB	VV	--	K	5	7.5	2670
140N099W02GB	M. CYMBALUK	50		50	18	1958	S	--	28	7-66	O	SB	1	--	--	--	--	2638
140N099W02HCD	M. CYMBALUK	65		65	18	1911	S	5	40	--	N	SB	1	--	K	6	7.5	2655
140N099W03ADU	M. CYMBALUK	179		139	4	1959	S	--	140	--	N	SB	3V	O	--	--	--	2640
140N099W03ADU	M. CYMBALUK	220		200	4	1963	S	--	140	--	N	ST	VV	--	--	--	--	2640
140N099W03CDU1	V. CYMBALUK	40		40	18	1929	H	8	30	--	N	SB	VV	--	K	4	7.0	2670
140N099W03CDU2	V. CYMBALUK	9		9	36	1956	S	6	0	7-66	O	SB	1	--	K	7	6.0	2640
140N099W06BDB1	A. LUPTAK	18		0	60	1911	K	8	15	--	N	SB	VV	--	K	4	6.0	2700
140N099W06BDB2	A. LUPTAK	20		20	08	1959	H	--	10	--	N	SB	1	--	K	4	--	2690
140N099W06BDC	A. LUPTAK	25		25	24	1930	S	6	18	--	N	GS	VV	--	K	4	6.5	2700
140N099W08DAD1	J. OBRIGEWITZCH	50		50	18	1944	S	8	20	--	N	SB	VV	--	K	5	7.0	2640
140N099W08DAD2	J. OBRIGEWITZCH	50		50	18	1946	H	--	16	--	N	SB	VV	--	K	4	--	2655
140N099W09CCB	J. OBRIGEWITZCH	30		0	18	1957	U	--	10	--	N	SB	VV	--	K	6	--	2630
140N099W10BAA	V. CYMBALUK	208		188	4	1961	S	10	108	--	N	SB	VV	--	K	6	9.0	2640
140N099W12BAA1	A. JOHNSON	70		0	48	1904	K	--	10	--	N	SB	VV	--	K	5	7.0	2585
140N099W12BAA2	A. JOHNSON	20		0	12	1946	U	10	--	--	N	SB	VV	--	K	5	6.5	2588
140N099W16BBB	J. OBRIGEWITZCH	50		50	18	1951	U	--	20	--	N	SB	VV	--	--	--	--	2662
140N099W17DDO	NUSMC 3689	300		--	--	1968	U	--	--	--	N	--	--	YC	--	--	--	2670
140N099W20BDA	R. REDMOND	20		0	18	1916	H	6	17	--	N	SB	1	--	K	6	5.5	2640
140N099W23ADA1	J. RYKOWSKY	90		0	18	1941	H	--	--	--	N	SB	--	--	K	4	--	2610

LUCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAILABLE	QW TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ALTITUDE OF LSD (FT.)
140N099W23ADA2	J. RYKOWSKY	150	--	4	18	1961	S	--	40	9-61	N	SB	VV	--	K	5	8.5	2610
140N099W26AAC1	N. DOLYNIUK	35	0	18	18	1944	H	--	16	--	N	SB	VV	--	K	5	8.5	2638
140N099W26AAC2	N. DOLYNIUK	43	0	18	18	1960	U	--	30	--	N	SB	VV	--	K	5	--	2630
140N099W26ACD	N. DOLYNIUK	57	0	18	18	1963	S	--	--	--	N	SB	1	--	K	4	--	2600
140N099W28CC8	J. WEISS	72	0	18	18	1908	S	5	53	--	N	SB	1	--	K	6	8.5	2648
140N099W29CDC	A. OBRIGEWITZ	40	0	18	--	--	K	15	4	--	N	SB	--	--	K	5	--	2590
140N099W30DBA1	H. TALKINGTON	85	--	18	18	1958	S	--	80	--	N	SB	1	--	K	5	10.0	2615
140N099W30DBA2	H. TALKINGTON	360	--	4	18	1962	H	--	260	--	N	TR	1	--	--	--	--	2615
140N099W31ABA	R. NEWTON	18	--	18	24	1992	S	--	6	--	N	SB	VV	--	--	--	--	--
140N099W31CB	AMERADA-NEWTON	9575	--	--	--	1954	U	--	--	--	N	--	--	JL	--	--	--	2686
140N099W32ACC1	STUSS BROS.	73	--	18	18	1963	H	--	48	--	N	SB	VV	--	K	5	--	2580
140N099W32ACC2	STUSS BROS.	92	92	4	18	1964	S	--	--	--	N	SD	--	--	K	6	7.0	2580
140N099W32DCC	E. DOLYNIUK	110	70	6	18	1959	H	12	18	--	N	SB	VV	--	P	6	--	2593
140N099W33CHC	STANDARD OIL	805	761	5	18	1967	C	6	410	--	N	TR	2V	D	C	5	17.0	2670
140N099W35AAD1	A. DOLYNIUK	12	0	18	18	1924	U	--	8	7-66	U	SB	VV	--	--	--	--	2550
140N099W35AAD2	A. DOLYNIUK	26	0	18	18	1944	S	5	10	7-66	O	SB	VV	--	K	6	6.5	2555
140N099W35AAD3	A. DOLYNIUK	21	0	24	18	1961	H	--	9	7-66	U	SB	VV	--	K	4	--	2560
141N090M19CCL	USGS (MERCER COUNTY)	66	--	--	--	1968	U	--	--	--	N	--	--	G	--	--	--	2075
141N090M19CCD	NDSMC 3433 (DO.)	1192	1782	1142	4	1967	U	8	4	8-67	C	HC	3	YB	C	6	16.5	2090
141N090M33CDC	NDSMC 3662 (DO.)	516	520	504	--	1968	U	--	214	12-68	O	TR	7V	GE	--	--	--	2251
141N091W25AAA	E. EGERT	35	35	48	18	1943	H	--	32	--	N	22	S	--	C	4	--	--
141N091W27ACR1	H. SCHMIDT	268	268	14	18	1916	K	--	18	--	N	TR	--	--	K	5	--	2050
141N091W27ACR2	H. SCHMIDT	36	--	24	18	1954	U	--	33	--	N	22	S	--	--	--	--	2050
141N091W28CCA	L. HUSKA	21	--	6	18	1964	H	--	--	--	N	22	--	--	--	--	--	--
141N091W29DDO	USGS	31	--	--	18	1968	U	--	--	--	N	--	--	G	--	--	--	2044
141N091W30DCB	F. BURGER	240	240	4	18	1962	K	3	F	--	N	TR	--	--	--	--	--	2080
141N091W30DDA	F. BURGER	37	--	18	18	1962	H	60	12	--	N	22	S	--	K	5	--	2080
141N091W31ADD	USGS	17	--	--	18	1968	U	--	--	--	N	--	--	G	--	--	--	2085
141N091W32BCB	E. FOSTER	262	--	2	18	1928	U	1	F	--	N	TR	--	--	K	6	9.5	2180
141N091W32CD1	A. SCHWARTZ	45	45	6	--	--	S	--	--	--	N	SB	1	--	--	--	--	2090
141N091W32CD2	A. SCHWARTZ	90	--	6	18	1945	H	--	70	--	N	ST	--	--	K	6	--	2090
141N091W34AAD	USGS	21	--	--	18	1968	U	--	--	--	N	--	--	G	--	--	--	2191
141N091W34BCC	P. DUCKWITZ	262	--	2	18	1928	H	--	--	--	N	TR	1	--	K	6	9.0	--
141N091W34CDC	USGS	110	--	--	18	1968	U	--	--	--	N	--	--	G	--	--	--	2126
141N091W35ADD	I. KUSCHEL	19	--	54	18	1910	K	--	14	--	N	22	S	--	--	--	--	--
141N091W35DCD	E. KRUGER	30	30	18	--	--	S	--	--	--	N	22	S	--	--	--	--	--
141N092W26ADD1	E. DETWEILER	125	--	6	18	1919	K	--	75	--	N	TR	--	--	K	5	--	2110
141N092W26ADD2	E. DETWEILER	183	--	8	18	1928	U	--	26	--	N	TR	--	--	--	--	--	--
141N092W26BHC	P. LANTZ	100	--	12	18	1950	H	--	10	--	N	ST	--	--	K	6	--	2080
141N092W26BHC	P. LANTZ	50	50	18	18	1950	S	--	--	--	N	22	S	--	K	5	9.0	--

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LUCAL WELL NUMBER	OWNER	WELL DEPTH (FT.)	DRILLED DEPTH (FT.)	CASING DEPTH (FT.)	CASING DIAMETER (IN.)	DATE DRILLED (YEAR)	USE OF WATER	YIELD (GPM)	WATER LEVEL (FT.)	DATE WATER LEVEL MEAS.	FREQUENCY OF WATER-LEVEL MEASUREMENTS	MAJOR AQUIFER	WATER BEARING MATERIAL	LOG AVAILABLE	OW TYPE	SPECIFIC CONDUCTANCE	TEMPERATURE (°C)	ALTITUDE OF LSD (FT.)
141N092W27ADD	USGS	15	--	--	--	1968	U	--	--	--	N	--	--	G	--	--	--	2056
141N092W27CC1	NDSMC 3545	906	0	5	5	1967	U	--	--	--	N	--	--	Y	--	--	--	2163
141N092W27CC2	NDSMC 3545A	136	0	5	5	1967	U	--	--	--	N	--	--	D	--	--	--	2165
141N092W27CC3	NDSMC 3545B	530	524	2	2	1969	U	--	79	6-69	M	TR	VV	--	C	6	9.5	2164
141N092W28CAA	P.HOFF	86	86	18	18	1944	H	5	50	--	N	--	--	--	K	5	--	--
141N092W28CAR	P.HOFF	80	--	18	18	1953	S	--	60	--	N	--	--	--	--	--	--	--
141N092W30BCA	N.AMANN	42	--	18	18	1944	K	4	27	--	N	--	S	--	P	5	--	--
141N092W35DAA	USGS	8	--	--	--	1968	U	--	--	--	N	--	--	G	--	--	--	2104
141N093W29DD1	P.HOERNER	80	80	18	18	1941	U	--	64	8-66	O	--	--	--	--	--	--	2180
141N093W29DD2	P.HOERNER	160	160	5	5	1952	K	--	13	--	N	ST	--	--	K	5	--	2180
141N093W26BBR1	NDSMC 3685	200	--	--	--	1968	U	--	12	11-68	O	--	--	GE	--	--	--	2119
141N093W26BBR2	NDSMC 3685A	61	58	1	1	1969	U	--	13	5-69	M	SI	SS	D	C	4	7.5	2119
141N093W26CDC1	M.FELLER	80	80	18	18	1941	H	--	15	--	N	SB	VV	--	--	--	10.0	2220
141N093W26CDC2	M.FELLER	80	--	18	18	1949	H	--	59	--	N	SB	VV	--	K	5	--	2220
141N093W26CDC3	M.FELLER	120	120	2	2	1960	S	--	40	--	N	SB	VV	--	K	5	--	2220
141N093W27ACD	A.BRADENEYER	40	--	18	18	1916	K	A	16	--	N	SB	VV	--	--	--	--	--
141N093W28CAC	W.BERNHARDT	35	0	16	16	1905	S	2	25	--	N	--	S	--	K	6	--	--
141N093W28CDD	W.BERNHARDT	124	--	6	6	1955	K	--	40	--	N	SB	I	--	K	5	--	--
141N093W30DDA	J.HEINERT	27	27	24	24	1946	U	--	15	7-66	U	--	P	--	--	--	--	2150
141N093W31BRA	L.BERNHARDT	24	--	24	--	--	U	--	16	8-66	U	--	--	--	--	--	--	2190
141N093W31CDH	R.BOESPFLUG	80	--	6	6	1959	U	--	F	--	N	--	--	--	--	--	--	--
141N093W32DAA	J.HEINERT	106	106	6	6	--	K	--	40	--	N	SB	VV	--	K	6	9.0	2230
141N093W34BAB	F.JURGENS	75	--	18	18	1920	K	--	62	--	N	SB	--	--	K	6	8.5	--
141N093W34CBD1	F.DOHRMANN	35	35	24	--	--	K	--	20	--	N	SB	VV	--	K	4	--	--
141N093W34CBD2	F.DOHRMANN	30	30	18	--	--	U	--	--	--	N	SB	VV	--	--	--	--	--
141N093W34DBD	R.BOESPFLUG	62	--	24	24	1902	S	--	30	--	N	SB	--	--	K	7	7.5	2270
141N093W34DCA	R.BOESPFLUG	28	--	72	1889	H	--	--	14	--	N	SB	I	--	--	--	--	--
141N093W36AAC	P.HOEKNER	10	10	48	1916	S	--	6	2	--	N	SB	I	--	--	--	--	2200

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TABLE 2.--Records of springs

Location	Owner or name	Use of water ^{1/}	Aquifer/ bearing material	Flow (gallons per minute)	Method determined	Date measured	Quality of water type ^{2/}	Specific conductance (micromhos at 25°C)	Temperature °C	Remarks	
HETTINGER COUNTY											
132-91-31ADC	P. Schmidt	S	TR	---	1.5	Measured	8- 9-67	K	890	10.5	Perennial.
132-92-18ABB1	N. Kjos	U	SB	---	---	---	---	K	1380	---	---
133-92-30BCD1	Blickensderfer	S	TR	Lignite	2.5	Measured	11- 9-67	K	1350	---	Perennial.
133-92-34BBB	E. Sutnik	S	SB	---	---	---	---	K	2100	---	Do.
133-94-20BBB1	E. Schmitt	U	SB	---	---	---	---	K	2300	6.0	Responds to precipitation.
133-94-26CCB	T. Landis	S		Sand and gravel	---	---	---	-	--	---	Perennial.
133-94-30BEC	V. Esping	U	SB	---	---	---	---	K	950	---	---
134-91- 5DAD	W. Walker	S	TR	---	2	Measured	6-19-68	K	3850	10.5	Perennial.
134-92-27ABC	W. Brackel	S	TR	---	8	do.	6-20-68	K	725	11.0	Perennial; clear.
134-92-27DCA	C. Brackel	S	TR	---	15	Estimated	6-20-68	K	< 500	---	Perennial.
134-93-18ABA	C. Heinrich	U	ST	---	<.1	do.	9- 1-67	-	--	---	Seasonal; alkaline.
135-91- 7ABB	J. Ottmar	S	SB	Lignite	---	---	---	-	--	---	Perennial; old coal mine.
135-92-34DDD1	D. Glasser	S	TR	---	.1 to 1	Estimated	7-24-67	-	--	---	Perennial.
135-97-20AAC	D. Sorenson	S	SB	---	1 to 10	do.	2- 2-68	K	3075	3.0	Perennial; oily film on water; alkali flat above spring.
135-97-27ABB	N. Koppinger	S	SB	---	---	---	---	-	--	---	Perennial.
136-93-16CCB	F. Miller	S	SB	---	2	Estimated	8- 3-67	-	--	---	Seasonal; runs in the spring then stops.
136-94-10AAD	N. Rebel	S	SB	Lignite	4	do.	8- 9-67	-	--	---	Perennial; old coal mine.
136-95-28BBA	R. Hartman	U	SB	do.	.1 to 1	do.	6- 6-68	P	5400	10.5	Perennial; brown.
136-96-28BAA	J. Grundhauser	S	SB	do.	1 to 10	do.	10-28-67	-	--	---	Perennial.
136-96-29CDC	K. Bleizetter	U	SB	do.	---	---	---	-	--	---	Do.
136-97-21BBD	A. Jirgas	S	SB	do.	5	Estimated	4- 3-68	-	--	---	---
STARK COUNTY											
137-91-14BAA	A. Enzi	S	TR	---	3	do.	6-28-67	-	--	---	Perennial.
137-91-19CDD	E. Schatz	S	SB	Lignite	2	do.	6-26-67	-	--	---	Do.
137-91-24ACA	J. Berger	S	TR	Sandstone	1	do.	6-28-67	-	--	---	Perennial; clear.
137-93- 4AAB	Kirschenheiter	S	SB	Lignite	1	do.	7-11-67	-	--	---	Perennial; old coal mine.
137-93-20BCD	E. Wieglanda	S	SB	do.	6	do.	7-11-67	K	1350	10.0	Old coal mine.
137-94- 3CCB	V. Lefor	S	SB	---	1	do.	7- 3-67	-	--	---	Perennial.
137-94-30BBB	M. Kuhn	S	GV	Clay	2	do.	7- 7-67	-	--	---	Perennial; clear.
137-95-12DBA	A. Gabbert	S	GV	---	2	do.	6-30-67	-	--	---	Perennial; yellow.
137-97-18ABAL	L. Fitterer	S	WR	Sandstone	1 to 10	do.	11-24-66	K	600	---	Perennial.

^{1/} See page 14 for explanation.

Location	Owner or name	Use of water ^{1/}	Aquifer ^{1/}	Water-bearing material	Flow (gallons per minute)	Method determined	Date measured	Quality of water type ^{1/}	Specific conductance (micromhos at 25°C)	Temperature °C	Remarks
138-91-3DAA	R. Kitzan	S	SB	Sandstone	4	Estimated	7- 5-67	-	--	---	Perennial.
138-91-12BAC	F. Schneider	S	SB	Lignite	3	do.	7- 6-67	-	--	---	Do.
138-91-14DAC	H. Kitzan	S	SB	Clay	1	do.	6-29-67	-	--	---	Perennial; clear.
138-91-22BDC	A. Auch	S	SB	Lignite	2	do.	7-15-67	-	--	---	Perennial; oily.
138-92-29DAD	N. Dak. Hwy. Dept.	U	SB	do.	15	Measured	6- 8-67	K	590	9.5	Perennial.
138-92-36ABB	State of N. Dak.	U	SB	do.	3	Estimated	6-13-67	-	--	---	Do.
138-93- 3BDA	A. Elkins	K	SB	do.	1 to 10	do.	6- 8-67	K	1650	---	Clear; from old coal mine.
138-93-20BCC	A. Stanger	K	SB	do.	1 to 10	do.	6- 7-67	K	2100	---	Perennial; from old coal mine.
138-93-23BCA	F. Blasy	K	ST	do.	4	Measured	6- 7-67	K	2100	9.5	Perennial; clear.
138-94- 3BAB	F. Bogner	S	SB	---	.3	do.	6- 2-67	K	1710	9.5	Do.
138-94-15AAA	M. Dassinger	S	SB	Lignite	12	do.	6- 2-67	K	500	8.5	Clear; thin oily film over water in tank.
138-94-22DAD1	S. Anton	S	SB	---	.1 to 1	Estimated	6- 6-67	-	--	---	Seasonal.
138-94-24CBC	P. Mayer	U	SB	Lignite	.1 to 1	do.	6- 6-67	-	--	---	Seasonal; alkaline.
138-95-10BBB1	A. Lefor	S	SB	Sandstone	1 to 10	do.	5-31-67	-	--	---	Perennial; clear.
138-97- 5CCD	V. Veverka	S	22	Gravel	5	do.	12-28-66	-	--	---	Perennial; clear; soft.
138-97-35CBA1	R. Gress	S	WR	---	1 to 10	do.	12-31-66	K	< 500	---	Perennial.
138-97-35CBA2	R. Gress	S	WR	---	1 to 10	do.	12-31-66	K	500	---	Do.
138-98-19BCC1	J. Schmidt	U	SB	Sandstone	---	---	---	-	--	---	Seasonal.
138-98-19BCC2	J. Schmidt	S	SB	do.	---	---	---	-	--	---	Perennial; clear.
138-99- 8CBC	D. Fugere	S	SB	---	.1 to 1	Estimated	9- 3-66	-	--	---	Clear.
138-99-22DAC	H. Emil	U	SB	---	<.1	do.	9- 7-66	-	--	---	Black; oily.
138-99-34DCA	L. Hutzenbiler	S	SB	---	1 to 10	do.	9- 3-66	-	--	---	Brown.
139-91- 4EBD1	C. Neidhart	K	SB	---	5	Measured	6-22-67	K	3200	7.0	Perennial; alkaline.
139-91- 4EBD2	C. Neidhart	S	SB	---	3	Estimated	6-22-67	-	--	---	Perennial; alkaline; clear.
139-91- 9DDA1	R. Walth	S	SB	Lignite	3	do.	6-22-67	K	1050	6.0	Perennial; clear.
139-91-29DDD	M. Diede	U	SB	do.	.1 to 1	do.	6-23-67	-	--	---	Perennial; alkaline.
139-92- 4BCB	Richardton	P	SB	---	30	do.	12-11-66	C	1340	---	Perennial.
139-92-28BEC	F. Rummel	S	SB	---	1 to 10	do.	3-30-68	K	< 500	---	Do.
139-93-30BAD1	R. Stanger	S	SB	---	1 to 10	do.	4- 6-68	K	785	7.0	Do.
139-94-17ABC1	F. Foster	H	SB	---	1 to 10	do.	3- 8-67	K	1200	---	Perennial; high iron; hard; clear.
139-94-17ABC2	J. Tommaschy	K	SB	Lignite	1 to 10	do.	3- 8-67	K	1710	---	Perennial; clear.
139-94-17BDAD1	Weckerling	S	SB	do.	11 to 100	do.	3- 8-67	K	680	---	Perennial; clear; good.
139-94-17BDAD2	Weckerling	S	SB	---	7	Measured	3- 8-67	K	890	---	Perennial; clear.
139-94-17BDB1	Weckerling	S	SB	Lignite	1 to 10	Estimated	3- 8-67	-	--	---	Do.
139-94-17BDB2	Weckerling	S	SB	do.	1 to 10	do.	3- 8-67	-	--	---	Perennial.

Location	Owner or name	Use of water	Aquifer	Water-bearing material	Flow (gallons per minute)	Method determined	Date measured	Quality of water type	Specific conductance (microhos at 25°C)	Temperature °C	Remarks
139-94-22ADD	E. Reilly	K	SB	Sandstone	40	Estimated	3- 6-67	K	1510	---	Perennial.
139-94-31BAAL	A. Baar	S	SB	---	.1 to 1	do.	3- 4-67	-	--	---	Perennial; multiple openings; iron tasting.
139-94-33BCB	L. Stein	S	--	---	1 to 10	do.	3- 4-67	-	--	---	Perennial; old coal mine.
139-95-11DCC1	E. Wanner	S	SB	Lignite	.1 to 1	do.	1- 5-67	K	1300	9.5	Seasonal.
139-95-11DCC2	E. Wanner	S	SB	do.	1 to 10	do.	1- 5-67	-	--	---	Perennial.
139-97-23BCC1	F. Klein	S	SB	do.	---	---	---	-	--	---	---
140-91- 4ADD1	O. Bruvold	K	SB	do.	4	Measured	6-21-67	K	1050	9.5	Perennial; soft; uncolored.
140-91- 4ADD2	O. Bruvold	K	SB	do.	2	do.	6-21-67	K	1060	---	Perennial; clear.
140-91- 6ACD	L. Groth	K	SB	do.	1	do.	6-21-67	K	1325	---	Do.
140-91-15CCD	R. Riedinger	K	SB	do.	6	Estimated	6-20-67	K	3200	---	Perennial; brown; color value 100.
140-91-16DDC	A. Knopp	S	SB	do.	2	do.	6-20-67	-	--	---	Clear.
140-91-20CBB1	R. Meas	S	SB	do.	7	Measured	6-21-67	K	1450	---	Perennial; clear.
140-91-23ACD1	A. Duckwitz	H	SB	Sandstone	.75	Estimated	6-20-67	-	--	---	Perennial.
140-91-23ADC	A. Duckwitz	S	SB	---	4	do.	6-20-67	-	--	---	Do.
140-91-30DAC	J. Erdle	K	SB	Lignite	3	do.	6-21-67	K	2150	9.5	Perennial; clear; soft.
140-93-26DAD	E. Breum	P	SB	do.	1200	do.	10-12-68	C	687	8.5	Perennial.
140-94-6DCC	J. Seckler	S	SB	---	---	---	---	K	2800	11.5	Very strong spring; slight tint.
140-94-13ADA	E. Haugen	S	SB	---	4	Measured	9-14-68	-	--	---	Perennial.
140-95-26DBD	A. Lutlman	S	SB	---	1 to 10	Estimated	1- 4-67	-	--	---	Do.
140-97- 4CCA1	A. Adamski	S	SB	---	1 to 10	do.	1- 4-67	-	--	---	Seasonal.
140-98-14CCA	H. Huska	H	SB	Lignite	1 to 10	do.	8-11-66	K	900	---	Good tasting; clear; soft.
140-99-36BBB	A. Dolyniuk	S	SB	do.	<.1	do.	7-15-66	K	980	9.0	Perennial; old coal strip pit.
141-92-32BCC	R. Hauck	S	SB	do.	---	---	---	K	1640	---	Perennial; alkaline.
141-92-32DBB	R. Hauck	S	SB	do.	1 to 10	Estimated	8-18-66	K	1450	---	Perennial; soft; slightly alkaline.
141-93-30DBD	J. Heinert	U		Sand	11 to 100	do.	8-19-66	-	--	---	Perennial; yellow.
141-93-33ACB	F. Dohrman	S	SB	---	---	---	---	-	--	---	---

TABLE 3.--Water-level records of observation wells

Depth to water, in feet below land surface

HETTINGER COUNTY

132-91-28DDD					
Date	Water level	Date	Water level	Date	Water level
Sept. 26, 1968....	289.95	Apr. 1.....	289.96	Nov. 11.....	289.82
Oct. 11.....	289.9	May 8.....	290.11	Nov. 28.....	289.98
Dec. 4.....	295.54	June 12.....	289.89	Dec. 15.....	289.89
Jan. 11, 1969....	289.73	Aug. 19.....	289.72		
Feb. 11.....	290.3	Oct. 1.....	289.70		

132-92-21DDD2					
Date	Water level	Date	Water level	Date	Water level
June 13, 1969....	11.47	Oct. 2.....	11.19	Nov. 11.....	11.21
July 15.....	10.61	Oct. 22.....	11.27	Dec. 16.....	11.20
Aug. 20.....	10.76				

132-92-24AAA					
Date	Water level	Date	Water level	Date	Water level
Nov. 29, 1968....	108.25	June 12.....	108.35	Oct. 22.....	108.29
Dec. 4.....	107.79	July 15.....	108.04	Nov. 11.....	108.03
Apr. 22, 1969....	108.41	Aug. 19.....	108.10	Dec. 15.....	108.15
May 7.....	108.45	Oct. 1.....	107.79		

132-94-15BBB1					
Date	Water level	Date	Water level	Date	Water level
June 17, 1969....	45.92	Oct. 1.....	45.46	Nov. 25.....	45.47
July 15.....	45.42	Oct. 23.....	45.42	Dec. 15.....	45.42
Aug. 19.....	45.55				

132-94-15BBB2					
Date	Water level	Date	Water level	Date	Water level
June 17, 1969....	18.37	Oct. 1.....	19.00	Nov. 25.....	19.18
July 15.....	18.75	Oct. 23.....	19.07	Dec. 16.....	19.27
Aug. 19.....	18.85				

132-94-29CCC					
Date	Water level	Date	Water level	Date	Water level
Dec. 4, 1968....	74.54	May 9.....	74.83	Oct. 1.....	74.96
Feb. 12, 1969....	74.17	June 13.....	74.76	Oct. 23.....	74.95
Apr. 1.....	74.91	July 15.....	74.27	Nov. 25.....	74.77
Apr. 23.....	74.99	Aug. 19.....	75.24	Dec. 16.....	74.93

133-93-5EDD					
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See U.S. Geological Survey 1939, 1940, 1942-44, 1949, 1951a, 1951b, 1952a, 1952b, 1954a, 1954b, 1955-57, and 1959. Formerly published as 133-93-5ED1.
Records available: 1938-42, 1946-55.

Depth to water, in feet below land surface

133-93-26AAA

Date	Water level	Date	Water level	Date	Water level
Oct. 10, 1967....	59.1	Aug. 21.....	58.99	June 12.....	58.79
Nov. 30.....	58.96	Oct. 1.....	58.85	July 8.....	58.48
Jan. 24, 1968....	58.73	Oct. 24.....	58.96	Aug. 19.....	58.87
Feb. 26.....	58.75	Nov. 29.....	58.97	Oct. 1.....	58.58
Mar. 22.....	58.76	Dec. 31.....	58.85	Oct. 22.....	58.66
Apr. 19.....	58.80	Feb. 12, 1969....	58.01	Nov. 28.....	58.58
May 17.....	56.12	Apr. 1.....	57.65	Dec. 16.....	58.55
June 12.....	58.91	Apr. 24.....	58.79		
July 15.....	58.90	May 8.....	58.69		

133-94-25ACC

Date	Water level	Date	Water level	Date	Water level
June 19, 1969....	19.45	Oct. 1.....	19.37	Nov. 25.....	19.77
July 15.....	19.19	Oct. 16.....	19.55	Dec. 16.....	19.73
Aug. 19.....	19.22				

133-95-19DDD

Date	Water level	Date	Water level	Date	Water level
Dec. 10, 1968....	79.97	July 15.....	79.88	Nov. 25.....	80.01
Apr. 23, 1969....	79.90	Aug. 19.....	79.69	Dec. 4.....	80.04
May 13.....	79.89	Oct. 1.....	79.90		
June 13.....	80.02	Oct. 23.....	80.01		

133-97-9AAA1

Date	Water level	Date	Water level	Date	Water level
Oct. 31, 1967....	4.04	Aug. 21.....	4.28	May 16.....	3.82
Jan. 24, 1968....	3.79	Oct. 2.....	4.25	June 17.....	3.81
Feb. 27.....	5.49	Oct. 25.....	4.19	July 1.....	3.67
Mar. 22.....	3.64	Nov. 27.....	4.13	Aug. 19.....	3.76
Apr. 19.....	3.63	Dec. 30.....	4.10	Sept. 30.....	3.98
May 23.....	3.85	Feb. 11, 1969....	4.06	Oct. 29.....	3.91
June 12.....	3.84	Apr. 2.....	3.69	Nov. 26.....	3.92
July 15.....	4.18	Apr. 24.....	3.86	Dec. 16.....	3.91

133-97-9AAA2

Date	Water level	Date	Water level	Date	Water level
Oct. 31, 1967....	8.79	Aug. 21.....	6.55	May 16.....	6.08
Jan. 24, 1968....	6.35	Oct. 2.....	6.53	June 17.....	6.30
Feb. 27.....	6.27	Oct. 25.....	6.49	July 1.....	5.98
Mar. 22.....	6.96	Nov. 27.....	6.42	Aug. 19.....	6.06
Apr. 19.....	6.10	Dec. 30.....	6.37	Sept. 30.....	6.22
May 23.....	6.21	Feb. 11, 1969....	6.29	Oct. 29.....	6.18
June 12.....	6.21	Apr. 2.....	6.02	Nov. 26.....	6.15
July 15.....	6.48	Apr. 24.....	6.02	Dec. 16.....	6.15

Depth to water, in feet below land surface

133-97-34BBB

Date	Water level	Date	Water level	Date	Water level
Dec. 5, 1967....	159.4	July 15.....	158.44	May 16.....	161.0
Jan. 24, 1968....	158.55	Aug. 21.....	158.49	July 1.....	160.75
Feb. 27.....	158.57	Oct. 22.....	158.82	Aug. 1.....	158.19
Mar. 22.....	158.57	Nov. 27.....	159.93	Aug. 19.....	158.12
Apr. 19.....	159.65	Dec. 30.....	159.02	Sept. 30.....	158.06
Apr. 25.....	158.4	Feb. 11, 1969....	158.8	Oct. 29.....	158.17
May 23.....	158.49	Apr. 2.....	158.65	Nov. 26.....	158.35
June 12.....	158.50	Apr. 24.....	158.48	Dec. 16.....	158.26

134-91-32CCC

Oct. 10, 1967....	46.50	Aug. 21.....	42.98	June 16.....	43.07
Dec. 1.....	46.24	Oct. 1.....	42.96	July 14.....	42.87
Jan. 24, 1968....	42.47	Oct. 24.....	43.03	Aug. 20.....	42.88
Feb. 26.....	40.64	Nov. 29.....	43.07	Oct. 1.....	43.10
Mar. 22.....	42.68	Dec. 30.....	43.05	Oct. 22.....	43.24
Apr. 25.....	42.57	Feb. 12, 1969....	43.03	Nov. 11.....	43.24
May 23.....	42.73	Apr. 1.....	42.82	Dec. 15.....	43.31
June 12.....	42.75	Apr. 22.....	43.01		
July 15.....	42.82	May 9.....	42.86		

134-91-34DDD

Nov. 29, 1968....	66.72	May 8.....	75.84	Oct. 22.....	75.41
Dec. 3.....	66.85	June 13.....	75.85	Nov. 11.....	75.21
Feb. 12, 1969....	67.35	July 15.....	75.40	Dec. 15.....	75.32
Apr. 1.....	66.99	Aug. 19.....	75.48		
Apr. 22.....	75.90	Oct. 1.....	74.92		

134-92-34DDC

Nov. 29, 1968....	100.47	May 9.....	100.17	Oct. 22.....	100.14
Dec. 3.....	100.40	June 13.....	100.41	Nov. 11.....	100.07
Feb. 12, 1969....	100.17	July 15.....	100.13	Dec. 15.....	100.04
Apr. 1.....	100.19	Aug. 19.....	101.38		
Apr. 22.....	100.32	Oct. 1.....	100.01		

134-93-23ADD

June 19, 1969....	130.00	Oct. 2.....	129.26	Nov. 25.....	129.78
July 15.....	129.56	Oct. 22.....	129.80	Dec. 15.....	129.80
Aug. 19.....	129.63				

134-94-8DCC

Oct. 2, 1968....	14.8	Apr. 23.....	14.6	Oct. 1.....	14.24
Oct. 24.....	14.7	May 15.....	14.5	Oct. 16.....	14.38
Nov. 27.....	14.6	June 13.....	14.44	Nov. 25.....	14.23
Apr. 2, 1969....	14.3	Aug. 1.....	14.17	Dec. 16.....	14.38

Depth to water, in feet below land surface

134-95-13ACAL					
Date	Water level	Date	Water level	Date	Water level
Sept. 21, 1966....	15.35	Feb. 26.....	15.34	Feb. 11, 1969....	15.54
Jan. 27, 1967....	15.34	Mar. 22.....	15.83	Apr. 1.....	16.49
Feb. 28.....	15.21	Apr. 19.....	15.58	Apr. 23.....	15.69
Mar. 31.....	16.11	May 23.....	14.84	May 15.....	14.98
Apr. 28.....	15.97	June 12.....	14.54	June 13.....	14.15
June 20.....	12.49	July 15.....	14.21	July 8.....	13.00
July 21.....	12.45	Aug. 21.....	14.84	Aug. 19.....	12.24
Aug. 23.....	13.41	Oct. 2.....	14.67	Oct. 1.....	12.29
Oct. 25.....	13.37	Oct. 24.....	14.50	Oct. 23.....	12.26
Dec. 1.....	13.96	Nov. 27.....	14.31	Nov. 25.....	12.49
Jan. 24, 1968....	14.76	Dec. 27.....	15.29	Dec. 16.....	12.74

134-95-20AAA					
Oct. 25, 1967....	78.67	Aug. 21.....	78.81	June 16.....	78.59
Dec. 1.....	78.70	Oct. 2.....	78.78	July 8.....	78.42
Jan. 24, 1968....	80.47	Oct. 24.....	78.79	Aug. 19.....	78.53
Feb. 27.....	78.77	Nov. 26.....	78.84	Oct. 1.....	78.43
Mar. 22.....	78.72	Dec. 27.....	78.65	Oct. 23.....	78.48
Apr. 19.....	78.46	Feb. 11, 1969....	78.70	Nov. 25.....	78.50
May 23.....	78.75	Apr. 2.....	78.53	Dec. 16.....	78.50
June 12.....	78.69	Apr. 24.....	78.73		
July 15.....	78.72	May 16.....	78.65		

134-96-25BBB2					
Feb. 11, 1969....	95.07	June 16.....	95.17	Oct. 23.....	95.36
Apr. 2.....	94.95	July 15.....	95.07	Nov. 25.....	95.46
Apr. 24.....	94.91	Aug. 19.....	95.39	Dec. 16.....	95.50
May 16.....	95.17	Oct. 1.....	95.34		

134-97-15CCC2					
Dec. 1, 1967....	5.4	Aug. 21.....	6.10	May 16.....	5.28
Jan. 24, 1968....	5.38	Sept. 24.....	5.52	June 17.....	5.16
Feb. 27.....	5.49	Oct. 25.....	5.60	July 1.....	5.05
Mar. 22.....	6.16	Nov. 27.....	5.46	Aug. 19.....	5.05
Apr. 19.....	5.27	Dec. 27.....	5.31	Sept. 30.....	5.05
May 23.....	5.58	Feb. 11, 1969....	5.24	Oct. 23.....	4.97
June 12.....	5.37	Apr. 2.....	5.18	Nov. 26.....	5.10
July 15.....	5.49	Apr. 24.....	5.20	Dec. 18.....	5.05

135-93-12CCC					
Dec. 1, 1967....	88.18	Aug. 21.....	88.34	May 9.....	87.96
Jan. 24, 1968....	88.12	Oct. 1.....	87.72	June 19.....	88.73
Feb. 23.....	88.27	Oct. 30.....	88.20	July 8.....	88.30
Mar. 22.....	88.28	Nov. 29.....	88.30	Oct. 2.....	88.30
Apr. 19.....	88.10	Dec. 30.....	88.19	Oct. 17.....	88.33
May 23.....	88.24	Feb. 12, 1969....	88.17	Dec. 15.....	88.29
June 12.....	88.24	Mar. 20.....	88.80		
July 15.....	88.27	Apr. 23.....	88.05		

Depth to water, in feet below land surface

135-94-190CC2					
Date	Water level	Date	Water level	Date	Water level
Dec. 1, 1967....	23.91	Aug. 21.....	23.99	June 13.....	23.89
Jan. 24, 1968....	23.60	Oct. 2.....	24.10	July 15.....	23.72
Feb. 27.....	24.15	Oct. 24.....	24.01	Aug. 19.....	23.66
Mar. 22.....	24.15	Nov. 27.....	23.98	Oct. 1.....	23.58
Apr. 19.....	23.94	Feb. 11, 1969....	24.47	Oct. 23.....	23.64
May 23.....	24.13	Apr. 2.....	24.29	Nov. 25.....	23.44
June 12.....	24.01	Apr. 23.....	23.87	Dec. 16.....	23.96
July 15.....	23.95	May 14.....	23.64		

135-94-31CCC					
Nov. 27, 1968....	6.32	June 13.....	3.10	Oct. 23.....	4.10
Dec. 5.....	5.75	July 15.....	2.29	Nov. 25.....	3.81
Apr. 23, 1969....	2.16	Aug. 19.....	4.12	Dec. 16.....	3.40
May 14.....	2.24	Oct. 1.....	4.71		

135-97-4ADB1					
Oct. 13, 1966....	46.67	Apr. 19.....	46.41	May 28.....	46.49
Nov. 22.....	46.82	May 23.....	46.01	July 1.....	46.22
Dec. 16.....	46.76	June 22.....	46.56	Aug. 8.....	46.09
Jan. 27, 1967....	46.87	July 17.....	46.88	Sept. 20.....	46.45
Feb. 28.....	46.29	July 19.....	46.42	Oct. 23.....	46.39
Mar. 31.....	46.07	Aug. 21.....	47.39	Oct. 24.....	46.43
Apr. 28.....	45.56	Sept. 24.....	47.28	Oct. 24.....	46.45
June 20.....	45.41	Oct. 25.....	47.07	Nov. 26.....	46.45
July 21.....	46.39	Dec. 19.....	47.02	Nov. 28.....	46.46
Aug. 25.....	46.89	Feb. 11, 1969....	46.92	Dec. 16.....	46.18
Oct. 25.....	46.55	Mar. 21.....	46.63	Dec. 16.....	46.31
Feb. 27, 1968....	46.29	Apr. 17.....	45.88		
Mar. 22.....	46.41	Apr. 24.....	45.93		

135-97-4DCA					
Sept. 19, 1968....	145.91	May 27, 1969....	144.45	Oct. 23.....	143.50
Sept. 24.....	143.69	July 1.....	144.91	Nov. 26.....	144.20
Oct. 8.....	143.58	Aug. 8.....	143.55	Dec. 16.....	143.01
Dec. 19.....	142.02	Sept. 30.....	143.42		

136-91-90CC					
Oct. 7, 1966....	84.22	Oct. 10.....	83.99	Oct. 30.....	83.58
Nov. 2.....	84.11	Nov. 30.....	83.82	Nov. 29.....	83.67
Nov. 21.....	83.51	Jan. 24, 1968....	83.77	Dec. 27.....	83.62
Dec. 16.....	84.27	Feb. 26.....	83.82	Feb. 12, 1969....	83.66
Jan. 26, 1967....	84.24	Mar. 22.....	83.83	Feb. 17.....	83.64
Feb. 27.....	84.21	Apr. 25.....	83.77	Mar. 20.....	83.60
Mar. 31.....	84.07	May 23.....	83.82	Apr. 23.....	83.62
Apr. 27.....	84.07	May 23.....	83.73	June 19.....	83.56
May 30.....	84.02	June 12.....	83.70	Aug. 20.....	83.47
June 19.....	83.90	July 15.....	83.68	Oct. 2.....	83.37
July 21.....	84.02	Aug. 19.....	83.62	Nov. 28.....	83.56
Aug. 22.....	84.03	Oct. 1.....	83.63	Dec. 15.....	83.45

Depth to water, in feet below land surface

136-92-29BCD					
Date	Water level	Date	Water level	Date	Water level
Sept. 20, 1966....	6.86	Oct. 30.....	6.80	July 8.....	4.16
Apr. 30, 1968....	5.50	Nov. 29.....	6.37	Aug. 20.....	5.87
May 23.....	5.68	Dec. 27.....	6.40	Oct. 2.....	6.64
June 12.....	5.73	Mar. 20, 1969....	6.56	Oct. 22.....	6.44
July 15.....	6.35	Apr. 22.....	5.02	Dec. 15.....	6.04
Aug. 21.....	7.11	May 9.....	5.11		
Oct. 1.....	6.99	June 19.....	5.82		

136-93-25BBB					
Nov. 30, 1967....	99.3	Aug. 21.....	99.44	May 9.....	99.28
Jan. 24, 1968....	98.98	Oct. 1.....	99.32	June 19.....	99.37
Feb. 26.....	99.38	Oct. 30.....	99.30	July 8.....	99.68
Mar. 22.....	99.47	Nov. 29.....	99.41	Aug. 20.....	99.54
Apr. 19.....	99.24	Dec. 27.....	99.10	Oct. 2.....	99.34
May 23.....	99.42	Feb. 12, 1969....	99.42	Oct. 22.....	99.44
June 12.....	99.41	Mar. 20.....	99.19	Dec. 15.....	99.36
July 15.....	99.38	Apr. 23.....	98.89		

136-94-3DDD					
Nov. 23, 1968....	126.93	June 19.....	124.61	Oct. 22.....	124.34
Feb. 12, 1969....	126.05	July 15.....	123.95	Dec. 17.....	124.20
Apr. 23.....	124.72	Aug. 20.....	124.33		
May 14.....	124.54	Oct. 2.....	124.23		

136-97-10DCD					
Sept. 22, 1967....	27.8	Oct. 25.....	37.59	July 1.....	23.72
May 1, 1968....	34.56	Feb. 11, 1969....	39.52	Aug. 20.....	20.92
June 21.....	35.55	Apr. 15.....	2.2	Sept. 30.....	23.64
July 25.....	36.40	Apr. 17.....	7.69	Oct. 24.....	24.80
Aug. 21.....	36.66	May 28.....	21.60	Nov. 26.....	26.06
Oct. 3.....	37.66	June 18.....	23.45	Dec. 17.....	26.67

136-97-15DAD					
Oct. 27, 1967....	132.14	Aug. 21.....	132.24	June 18.....	131.89
Jan. 24, 1968....	132.03	Oct. 3.....	132.26	July 1.....	131.85
Feb. 27.....	132.00	Oct. 25.....	132.14	Aug. 20.....	131.73
Mar. 22.....	132.18	Dec. 27.....	131.88	Sept. 30.....	131.85
Apr. 19.....	131.97	Feb. 11, 1969....	132.11	Oct. 24.....	131.78
May 23.....	132.01	Mar. 21.....	131.92	Nov. 26.....	131.78
June 21.....	131.84	Apr. 15.....	131.83	Dec. 17.....	131.67
July 25.....	132.28	May 28.....	131.91		

Depth to water, in feet below land surface

STARK COUNTY

137-91-18CCD					
Date	Water level	Date	Water level	Date	Water level
Nov. 21, 1966....	33.3	Feb. 26.....	32.89	Apr. 23, 1969....	34.29
Mar. 31, 1967....	34.72	Mar. 22.....	33.07	May 9.....	34.29
Apr. 27.....	34.46	Apr. 30.....	33.29	June 19.....	34.90
May 30.....	32.92	May 23.....	33.55	Aug. 1.....	34.30
June 19.....	32.85	June 12.....	33.65	Oct. 2.....	33.85
July 21.....	32.60	July 15.....	33.90	Oct. 15.....	33.97
Aug. 22.....	32.48	Aug. 19.....	34.06	Nov. 28.....	33.66
Oct. 10.....	32.33	Oct. 1.....	33.96	Dec. 15.....	33.68
Nov. 29.....	32.47	Oct. 30.....	34.12		
Jan. 24, 1968....	32.96	Nov. 29.....	34.16		

137-94-4CBC					
May 14, 1969....	227.11	Aug. 20.....	226.06	Dec. 2.....	226.60
June 18.....	226.5	Sept. 25.....	226.54	Dec. 17.....	226.36
July 17.....	226.39	Oct. 28.....	226.38		

137-96-22CCC2					
Oct. 27, 1967....	14.36	Oct. 3.....	14.63	June 18.....	13.61
Jan. 24, 1968....	14.02	Oct. 25.....	14.50	July 2.....	13.32
Mar. 22.....	13.86	Dec. 26.....	14.34	Aug. 20.....	13.68
Apr. 19.....	13.62	Feb. 10, 1969....	14.31	Sept. 30.....	14.11
May 23.....	13.67	Mar. 21.....	14.06	Oct. 24.....	13.98
June 21.....	13.87	Apr. 15.....	12.77	Nov. 26.....	13.86
July 25.....	14.33	May 23.....	13.06	Dec. 17.....	13.76
Aug. 21.....	14.68	May 28.....	13.46		

137-98-12BBB					
May 28, 1969....	277.20	Aug. 15.....	275.48	Dec. 1.....	275.49
June 30.....	276.40	Oct. 30.....	275.48	Dec. 17.....	275.48
July 17.....	275.31				

137-99-24DDD					
Dec. 9, 1968....	113.36	May 20.....	114.15	Sept. 26.....	113.55
Feb. 10, 1969....	114.36	July 1.....	113.28	Oct. 30.....	113.58
Mar. 25.....	114.23	July 17.....	113.40	Dec. 1.....	113.57
Apr. 15.....	114.33	Aug. 15.....	113.77	Dec. 17.....	113.55

138-92-32DDD					
May 9, 1969....	206.25	Oct. 2.....	206.07	Nov. 28.....	206.15
June 5.....	206.45	Oct. 22.....	206.15	Dec. 15.....	206.14
July 8.....	206.16				

Depth to water, in feet below land surface

138-96-2DDD

Date	Water level	Date	Water level	Date	Water level
May 13, 1967....	13.7	Nov. 19.....	33.37	July 2.....	28.89
May 23, 1968....	32.26	Dec. 26.....	33.46	Aug. 20.....	21.21
June 21.....	32.44	Feb. 11, 1969....	33.63	Sept. 30.....	25.48
July 25.....	32.75	Mar. 25.....	16.22	Oct. 24.....	26.73
Aug. 21.....	32.75	Apr. 15.....	26.46	Nov. 26.....	28.39
Oct. 3.....	33.24	May 23.....	27.44	Dec. 17.....	29.38
Oct. 25.....	33.05	June 18.....	28.52		

138-96-16ADA

Oct. 27, 1967....	32.8	July 25.....	40.27	June 18.....	39.25
Dec. 6.....	40.58	Aug. 21.....	40.16	July 2.....	39.93
Jan. 24, 1968....	31.97	Oct. 3.....	40.35	Aug. 8.....	39.82
Feb. 27.....	38.17	Dec. 19.....	40.10	Sept. 30.....	39.65
Mar. 22.....	40.41	Feb. 10, 1969....	40.68	Oct. 24.....	39.83
Apr. 19.....	40.15	Mar. 21.....	40.16	Nov. 26.....	39.98
May 23.....	40.38	Apr. 11.....	40.02	Dec. 17.....	39.68
June 21.....	39.45	May 23.....	39.90		

138-96-21DDD2

Oct. 27, 1967....	99.35	May 23.....	98.18	Dec. 19.....	98.69
Dec. 6.....	108.77	June 21.....	97.91	Feb. 10, 1969....	98.95
Jan. 24, 1968....	98.39	July 25.....	98.57	Mar. 21.....	99.18
Feb. 27.....	98.07	Aug. 21.....	98.24	Apr. 15.....	99.44
Mar. 22.....	98.47	Sept. 20.....	98.72	May 23.....	100.04
Apr. 19.....	98.37	Oct. 25.....	98.45		

138-96-28AAA

May 23, 1969....	87.02	July 17.....	85.35	Oct. 24.....	86.12
June 18.....	85.99	Aug. 20.....	85.80	Nov. 26.....	86.67
July 2.....	85.33	Sept. 30.....	85.44	Dec. 17.....	86.71

138-99-24000

Dec. 10, 1968....	212.1	May 20.....	215.95	Sept. 26.....	216.35
Feb. 10, 1969....	216.53	July 1.....	215.40	Oct. 30.....	215.35
Mar. 21.....	216.3	July 17.....	215.53	Dec. 1.....	215.29
Apr. 15.....	215.66	Aug. 15.....	216.0	Dec. 17.....	215.28

139-91-2BAA

See U.S. Geological Survey 1942-44, 1946-49, 1951a, 1951b, 1952a, 1952b, 1954a, 1954b, 1955-57, and 1959.
Records available: 1940-56.

Depth to water, in feet below land surface

139-91-18ADD1

Date	Water level	Date	Water level	Date	Water level
Oct. 27, 1967....	62.0	July 15.....	61.23	May 20.....	62.31
Dec. 19.....	62.09	Aug. 29.....	61.71	June 30.....	62.32
Jan. 24, 1968....	63.63	Oct. 1.....	61.77	July 8.....	62.22
Feb. 26.....	62.04	Oct. 28.....	61.76	Aug. 14.....	61.97
Mar. 21.....	61.97	Dec. 10.....	61.34	Sept. 25.....	61.72
Apr. 24.....	61.94	Feb. 10, 1969....	61.55	Oct. 22.....	61.69
May 23.....	61.94	Mar. 20.....	62.23	Nov. 28.....	61.55
June 12.....	60.74	Apr. 25.....	62.36	Dec. 15.....	61.47

139-91-21DDD

June 2, 1969....	167.66	Oct. 2.....	167.59	Nov. 28.....	167.88
July 8.....	167.75	Oct. 22.....	167.83	Dec. 15.....	167.71
Aug. 15.....	167.84				

139-93-27AAA

Dec. 10, 1968....	283.85	June 30.....	284.07	Oct. 28.....	284.30
Jan. 11, 1969....	284.01	July 16.....	283.98	Dec. 2.....	283.98
Apr. 10.....	284.28	Aug. 14.....	284.03		
May 20.....	284.7	Sept. 25.....	284.26		

139-94-23DCC

Oct. 12, 1967....	142.90	June 18.....	143.43	Apr. 17.....	143.80
Nov. 15.....	143.27	July 22.....	143.66	May 20.....	144.04
Dec. 19.....	143.20	Aug. 29.....	144.15	June 30.....	143.94
Jan. 24, 1968....	143.00	Oct. 10.....	143.64	July 18.....	143.86
Feb. 27.....	143.27	Oct. 12.....	143.63	Aug. 14.....	144.45
Mar. 22.....	143.39	Dec. 10.....	143.97	Sept. 25.....	144.14
Apr. 18.....	143.15	Jan. 11, 1969....	143.78	Oct. 28.....	144.08
May 24.....	143.45	Mar. 21.....	143.64	Dec. 2.....	144.10

139-95-21DDD2

June 30, 1969....	101.76	Sept. 25.....	102.62	Dec. 2.....	102.72
July 17.....	102.61	Oct. 30.....	102.68	Dec. 17.....	102.63
Aug. 14.....	102.92				

139-96-3BBC3

See U.S. Geological Survey 1951a, 1951b, 1952a, 1952b, 1954a, 1954b, and 1955. Published as 139-96-3BBC.
Records available: 1947-53.

139-96-3BCB

See U.S. Geological Survey 1964.
Records available: 1957-61.

Depth to water, in feet below land surface

139-96-12BBB

Date	Water Level	Date	Water Level	Date	Water Level
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See U.S. Geological Survey 1952a, 1952b, and 1954a. Published as S. L. Carroll, 139-96-12BB. Records available: 1946-51.

Apr. 8, 1967....	50.95	Feb. 27.....	48.7	Oct. 12.....	49.21
May 31.....	51.0	Mar. 21.....	48.9	Nov. 19.....	49.28
June 20.....	51.7	May 24.....	48.98	Dec. 11.....	49.16
July 20.....	52.24	June 18.....	49.06	Feb. 11, 1969....	52.4
Oct. 25.....	53.15	July 22.....	50.76	Mar. 21.....	52.1
Dec. 19.....	50.4	Aug. 29.....	50.30	May 29.....	Dry
Jan. 24, 1968....	48.63	Oct. 10.....	50.04		

139-96-23BCC

May 28, 1969....	80.90	Aug. 20.....	79.09	Oct. 15.....	79.54
June 18.....	80.77	Sept. 30.....	79.25	Nov. 26.....	79.83
July 2.....	81.04				

139-98-13DDD

Oct. 13, 1967....	164.99	Aug. 21.....	165.68	June 30.....	166.11
Dec. 19.....	165.35	Oct. 3.....	165.82	July 31.....	165.68
Jan. 24, 1968....	165.18	Oct. 31.....	165.67	Aug. 15.....	165.74
Mar. 21.....	165.35	Dec. 10.....	165.63	Sept. 26.....	165.92
Apr. 19.....	165.31	Feb. 10, 1969....	165.58	Oct. 30.....	165.51
May 23.....	165.50	Mar. 21.....	165.57	Dec. 1.....	165.87
June 14.....	165.10	Apr. 15.....	165.72	Dec. 17.....	165.82
July 24.....	165.73	May 22.....	165.83		

139-99-21CCC

Oct. 13, 1967....	192.04	Aug. 21.....	191.99	July 1.....	191.93
Dec. 19.....	191.8	Oct. 3.....	192.00	July 31.....	191.85
Jan. 24, 1968....	191.78	Oct. 31.....	191.98	Aug. 15.....	191.84
Feb. 27.....	191.88	Nov. 19.....	191.97	Sept. 25.....	191.94
Mar. 22.....	191.90	Dec. 10.....	191.81	Oct. 30.....	191.95
Apr. 19.....	191.74	Feb. 10, 1969....	191.75	Dec. 1.....	191.92
May 23.....	191.97	Mar. 21.....	191.70	Dec. 17.....	191.90
June 14.....	191.83	Apr. 15.....	191.73		
July 24.....	191.99	May 20.....	191.90		

140-92-1EAA

Oct. 27, 1967....	15.33	July 22.....	14.67	May 7.....	14.37
Dec. 6.....	14.52	Aug. 29.....	14.54	June 30.....	14.33
Jan. 24, 1968....	14.44	Oct. 1.....	14.54	July 17.....	14.38
Feb. 27.....	14.35	Oct. 31.....	14.58	Aug. 14.....	14.42
Apr. 18.....	14.52	Dec. 10.....	14.58	Sept. 25.....	14.58
Apr. 24.....	14.68	Feb. 18, 1969....	14.42	Oct. 28.....	14.53
May 24.....	14.53	Mar. 20.....	14.18	Nov. 26.....	14.48
June 18.....	14.48	Apr. 10.....	14.27		

Depth to water, in feet below land surface

140-92-6DAA					
Date	Water level	Date	Water level	Date	Water level
Oct. 27, 1967....	10.75	Aug. 29.....	11.15	June 30.....	10.56
Dec. 19.....	10.90	Oct. 1.....	11.28	July 17.....	10.38
Jan. 24, 1968....	10.99	Oct. 31.....	11.55	Aug. 14.....	11.45
Feb. 27.....	11.03	Dec. 10.....	11.43	Sept. 25.....	11.21
Apr. 18.....	10.86	Feb. 18, 1969....	11.49	Oct. 28.....	10.97
May 24.....	10.86	Mar. 20.....	11.55	Nov. 26.....	11.01
June 18.....	10.83	Apr. 10.....	10.75		
July 22.....	11.09	May 7.....	10.58		

140-93-9BBC					
Dec. 10, 1968....	153.60	June 30.....	149.92	Oct. 28.....	149.90
Jan. 11, 1969....	152.91	July 16.....	150.08	Nov. 26.....	150.53
Apr. 10.....	151.98	Aug. 14.....	150.25		
May 7.....	150.4	Sept. 25.....	150.34		

140-94-3DDD2					
June 30, 1969....	55.95	Aug. 14.....	55.82	Oct. 15.....	56.12
July 31.....	55.69	Sept. 25.....	56.03	Nov. 26.....	56.22

140-94-35CDC					
Aug. 16, 1966....	36.5	May 31.....	35.72	Nov. 30.....	34.7
Nov. 3.....	36.93	June 20.....	35.58	Dec. 19.....	35.5
Dec. 16.....	36.85	July 20.....	37.25	Jan. 24, 1968....	34.95
Jan. 27, 1967....	36.97	Aug. 25.....	35.15	Feb. 27.....	35.28
Feb. 28.....	37.29	Sept. 18.....	35.12	Apr. 18.....	35.04
Mar. 31.....	36.47	Oct. 12.....	34.65	May 24.....	35.04

140-95-8AAA					
Dec. 10, 1968....	27.23	Apr. 17.....	18.19	Sept. 25.....	18.90
Dec. 19.....	20.29	May 20.....	18.45	Oct. 28.....	19.04
Dec. 26.....	20.17	June 18.....	18.79	Dec. 1.....	19.24
Feb. 10, 1969....	19.94	July 18.....	18.12		
Mar. 21.....	20.41	Aug. 8.....	17.95		

140-95-9BBB					
Dec. 10, 1968....	122.27	May 20.....	122.4	Oct. 30.....	122.19
Dec. 19.....	123.0	June 18.....	121.69	Dec. 1.....	122.26
Dec. 26.....	121.48	July 18.....	121.92	Dec. 4.....	122.29
Feb. 10, 1969....	122.02	Aug. 8.....	122.0		
Mar. 21.....	122.04	Oct. 29.....	122.17		

Depth to water, in feet below land surface

141-92-27CCC3					
Date	Water level	Date	Water level	Date	Water level
May 7, 1969....	80.36	Aug. 14.....	77.93	Oct. 28.....	77.96
June 30.....	77.84	Sept. 25.....	77.98	Nov. 26.....	78.20
July 16.....	77.69				

141-93-26BBB2					
Date	Water level	Date	Water level	Date	Water level
May 7, 1969....	13.08	Aug. 11.....	13.05	Oct. 28.....	13.07
June 30.....	13.08	Sept. 25.....	13.18	Nov. 26.....	13.21
July 17.....	13.05				

TABLE 4.--Logs of wells and test holes

HETTINGER COUNTY

132-91-14AAB
Karl Schafer
(Log from Moe's Well Drilling)

Altitude: 2439 ft above msl

Date drilled: 1964

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Tongue River Formation:			
	Sand, surface-----	5	5
	Clay, gray-----	30	35
	Sand-----	11	46
	Lignite-----	2	48
	Clay, brown-----	11	59
	Lignite-----	6	65
	Clay, gray-----	4	69
	Sand, gray-----	6	75
	Clay, gray-----	20	95
	Sand, gray-----	2	97
	Sandstone, rock-----	1.5	98.5
	Sand, gray-----	16.5	115
	Sandrock-----	1	116
	Sand, gray-----	50	166
	Rock-----	1	167
	Clay, gray-----	35	202

Rock from surface to 98.5 ft reported dry.

132-91-21DDD
Eagle Butte School
(Log from Moe's Well Drilling)

Altitude: 2545 ft above msl

Date drilled: May 1968

Sentinel Butte Formation:			
	Sand, surface-----	7	7
	Clay, brown-----	1	8
	Clay, yellow-----	20.5	28.5
Tongue River Formation:			
	Lignite-----	5.5	34
	Clay, gray-----	36	70
	Sand, green, chunky-----	23	93
	Rock, white, soft-----	2.5	95.5
	Clay, gray, silty-----	17	112.5
	Rock, soft-----	.5	113
	Clay, gray, silty-----	33	146
	Sandstone, soft-----	1.5	147.5
	Sand and clay, gray, mixed-----	3.5	151
	Rock, soft-----	.5	151.5
	Sand, gray, medium-coarse-----	28.5	180

Altitude: 2469 ft above msl

Date drilled: August 1968

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Tongue River Formation:			
	Topsoil, dark-brown, fine sandy loam, loose-----	1	1
	Sandstone, yellowish-gray to yellowish-red, very fine to fine, clayey, gypsiferous and limonitic, semiconsolidated, oxidized-----	14	15
	Sandstone, dark-greenish-gray, very fine, very clayey, semiconsolidated-----	5	20
	Sandstone, dark-greenish-gray, very fine to fine, fairly well sorted, subangular, slightly clayey, mostly quartz, noncalcareous, semiconsolidated-----	15	35
	Sandstone as above, water-bearing-----	13	48
	Shale, light-gray to reddish-brown and black, silty---	2	50
	Lignite, brittle-----	1	51
	Shale as above-----	6	57
	Lignite, black, fissile-----	4	61
	Shale, light-gray, very silty, moderately brittle, smooth, tight-----	18	79
	Lignite-----	1	80
	Shale, light-gray to brownish-black, silty, carbonaceous; thin streaks of lignite-----	18	98
	Shale, variegated green, gray, and brown, sandy to silty, carbonaceous; thin streaks of lignite-----	5	103
	Siltstone, buff; possibly concretion-----	3	106
	Shale, dark-gray, silty; shell fragments-----	14	120
	Shale, variegated gray, brown, and black-----	4	124
	Lignite-----	1	125
	Shale, pastel green, silty to sandy, bentonitic, friable to brittle-----	18	143
Basal Tongue River sandstone:			
	Sandstone, light-gray to light-greenish-gray, very fine to fine, locally clayey; lignite fragments; semiconsolidated; with thin indurated layers of dark-gray sandstone and white, argillaceous sandstone with calcareous cement-----	25	168
	Siltstone, light-olive-gray to brownish-gray, carbonaceous, semiconsolidated-----	6	174
	Sandstone, very fine to fine, well-sorted, subangular to subrounded, micaceous, lignitic, semiconsolidated--	34	208
	Sandstone, dark-olive-gray, fine, clayey, semiconsolidated; with interbeds of buff and gray siltstone, in part calcite cemented-----	10	218
	Shale, light-greenish-gray, very sandy, medium-soft to brittle-----	7	225
	Sandstone, light-greenish-gray, fine-grained, clayey, semiconsolidated, porous-----	18	243
	Shale, light-gray to dark-olive-gray, very silty to sandy, locally carbonaceous; with interbeds of buff, indurated siltstone and bentonitic, soft clay-----	33	276
Cannonball Formation:			
	Shale, dark-gray to brownish-black and dark-greenish-gray, silty to sandy, locally carbonaceous; shell fragments-----	30	306
	Shale, dark-gray, silty, brittle; with thin lenses of semiconsolidated siltstone and very dark gray, very limy, hard siltstone-----	54	360
	Shale, dark-gray, silty, smooth, brittle-----	28	388
	Shale as above; with interbeds of dark-greenish-gray, sandy shale-----	32	420
	Shale, medium- to dark-gray, silty; harder than above. Some cuttings appear to be dry inside-----	70	490
	Shale, dark-greenish-gray to brownish-gray, silty to sandy, carbonaceous-----	16	506

132-91-28DDD, Continued
NDSWC 3627

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Cannonball Formation, Continued:			
	Sandstone, silty, argillaceous, semiconsolidated-----	7	513
	Shale, brownish-gray, silty to sandy; with interbeds of variegated, semiconsolidated siltstone and sandstone-----	19	532
	Sandstone, light-medium-gray, very fine, silty, micaceous, friable; with interbeds of shale as above--	29	561
	Shale, medium-gray to dark-greenish-gray, silty to sandy-----	7	568
	Sandstone as above-----	17	585
	Shale, dark-gray to dark-greenish-gray, sandy-----	7	592
	Sandstone as above-----	11	603
Ludlow Formation:			
	Shale, light-gray to light-greenish-gray with brownish-black streaks, silty, brittle, tight-----	18	621
	Lignite; with interbeds of carbonaceous shale-----	7	628
	Sandstone, green, very fine to fine, slightly clayey, semiconsolidated, abundant shell fragments-----	7	635
	Sandstone as above; but darker colored; more clayey---	8	643
	Shale, light- to medium-gray, smooth, brittle-----	19	662
	Shale, brownish-black to black, carbonaceous, hard, brittle-----	21	683
	Lignite-----	1	684
	Sandstone, white, silty, clayey, limy; with interbeds of shale as above and lignite-----	17	701
	Shale as above-----	6	707
	Sandstone, light-greenish-gray, very fine, semi-consolidated-----	9	716
	Lignite-----	1	717
	Sandstone and shale as above; interbedded-----	23	740
	Sandstone, greenish-gray to brownish-gray, very fine, shaly, semiconsolidated; with interbeds of shale as above; abundant shell fragments and trace of lignite-----	19	759
	Lignite-----	2	761
	Shale, brownish-gray, silty, carbonaceous, brittle; interbedded with green shale and shell fragments-----	10	771
	Lignite-----	1	772
	Shale as above-----	3	775
	Lignite with 1-ft shale parting-----	6	781
	Shale, variegated green and gray, silty, brittle-----	13	794
	Lignite-----	3	797
Hell Creek Formation:			
	Shale, variegated green and gray, bentonitic, hard---	22	819
	Sandstone, greenish-gray, very fine, slightly clayey, carbonaceous, semiconsolidated-----	14	833
	Shale-----	4	837
	Sandstone, dark-greenish-gray, fine to medium, well-sorted, subangular, semiconsolidated, porous and permeable; with interbeds of siltstone and shell layers-----	34	871
	Shale, pastel-green to light-olive-gray; with interbeds of greenish-gray, sandy, shale and greenish-gray to light-olive-gray, fine to medium semi-consolidated sandstone-----	61	932
	Sandstone, light-greenish-gray, fine, slightly clayey, semiconsolidated; with interbeds of very fine sandstone, indurated siltstone, and light-gray, sandy, soft shale-----	25	957
	Sandstone, light-greenish-gray with brownish-black carbonaceous and reddish-brown stains, very fine to fine, semiconsolidated-----	19	976

132-91-28DDD, Continued
NDSWC 3627

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Hell Creek Formation, Continued:			
	Sandstone, dark-greenish-gray, fine to medium, well-sorted; lignite specks; with interbeds of greenish-gray, clayey, fossiliferous (shell fragments) sandstone and greenish-gray shale-----	36	1012
	Sandstone, light-greenish-gray, very fine, clayey; with interbeds of chocolate-colored to black shale----	13	1025
Fox Hills Formation:			
	Sandstone, greenish-gray, fine to medium, slightly clayey, semiconsolidated; with carbonaceous streaks---	11	1036
	Sandstone as above; but medium-grained, well-sorted, subrounded-----	13	1049
	Shale, light-green to chocolate-gray and black, smooth, brittle-----	23	1072
	Sandstone, light-greenish-gray, fine; with carbonaceous stains, ironstone concretions, and occasional shell fragments-----	10	1082
	Shale, sandy-----	15	1097
	Sandstone, dark-greenish-gray, very fine and fine, consolidated to semiconsolidated-----	12	1109
	Lignite, black, moderately hard-----	3	1112
	Sandstone as above, consolidated; interbeds of sandy shale-----	38	1150
	Sandstone as above, silty; but few shale interbeds---	24	1174
	Shale, gray, carbonaceous; with interbeds of light-greenish-gray, very fine, very silty, semiconsolidated to well-cemented sandstone and light-gray semiconsolidated siltstone-----	19	1193
	Sandstone, light- to dark-greenish-gray, very fine to fine, semiconsolidated to consolidated; with a few thin interbeds of dark-gray to black shale-----	46	1239
	Shale, very light to medium-gray, very silty, locally sandy; with interbeds of dark-gray to black shale-----	16	1255
	Siltstone, light-gray, calcareous; mostly semiconsolidated with thin cemented layers; with interbeds of very fine sandstone-----	68	1323
	Shale, light- to medium-gray, very silty, soft; with interbeds of dark-gray, brittle shale. Contains pyrite-----	15	1338
	Shale, very silty as above, calcareous; with dark noncalcareous shale as above-----	22	1360
	Shale, light- to medium-gray, very silty to very sandy, calcareous, micaceous; waxy feel-----	35	1395
Pierre Formation:			
	Shale, dark-gray, brittle, smooth; slow drilling-----	25	1420

132-92-6DDD1
 Emmanuel Sutnik
 (Log from Leonard, Babcock, and Dove, 1925)

Altitude: 2556 ft above msl Date drilled: --

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Shale and sandstone-----	98	98
Tongue River Formation (?):			
	Coal-----	9	107
	Shale and sandstone-----	14	121
	Coal-----	8	129
	Shale, brown-----	3	132
	Coal-----	3	135
	Clay, sandy-----	40	175
	Sandstone, soft-----	18	193

132-92-7ADD
 (Log from Leonard, Babcock, and Dove, 1925)

Altitude: 2520 ft above msl Date drilled: --

Sentinel Butte Formation:			
	Shale and sandstone-----	25	25
Tongue River Formation (?):			
	Coal-----	8	33
	Shale-----	1	34
	Coal-----	1	35
	Shale and sandstone-----	26	61
	Coal-----	7	68

132-92-9AAA
 N. Schulz
 (Log from Simpson, 1929)

Altitude: 2569 ft above msl Date drilled: --

Tongue River Formation:			
	Silt-loam, chocolate-colored-----	1	1
	Clay, yellow-----	5	6
	Coal, slacked or rotten-----	3	9
	Clay, blue-----	28	37
	Rock-----	1	38
	Clay, blue-----	22	60
	Clay, black-----	5	65
	Coal-----	1	66
	Clay, whitish-blue-----	29	95
	Sand, blue-----	2	97
	Coal-----	8	105
	Clay, black-----	1	106
	Coal-----	2	108
	Clay, blue-----	10	118
	Rock-----	1	119
	Clay, blue-----	13	132
	Coal-----	1	133
	Clay, blue-----	19	152
	Rock, soft-----	1	153
	Clay, blue, with strata of shells and coal flakes-----	9	162
	Coal-----	2	164
	Clay, dark and very fine sand-----	16	180
Basal Tongue River sandstone:			
	Sand, white, fine; yielded 1 gpm-----	10	190
	Clay, blue-----	12	202
	Sandrock, soft; water-----	23	225

132-92-15CCC
NDSWC 3713

Altitude: 2566 ft above msl

Date drilled: June 1969

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Sandstone, fine and very fine, well-sorted, sub-rounded, predominantly quartz, highly calcareous, semiconsolidated; contains some yellowish-gray clay and silt with hematitic and carbonaceous stains; also contains small iron pellets; dry-----	20	20
	Sandstone, very fine and fine, well-sorted, sub-rounded, predominantly quartz, highly carbonaceous, mostly semiconsolidated; contains some yellowish-gray clay and silt and a few thin moderately indurated sandstone lenses-----	56	76

132-92-21DDD1
NDSWC 3714

Altitude: 2460 ft above msl

Date drilled: June 1969

Sentinel Butte Formation:			
	Loam, black, sandy-----	1	1
	Sandstone, rusty-red, fine and medium, semi-consolidated; contains iron pellets-----	11	12
	Sandstone, fine and medium, oxidized, semi-consolidated; interbedded with thin yellowish-gray, reddish-gray, and brownish-black siltstone, clay beds, and lignite seams-----	5	17
Tongue River Formation:			
	Lignite-----	3	20
	Sandstone, light-greenish-gray, clayey, semi-consolidated-----	5	25
	Shale, yellowish-green, very silty, slightly cohesive-----	3	28
	Lignite, black, moderately hard, brittle-----	2	30
	Shale, light-gray, silty, slightly hard and brittle--	2	32
	Lignite, black, brittle-----	2	34
	Shale, medium- to dark-gray, crumbly, waxy, carbonaceous-----	6	40
	Shale, green, silty; contains lenses of light-olive-gray shale and soft to hard bentonitic clay-----	5	45
	Sandstone, light-olive-gray, fine to medium, generally well-sorted, subrounded and subangular, slightly clayey, carbonaceous, slightly consolidated-----	25	70
	Siltstone and very fine sandstone, light-greenish-gray and light-olive-gray, carbonaceous, interbedded, semiconsolidated-----	13	83
	Shale, dark-gray to black, silty, highly carbonaceous, brittle-----	24	107
	Sandstone, greenish-gray, very fine, silty, locally carbonaceous, semiconsolidated-----	15	122
	Siltstone, greenish-gray with brownish-black carbonaceous stains, clayey and sandy-----	18	140
	Sandstone, dark-gray, very fine-grained, calcareous, indurated-----	2	142
	Shale, light-olive-gray, dark-greenish-gray, and brownish-black, brittle, carbonaceous, interbedded---	52	194
	Sandstone, dark-greenish-gray, very fine, calcareous, indurated-----	1	195
	Sandstone, dark-greenish-gray, clayey, locally carbonaceous, cohesive, semiconsolidated; contains shell fragments-----	38	233

132-92-21DDDL, Continued
NDSWC 3714

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Tongue River Formation, Continued:			
	Shale, dark-gray, dark-greenish-gray, and brownish-black, silty and very sandy, carbonaceous, slightly plastic to hard and brittle, interbedded; alternating colors-----	50	283
Basal Tongue River sandstone:			
	Sandstone, dark-greenish-gray, very fine and fine, clayey, semiconsolidated-----	9	292
	Shale, dark-gray, very silty, carbonaceous-----	9	301
	Sandstone, greenish-gray, very fine, calcareous, indurated-----	9	310

132-92-24AAA
NDSWC 3672

Altitude: 2559 ft above msl

Date drilled: November 1968

Sentinel Butte Formation:			
	Sandstone, black, fine, silty, carbonaceous, semi-consolidated-----	6	6
	Sandstone, yellow, fine to medium, well-sorted, heavy limonite stains, semiconsolidated, oxidized-----	10	16
	Shale, yellowish-gray and light-olive-gray, sandy, brittle, oxidized; contains brownish-black, carbonaceous material-----	6	22
	Sandstone, shaly, semiconsolidated-----	2	24
	Shale, yellowish-gray and light-olive-gray, sandy, silty, micaceous, brittle, oxidized; contains brownish-black carbonaceous material-----	11	35
Tongue River Formation:			
	Lignite, oxidized, brittle-----	5	40
	Sandstone, light- to medium-gray, very fine to medium, semiconsolidated; contains a few thin indurated sandstone lenses-----	65	105
	Shale, medium-gray, sandy-----	2	107
	Sandstone, indurated-----	1	108
	Shale, medium-gray, sandy-----	3	111
	Sandstone, light-gray, very fine, well-sorted, weakly consolidated-----	10	121
	Shale, black, carbonaceous and lignitic-----	4	125
	Sandstone, light-gray, very fine, well-sorted, weakly consolidated; water-----	7	132
	Siltstone, very light gray, semiconsolidated-----	8	140
	Shale, light-gray, very silty, slightly plastic-----	8	148
	Sandstone, light-olive-gray, very fine to fine, moderately well-sorted, weakly consolidated; water-----	15	163
	Shale, black, carbonaceous, hard-----	3	166
	Sandstone, light-olive-gray, very fine to fine, moderately well-sorted, weakly consolidated; water-----	14	180
	Lignite-----	1	181
	Sandstone, light-olive-gray, very fine to fine, moderately well-sorted, weakly consolidated; water-----	5	186
	Shale, light- and medium-gray, silty, lignitic, brittle-----	14	200

132-92-28DCD2
 J. Swindler
 (Log from Moe's Well Drilling)

Altitude: 2462 ft above msl Date drilled: November 1960

Geologic source	Material	Thickness (feet)	Depth (feet)
Quaternary deposits, undifferentiated:			
	Sand and running gravel, surface-----	10	10
Sentinel Butte Formation (?):			
	Sand, water-----	35	45
Tongue River Formation:			
	Coal-----	24	69

132-92-32ACC2
 E. Johnson
 (Log from Moe's Well Drilling)

Altitude: 2510 ft above msl Date drilled: November 1967

Sentinel Butte Formation:			
	Sand, surface-----	4	4
	Clay, yellow-----	7	11
	Sand, yellow-----	6	17
	Coal-----	1	18
	Clay, gray-----	.5	18.5
	Coal-----	12.5	31
	Clay, yellow-----	3	34
	Clay, gray-----	30	64
	Sand, gray, fine-----	6	70
	Clay, gray-----	3	73
	Coal-----	5	78
	Sand, gray, coarse-----	42	120

132-93-22BCB
 NDSWC 3525

Altitude: 2514 ft above msl Date drilled: September 1967

Quaternary deposits, undifferentiated:			
	Gravel, dark-brown, fine to medium, subangular and angular; pebbles principally chert and quartzite-----	3	3
Sentinel Butte Formation:			
	Sandstone, medium to coarse, subangular to subrounded, quartzose, semiconsolidated, oxidized; contains some lignite-----	22	25
	Siltstone, light-yellowish-gray, clayey, micaceous, semiconsolidated, oxidized-----	10	35
	Sandstone, light-yellowish-gray to greenish-gray (with depth), generally subrounded, quartzose, semiconsolidated-----	10	45
	Clay, medium-gray, silty and sandy, micaceous-----	15	60
	Sandstone, gray, very fine, quartzose, lignitic, calcareous; contains numerous greenstone grains; semiconsolidated-----	10	70
	Clay, medium- to dark-gray, very silty-----	9	79
Tongue River Formation:			
	Lignite-----	5	84
	Clay, light-greenish-gray and brownish-black, sandy and carbonaceous; and interbedded lignite-----	4	88

132-93-22BCB, Continued
NDSWC 3525

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Tongue River Formation, Continued:			
	Sandstone, light-greenish-gray, fine, clayey, semiconsolidated-----	12	100
	Clay, greenish-gray, silty-----	5	105
	Sandstone, gray, fine, subangular to rounded, lignitic, semiconsolidated-----	5	110
	Clay, greenish-gray, very sandy, micaceous-----	45	155
	Siltstone, light-olive-gray, clayey, micaceous, semiconsolidated-----	10	165
	Shale, light-olive- to medium-gray, silty, laminated; contains some darker carbonaceous laminae-----	15	180
	Shale, medium- to dark-gray, silty, calcareous; contains streaks of highly calcareous white clay and some thin layers of light-olive-gray soft siltstone---	60	240
	Shale, medium-gray, silty; contains very fine grained sandstone lenses-----	30	270
	Clay, dark-greenish-gray, sandy-----	10	280
	Sandstone, greenish-gray, fine to very fine, clayey, semiconsolidated; contains thin lenses of indurated light-greenish-gray sandstone and buff to light-olive-gray, calcareous siltstone-----	50	330
	Shale, light-olive- to medium-gray, silty, brittle---	30	360
	Shale, light-olive- to medium-gray, brownish-black, and black, silty, carbonaceous, and oily-----	10	370
Basal Tongue River sandstone:			
	Sandstone, light-olive-gray, very fine, subangular, quartzose, clayey, semiconsolidated-----	25	395
Cannonball Formation:			
	Clay, brownish-gray, sandy, slightly calcareous-----	20	415
	Clay, light-olive-gray, silty to sandy, highly calcareous; contains some light-gray, soft siltstone and thin indurated sandstone and siltstone layers-----	41	456
Ludlow Formation:			
	Lignite-----	4	460
	Sandstone, greenish-gray, very fine to fine, semi-consolidated-----	20	480
	Sandstone, light-greenish-gray, very fine, very silty, becomes clayey with depth, semiconsolidated-----	50	530
	Shale, brownish-gray to brownish-black, silty, carbonaceous-----	20	550
	Clay, very light gray, silty; grading into dark-greenish-gray and brownish-gray, fine, clayey, soft sandstone-----	10	560
	Clay, very light gray to light-olive-gray; contains small shell fragments-----	10	570
	Lignite-----	2	572
	Clay as above-----	26	598
	Lignite and brownish-black clay-----	10	608
	Sandstone, light-greenish-gray, very fine to fine, clayey, micaceous, carbonaceous in pockets, semi-consolidated-----	8	616
	Shale, light- to medium-gray, very silty; and hard, white, bentonitic clay-----	16	632
	Shale, light- to medium-gray, sandy-----	16	648
	Lignite seams, and gray to brownish-black clay-----	4	652
	Shale, light- to medium-gray, silty and sandy; and gray to brownish-black clay-----	21	673
	Lignite seams and brownish-black clay-----	4	677
	Shale, light-greenish-gray and light-olive-gray, silty; also some very fine sandstone and white, bentonitic clay, interbedded-----	39	716
	Sandstone, light-greenish-gray, very fine, silty to clayey, micaceous, semiconsolidated-----	22	738

132-93-22BCB, Continued
NDSWC 3525

Geologic source	Material	Thickness (feet)	Depth (feet)
Ludlow Formation, Continued:			
	Siltstone, variegated, clayey; contains some lignitic and carbonaceous material; semiconsolidated-----	20	758
	Lignite-----	2	760
Hell Creek Formation:			
	Shale, light-greenish-gray to greenish-gray-----	30	790
	Sandstone, light-greenish-gray, very fine to fine, clayey, quartzose, semiconsolidated-----	8	798
	Sandstone, light-greenish-gray, fine, indurated-----	7	805
	Sandstone, light-greenish-gray, fine, semi-indurated-----	9	814
	Shale, medium-gray; contains thin beds of buff bentonitic clay-----	18	832
	Sandstone, greenish-gray, very fine, clayey, semi-consolidated-----	12	844
	Clay, brownish-gray, silty, carbonaceous-----	16	860
	Shale, variegated very light to very dark gray; and light-greenish-gray, sandy clay-----	40	900

132-93-23BAB2
Grant Ranch
(Log from Moe's Well Drilling)

Altitude: 2500 ft above msl Date drilled: May 1964

Sentinel Butte Formation:			
	Sand, surface-----	10	10
	Clay, yellow-----	5	15
	Sand, surface-----	6	21
	Clay, gray-----	7	28
	Sand-----	48	76
Tongue River Formation:			
	Coal-----	3	79
	Clay, gray-----	4	83

132-93-28BCE2
H. Watson
(Log from Moe's Well Drilling)

Altitude: 2514 ft above msl Date drilled: 1966

Sentinel Butte Formation:			
	Sand, surface, soft-----	6	6
	Clay, white, hard-----	2	8
	Coal, slack, soft-----	10	18
	Clay, gray, hard-----	6	24
	Sand, brown, hard-----	4	28
	Clay, gray, soft-----	5	33
	Sand, gray, soft-----	31	64
	Clay, gray, soft-----	3	67
Tongue River Formation:			
	Coal, hard-----	3	70
	Clay, gray, hard-----	6	76
	Coal, hard-----	3	79
	Clay, gray, hard-----	6	85
	Sand, brown, soft-----	24.5	109.5
	Rock, hard-----	8.5	118
	Clay, gray, soft-----	7	125
	Sand, gray, soft-----	35	160

132-93-28CBC
G. Hughes
(Log from Moe's Well Drilling)

Altitude: 2537 ft above msl

Date drilled: 1966

<u>Geolog.c source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation:			
	Sand, surface, soft-----	1	1
	Sand and clay, yellow, soft-----	2.5	3.5
	Rock, gray, hard-----	1.5	5
	Sand, gray, soft-----	11	16
	Sand, red, soft; 1 quart per minute-----	2	19
	Rock, white, soft-----	3	21
	Sand and clay mix-----	13	34
	Rock, side-----	-	34
	Clay, gray, soft-----	4	38
	Coal, hard, dry-----	1	39
	Clay, gray, soft-----	6	45
	Coal, hard, dry-----	1.2	46.2
	Clay, gray, soft-----	.8	47
	Coal, hard, dry-----	1	48
	Clay, gray, soft-----	.2	48.2
	Coal, hard, 8 gallons per minute-----	9.8	58
	Sand, red, soft-----	1.5	59.5
	Clay, gray, soft-----	15.5	75
	Sand, gray, soft, seep-----	9	84
	Clay, gray-----	23	107

Tongue River Formation:

	Coal, hard-----	3	110
	Clay, gray, soft-----	10	120
	No record-----	31	151
	Coal, hard-----	.5	151.5
	Clay, gray, hard-----	8.5	160
	Sand, gray, very coarse-----	20	180

132-93-34ADA
G. Harbmeyer
(Log from Moe's Well Drilling)

Altitude: 2524 ft above msl

Date drilled: August 1968

<u>Geolog.c source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation:			
	Sand, gray-----	2.5	2.5
	Clay, yellow-----	7.5	10
	Coal-----	1.5	11.5
	Clay, gray-----	9.5	21
	Clay, brown-----	1	22
	Clay, gray-----	16	38
	Coal-----	6	44
	Clay, gray-----	2	46
	Sand, green-----	38	84
	Rock, hard-----	.5	84.5
	Sand, green, medium-coarse-----	11.5	96
	Clay, gray-----	4	100

132-93-34ADD3
 G. Hardmeyer
 (Log from Moe's Well Drilling)

Altitude: 2527 ft above msl

Date drilled: April 1966

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation:			
	Sand, surface-----	5	5
	Clay, gray, hard-----	4.5	9.5
	Coal, hard-----	1.5	11
	Rock, white-----	.8	11.8
	Clay, gray, hard-----	7.2	19

132-93-34DAA
 G. Hardmeyer
 (Log from Moe's Well Drilling)

Altitude: 2544 ft above msl

Date drilled: May 1966

Sentinel Butte Formation:			
	Sand, yellow, surface, soft-----	6	6
	Rock, brown, soft-----	2	8
	Coal, slack, soft-----	3	11
	Coal, hard-----	5	16
	Clay, gray, soft-----	1.2	17.2
	Sand, brown, soft-----	.8	18
	Coal, hard-----	1	19
	Clay, gray, hard-----	9	28
	Coal, soft-----	4	32
	Clay, gray, soft-----	1	33

132-94-15BBB1
NDSWC 3715

Altitude: 2576 ft above msl

Date drilled: June 1969

Geologic source	Material	Thickness (feet)	Depth (feet)
Quaternary deposits, undifferentiated:			
	Loam, black, silty-----	1	1
	Sand, moderate-olive-brown, medium to coarse, oxidized; contains lenses of gravel and sandy clay----	19	20
Sentinel Butte Formation:			
	Sandstone, yellowish-gray, medium, well-sorted, sub-rounded, semiconsolidated-----	8	28
	Sandstone, yellowish-gray, medium, semiconsolidated; interbedded with lignite and calcareous, clayey, soft siltstone-----	12	40
	Sandstone, dark-greenish-gray, medium, well-sorted, subrounded, semiconsolidated; contains a few thin, medium-gray, soft siltstone lenses-----	10	50
Tongue River Formation:			
	Lignite-----	4	54
	Shale, brownish-gray to brownish-black, silty, carbonaceous; and light-greenish-gray and light-olive-gray siltstone, interbedded-----	22	76
	Lignite-----	2	78
	Siltstone, light-greenish-gray; and light-greenish gray very fine sandstone; both semiconsolidated-----	10	88
	Siltstone, light-greenish-gray; and light-greenish-gray and light-olive-gray, bentonitic clay-----	12	100
	Siltstone, light-gray, calcareous, semiconsolidated---	20	120
	Sandstone, medium- to dark-gray, very fine, sub-angular to subrounded, silty, slightly to moderately consolidated-----	7	127
	Sandstone, dark-greenish-gray, very fine, indurated-----	1	128
	Sandstone, medium- to dark-gray, very fine, sub-angular to subrounded, silty, slightly to moderately consolidated-----	7	135
	Sandstone, dark-greenish-gray, very fine, indurated-----	1	136
	Sandstone, dark-gray, fine, semiconsolidated-----	18	154
	Sandstone, dark-greenish-gray, fine, calcareous, indurated-----	4	158
	Shale, light-gray, medium-gray, and brownish-black, silty, carbonaceous, and lignitic; contains a few light-gray, very fine, soft sandstone lenses interbedded-----	42	200

132-94-18AAA2
R. Svihovec
(Log from Moe's Well Drilling)

Altitude: 2645 ft above msl

Date drilled: August 1961

Sentinel Butte Formation:			
	Sand, surface-----	10	10
	Sandrock, brown-----	2	12
	Sandrock, white-----	1	13
	Sand, yellow-----	46	59
	Sand, water-----	9	68
Tongue River Formation:			
	Coal-----	.5	68.5
	Sand-----	1.5	70
	Coal-----	4.5	74.5
	Clay-----	5.5	80

132-94-29CCC
NDSWC 3673

Altitude: 2604 ft above msl

Date drilled: November 1968

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Sandstone, fine, moderately well sorted, semi-consolidated, oxidized; contains some limonitic stained, yellowish-gray siltstone-----	40	40
	Sandstone, light-olive-gray, fine, well-sorted, quartzose; and very light-gray siltstone interbedded, both semiconsolidated-----	21	61
Tongue River Formation:			
	Lignite, black, fissile, fractured-----	8	69
	Sandstone, light-gray, very fine, well-sorted, semi-consolidated; contains a few thin calcareous clayey siltstone beds (to 88 ft) and a black carbonaceous silty clay bed (91 to 95 ft)-----	72	141
	Siltstone, light- to medium-gray, clayey to sandy, semiconsolidated; contains some carbonaceous lenses and some very fine, soft sandstone lenses-----	31	172
	Sandstone, greenish-gray, very fine, well-sorted, semiconsolidated-----	20	192
	Sandstone, greenish-gray, very fine, well-sorted, semiconsolidated; contains greenish-gray silty clay lenses-----	31	223
	Siltstone, light-gray, clayey, semiconsolidated-----	4	227
	Siltstone, light-gray, sandy, semiconsolidated; contains some light-gray, clayey siltstone beds-----	58	285

133-91-1BBD
W. Wruck
(Log from Moe's Well Drilling)

Altitude: 2322 ft above msl

Date drilled: May 1963

Sentinel Butte Formation:			
	Sand, surface-----	35	35
	Sand, gray-----	9	44
Tongue River Formation (?):			
	Clay, gray-----	4	48
	Sand, gray-----	15	63
	Rock-----	1	64
	Coal-----	5	69
	Clay, gray-----	6	75
	Sand, gray-----	47	122

133-91-2DEB
E. Lemke
(Log from Moe's Well Drilling)

Altitude: 2368 ft above msl

Date drilled: October 1963

Sentinel Butte Formation:			
	Sand, surface-----	38	38
	Clay, brown-----	2	40
	Sand, surface-----	7	47
	Sand, gray-----	35	82
Tongue River Formation:			
	Coal-----	1	83
	Clay, gray-----	3	86

133-91-4BCB
R. Bieber
(Log from Moe's Well Drilling)

Altitude: 2366 ft above msl

Date drilled: September 1963

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Sand, surface-----	6	6
	Clay, yellow-----	9	15
	Sand, gray-----	7	22
Tongue River Formation (?):			
	Clay, gray-----	25	47
	Sand, gray-----	20.5	67.5
	Coal-----	2.5	70
	Sand, gray-----	3	73
	Rock, hard-----	.8	73.8
	Sand-----	14.2	88
	Coal-----	7	95
	Sand-----	2.5	97.5
	Clay, green-----	3.5	101

133-91-6AAB
A. Schlosser
(Log from Moe's Well Drilling)

Altitude: 2390 ft above msl

Date drilled: July 1967

Sentinel Butte Formation:			
	Sand, surface-----	8	8
	Clay, gray-----	12	20
	Sand, gray-----	14	34
Tongue River Formation (?):			
	Clay, gray-----	2	36

133-91-13CBC
F. Huber
(Log from Moe's Well Drilling)

Altitude: 2342 ft above msl

Date drilled: November 1964

Tongue River Formation:			
	Sand, surface-----	4	4
	Clay, yellow-----	5	9
	Clay, gray-----	3.5	12.5
	Coal-----	1.5	14
	Sand, yellow, surface-----	21	35
	Sand, gray-----	20	55
	Sand and clay, gray, mixed-----	9	64
	Clay, gray-----	12	76
	Coal-----	1	77
	Clay-----	3	80
	Coal-----	3	83
	Clay, green-----	25.5	108.5
	Coal-----	1	109.5
	Clay, gray-----	2.5	112
	Sand, white-----	52	164
	Clay, brown-----	9	173
	Sand, gray-----	20	193

133-91-14DBC
A. Kilzer
(Log from Moe's Well Drilling)

Altitude: 2324 ft above msl

Date drilled: November 1963

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Tongue River Formation:			
	Sand, surface-----	8	8
	Sand, gray, medium-----	34.5	42.5
	Rock-----	.3	42.8
	Sand, gray-----	9.7	52.5
	Coal-----	1.5	54
	Clay, gray-----	5	59
	Coal-----	4.5	63.5
	Clay, gray-----	19.5	83
	Sandrock, brown-----	.8	83.8
	Clay, gray-----	13.2	97
	Sand, gray-----	3.5	100.5
	Sandrock-----	.5	101
	Clay, gray-----	17	118
	Sand, gray-----	10	128
	Clay, green-----	10	138
	Sand, green-----	18.5	156.5
	Rock-----	.2	156.7
	Clay, gray-----	4.3	161

133-91-19BCD
I. Bern
(Log from Moe's Well Drilling)

Altitude: 2393 ft above msl

Date drilled: August 1961

Tongue River Formation:			
	Sand, surface-----	9	9
	Clay, yellow-----	16	25
	Clay, gray-----	5	30
	Clay-----	2	32
	Clay, brown-----	3.5	35.5
	Clay, gray-----	12.5	48
	Sand, gray, very fine-----	31.5	79.5
	Rock-----	.5	80
	Sand, fine to coarse-----	29	109
	Clay-----	2	111

133-91-24BAB
R. Kilzer
(Log from Moe's Well Drilling)

Altitude: 2352 ft above msl

Date drilled: June 1964

Sentinel Butte Formation:			
	Sand, surface-----	5	5
	Clay-----	7.5	12.5
Tongue River Formation (?):			
	Coal-----	.5	13
	Clay-----	13	26
	Coal, wet-----	2	28
	Sand and clay, mixed-----	7	35
	Sand-----	20	55
	Clay, brown-----	10	65
	Sand-----	24	89
	Coal-----	11	100
	Sand-----	4	104
	Clay, brown-----	2	106

133-91-24BAB, Continued
R. Kilzer

Geologic source	Material	Thickness (feet)	Depth (feet)
Tongue River Formation (?), Continued:			
	Coal-----	1.5	107.5
	Clay, green-----	4	111.5
	Rock-----	.5	112
	Clay, green-----	11	123
	Sand, white-----	21	144
	Clay, green-----	21	165
	Sand-----	35	200

133-91-29ABB
J. Hummel
(Log from Moe's Well Drilling)

Altitude: 2386 ft above msl Date drilled: August 1962

Sentinel Butte Formation:			
	Sand, white, surface-----	16	16
Tongue River Formation (?):			
	Clay, gray-----	12	28
	Clay, brown-----	8	36
	Clay, green-----	9	45
	Sand, gray, very fine-----	9	54
	Coal-----	1	55
	Clay, brown-----	7	62
	Coal-----	2.5	64.5
	Sand, gray, fine-----	2	66.5
	Coal-----	2.5	69
	Clay, green-----	21	90
	Sand, green-----	27	117
	Sand, brown, very coarse-----	34	151

133-91-30DDA2
A. Kibbel
(Log from Moe's Well Drilling)

Altitude: 2473 ft above msl Date drilled: April 1967

Sentinel Butte Formation (?):			
	Sand, surface-----	7	7
Tongue River Formation:			
	Coal, slack-----	14	21
	Clay, brown-----	2	23
	Clay, gray-----	10	33
	Sand, gray-----	13	46
	Sand, red-----	1.5	47.5
	Coal-----	1.2	48.7
	Clay, gray-----	3.8	52.5
	Rock-----	.2	52.7
	Clay, gray-----	.3	53
	Rock-----	.2	53.2
	Sand, gray, fine-----	3.8	57
	Clay, gray-----	19	76
	Clay, green-----	11	87
	Rock-----	1.5	88.5
	Sand, gray-----	25	113.5
	Rock-----	.5	114
	Clay, gray-----	1	115

133-91-34BBA2
G. Huber
(Log from Moe's Well Drilling)

Altitude: 2409 ft above msl

Date drilled: October 1963

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Sand, surface-----	18	18
Tongue River Formation (?):			
	Coal-----	3.5	21.5
	Clay, gray-----	5.5	27
	Sand, gray-----	6	33
	Coal-----	1	34
	Sand, gray-----	8	42
	Clay, gray-----	41	83
	Coal-----	5	88
	Clay, gray-----	12	100
	Sand-----	3	103
	Rock, very hard-----	2.8	105.8
	Sand-----	28.2	134
	Clay, gray-----	2.5	136.5

133-92-5BAA2
R. Stern
(Log from Moe's Well Drilling)

Altitude: 2380 ft above msl

Date drilled: July 1963

Quaternary deposits, undifferentiated:			
	Gravel-----	5	5
Tongue River Formation:			
	Sand, surface-----	21	26
	Sand, white-----	13	39
	Coal-----	4	43
	Clay, gray-----	4	47
	Rock, soft-----	.5	47.5
	Clay, gray-----	20	67.5
	Rock-----	7.5	75
	Sand-----	3	78
	Rock-----	3	81
	Clay, gray-----	17	98
	Sand-----	21.8	119.8
	Rock-----	1.2	121
	Sand-----	7.5	128.5
	Rock, hard-----	2.2	130.7
	Sand-----	37.8	168.5
	Clay, gray-----	7.5	176
	Rock, soft-----	1	177
	Clay, gray-----	13.8	190.8
	Rock-----	.4	191.2
	Clay, gray-----	28	219.2
	Rock-----	.8	220
	Clay, gray-----	11.5	231.5
	Rock-----	1	232.5
	Clay, gray-----	54.5	287
Basal Tongue River sandstone:			
	Sand, green, coarse-----	9	296
	Rock-----	.2	296.2
	Sand-----	14.8	311
	Rock, hard-----	-	311

133-92-5BBB2
H. Hintz
(Log from Moe's Well Drilling)

Altitude: 2402 ft above msl

Date drilled: May 1968

Geologic source	Material	Thickness (feet)	Depth (feet)
Quaternary deposits, undifferentiated:			
	Sand, surface-----	3	3
	Gravel-----	2	5
Tongue River Formation:			
	Clay, yellow, sandy-----	11	16
	Sandrocks, red-----	1	17
	Clay, gray-----	20	37
	Sand, green-----	30.5	67.5
	Sandstone, soft-----	27.5	95
	Sand, green-----	38	133
	Rock, hard-----	1.5	134.5
	Clay, gray, silty-----	8.5	143
	Rock, gray-----	1	144
	Clay, brown-----	65	209
	Rock-----	.5	209.5
	Clay, brown-----	86.5	296
Basal Tongue River sandstone:			
	Sand, gray, medium-coarse-----	39	335
	Clay, gray-----	5	340

133-92-18BAA
P. Blickensderfer
(Log from Moe's Well Drilling)

Altitude: 2412 ft above msl

Date drilled: March 1960

Sentinel Butte Formation (?):			
	Sand, surface-----	10	10
	Sand, slight-----	5	15
Tongue River Formation:			
	Clay, gray-----	32	47
	Sand, coarse-----	43	90
	Clay, gray-----	11	101

133-92-27ABC
W. Huisman
(Log from Moe's Well Drilling)

Altitude: 2540 ft above msl

Date drilled: May 1963

Sentinel Butte Formation:			
	Sand, surface-----	3	3
	Clay-----	13	16
	Sand, fine-----	74	90
Tongue River Formation (?):			
	Coal-----	1	91
	Sand-----	19	110
	Clay-----	32	142
	Coal-----	8	150
	Clay, gray-----	15	165
	Rock-----	-	165
	Clay, gray-----	19	184
	Coal-----	3	187
	Clay, brown-----	3	190
	Coal-----	3	193
	Clay, green-----	6	199
	Sand, very coarse-----	27	226
	Rock-----	1	227
	Sand, very coarse-----	15	242

133-92-35CAA
C. Thoreson
(Log from Moe's Well Drilling)

Altitude: 2585 ft above msl

Date drilled: September 1964

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Sand, surface-----	5	5
	Clay, gray-----	4.5	9.5
Tongue River Formation (?):			
	Coal-----	10	19.5
	Clay, gray-----	3.5	23
	Sand-----	2.5	25.5
	Coal-----	2	27.5
	Clay, gray-----	5.5	33
	Sand and clay, gray-----	6	39
	Sand, gray-----	12	51
	Sand, red and yellow-----	1.5	52.5
	Rock-----	.2	52.7
	Sand, yellow-----	21.3	74
	Coal-----	.5	74.5
	Sand, yellow-----	5.3	79.8
	Rock, soft-----	1.7	81.5
	Sand, yellow-----	12.5	94
	Sand, gray-----	20	114
	Clay, gray-----	2	116
	Sand, gray-----	6	122
	Sandrock-----	5	127
	Sand, gray-----	4.5	131.5
	Rock, side-----	-	131.5
	Sand, gray-----	4.5	136
	Rock-----	13	149
	Coal, wet-----	10	159
	Sand, gray-----	14	173
	Clay, gray-----	.5	173.5
	Rock, hard-----	1.5	175
	Sand-----	15	190
	Coal-----	3.5	193.5
	Sand-----	5.5	199
	Missing-----	4	203

133-93-1BAB
M. Larson
(Log from Moe's Well Drilling)

Altitude: 2412 ft above msl

Date drilled: July 1966

Quaternary deposits, undifferentiated:			
	Gravel-----	13	13
Tongue River Formation:			
	Clay, yellow, soft-----	13	26
	Clay, gray, soft-----	3.5	29.5
	Coal, hard-----	3	32.5
	Clay, gray-----	1.5	34
	Coal, hard-----	.5	34.5
	Clay, gray, soft-----	11.5	46
	Coal, hard-----	.8	46.8
	Clay, brown, hard-----	18.2	65
	Clay, green, hard-----	5.5	70.5
	Coal, hard-----	2.5	73
	Clay, tan, soft-----	35	108
	Coal, hard-----	4	112
	Clay, gray, soft-----	16	128
	Sand, gray, soft-----	35.5	163.5
	Rock, gray, very hard-----	5.5	169

133-93-1BAB, Continued
M. Larson

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Tongue River Formation, Continued:			
	Sand, gray, soft-----	36.5	205.5
	Clay, gray, soft-----	2.5	208
	Sand, green, soft-----	8	216
	Clay, gray, soft-----	16.5	232.5
	Clay, gray, soft-----	83.5	316
Basal Tongue River sandstone:			
	Sand, green-----	6	322
	Sand and gravel-----	16.5	338.5
	Rock, gray, soft-----	3	341.5
	Sand, green, soft-----	5	346.5
	Rock, hard-----	.5	347
	Sand, green-----	5	352
	Rock, hard-----	.5	352.5
	Clay, gray, soft-----	13.5	366

133-93-2AAA
C. Heinrich
(Log from Moe's Well Drilling)

Altitude: 2378 ft above msl Date drilled: May 1964

Quaternary deposits, undifferentiated (?):			
	Sand, surface-----	25	25
Tongue River Formation:			
	Clay, gray-----	7	32
	Rock-----	2	34
	Sand and clay, mix-----	27	61
	Clay, gray-----	40	101
	Coal-----	2	103
	Sand-----	29	132
	Clay, gray-----	37.5	169.5
	Rock-----	1	170.5
	Clay, gray-----	9.5	180
	Sand and clay, mix-----	11	191
	Clay, gray-----	27	218
	Rock-----	1.5	219.5
	Clay, gray-----	57.5	277
Basal Tongue River sandstone:			
	Sand, gray-----	13	290
	Rock-----	1.2	291.2
	Sand, gray-----	1.3	292.5
	Rock-----	.2	292.7
	Sand, gray-----	12.8	305.5
	Rock-----	.5	306
	Sand-----	2	308
	Rock-----	5	313

133-93-2AAD1
C. Heinrich
(Log from Moe's Well Drilling)

Altitude: 2375 ft above msl

Date drilled: October 1959

Geologic source	Material	Thickness (feet)	Depth (feet)
Quaternary deposits, undifferentiated:			
	Dirt, surface-----	15	15
Tongue River Formation:			
	Clay, yellow-----	5	20
	Clay, gray-----	50	70
	Coal-----	3	73
	Clay, gray-----	17	90
	Sand-----	20	110
	Rock, sandstone-----	2	112
	Sand-----	4	116
	Clay-----	30	146

133-93-3AAD
Mott Equity
(Log from Moe's Well Drilling)

Altitude: 2385 ft above msl

Date drilled: September 1966

Tongue River Formation:			
	Sand, brown, surface, soft-----	8.5	8.5
	Sandrock, white, soft-----	1	9.5
	Sand, surface, soft-----	8.5	18
	Clay, yellow, hard-----	4.5	22.5
	Coal, hard-----	1.5	24
	Clay, gray, hard-----	15	39
	Sand, red, soft-----	.2	39.2
	Clay, gray, soft-----	2.8	42
	Clay, green, hard-----	6	48
	Clay, gray, hard-----	46	94
	Coal, hard-----	3.2	97.2
	Clay, gray, hard-----	5.3	102.5
	Rock, very hard-----	.5	103
	Clay, gray, soft-----	8	111
	Coal, hard-----	3	114
	Sand, gray, soft-----	33	147
	Rock, white, hard-----	3	150
	Sand, gray, soft-----	2	152
	Clay, gray, soft-----	1	153

133-93-3BCA
R. Martin
(Log from Moe's Well Drilling)

Altitude: 2396 ft above msl

Date drilled: October 1963

Quaternary deposits, undifferentiated:			
	Sand, surface-----	4	4
	Gravel-----	4	8
Tongue River Formation:			
	Sand, gray-----	18	26
	Clay, gray-----	2	28
	Sand, gray-----	17	45
	Coal-----	4	49
	Clay, green-----	26	75
	Clay, brown-----	11	86
	Coal-----	2	88

133-93-3BCA, Continued
R. Martin

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Tongue River Formation, Continued:			
	Clay, brown-----	20	108
	Coal-----	4	112
	Clay, gray-----	13	125
	Sand, gray-----	4	129
	Clay, gray-----	2	131
	Coal-----	3	134
	Sand, gray-----	32.5	166.5
	Rock-----	1.5	168
	Sand, gray-----	8	176
	Clay, gray-----	22	198
	Sand, gray-----	2	200
	Clay, gray-----	20	220
Basal Tongue River sandstone (?):			
	Sand, gray-----	25	245
	Clay, blue-----	8	253

133-93-4DAD
R. Martin
(Log from Moe's Well Drilling)

Altitude: 2417 ft above msl

Date drilled: July 1961

Tongue River Formation:			
	Sand, surface-----	5	5
	Clay, yellow-----	30	35
	Sand, brown-----	21	56
	Clay, gray-----	12	68
	Coal-----	3.5	71.5
	Clay, gray-----	37.5	109
	Sand, gray-----	11	120
	Coal-----	1.5	121.5
	Clay, gray-----	16.5	138
	Coal-----	.5	138.5
	Clay, gray-----	11.5	150
	Coal-----	1.5	151.5
	Clay, brown-----	7.5	159
	Sand, gray-----	43	202
	Clay-----	.4	202.4

133-93-5ACC
A. Frieboes
(Log from Moe's Well Drilling)

Altitude: 2400 ft above msl

Date drilled: September 1959

Tongue River Formation:			
	Sand, surface-----	25	25
	Sand, blue-----	4	29
	Clay, gray-----	27	56
	Coal-----	4	60
	Clay, gray and brown-----	45	105
	Sand, gray-----	37	142
	Rock, hard-----	-	142

133-93-5BBD
USBR-DH51-6

Altitude: 2425 ft above msl

Date drilled: 1952

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Quaternary deposits, undifferentiated:			
	Clay-----	3.5	3.5
Tongue River Formation:			
	Clay, shale-----	3.5	7
	Siltstone-----	7.2	14.2
	Shale, clay-----	2.3	16.5
	Lignite-----	.3	16.8
	Shale, clay-----	17.2	34
	Lignite-----	.5	34.5
	Shale, clay-----	10.5	45
	Lignite-----	1	46
	Sandstone-----	4	50
	Shale, clay-----	2.5	52.5
	Sandstone-----	1.5	54
	Shale, silty-----	5.5	59.5
	Sandstone-----	1.5	61
	Shale, clay-----	6.5	67.5
	Lignite-----	.5	68
	Shale, silty-----	8	76
	Sandstone-----	2.5	78.5
	Lignite-----	4	82.5
	Shale, clay-----	19	101.5

133-93-5CCD
A. Schaible
(Log from Moe's Well Drilling)

Altitude: 2420 ft above msl

Date drilled: September 1961

Tongue River Formation:			
	Sand, surface-----	6	6
	Clay, yellow-----	10	16
	Clay, white-----	5	21
	Coal-----	1	22
	Clay, gray-----	3	25
	Sand, gray-----	2	27
	Clay-----	14	41
	Coal-----	.5	41.5
	Clay, green-----	3.5	45
	Sand, very fine-----	8	53
	Coal-----	.3	53.3
	Sand, very fine-----	3.7	57
	Clay, green-----	13	70
	Coal-----	.5	70.5
	Clay, green-----	4	74.5
	Rock, gray, hard-----	3	77.5
	Clay, green-----	4.5	82
	Sand, gray, fine-----	65	147
	Clay, white-----	4	151
	Rock, gray, hard-----	2.5	153.5
	Clay, gray-----	8.5	162
	Sand-----	6	168
	Coal-----	1.5	169.5
	Clay-----	5.5	175
	Coal-----	1	176
	Clay, brown-----	19	195
	Sand, brown-----	9	204
	Clay, white-----	3	207

133-93-7BCA
 B. Schaible
 (Log from Moe's Well Drilling)

Altitude: 2442 ft above msl

Date drilled: August 1962

Geologic source	Material	Thickness (feet)	Depth (feet)
Tongue River Formation:			
	Sand, surface-----	2	2
	Rock, gray, flint-----	2.5	4.5
	Clay, gray-----	28.5	33
	Rock-----	.5	33.5
	Clay, gray-----	1.5	35
	Coal-----	1	36
	Clay, gray-----	8	44
	Coal-----	3	47
	Clay, gray-----	18	65
	Sand-----	2	67
	Clay, green-----	3.5	70.5
	Coal-----	13	83.5
	Clay, green-----	40.5	124
	Rock-----	.5	124.5
	Clay, gray-----	47.5	172
	Rock-----	.5	172.5
	Clay-----	2.5	175
	Coal-----	4	179
Basal Tongue River sandstone (?):			
	Sand-----	10	189
	Rock, gold and black, hard-----	1	190
	Sand, coarse-----	30	220

133-93-1LDCC
 C. Heinrich
 (Log from Moe's Well Drilling)

Altitude: 2412 ft above msl

Date drilled: November 1963

Tongue River Formation:			
	Sand, surface-----	15	15
	Coal-----	3	18
	Clay, gray-----	17	35
	Sand, gray-----	33	68
	Clay, gray-----	14	82

133-93-13CCC
 NDSWC 3711

Altitude: 2475 ft above msl

Date drilled: June 1969

Quaternary deposits, undifferentiated:			
	Loam, dark-brown, sandy-----	1	1
	Sand, yellowish-gray, fine, very fine, silty and clayey-----	8	9
	Gravel, reddish-brown, fine, angular, iron-stained---	9	18
Tongue River Formation:			
	Siltstone, dusky-yellow, oxidized; and very fine to fine, well-sorted, subangular to subrounded sandstone; both semiconsolidated-----	20	38
	Lignite-----	2	40
	Siltstone, light-gray and very fine sandstone, both semiconsolidated-----	9	49
	Lignite-----	1	50
	Siltstone, light-gray, sandy and very fine sandstone, both semiconsolidated-----	12	62

133-93-13CCC, Continued
NDSWC 3711

Geologic source	Material	Thickness (feet)	Depth (feet)
Tongue River Formation, Continued:			
	Lignite-----	2	64
	Siltstone, light-gray, clayey and sandy, semi-consolidated-----	4	68
	Clay, light-greenish-gray, silty-----	5	73
	Siltstone, light-greenish-gray, clayey, semi-consolidated-----	12	85
	Sandstone, light-olive-gray to dark-greenish-gray, very fine to fine, well-sorted, subangular to sub-rounded, carbonaceous, locally clayey, semi-consolidated-----	35	120
	Sandstone, dark-greenish-gray; calcium carbonate cement-----	2	122
	Shale, medium-gray, silty to sandy-----	20	142
	Shale, dark-greenish-gray and brownish-gray, sandy, carbonaceous-----	20	162
	Shale, medium-gray, silty-----	14	176
	Shale, brownish-black, sandy, carbonaceous-----	9	185
	Shale, brownish-black, silty to sandy, carbonaceous-----	24	209
	Shale, medium-dark-gray, silty; contains a few thin bentonite seams and sandy beds-----	91	300

133-93-18CDD
O. Schmitt
(Log from Moe's Well Drilling)

Altitude: 2488 ft above msl

Date drilled: January 1963

Tongue River Formation:			
	Sand, surface-----	2	2
	Shale-----	1	3
	Sand, surface-----	9	12
	Gravel-----	-	12
	Sand, green-----	16	28
	Clay, white-----	13	41
	Coal-----	.5	41.5
	Clay-----	13.5	55
	Sand-----	8	63
	Clay, brown-----	3	66
	Clay, green-----	3	69
	Sandrock-----	1	70
	Coal-----	2	72
	Sand, trace-----	8	80

133-93-21AAD2
J. Swindler
(Log from Moe's Well Drilling)

Altitude: 2550 ft above msl

Date drilled: August 1968

Sentinel Butte Formation:			
	Sand, surface-----	3	3
	Sandrock-----	1	4
	Sand, surface-----	7.2	11.2
	Sandrock-----	.8	12
	Sand, surface-----	4	16
	Sandrock-----	1	17
	Sand, surface-----	33	50
	Sand, gray-----	17	67

133-93-21AAD2, Continued
J. Swindler

Geologic source	Material	Thickness (feet)	Depth (feet)
Tongue River Formation (?):			
	Clay, gray-----	34	101
	Sand-----	36.5	137.5
	Rock-----	.5	138
	Sand-----	5	143
	Coal-----	1.5	144.5
	Clay, gray-----	2.5	147

133-93-24CCC2

J. Harsch

(Log from Moe's Well Drilling)

Altitude: 2508 ft above msl

Date drilled: April 1968

Sentinel Butte Formation:			
	Sand, surface-----	17	17
	Clay, gray-----	28	45
Tongue River Formation:			
	Coal-----	4.5	49.5
	Clay, gray, silty-----	6.5	56
	Rock, medium-soft-----	1.5	57.5
	Sand and clay, gray, mix-----	13.5	71
	Rock, gray, soft-----	.5	71.5
	Sand, gray-----	68.5	140

133-93-26AAA

NDSWC 3526

Altitude: 2505 ft above msl

Date drilled: September 1967

Sentinel Butte Formation:			
	Sandstone, yellowish-gray, fine, well-sorted, sub-angular, semiconsolidated-----	7	7
	Sandstone, yellowish-gray, fine and very fine, silty, semiconsolidated-----	3	10
	Siltstone, dusky-yellow, clayey to sandy, semiconsolidated, oxidized-----	19	29
	Sandstone, yellowish-green to dusky-yellow to light-olive-gray, very fine and fine, silty; contains some carbonaceous material; semiconsolidated-----	14	43
Tongue River Formation:			
	Lignite, black; thinly interbedded with medium-gray to brownish-gray, silty clay-----	11	54
	Siltstone, medium-gray, clayey, semiconsolidated-----	8	62
	Lignite-----	1	63
	Siltstone, light-olive- to medium-gray, clayey, semiconsolidated; contains streaks of carbonaceous clay-----	43	106
	Sandstone, light-olive-gray, fine, well-sorted, sub-angular, semiconsolidated-----	25	131
	Clay, medium-gray, silty; becomes sandy with depth-----	16	147
	Sandstone, light-olive-gray, very fine, semiconsolidated-----	10	157
	Siltstone, light-olive-gray, sandy, semiconsolidated-----	12	169
	Sandstone, light-gray, very fine to fine and sandy siltstone, laminated, both semiconsolidated-----	6	175
	Siltstone, light- to medium-gray, clayey, semiconsolidated-----	9	184
	Sandstone, very fine, silty to clayey, semiconsolidated-----	8	192
	Siltstone, medium-gray, clayey, semiconsolidated-----	8	200

133-93-30CDC
C. Domjahn
(Log from Moe's Well Drilling)

Altitude: 2545 ft above msl Date drilled: January 1967

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation (?):			
	Sand, yellow, surface-----	5	5
	Clay, gray-----	3	8
	Sand, brown-----	12	20
	Sand, gray-----	19	39
Tongue River Formation (?):			
	Coal-----	1	40

133-93-31BAA
C. Domjahn
(Log from Moe's Well Drilling)

Altitude: 2550 ft above msl Date drilled: August 1964

Sentinel Butte Formation:			
	Sand, surface-----	8	8
	Sand, gray-----	54	62

133-93-31BCC
A. Mehrer
(Log from Moe's Well Drilling)

Altitude: 2550 ft above msl Date drilled: April 1966

Sentinel Butte Formation:			
	Sand, surface-----	7	7
	Sand, black-----	1	8
	Clay, yellow-----	4	12
	Sand, surface-----	5	17
	Clay, blue-----	4	21
Tongue River Formation (?):			
	Coal-----	1	22
	Clay, blue-----	7	29
	Sand, gray, medium-----	3	32
	Sand and clay, gray, mix-----	25	57
	Sand, gray, medium-----	21	78
	Coal-----	2	80

133-93-34CBB2
M. Swindler
(Log from Moe's Well Drilling)

Altitude: 2602 ft above msl Date drilled: July 1964

Sentinel Butte Formation:			
	Sand, surface-----	54.5	54.5
	Rock-----	-	54.5
	Sand, surface-----	3.5	58
	Shale, red-----	3	61
	Sand, red-----	1.5	62.5
	Rock-----	-	62.5
	Sand, surface-----	22.5	85

133-93-34CEB2, Continued
M. Swindler

Geologic source	Material	Thickness (feet)	Depth (feet)
Tongue River Formation:			
	Coal and sand veins-----	13	98
	Sand-----	10	108
	Coal-----	1	109
	Sand, gray-----	10	119

133-93-36BAD
A. Mehrer
(Log from Moe's Well Drilling)

Altitude: 2515 ft above msl Date drilled: April 1964

Sentinel Butte Formation:			
	Sand, surface-----	3	3
	Clay, yellow-----	10	13
	Clay, red-----	5	18
	Sand, surface-----	19	37
	Sand, brown-----	13	50
	Sand, gray-----	5.5	55.5
	Rock, soft-----	.5	56
	Sand, gray, coarse-----	18.5	74.5
Tongue River Formation:			
	Coal-----	5.5	80

133-93-36CDD
NDSWC 3712

Altitude: 2576 ft above msl Date drilled: June 1969

Quaternary deposits, undifferentiated (?):			
	Sand, yellowish-gray, very fine, well-sorted; eolian (?)-----	7	7
Sentinel Butte Formation:			
	Clay, dusky-yellow, sandy, oxidized-----	2	9
	Shale, yellow-greenish-gray, silty-----	10	19
	Lignite-----	2	21
	Shale, light-olive-gray, silty-----	4	25
	Sandstone, dusky-yellow, very fine, clayey, semi-consolidated-----	9	34
	Sandstone, yellowish-reddish-brown, fine, well-sorted, subangular to subrounded, semiconsolidated-----	16	50
	Sandstone, yellowish-gray to reddish-brown, clayey, semiconsolidated-----	40	90
	Sandstone, yellowish-green to light-grayish-green, very fine, silty, semiconsolidated-----	19	109
	Clay, light-greenish-gray, silty-----	4	113
Tongue River Formation:			
	Lignite-----	2	115
	Siltstone, light-olive-gray, clayey, carbonaceous, semiconsolidated-----	2	117
	Sandstone, light-greenish-gray, very fine, friable-----	6	123
	Shale, greenish-gray, silty, waxy-----	3	126
	Lignite-----	3	129
	Shale, black, carbonaceous; and light-olive-gray to light-greenish-gray, sandy, slightly carbonaceous, friable siltstone-----	13	142

133-93-36CDD, Continued
NDSWC 3712

Geologic source	Material	Thickness (feet)	Depth (feet)
Tongue River Formation, Continued:			
	Sandstone, greenish-gray and brownish-gray, very fine and fine, clayey, carbonaceous and lignitic, semi-consolidated-----	43	185
	Sandstone, greenish-gray, very fine and fine, lignitic, clayey, semiconsolidated-----	21	206
	Siltstone, greenish-gray, bentonitic, shaly, semi-consolidated-----	4	210
	Lignite-----	5	215
	Siltstone, greenish-gray, bentonitic, semiconsolidated	4	219
	Lignite-----	1	220
	Siltstone, greenish-gray, bentonitic, semiconsolidated and carbonaceous shale-----	19	239
	Lignite-----	1	240
	Siltstone, greenish-gray, bentonitic, semiconsolidated	3	243
	Lignite-----	2	245
	Siltstone, greenish-gray, semiconsolidated and medium- and dark-gray shale-----	14	259
	Sandstone, dark-greenish-gray, fine, clayey, carbonaceous, semiconsolidated-----	28	287
	Shale, light-gray, silty-----	2	289
	Lignite-----	4	293
	Shale, light- and medium-gray, very silty; contains some thin interbedded lignite seams-----	27	320

133-94-1BBB
NDSWC 3717

Altitude: 2454 ft above msl

Date drilled: June 1969

Sentinel Butte Formation:

	Loam, black, sandy-----	1	1
	Sandstone, very fine to fine, well-sorted, subangular to subrounded, semiconsolidated-----	2	3
	Shale, yellowish-gray to dusky-yellow, silty and sandy, oxidized; apparently interbedded with very fine to fine, well-sorted, subangular to subrounded, soft sandstone-----	15	18

Tongue River Formation:

	Shale, brownish-black, carbonaceous, waxy-----	8	26
	Shale, greenish-gray, silty-----	13	39
	Lignite, black, fractured-----	1	40
	Shale, brownish-black, carbonaceous-----	6	46
	Siltstone, light-greenish-gray and thin, interbedded, very fine sandstone, both semiconsolidated-----	5	51
	Shale, green, silty, waxy-----	6	57
	Siltstone and very fine sandstone, greenish-gray clayey, interbedded, semiconsolidated-----	14	71
	Shale, black, carbonaceous and lignitic-----	7	78
	Sandstone, dark-greenish-gray, very fine; calcium carbonate cemented-----	4	82
	Sandstone, light-olive-gray to light-greenish-gray, very silty to clayey, semiconsolidated-----	12	94
	Shale, medium-gray, very silty, bentonitic-----	21	115
	Shale, black, carbonaceous-----	5	120
	Shale, medium-gray, very silty-----	10	130
	Sandstone, greenish-gray, very fine, clayey, carbonaceous, semiconsolidated-----	12	142
	Shale, black, carbonaceous, waxy-----	7	149
	Lignite, hard-----	6	155
	Shale, brownish-black, carbonaceous-----	13	168

133-94-LBBB, Continued
NDSWC 3717

Geologic source	Material	Thickness (feet)	Depth (feet)
Tongue River Formation, Continued:			
	Shale, light- and medium-gray, very silty; contains some interbedded yellowish-gray, bentonitic clay-----	45	213
	Shale, black, carbonaceous, massive-----	6	219
	Claystone, brownish-gray, siliceous, indurated-----	7	226
	Shale, black-----	5	231
	Shale, medium-gray and brownish-gray, silty and sandy, carbonaceous-----	19	250
	Lignite-----	4	254
Basal Tongue River sandstone:			
	Sandstone, greenish-gray (locally brownish-gray), fine, clayey, semiconsolidated-----	59	313
	Sandstone, brownish-gray and greenish-gray, very fine and fine, carbonaceous, semiconsolidated; contains some interbedded, sandy shale-----	27	340

133-94-2ABA
NDSWC 3709

Altitude: 2470 ft above msl

Date drilled: June 1969

Sentinel Butte Formation:			
	Loam, black, sandy-----	1	1
	Sandstone, dark-brown, fine to medium, well-sorted, semiconsolidated-----	3	4
	Clay, dusky-yellow and moderate-olive-brown, silty and sandy; contains some interbedded fine sand-----	16	20
	Shale, light-gray, silty-----	12	32
Tongue River Formation:			
	Shale, dark-gray to black, carbonaceous-----	10	42
	Siltstone, light-gray, semiconsolidated-----	6	48
	Clay, light-greenish-gray, very silty-----	7	55
	Lignite-----	2	57
	Shale, brownish-black, carbonaceous-----	3	60
	Siltstone, medium-gray, clayey to sandy, semiconsolidated-----	6	66
	Shale, black, silty, carbonaceous-----	3	69
	Sandstone, medium-dark-gray, very fine, clayey, semiconsolidated-----	11	80
	Sandstone, dark-greenish-gray, very fine, calcareous, indurated-----	2	82
	Siltstone, light-greenish-gray and dark-gray; very fine sandstone, interbedded; semiconsolidated-----	12	94
	Shale, black, carbonaceous-----	6	100
	Shale, greenish-gray; contains some bentonitic beds-----	23	123
	Lignite, black-----	2	125
	Shale, medium-gray, silty, carbonaceous-----	13	138
	Sandstone, brownish-gray, very fine to fine, well-sorted, subangular; mostly semiconsolidated but indurated at 143 ft; with interbedded carbonaceous shale-----	22	160
	Lignite-----	7	167
	Shale, carbonaceous-----	4	171
	Siltstone, light-greenish-gray, semiconsolidated; light-greenish-gray, silty, bentonitic clay and light-greenish-gray, very fine, silty, soft sandstone interbedded-----	60	231
	Lignite-----	2	233
	Shale, light-olive-gray, silty, carbonaceous-----	9	242
	Sandstone, light-olive-gray, fine, well-sorted, subangular to subrounded, carbonaceous; predominantly quartz; semiconsolidated-----	20	262
	Shale, black, carbonaceous-----	6	268

133-94-2ABA, Continued
NDSWC 3709

Geologic source	Material	Thickness (feet)	Depth (feet)
Tongue River Formation, Continued:			
	Lignite-----	2	270
	Shale, brownish-black-----	3	273
Basal Tongue River sandstone:			
	Sandstone, dark-greenish-gray, fine, well-sorted, semiconsolidated; contains some clayey and brownish-black, carbonaceous, silty lenses-----	63	336
Ludlow Formation:			
	Shale, brownish-black, carbonaceous-----	6	342
	Shale, variegated grays, light-green, and light-browns, silty; with sandy and carbonaceous layers-----	38	280

133-94-3BBB
Austin Bros.
(Log from Moe's Well Drilling)

Altitude: 2473 ft above msl Date drilled: September 1961

Quaternary deposits, undifferentiated:			
	Sand, surface-----	5	5
	Clay, yellow-----	7	12
	Gravel-----	2	14
Tongue River Formation:			
	Clay, gray-----	22	36
	Coal-----	.5	36.5
	Clay, brown-----	4.5	41
	Coal-----	2.5	43.5
	Sand, blue-----	6.5	50
	Clay, gray-----	4.3	93
	Coal-----	4	97
	Clay-----	30	127
	Sandrock, white-----	1	128
	Clay-----	5	133
	Sand, gray-----	6	139
	Coal-----	9.5	148.5
	Clay, gray-----	8.5	157

133-94-4DAA2
C. Wallace
(Log from Moe's Well Drilling)

Altitude: 2465 ft above msl Date drilled: September 1959

Tongue River Formation:			
	Gumbo-----	10	10
	Clay-----	5	15
	Sand-----	10	25
	Clay-----	11	36
	Coal-----	5.5	41.5
	Clay, gray-----	1	42.5
	Sand-----	4.5	47
	Clay, gray-----	25	72
	Sandstone, flint-----	5	77
	Clay-----	2	79
	Coal-----	1	80
	Clay-----	7	87
	Sand-----	3	90
	Clay-----	25	115
	Sand-----	49	164
	Coal-----	1	165

133-94-19BAD
O. Olson
(Log from Moe's Well Drilling)

Altitude: 2556 ft above msl

Date drilled: August 1961

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Sand, surface-----	9	9
	Clay, gray-----	13	22
	Rock-----	.5	22.5
	Clay, gray-----	18.5	41
	Sand, coarse-----	6	47
Tongue River Formation (?):			
	Coal-----	6	53
	Sand, coarse, green-----	26	79
	Coal-----	1	80
	Clay, green-----	22	102
	Coal-----	1.5	103.5
	Clay-----	14.5	118
	Sand-----	3	121
	Clay-----	14	135
	Sand-----	3	138
	Clay-----	7	145
	Sand-----	19	164
	Coal-----	2.5	166.5

133-94-20ABD2
J. Bogner
(Log from Moe's Well Drilling)

Altitude: 2570 ft above msl

Date drilled: September 1960

Sentinel Butte Formation:			
	Sand, surface-----	7	7
	Clay, brown, sandy-----	8	15
	Sand, surface-----	.2	15.2
	Sand-----	24.8	40
	Sand, water-----	16	56
Tongue River Formation:			
	Coal-----	2.5	58.5
	Clay, gray-----	2.5	61

133-94-25ACC
NDSWC 3716

Altitude: 2535 ft above msl

Date drilled: June 1969

Tongue River Formation:			
	Loam, black, sandy-----	1	1
	Sandstone, dark-brown to yellowish-gray, fine to medium, well-sorted, subrounded, semiconsolidated-----	6	7
	Siltstone, yellowish-green, interbedded medium-gray and brownish-black, carbonaceous, semiconsolidated, oxidized-----	17	24
	Siltstone, green, clayey to sandy with depth, semiconsolidated-----	18	42
	Sandstone, fine, well-sorted, calcareous; composed principally of subrounded quartz grains; semiconsolidated-----	36	78
	Shale, black, carbonaceous-----	4	82
	Shale, medium-gray to greenish-gray, silty, bentonitic; with interbedded, silty, very fine sandstone-----	13	95

133-94-25ACC, Continued
NDEWC 3716

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Tongue River Formation, Continued:			
	Sandstone, indurated-----	1	96
	Siltstone, very light-gray; interbedded with very fine sandstone; both semiconsolidated-----	19	115
	Lignite-----	2	117
	Shale, black, carbonaceous-----	3	120
	Shale, light- and medium-gray, greenish-gray, brown and black, silty, bentonitic, carbonaceous, interbedded; with a few thin lignite seams-----	39	159
	Sandstone, light-olive-gray and greenish-gray, very fine, silty to clayey, carbonaceous, semiconsolidated-----	29	188
	Shale, variegated grays, greenish-gray, and black, silty and sandy-----	12	200
	Lignite, black, hard-----	3	203
	Shale, black, carbonaceous-----	4	207
	Sandstone, brownish-black, very fine, clayey, highly carbonaceous, semiconsolidated-----	6	213
	Shale, silty, carbonaceous-----	3	216
	Sandstone, greenish-gray, very fine and fine, semiconsolidated; contains thin interbeds of light-olive-gray and brownish-black, carbonaceous shale and lignite. Some shell fragments are present-----	41	257
	Shale, variegated grays and greens, silty and sandy; interbedded with carbonaceous siltstone and very fine sandstone, mostly semiconsolidated but indurated 288-291 ft-----	73	330
	Shale, light-gray, silty, bentonitic-----	10	340

133-94-26DAA2
I. Landis
(Log from Moe's Well Drilling)

Altitude: 2576 ft above msl

Date drilled: April 1962

Sentinel Butte Formation:			
	Sand, surface-----	19	19
	Rock-----	1	20
	Sand, surface-----	15	35
	Sand, water-----	3	38
	Clay, green-----	7	45
Tongue River Formation:			
	Coal-----	6	51
	Sand and clay-----	14	65
	Clay-----	6	71

133-94-28AAD
C. Wallace
(Log from Moe's Well Drilling)

Altitude: 2607 ft above msl

Date drilled: September 1959

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation:			
	Sand, surface-----	14	14
Tongue River Formation (?):			
	Coal-----	2	16
	Clay, green-----	11	27
	Sandrock-----	.5	27.5
	Clay, brown-----	3.5	31
	Sandrock-----	.5	31.5
	Clay-----	.5	32
	Rock, hard-----	4.8	36.8
	Clay, brown-----	.7	37.5
	Rock, hard-----	.5	38
	Clay, gray-----	17	55
	Sand, fine-----	3	58
	Clay, brown-----	2	60
	Sand, coarse-----	20	80

133-94-28CDA
G. Anderson
(Log from Moe's Well Drilling)

Altitude: 2647 ft above msl

Date drilled: August 1963

Sentinel Butte Formation:			
	Sand, surface-----	30	30
	Sand, gray-----	11	41
	Clay, gray-----	4	45
Tongue River Formation (?):			
	Coal-----	3	48
	Clay, green-----	1	49
	Rock, sandstone-----	1.2	50.2
	Clay, gray-----	6.3	56.5
	Coal, very hard-----	1.7	58.2
	Clay, gray-----	10.8	69
	Coal-----	1	70
	Clay, gray-----	20	90
	Sand, with side rock at 99.2-----	28	118
	Clay, gray-----	5	123

133-94-32DDA1
R. Laughler
(Log from Moe's Well Drilling)

Altitude: 2713 ft above msl

Date drilled: September 1964

Sentinel Butte Formation:			
	Sand, surface-----	2	2
	Clay, yellow-----	7	9
	Clay, gray-----	4	13
Tongue River Formation (?):			
	Coal, slack-----	14.5	27.5
	Sand, gray-----	3.5	31
	Clay, gray-----	5	35
	Sand, gray-----	9	45
	Clay, gray-----	25	70

133-94-32DDA1, Continued
R. Laughler

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Tongue River Formation (?), Continued:			
	Sand and clay mix-----	20	90
	Clay, gray-----	10	100
	Sand, brown-----	10	110
	Sand, gray-----	43	153
	Clay, brown-----	14.5	167.5
	Rock-----	2.4	169.9
	Clay, gray-----	1.1	171
	Coal-----	5.9	176.9
	Clay, gray-----	37.1	214
	Coal-----	2	216
	Clay, white-----	37	253
	Rock, side-----	-	253
	Coal-----	1.5	254.5
	Clay, white-----	18.5	273
	Coal-----	1	274
	Clay, white-----	7	281
	Sand and clay-----	14	295
	Clay, gray-----	29.2	324.2
	Rock-----	.3	324.5
	Clay, green-----	5.5	330
Basal Tongue River sandstone:			
	Sand, gray-----	74	404

133-95-2BBB
C. Krogh
(Log from Moe's Well Drilling)

Altitude: 2567 ft above msl

Date drilled: July 1960

Sentinel Butte Formation:			
	Sand, surface-----	28	28
Tongue River Formation:			
	Coal-----	1.5	29.5
	Clay, gray-----	15.5	45
	Coal-----	4	49
	Clay, gray-----	41	90
	Sand-----	10	100
	Clay, gray-----	20	120
	Coal-----	.2	120.2
	Clay, gray-----	4.8	125
	Coal-----	3	128
	Clay, gray-----	23	151
	Coal-----	.2	151.2
	Clay, gray-----	11.8	163
	Sandstone-----	2	165
	Clay, gray-----	10	175
	Sandrock-----	2	177
	Clay, gray-----	18	195
	Coal-----	3	198
	Clay, gray-----	15	213
	Clay, white-----	7	220
	Coal-----	15	235
	Clay, white-----	10	245
	Clay, brown-----	10	255
	Sand, very fine-----	37	292
	Clay, gray-----	13	305
Basal Tongue River sandstone:			
	Sand, coarse-----	35	340
	Clay, gray-----	10	350

133-95-10DAA2
 J. Anderson
 (Log from Moe's Well Drilling)

Altitude: 2586 ft above msl

Date drilled: December 1962

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation:			
	Sand, surface-----	8.5	8.5
	Sandrock-----	1.5	10
	Sand, surface-----	7	17
	Sandrock-----	1.5	18.5
	Clay, yellow-----	4.5	23
	Clay, gray-----	17	40
Tongue River Formation:			
	Coal-----	.5	40.5
	Clay and sand-----	6.5	47
	Coal-----	.5	47.5
	Clay, green-----	19.5	67
	Coal-----	5	72
	Clay-----	17.5	89.5
	Rock-----	1.5	91
	Clay, gray-----	50	141
	Coal-----	5	146
	Clay-----	11	157
	Sand, lumpy-----	20	177
	Clay, green-----	3	180

133-95-11DDDD2
 T. Strand
 (Log from Moe's Well Drilling)

Altitude: 2620 ft above msl

Date drilled: July 1961

Sentinel Butte Formation:			
	Sand, surface-----	9	9
	Clay, yellow-----	2	11
	Sand-----	8	19
	Clay, gray-----	20	39
	Coal-----	1	40
	Clay, gray-----	10	50
	Coal-----	4	54
	Clay-----	22	76
	Sandstone-----	3.5	79.5
	Sand, fine-----	37.5	117
	Clay, green-----	3	120
Tongue River Formation:			
	Coal-----	2	122
	Sand, green-----	16	138
	Clay-----	21	159
	Coal-----	2	161
	Coal and clay-----	9	170
	Clay-----	20	190

133-95-13AAB
T. Strand
(Log from Moe's Well Drilling)

Altitude: 2555 ft above msl

Date drilled: August 1961

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Sand, surface-----	4	4
	Coal-----	1.5	5.5
	Clay-----	5.5	11
	Sand-----	6	17
	Coal-----	3	20
	Coal and clay-----	5	25
	Sand, very fine-----	5	30
	Clay-----	10	40
	Rock-----	4	44
	Clay-----	7	51

133-95-19DDD
NDGWC 3674

Altitude: 2648 ft above msl

Date drilled: November 1968

Sentinel Butte Formation:			
	Sandstone, yellowish-gray, silt to fine, moderately well-sorted, semiconsolidated, oxidized-----	20	20
	Sandstone, greenish-gray, very fine, well-sorted, subrounded, quartzose, semiconsolidated-----	27	47
	Siltstone, light-gray, semiconsolidated-----	4	51
Tongue River Formation (?):			
	Lignite-----	2	53
	Siltstone, brownish-black, semiconsolidated-----	3	56
	Lignite-----	2	58
	Siltstone, light-gray, semiconsolidated-----	10	68
	Shale, light-gray-----	11	79
	Lignite-----	1	80
	Shale, medium-gray-----	18	98
	Lignite-----	3	101
	Shale, light-gray to black, silty to sandy, lignitic and carbonaceous-----	20	121
	Shale, green, silty-----	9	130
	Siltstone, light-greenish-gray, slightly friable-----	3	133
	Shale, medium-gray, hard-----	11	144
	Shale, medium-gray; with interbedded light-gray, clayey siltstone and very fine sandstone-----	16	160
	Shale, medium-gray; with interbedded lignitic and carbonaceous, soft siltstone-----	22	182
	Limestone, dark-gray-----	2	184
	Siltstone, light-gray, semiconsolidated; with interbedded light-gray, silty shale-----	11	195
	Sandstone, light-olive-gray, very fine to fine, moderately well-sorted, semiconsolidated; water-----	19	214
	Sandstone, light-olive-gray, very fine to fine, clayey, semiconsolidated-----	5	219
	Lignite-----	3	222
	Shale, medium-gray, with carbonaceous stains-----	6	228
	Lignite-----	3	231
	Shale, medium-gray, silty; interbedded with light-gray, silty and sandy shale-----	52	283
Basal Tongue River sandstone:			
	Sandstone, very fine to fine, silty; drilled as though consolidated-----	17	300

133-95-24BEC2
W. Olson
(Log from Moe's Well Drilling)

Altitude: 2634 ft above msl

Date drilled: July 1966

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation:			
	Sand, yellow, surface-----	50	50
	Sand, gray, medium to coarse, soft-----	11.2	61.2
	Rock, soft to hard-----	5.8	67
	Sand, gray, soft-----	7	74
	Clay, gray, soft-----	33	107
Tongue River Formation:			
	Coal, hard-----	.8	107.8
	Clay, gray, soft-----	3.7	111.5
	Coal-----	1.5	113
	Clay, green, rock at 117 ft-----	6	119
	Coal, hard, water at 8 gpm-----	6	125
	Clay, gray, hard-----	7	132

133-95-26AAD2
C. Donner
(Log from Moe's Well Drilling)

Altitude: 2659 ft above msl

Date drilled: November 1961

Sentinel Butte Formation:			
	Sand, surface-----	70	70
	Sand, blue-----	25	95
	Sand, water-----	21	116
	Rock, dry-----	3	119
	Sand-----	26	145
Tongue River Formation:			
	Coal-----	.5	145.5
	Rock-----	2.5	148
	Sand-----	2	150
	Coal-----	10	160
	Clay-----	1	161

133-96-6BAB
W. Zenker
(Log from Sander and Son)

Altitude: 2770 ft above msl

Date drilled: November 1939

Sentinel Butte Formation:			
	Clay, dark, surface-----	3	3
	Clay, gray-----	93	96
	Rock, gray-----	1.5	97.5
	Clay, light-----	17.5	115
Tongue River Formation (?):			
	Coal, black-----	4	119
	Clay, light-----	83	202
	Sand, gray, water-----	10	212

133-96-10AAB2
H. Hoveland
(Log from Moe's Well Drilling)

Altitude: 2672 ft above msl

Date drilled: June 1968

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation:			
	Sand, yellow, surface-----	34	34
	Sand, blue, very fine-----	9	43
	Rock, white, hard-----	2.5	45.5
Tongue River Formation (?):			
	Sand, blue, very fine-----	89.5	135
	Sand, blue, coarse, shells at 170 ft-----	37	172
	Rock, gray, medium-hard-----	4	176
	Sand, gray, coarse-----	5	181

133-96-10BBB
W. Stang
(Log from Moe's Well Drilling)

Altitude: 2673 ft above msl

Date drilled: November 1961

Sentinel Butte Formation:			
	Sand, surface-----	10	10
	Clay, yellow-----	15	25
	Rock-----	1.5	26.5
	Clay-----	8.5	35
	Sand-----	10	45
Tongue River Formation:			
	Coal-----	1.5	46.5
	Clay-----	60.5	107
	Rock-----	.5	107.5
	Clay-----	2.5	110
	Sand-----	2	112
	Coal-----	2	114
	Sand-----	15	129
	Sandrock-----	1	130
	Sand-----	11	141

133-96-11AAD
A. Jacobs
(Log from Moe's Well Drilling)

Altitude: 2611 ft above msl

Date drilled: January 1962

Sentinel Butte Formation:			
	Sand, surface-----	22	22
	Sandrock-----	6	28
	Sand, blue, dry-----	21	49
Tongue River Formation (?):			
	Coal-----	2	51
	Clay, white-----	2	53
	Clay, green-----	7	60
	Sand, water-----	16	76
	Sandrock-----	4	80
	Sand, water-----	10	90
	Sand, brown-----	1	91

133-96-15BCC2
 F. Kirschemann
 (Log from Moe's Well Drilling)

Altitude: 2678 ft above msl

Date drilled: September 1966

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation:			
	Sand, surface, soft-----	7	7
	Clay, brown, hard-----	14	21
	Clay, gray, hard-----	2.5	23.5
Tongue River Formation:			
	Coal, dry-----	3.3	26.8
	Clay, gray, soft-----	.2	27
	Coal, hard, dry-----	1	28
	Clay, gray, hard-----	2	30
	Coal and gray clay, interlayered-----	3	33
	Rock, gray, hard-----	5	38
	Sand and clay, gray, soft-----	9	47
	Coal, hard, dry-----	1.5	48.5
	Clay, gray, hard-----	8.5	57
	Sandrock, white, moderately hard-----	4.5	61.5
	Clay, gray, hard-----	17.5	79
	Coal, hard, dry-----	1	80
	Clay, brown, soft-----	3.5	83.5
	Sand, brown, hard-----	1.5	85
	Coal, hard, dry-----	.5	85.5
	Clay, gray, hard-----	1	86.5
	Coal, soft, seep-----	2.5	89
	Clay, tan, soft-----	1	90
	Sand, tan, soft-----	5	95
	Sand, gray, fine-----	4	99
	Rock, hard-----	1	100
	Sand, gray, coarse-----	41	141

133-96-22DCC2
 B. Huether
 (Log from Moe's Well Drilling)

Altitude: 2703 ft above msl

Date drilled: April 1960

Sentinel Butte Formation:			
	Dirt, surface-----	8	8
	Coal-----	1	9
	Clay, brown-----	16	25
	Clay, gray-----	7	32
	Sand-----	23	55
Tongue River Formation:			
	Coal-----	8	63
	Clay-----	2	65
	Coal-----	2	67
	Clay-----	3	70

133-96-28DAA2
C. Kircherman
(Log from Moe's Well Drilling)

Altitude: 2696 ft above msl

Date drilled: September 1960

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Dirt, surface-----	6	6
	Sand-----	8	14
	Sandstone-----	1	15
	Sand-----	10	25
	Rock-----	.5	25.5
	Clay, gray-----	16.5	42
Tongue River Formation:			
	Coal-----	.5	42.5
	Rock-----	.5	43
	Coal-----	10.5	53.5
	Clay-----	17.5	71

133-96-30BAB3
P. Urlacher
(Log from Moe's Well Drilling)

Altitude: 2662 ft above msl

Date drilled: October 1966

Quaternary deposits, undifferentiated:			
	Sand, yellow, surface, soft-----	1	1
	Gravel, soft-----	3	4
Tongue River Formation (?):			
	Sand, yellow, surface, soft-----	14	18
	Clay, gray, hard-----	13	31
	Coal, hard-----	2	33
	Clay, gray, hard-----	22	55
	Sand, very fine, soft-----	12	67

133-97-4EBB1
D. Olson
(Log from Sander and Son)

Altitude: 2732 ft above msl

Date drilled: April 1946

Sentinel Butte Formation (?):			
	Soil, dark, surface-----	2	2
	Sand, gray-----	24	26
	Rock, gray-----	3	29
	Sand, gray-----	16	45

133-97-5DAA
G. Ott
(Log from Sander and Son)

Altitude: 2705 ft above msl

Date drilled: 1961

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Sand, brown-----	16	16
Tongue River Formation (?):			
	Clay and coal ledge-----	4	20
	Rock, brown-----	1	21
	Clay-----	14	35
	Sand, fine-----	35	70
	Sand, coarse-----	12	82
	Clay-----	8	90

133-97-6BAA2
O. Rustan
(Log from Sander and Son)

Altitude: 2748 ft above msl

Date drilled: July 1951

Sentinel Butte Formation (?):			
	Soil, dark, surface-----	2	2
	Sand, gray-----	22	24
	Sand, red-----	10	34
	Rock, light-----	15	49
Tongue River Formation:			
	Coal, black-----	2	51
	Sand, blue, water-----	13	64

133-97-9AAA1 and 9AAA2
NDSWC 3531

Altitude: 2690 ft above msl

Date drilled: September 1967

Sentinel Butte Formation:			
	Sandstone, dark-yellowish-gray, fine, clayey, semiconsolidated-----	6	6
	Shale, dusky-yellow to light-yellowish-green, silty---	18	24
Tongue River Formation:			
	Lignite-----	1	25
	Clay, light-olive-gray, sandy, lignitic-----	3	28
	Lignite-----	3	31
	Clay, light-olive-gray, sandy-----	4	35
	Clay, light-olive-gray, sandy, calcareous, gritty, moderately soft-----	2	37
	Shale, light- to medium-gray (greenish with depth), sandy to silty-----	21	58
	Sandstone, greenish-gray, silt to fine, semiconsolidated-----	19	77
	Sandstone, dark-greenish-gray, fine to medium, well-sorted, subangular to subrounded, loose; contains greenstone, lignite, and biotite flakes; semiconsolidated-----	16	93
	Sandstone, dark-greenish-gray, very fine to medium; interbedded with siltstone; both semiconsolidated----	19	112
	Shale, light-greenish-gray, bentonitic, slightly hard-	5	117

133-97-9AAA1 and 9AAA2, Continued
NDSWC 3531

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Tongue River Formation, Continued:			
	Sandstone, dark-greenish-gray, medium, well-sorted, weakly consolidated-----	8	125
	Clay, brownish-black, sandy, carbonaceous-----	4	129
	Lignite, black, hard-----	3	132
	Clay, brownish-black, sandy, carbonaceous-----	5	137
	Sandstone, light-greenish-gray, silt to very fine, semiconsolidated-----	5	142
	Shale, light- to medium-gray, silty and bentonitic----	22	164
	Lignite, black, hard-----	2	166
	Shale, light-gray, silty, cohesive-----	3	168
	Sandstone, light-olive-gray, very fine and fine, moderately well-sorted, subangular, semiconsolidated--	6	175
	Shale, light-gray, silty-----	3	178
	Sandstone, light-olive-gray, very fine and fine, moderately well-sorted, subangular, semiconsolidated--	6	184
	Clay, white, bentonitic, crumbly-----	2	186
	Shale, light-gray, silty-----	3	189
Basal Tongue River sandstone:			
	Sandstone, light-olive-gray, silt to very fine, semi-consolidated-----	5	194
	Sandstone, light-olive-gray, fine and some medium, well-sorted, subangular to subrounded, mostly semiconsolidated;with a few indurated streaks-----	38	232
	Sandstone, light-olive-gray, silt to fine, semi-consolidated-----	6	238
	Sandstone, light-gray, very fine-grained, calcareous, indurated-----	2	240
	Sandstone, light-olive-gray, medium, well-sorted, subrounded, weakly consolidated-----	8	248
	Sandstone, light-olive-gray, semiconsolidated-----	4	252
	Clay, light-gray, silty to sandy, moderately soft----	5	257
	Clay, light-gray, sandy, moderately soft-----	3	260

133-97-10BBD4
E. Rustan
(Log from Moe's Well Drilling)

Altitude:	2687 ft above msl	Date drilled:	April 1946
Quaternary deposits, undifferentiated (?):			
	Sand, yellow, surface-----	14	14
Sentinel Butte Formation:			
	Clay, yellow-----	2	16
	Clay, gray-----	12	28
Tongue River Formation:			
	Coal-----	.5	28.5
	Clay, gray-----	2.5	31
	Coal, very soft-----	6.5	37.5
	Clay, green-----	20	57.5
	Clay, gray-----	12.5	70
	Sand, gray, chunk-----	25	95

133-97-11DDA2
 R. Multhaup
 (Log by H. and H. Service Co.)

Altitude: 2707 ft above msl Date drilled: December 1967

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Quaternary deposits, undifferentiated (?):			
	Sand and gravel, surface-----	40	40
Sentinel Butte Formation (?):			
	Shale, gray-----	22	62
Tongue River Formation (?):			
	Coal, ledge-----	1	63
	Shale, gray-----	1	64
	Coal-----	7	71
	Shale, gray to black, sandy-----	21	92
	Sand, blue, fine-----	36	128

133-97-14CBC2
 J. Paul
 (Log from Moe's Well Drilling)

Altitude: 2688 ft above msl Date drilled: August 1962

Sentinel Butte Formation:			
	Sand, surface-----	10	10
	Sand, gray-----	13	23
Tongue River Formation:			
	Coal-----	7	30
	Clay, green-----	11	41

133-97-30DCC1
 E. Nester
 (Log from Sander and Son)

Altitude: 2736 ft above msl Date drilled: November 1950

Sentinel Butte Formation:			
	Sand, dark, surface-----	2	2
	Clay, yellow-----	12	14
Tongue River Formation:			
	Coal, black-----	12	26
	Clay, gray-----	16	42
	Rock, gray-----	1	43
	Clay, dark-----	12	55
	Coal and clay, dark-----	55	110
	Sand, gray, water-----	2	112

133-97-32DCC3
C. Tews
(Log from Moe's Well Drilling)

Altitude: 2699 ft above msl

Date drilled: August 1967

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Quaternary deposits, undifferentiated:			
	Sand and gravel, surface-----	12	12
Tongue River Formation:			
	Coal, slack, soft-----	4	16
	Clay, gray, hard-----	5	21
	Coal, 1 gpm-----	3	24
	Clay, gray-----	7.5	31.5
	Coal, hard, dry-----	4.5	36
	Clay, brown, hard-----	3	39
	Sand, gray, soft, 2 gpm-----	2	41
	Clay, gray, soft-----	9	50
	Clay, brown, hard-----	18	68

133-97-34BBB
NDSWC 3556

Altitude: 2733 ft above msl

Date drilled: October 1967

Tongue River Formation:

	Loam, dark-brown-----	3	3
	Lignite-----	1	4
	Shale, yellowish-gray, silty, lignitic-----	7	11
	Lignite-----	3	14
	Shale, yellowish-gray and green, silty, lignitic-----	4	18
	Sandstone, dusky-yellow to moderate-olive-brown, very fine, silty, semiconsolidated, oxidized-----	10	28
	Shale, yellowish-gray, silty-----	11	39
	Sandstone, yellowish-green, very fine, lignitic, soft, friable-----	12	51
	Shale, light-gray to light-greenish-gray, silty-----	7	58
	Sandstone, greenish-gray, very fine, subangular, semiconsolidated-----	12	70
	Shale, light-green and light-greenish-gray, silty, carbonaceous; contains thin seams of lignite-----	22	92
	Sandstone, greenish-gray, very fine, weakly consolidated-----	14	106
	Shale, light-green and light-grayish-green, silty, carbonaceous-----	12	118
	Sandstone, light-olive-gray, very fine to fine, clayey, lignitic, semiconsolidated; contains interbeds of greenish-gray, silty shale-----	46	164
	Shale, variegated grays and greens, silty to sandy, thinly bedded; bentonitic near 200 ft-----	36	200
	Shale, variegated grays and greens, silty to sandy; contains interbedded semiconsolidated siltstone and sandstone-----	50	250
Basal Tongue River sandstone:			
	Sandstone, greenish-gray, fine, lignitic-----	10	260
	Sandstone, lignitic, semiconsolidated; with abundant interbeds of medium-gray, silty shale and bentonite-----	50	310
	Shale, greenish-gray; thinly interbedded with soft, fossiliferous sandstone and a few thin indurated sandstone layers-----	25	335
	Sandstone as above; with shale interbeds as above-----	57	392

133-97-34BBB, Continued
NDSWC 3556

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Cannonball Formation:			
	Shale, medium- to dark-gray, slightly hard and brittle-----	72	464
	Shale, medium-gray, silty, bentonitic-----	56	520
Ludlow Formation:			
	Sandstone, very fine to fine, clayey to silty, semi-consolidated; with interbedded carbonaceous shale, some thin indurated sandstone and lignite layers-----	80	600
	Shale, brownish-gray to nearly black, carbonaceous---	40	640
	Lignite-----	4	644
	Sandstone, dark-greenish-gray, fine (nearly medium), well-sorted, subangular, semiconsolidated-----	20	664
	Clay, dark-brown, carbonaceous; with some thin lignite beds-----	6	670
	Sandstone, dark-greenish-gray, fine (nearly medium), well-sorted, subangular, fossiliferous, semiconsolidated-----	10	680
	Shale, sandy and carbonaceous in upper part, bentonitic in lower part-----	24	704
	Sandstone, dark-greenish-gray, very fine to fine, friable; interbedded with some shale and lignite-----	52	756
Hell Creek Formation:			
	Shale, medium- to dark-gray and green, highly bentonitic; contains thin limestone layers-----	26	782
	Sandstone, light-olive-gray and dark-greenish-gray, fossiliferous, mostly semiconsolidated; with indurated streaks; with interbeds of sandy, locally carbonaceous clay and thin lignite streaks-----	44	826
	Lignite-----	3	829
	Clay, sandy, carbonaceous-----	4	833
	Sandstone, light-olive-gray, very fine to fine, semiconsolidated-----	10	843
	Shale, sandy-----	9	852
	Sandstone, semiconsolidated-----	11	863
	Shale-----	16	879
	Sandstone, semiconsolidated-----	5	884
	Clay-----	20	904
	Lignite-----	3	907
	Sandstone, semiconsolidated; interbedded with shale---	79	986
	Sandstone, semiconsolidated-----	14	1000

134-91-2BBB2

J. Haberstroh

Interpretive log based on driller's log from Moe's Well Drilling and electric, gamma ray, and caliper logs

Altitude: 2490 ft above msl

Date drilled: May 1968

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation:			
	Clay, yellow-----	14	14
	Shale, gray; carbonaceous in part-----	17	31
Tongue River Formation:			
	Lignite-----	1	32
	Shale, gray-----	6	38
	Lignite-----	4	42
	Shale, gray-----	36	78

134-91-2BBB2, Continued
J. Haberstroh

Geologic source	Material	Thickness (feet)	Depth (feet)
Tongue River Formation, Continued:			
	Shale, green-----	10	88
	Siltstone, calcareous, indurated-----	2	90
	Shale, gray-----	5	95
	Lignite-----	3	98
	Shale, gray, silty-----	43	141
	Lignite-----	4	145
	Shale, gray; carbonaceous in part; interbeds of shaly, semiconsolidated sandstone and siltstone-----	15	160
	Sandstone, gray, silty; with interbeds of silty and sandy shale-----	46	206
	Shale, gray; with thin interbeds of shaly sandstone and siltstone, mostly semiconsolidated, but locally indurated-----	90	296
	Sandstone, semiconsolidated-----	9	305
	Shale, gray; with thin interbeds of shaly, semi-consolidated sandstone and siltstone-----	42	347
Basal Tongue River sandstone:			
	Sandstone, gray-green, clayey, semiconsolidated; with occasional shaly interbeds-----	87	434
	Sandstone, calcareous, indurated-----	4	438
	Sandstone, gray-green, somewhat clayey, semiconsolidated-----	12	450
	Shale, sandy; with sandstone interbeds-----	5	455
	Sandstone, gray-green, cleaner than above, weakly consolidated-----	12	467
	Sandstone, gray-green, clayey, semiconsolidated; with shaly interbeds-----	8	475
	Sandstone, calcareous, indurated-----	2	477

134-91-6DDC2
H. Reich
(Log from Moe's Well Drilling)

Altitude: 2418 ft above msl

Date drilled: September 1963

Tongue River Formation (?):			
	Sand, surface-----	3	3
	Coal-----	1	4
	Clay, yellow-----	28	32
	Clay, gray; with rock at 36.8 ft-----	13	45
	Sand, gray-----	3	48
	Clay, brown; with sandrock at 56 ft-----	17	65
	Coal-----	3	68
	Sand, brown-----	5	73
	Clay, green-----	4.5	77.5
	Coal-----	1.5	79
	Clay, gray; with rock at bottom-----	1.5	80.5
	Sand and clay-----	10.5	91
	Clay, green-----	20	111
	Clay, brown-----	14	125
	Clay and sand-----	13	138
	Clay, white; with trace of sand at bottom-----	5	143
	Rock, very hard-----	6.5	149.5
	Clay, gray-----	4.7	154.2
	Rock-----	.3	154.5
	Clay, gray-----	3.5	158
	Coal-----	1	159
	Sand, lump-----	4	163
	Coal-----	1.5	164.5
	Sand; with side rock at 173 feet-----	28.5	193

134-91-6DDC2, Continued
H. Reich

Geologic source	Material	Thickness (feet)	Depth (feet)
Tongue River Formation, Continued:			
	Coal-----	1	194
	Clay, brown-----	4	198
	Coal-----	.5	198.5
	Clay, gray-----	3.5	202
	Clay, green-----	12.5	214.5
	Rock-----	.5	215
	Clay, gray-----	5	220
	Sand, brown-----	66.5	286.5
	Rock, hard-----	1.5	288
	Sand-----	1	289
	Rock, very hard-----	5	294
	Sand-----	8	302
	Rock, very hard-----	1.8	303.8
	Sand-----	12.4	316.2
	Rock, hard-----	.8	317
	Clay, brown-----	9	326
	Rock-----	.2	326.2
	Clay, gray-----	20.8	347
	Rock, hard-----	.2	347.2
	Clay, gray-----	86.8	434
	Rock, hard-----	.2	434.2
	Clay, green-----	2.8	437
Basal Tongue River sandstone:			
	Sand, coarse-----	6.5	443.5
	Rock, medium-----	.3	443.8
	Sand, gray-----	30.6	474.4
	Rock, very hard, continuing-----	.1	474.5

The hole yielded water at the rate of 0.2 gpm at 79 ft and 1 gpm at 111 ft.

134-91-23BAA (Composite)
A. Grosz
(Logs from Moe's Well Drilling)

Altitude: 2450 ft above msl

Date drilled: May 1968

Sentinel Butte Formation:			
	Sand, surface-----	1	1
	Clay, yellow-----	23	24
	Rock-----	3	27
Tongue River Formation (?):			
	Clay, yellow-----	10	37
	Clay, gray-----	4	41
	Rock-----	1	42
	Sand and clay, mixed-----	3	45
	Clay, gray-----	28	73
	Coal-----	8	81
	Clay, grayish-brown-----	4	85
	Clay, gray-----	65	150
	Sand, gray, chunk, with shell at 150 ft-----	30	180
	Clay, gray-----	56.5	236.5
	Rock, medium-hard-----	2.5	239
	Clay, gray-----	30	269
	Rock, hard-----	1.5	270.5
	Clay, gray, silty-----	81.5	352
Basal Tongue River sandstone (?):			
	Rock, soft-----	3	355
	Sand, gray, fine, continuing-----	10	365

134-91-28EAA
S. Kuehn
(Log from Moe's Well Drilling)

Altitude: 2350 ft above msl Date drilled: September 1961

Geologic source	Material	Thickness (feet)	Depth (feet)
Quaternary deposits, undifferentiated:			
	Sand, surface-----	8	8
	Gravel-----	5	13
Tongue River Formation:			
	Clay, gray-----	5	18
	Coal-----	1	19
	Clay, gray-----	32	51
	Coal-----	1	52
	Sand-----	3	55
	Clay, gray-----	12	67
	Coal-----	3	70
	Clay, gray, continuing-----	1	71

134-91-30DAC
L. Roll
(Log from Moe's Well Drilling)

Altitude: 2417 ft above msl Date drilled: September 1961

Sentinel Butte Formation:			
	Sand, surface-----	23	23
	Sand, gray-----	47	70
Tongue River Formation:			
	Coal-----	1	71
	Clay, gray, continuing-----	10	81

134-91-32CCC
NDSWC 3527

Altitude: 2378 ft above msl Date drilled: September 1967

Sentinel Butte Formation:			
	Topsoil, yellowish-gray, sandy loam-----	1	1
	Sandstone, yellowish- to light-olive-gray, well sorted, subangular to subrounded, weakly consolidated; took drilling fluid-----	27	28
	Sandstone, light-olive-gray, silty, semiconsolidated; thin seams of bentonite and lignite-----	6	34
Tongue River Formation:			
	Lignite-----	1	35
	Shale, sandy-----	8	43
	Siltstone, light-gray, soft, semiconsolidated-----	10	53
	Sandstone, gray, very fine and fine; interbedded with light-gray siltstone; both semiconsolidated; with thin lignite seams-----	20	73
	Lignite-----	2	75
	Sandstone, siltstone, and lignite as above-----	8	83
	Sandstone, gray, fine, well-sorted, semiconsolidated--	14	97
	Sandstone, gray to light-greenish-gray, silt to very fine; semiconsolidated above to indurated below-----	6	103
	Siltstone, variegated light colors, clayey to sandy, semiconsolidated-----	41	144
	Clay, light-yellowish-gray, bentonitic-----	5	149

134-91-32CCC, Continued
NDSWC 3527

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Tongue River Formation, Continued:			
	Sandstone, light-greenish-gray to medium-gray, silt to very fine, semiconsolidated; with interbeds of sandy shale and thin lignite seams-----	41	190
	Lignite-----	1	191
	Sandstone as above-----	4	195
	Lignite-----	1	196
	Siltstone, light-greenish-gray, clayey, semiconsolidated-----	22	218
	Shale, light-greenish-gray, silty; with interbeds of semiconsolidated siltstone and sandstone-----	26	244
	Shale, variegated dark-gray and green, silty to very fine sandy, bentonitic, micaceous, locally carbonaceous, soft; with interbeds of sandstone and siltstone, mostly semiconsolidated, some indurated-----	91	335
	Sandstone, dark-greenish-gray, silt to very fine, very clayey; with shale interbeds-----	18	353
	Shale as above-----	44	397
Basal Tongue River sandstone:			
	Sandstone, clayey, semiconsolidated-----	15	412
	Sandstone, fine, pyritic, indurated-----	6	418
	Sandstone, light-greenish-gray, clayey, semiconsolidated; with interbeds of sandy shale; shell fragments in lower part-----	29	447
	Shale, medium- to dark-gray, bentonitic-----	7	454
	Sandstone, light-olive-gray, fine to medium, well-sorted, subrounded, slightly calcareous-----	26	480
	Shale, medium-gray, silty, soft-----	8	488
	Sandstone, light-olive-gray, very fine to fine, clayey; mostly semiconsolidated with thin indurated layers-----	18	506
	Shale, medium-gray, silty, soft-----	9	515
	Sandstone, light-gray, fine, clayey-----	9	524
	Clay, medium-gray, bentonitic-----	10	534
	Shale, brownish-gray, sandy, carbonaceous, soft-----	5	539
	Shale, dark-gray, soft-----	7	546
	Sandstone, greenish-gray, fine, subangular to subrounded, semiconsolidated-----	13	559
	Shale, light-greenish-gray, silty, soft-----	14	573
	Sandstone, light-greenish-gray, very fine to fine, clayey, semiconsolidated-----	8	581
Ludlow Formation (Upper):			
	Lignite, black, fissile, hard-----	7	588
	Sandstone, brownish-black, fine, clayey, carbonaceous, noncalcareous-----	8	596
	Lignite, black, fissile, hard-----	5	601
	Shale, medium- to dark-gray, silty, slightly brittle-----	24	625
	Shale, medium-gray to brownish-gray, silty to sandy, locally carbonaceous; with thin interbeds of lignite and semiconsolidated sandstone-----	18	643
	Clay, yellowish-gray, bentonitic, noncalcareous, crumbly-----	5	648
	Sandstone, light-greenish-gray, fine, slightly clayey, carbonaceous-----	11	659
	Lignite-----	1	660
	Sandstone as above-----	15	675
	Shale, light- to medium-gray, silty, bentonitic-----	6	681
	Lignite-----	1	682
	Shale as above-----	13	695
	Lignite-----	2	697
	Shale as above; with interbeds of semiconsolidated to indurated siltstone and sandstone-----	21	718
	Lignite-----	1	719
	Shale as above-----	7	726
	Lignite-----	2	728

134-91-32CCC, Continued
NDSWC 3527

Geologic source	Material	Thickness (feet)	Depth (feet)
Ludlow Formation (Upper), Continued:			
	Shale as above-----	10	738
	Lignite-----	2	740
	Shale, medium- to dark-gray, silty, soft, slightly brittle-----	16	756
	Lignite-----	1	757
	Shale as above-----	8	765
	Sandstone, greenish-gray, very fine to fine, clayey, locally carbonaceous, semiconsolidated; with interbeds of light-colored clay and soft siltstone-----	23	788
	Lignite-----	2	790
	Sandstone as above-----	5	795
Cannonball Formation:			
	Shale, greenish-gray; increasingly silty to sandy with depth-----	17	812
	Sandstone, greenish-gray, very fine to fine, semiconsolidated-----	13	825
	Sandstone as above; interbedded with shale as above---	15	840
	Shale, dark-gray, silty, soft-----	14	854
	Sandstone, dark-greenish-gray, semiconsolidated-----	8	862
	Siltstone, light-tan, noncalcareous, indurated-----	3	865
	Sandstone, dark-greenish-gray, fine; contains lignite flakes and greenstone grains; semiconsolidated-----	7	872
Ludlow Formation (Lower):			
	Lignite, black, hard-----	2	874
Hell Creek Formation:			
	Clay, gray, bentonitic, very sticky-----	11	885
	Sandstone, dark-greenish-gray, very fine to fine, clayey, semiconsolidated; with interbeds of clay. Becomes coarser and cleaner with depth-----	33	918
	Sandstone, dark-greenish-gray, medium, weakly consolidated-----	10	928
	Clay, very light-gray, very bentonitic-----	5	933
	Shale, greenish-gray, very sandy, soft-----	10	943
	Sandstone, dark-greenish-gray with black specks, medium, well-sorted subround, semiconsolidated-----	7	950
	Lignite, hard-----	1	951
	Sandstone as above-----	11	962
	Shale, light- to medium-gray, silty to sandy-----	11	973
	Sandstone as above-----	7	980

134-91-34DDD
NDSWC 3671

Altitude: 2373 ft above msl

Date drilled: November 1968

Sentinel Butte Formation:

Sandstone, yellow, fine and medium, heavy limonite staining, weakly consolidated; dry----	45	45
Sandstone as above; with interbeds of light-olive-gray, sandy shale with black stains-----	15	60
Shale, light-gray, silty, slightly plastic-----	15	75

Tongue River Formation:

Lignite, black, fissile-----	3	78
Siltstone, black, sandy, carbonaceous, semiconsolidated-----	2	80

134-91-34DDD, Continued
NDSWC 3671

Geologic source	Material	Thickness (feet)	Depth (feet)
Tongue River Formation, Continued:			
	Sandstone, very light-gray, silt to very fine, moderately well-sorted, slightly clayey, weakly consolidated; appears dry-----	20	100
	Sandstone as above; wet-----	20	120
	Sandstone, light-gray, as above; with interbeds of soft siltstone and sandy clay-----	23	143
	Shale, dark-gray, silty, carbonaceous-----	6	149
	Siltstone, light-greenish-gray, semiconsolidated-----	6	155
	Sandstone, light-olive-gray, very fine, weakly consolidated-----	5	160
	Sandstone, greenish-gray, fine, well-sorted, sub-round; contains lignite flakes; semiconsolidated-----	11	171
	Shale, medium-gray to black, silty, carbonaceous-----	7	178
	Sandstone, gray, very fine to fine, semiconsolidated; interbedded with soft, gray siltstone and silty shale-----	24	202

134-92-2BDC
R. Hirsch
(Log from Moe's Well Drilling)

Altitude: 2421 ft above msl

Date drilled: March 1962

Sentinel Butte Formation (?):			
	Sand, surface-----	5	5
	Rock-----	.5	5.5
	Sand, surface-----	4.5	10
	Clay, yellow-----	25	35
Tongue River Formation (?):			
	Coal, slack-----	3	38
	Clay, green, and sand, mixed-----	14	52
	Rock, very hard-----	6	58
	Clay, gray-----	10	68
	Rock-----	1	69
	Sand, fine-----	11	80
	Sand, water-----	12	92
	Rock-----	1	93
	Sand, water-----	18.5	111.5

134-92-2CCC2
R. Hirsch
(Log from Moe's Well Drilling)

Altitude: 2438 ft above msl

Date drilled: July 1961

Sentinel Butte Formation (?):			
	Sand, surface-----	7	7
	Sand, water-----	5	12
	Sandrock-----	2.8	14.8
	Sand, brown-----	4.2	19
	Clay-----	7	26
Tongue River Formation:			
	Coal-----	.5	26.5
	Clay, green-----	2.5	29
	Coal-----	1	30
	Clay-----	15	45
	Sand-----	8	53
	Sandstone-----	2	55
	Sand-----	1	56

134-92-2CCCC2, Continued
R. Hirsch

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Tongue River Formation, Continued:			
	Coal-----	2	58
	Coal (sic)-----	38.5	96.5
	Rock-----	1.5	98
	Sand-----	24	122
	Clay, gray, continuing-----	9	131

134-92-34DDC
NDSWC 3670

Altitude: 2434 ft above msl

Date drilled: November 1968

Sentinel Butte Formation (?):

	Sandstone, variegated yellow and light-gray (limonite staining), fine and medium, fairly well-sorted, subangular and subround, weakly consolidated, oxidized; dry; large concretion at 7 ft-----	40	40
	Sandstone as above; but predominantly medium-----	22	62
	Sandstone, yellowish-gray with reddish-brown stains, silt to fine, weakly consolidated; dry-----	17	79
	Limestone (?), gray, hard-----	3	82
	Sandstone, light-olive-gray and brownish-black, very fine to fine, shaly, carbonaceous, semiconsolidated, partly oxidized; dry-----	9	91

Tongue River Formation (?):

	Shale, dark-brown, carbonaceous-----	7	98
	Sandstone, gray, fine, well-sorted, subround, mostly quartz with some lignite grains, clean, weakly consolidated; appears dry-----	18	116
	Sandstone as above; but water-bearing-----	24	140
	Shale, gray to black, silty and sandy, carbonaceous--	14	154
	Sandstone, dark-greenish-gray, very fine, well-sorted, weakly consolidated; water-bearing-----	26	180
	Sandstone as above; but light-gray, clayey and silty--	20	200

134-93-1CCC
NDSWC 3554

Altitude: 2494 ft above msl

Date drilled: October 1967

Sentinel Butte Formation:

	Shale, yellowish-gray and dusky-yellow, silty and sandy, soft, fractured, oxidized-----	16	16
	Lignite, black, hard, fractured-----	4	20
	Shale, green to dark-green, silty; with interbeds of soft siltstone-----	17	37

Tongue River Formation:

	Shale, greenish-gray, silty, smooth-----	16	53
	Sandstone, light-olive-gray to brownish-gray, very fine to fine, carbonaceous, semiconsolidated-----	4	57
	Lignite, black, fissile, hard-----	2	59
	Shale, medium-gray, silty, soft; with interbeds of white, bentonitic clay-----	23	82
	Sandstone, greenish-gray, very fine, calcareous, indurated-----	4	86
	Sandstone, greenish-gray, very fine to fine, clayey, semiconsolidated; with interbeds of gray, silty and sandy shale and numerous shell fragments-----	29	115
	Shale, light- to medium-gray, silty, soft-----	6	121

134-93-1CCC, Continued
NDSWC 3554

Geologic source	Material	Thickness (feet)	Depth (feet)
Tongue River Formation, Continued:			
	Shale, black, silty, carbonaceous-----	11	132
	Shale, light-gray, silty to sandy, soft-----	6	138
	Lignite-----	1	139
	Shale, medium-gray, silty, brittle-----	9	148
	Limestone, gray-----	4	152
	Shale, medium-gray, silty, brittle-----	17	169
	Lignite, black, fissile, hard-----	4	173
	Shale, green, brittle-----	10	183
	Siltstone, light-olive-gray, soft, crumbly-----	7	190
	Shale, green, as above-----	6	196
	Siltstone as above-----	4	200

134-93-8DBB
H. Pekas
(Log from Moe's Well Drilling)

Altitude: 2528 ft above msl Date drilled: April 1964

Sentinel Butte Formation:			
	Sand, surface-----	18.2	18.2
	Rock-----	1.3	19.5
	Sand, surface-----	5.5	25
	Sand and clay, mixed-----	3	28
	Clay, gray-----	12	40
	Clay, green-----	2	42
Tongue River Formation:			
	Coal-----	2	44
	Sand and clay, mixed-----	3	47
	Clay, green-----	4	51
	Coal-----	3	54
	Clay, gray-----	13	67
	Sand-----	1	68
	Clay, gray-----	9.8	77.8
	Rock, very hard-----	1.7	79.5
	Clay, gray-----	13.5	93
	Description missing-----	5	98
	Coal-----	5	103
	Clay, green-----	56	159
	Coal-----	5	164
	Clay, gray-----	9	173

134-93-12CCC1
D. Fries
(Log from Moe's Well Drilling)

Altitude: 2494 ft above msl Date drilled: September 1964

Sentinel Butte Formation:			
	Sand, surface-----	5	5
	Coal, wet-----	.5	5.5
	Clay, yellow-----	7.5	13
	Clay, gray-----	8	21
Tongue River Formation (?):			
	Coal-----	1	22
	Clay, green-----	8	30
	Sand and clay, mixed-----	4	34
	Coal-----	4	38
	Rock-----	.2	38.2
	Sand, fine-----	21.8	60
	Description missing-----	13	73
	Clay, gray, continuing-----	2	75

134-93-13BCB2
N. Fries
(Log from Moe's Well Drilling)

Altitude: 2511 ft above msl

Date drilled: September 1963

Geologic source	Material	Thickness (feet)	Depth (feet)
Quaternary deposits, undifferentiated:			
	Sand, surface-----	5	5
	Gravel-----	1	6
Sentinel Butte Formation:			
	Clay, yellow-----	9	15
	Coal-----	1.5	16.5
	Clay-----	16.5	33
Tongue River Formation (?):			
	Coal-----	1	34
	Clay, gray-----	3.5	37.5
	Coal-----	2	39.5
	Sand, very fine-----	25.5	65
	Clay, gray-----	10	75
	Sand-----	10	85
	Clay, gray, continuing-----	16	101

134-93-17DDD2
A. Salscheider
(Log from Moe's Well Drilling)

Altitude: 2520 ft above msl

Date drilled: May 1964

Sentinel Butte Formation:			
	Sand, surface-----	22	22
	Clay, gray-----	3	25
Tongue River Formation (?):			
	Coal-----	1.5	26.5
	Sand and clay mixed-----	3.5	30
	Sand, gray-----	2	32
	Clay, brown-----	2	34
	Coal, wet-----	2	36
	Clay, gray-----	8	44
	Sand, gray, fine-----	10	54
	Clay, gray-----	2	56
	Coal-----	3.8	59.8
	Clay, gray-----	1.2	61

134-93-19DCD
O. Schaible
(Log from Moe's Well Drilling)

Altitude: 2419 ft above msl

Date drilled: August 1962

Tongue River Formation:			
	Sand, surface-----	10	10
	Clay, yellow-----	17.5	27.5
	Coal-----	1	28.5
	Clay, green-----	15.5	44
	Sand-----	2	46
	Clay, green-----	13	59
	Sand-----	11	70
	Sandrock-----	1.5	70.5
	Clay, white-----	4.5	75
	Clay, green-----	12	87

134-93-19DCD, Continued
O. Schaible

Geologic source	Material	Thickness (feet)	Depth (feet)
Tongue River Formation, Continued:			
	Sand, with side of rock at 99 ft-----	12	99
	Clay, gray-----	8	107
	Sand, trace-----	2	109
	Clay, gray-----	18	127
	Sand-----	5	132
	Clay, brown-----	11	143
	Coal-----	3	146
	Clay-----	12.5	158.5
	Rock, "granite"-----	1.5	160
	Clay, gray-----	25	185
	Clay, white-----	21	206
	Clay, brown-----	11	217
Basal Tongue River sandstone:			
	Sand-----	46	263
	Clay, brown-----	2	265
	Coal-----	2	267
	Sand, green, very coarse-----	33	300

134-93-23ADD
NDSWC 3710

Altitude: 2510 ft above msl

Date drilled: June 1969

Sentinel Butte Formation:

Shale, dusky-yellow to moderate-olive-brown, silty to sandy, soft, oxidized-----	5	5
Siltstone, light-yellowish-gray, semiconsolidated, oxidized-----	19	24
Shale, light-yellowish-gray to light-gray and greenish-gray, silty to sandy, soft, oxidized; with interbeds of soft siltstone-----	9	33

Tongue River Formation:

Shale, carbonaceous-----	5	38
Siltstone, light-gray to greenish-gray, semiconsolidated; with sandy and clayey interbeds-----	34	72
Shale, medium-gray, silty, soft-----	25	97
Sandstone, dark-greenish-gray, very fine, calcareous, indurated-----	5	102
Shale, medium-gray, silty to sandy, soft, slightly plastic-----	10	112
Shale, brownish-gray, carbonaceous-----	4	116
Shale, variegated gray and green, silty to sandy, soft-----	9	125
Lignite-----	3	128
Shale, black and green, carbonaceous-----	10	138
Lignite-----	1	139
Shale as above-----	3	142
Lignite-----	1	143
Shale, interbedded gray and green, silty to sandy, and black, carbonaceous, soft; with thin lignite seams-----	17	160
Lignite-----	3	163
Siltstone, light-gray to light-medium-gray, clayey and sandy, semiconsolidated; with interbeds of gray, silty shale-----	3	166
Lignite-----	1	167
Siltstone as above-----	5	172
Lignite-----	1	173
Siltstone as above-----	7	180

134-93-23ADD, Continued
NDSWC 3710

Geologic source	Material	Thickness (feet)	Depth (feet)
Tongue River Formation, Continued:			
	Shale, medium-gray to brownish-black, silty, locally carbonaceous, soft-----	20	200
	Shale, greenish-gray, silty, waxy, chunky; with interbeds of light-greenish-gray, soft, friable, sandy siltstone-----	22	222
	Lignite-----	3	225
	Shale, brownish-black, carbonaceous-----	4	229
	Sandstone, light-olive-gray to brownish-gray, very fine, moderately well sorted, subangular and subround, carbonaceous, semiconsolidated-----	23	252
	Sandstone, dark-greenish-gray with brownish-black carbonaceous streaks, fine, well-sorted, subangular and subround, weakly consolidated-----	15	267
	Shale, black, carbonaceous-----	2	269
	Sandstone as above-----	11	280
	Sandstone, brownish-gray, very fine and fine, clayey, carbonaceous, friable-----	15	295
	Lignite, black, hard-----	2	297
	Shale, black, carbonaceous, somewhat hard-----	5	302
	Lignite, black, hard-----	4	306
	Shale, medium-dark-gray to brownish-gray and black, brittle-----	14	320

134-93-28AAD2
C. Heinrich
(Log from Moe's Well Drilling)

Altitude: 2440 ft above msl

Date drilled: June 1964

Tongue River Formation:			
	Sand, surface-----	5	5
	Clay, yellow-----	7	12
	Coal-----	.5	12.5
	Clay, brown-----	2.5	15
	Clay, gray-----	11	26
	Clay and blue sand, mixed-----	3	29
	Coal-----	.2	29.2
	Clay, blue-----	.8	30
	Sand-----	6	36
	Coal-----	2.5	38.5
	Clay, brown-----	26	64.5
	Coal-----	1	65.5
	Sandrock-----	1.5	67
	Sand-----	3	70
	Coal-----	3	73
	Clay, green-----	.3	73.3

Tested 0.5 gpm at 90 ft.

134-93-31BAB2
M. Greff
(Log from Moe's Well Drilling)

Altitude: 2398 ft above msl

Date drilled: April 1963

Quaternary deposits, undifferentiated:			
	Sand, surface-----	25	25
	Gravel, running-----	2	27
Tongue River Formation:			
	Clay, gray-----	8	35

134-93-32AAB
 J. Brusseau
 (Log from Moe's Well Drilling)

Altitude: 2433 ft above msl

Date drilled: January 1964

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Tongue River Formation:			
	Sand, surface-----	4	4
	Clay, gray-----	18.5	22.5
	Coal-----	1	23.5
	Clay, gray-----	3.5	27
	Sand, very fine-----	7	34
	Clay, gray-----	3	37
	Rock-----	1	38
	Clay, gray-----	15	53
	Clay, brown-----	1	54
	Coal-----	1	55
	Sand, gray-----	8	63
	Sand, green, with side of rock at 72 ft-----	17	80
	Clay, gray-----	29	109
	Coal-----	1	110
	Clay, gray-----	13	123
	Sand, gray, fine-----	13	136
	Coal, continuing-----	5	141

134-93-32CAA
 USBR DH 51-2

Altitude: 2393 ft above msl

Date drilled: September 1952

Quaternary deposits, undifferentiated:			
	Sand, silty-----	12	12
Tongue River Formation:			
	Lignite-----	.5	12.5
	Shale, clay-----	25.7	38.2
	Sandstone-----	1	39.2
	Shale, clay-----	13.8	53
	Sandstone-----	1	54
	Shale, clay-----	8	62
	Lignite-----	.5	62.5
	Shale, clay-----	5	67.5
	Lignite-----	.3	67.8
	Shale, clay-----	3.2	71
	Sandstone-----	2	73
	Lignite-----	4.2	77.2
	Shale, clay-----	6.3	83.5

134-93-32CAD
 USBR DH 51-3

Altitude: 2393 ft above msl

Date drilled: September 1952

Quaternary deposits, undifferentiated:			
	Silt-----	5	5
	Sand, clayey-----	18	23
Tongue River Formation:			
	Shale, silty-----	5	28
	Shale, clay-----	10	38
	Lignite-----	.2	38.2
	Shale, clay-----	8.6	46.8
	Sandstone-----	5.7	52.5
	Lignite-----	4.5	57
	Shale, clay-----	17	74
	Sandstone-----	9	83

134-93-32CCB
 C. Heinrich
 (Log from Moe's Well Drilling)

Altitude: 2412 ft above msl

Date drilled: November 1962

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Tongue River Formation (?) (or Quaternary deposits ?)			
	Sand, surface-----	26	26
Tongue River Formation:			
	Coal-----	.5	26.5
	Clay, green-----	4.5	31
	Sand, very fine-----	14	45
	Clay, gray-----	8	53
	Clay, brown-----	7	60
	Sand-----	7	67
	Coal-----	6	73
	Clay-----	12	85
	Sand-----	50	135
	Clay, gray, continuing-----	16	151

134-93-32CDC1
 USBR DH 51-4

Altitude: 2388 ft above msl

Date drilled: October 1952

Quaternary deposits, undifferentiated:			
	Silt-----	5	5
	Sand, clayey-----	6.5	11.5
Tongue River Formation:			
	Shale, silty-----	3.5	15
	Shale, clay-----	9.8	24.8
	Lignite-----	.2	25
	Shale, clay-----	1.5	26.5
	Sandstone-----	3.5	30
	Lignite-----	3.5	33.5
	Shale, clay-----	14.7	48.2
	Sandstone-----	25.6	73.8

134-93-32CDC2
 USBR DH 51-5

Altitude: 2426 ft above msl

Date drilled: October 1952

Quaternary deposits, undifferentiated:			
	Clay, sandy-----	4.5	4.5
Tongue River Formation:			
	Shale, silty-----	8	12.5
	Sandstone-----	4	16.5
	Shale, clay-----	2.5	19
	Shale, silty-----	7	26
	Sandstone-----	1.5	27.5
	Shale, silty-----	2	29.5
	Lignite-----	2.3	31.8
	Shale, clay-----	4.7	36.5
	Shale, silty-----	4	40.5
	Shale, clay-----	2.5	43
	Lignite-----	.5	43.5
	Shale, clay-----	2.5	46
	Lignite-----	1	47
	Shale, clay-----	7.5	54.5

134-93-32CDC2, Continued
 USBR DH 51-5

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Tongue River Formation, Continued:			
	Sandstone-----	5	59.5
	Shale, clay-----	5.7	65.2
	Lignite-----	.8	66
	Silt and clay shale-----	4.5	70.5
	Shale, silty-----	2.5	73
	Sandstone-----	3.5	76.5
	Lignite-----	4	80.5
	Silt and clay shale-----	11.5	92
	Sandstone-----	26.5	118.5

134-93-32CDC3
 USBR DH 51-7

Altitude: 2383 ft above msl Date drilled: September 1958

Quaternary deposits, undifferentiated:			
	Sand-----	8	8
Tongue River Formation:			
	Shale, clay-----	8.2	16.2
	Lignite-----	.6	16.8
	Shale, clay-----	7.2	24
	Sandstone-----	3.5	27.5
	Lignite-----	6.5	34
	Silt and clay shale-----	11.8	45.8
	Sandstone-----	29.2	75

134-93-32CDD
 USBR DH 51-8

Altitude: 2393 ft above msl Date drilled: October 1952

Quaternary deposits, undifferentiated:			
	Silt-----	10	10
	Sand, silty-----	10	20
	Clay-----	4	24
Tongue River Formation:			
	Shale, silty-----	8.8	32.8
	Silt and clay shale-----	4.4	37.2
	Lignite-----	.6	37.8
	Silt and clay shale-----	7.4	45.2
	Sandstone-----	3.3	48.5
	Lignite-----	2	50.5
	Shale, clay-----	22.5	73
	Sandstone-----	9.8	82.8

134-93-32DAD
 USBR DH 64-102

Altitude: 2392 ft above msl Date drilled: December 1964

Quaternary deposits, undifferentiated:			
	Topsoil-----	2	2
	Clay, silty-----	8	10
	Clay, sandy-----	3	13
	Sand, silty-----	5	18
	Clay, sandy, wet-----	4	22

134-93-35DBD
Mott No. 2
(Log by Independent Drilling Co.)

Altitude: 2422 ft above msl

Date drilled: 1947

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Tongue River Formation:			
	Topsoil-----	1	1
	Clay, yellow, sandy-----	41	42
	Clay, gray-----	7	49
	Coal-----	.5	49.5
	Clay, gray-----	30.5	80
	Coal-----	1	81
	Clay, gray-----	30	111
	Coal-----	.7	111.7
	Shale-----	4.3	116
	Sand, coal streaks-----	6	122
	Sand, hard-----	3	125
	Shale-----	33	158
	Coal-----	2	160
	Shale, sandy-----	40.4	200.4
	Shale-----	5.6	206
	Sand and shale streaks-----	14.8	220.8
	Shale-----	26.9	247.7
	Rock-----	.7	248.4
	Shale-----	34	282.4
	Rock-----	.4	282.8
	Shale-----	54	336.8
	Shale, sandy-----	6.2	343
	Rock-----	.3	343.3
	Shale-----	.5	343.8
	Rock-----	.2	344
	Shale-----	32.4	376.4
	Rock-----	.8	377.2
	Shale-----	5.8	383
	Rock-----	.3	383.3
	Shale-----	17.1	400.4
Basal Tongue River sandstone:			
	Sand, water-bearing-----	13.4	413.8
	Sand, fine, water-bearing-----	6.6	420.4
	Shale, sandy-----	4.6	425
	Shale-----	7	432

134-93-35DCD
Mott No. 1
(Log by Horbeck Well Drilling)

Altitude: 2380 ft above msl

Date drilled: July 1928

Tongue River Formation:			
	Clay, yellow-----	12	12
	Muck, black-----	3	15
	Shale and blue clay-----	89	104
	Muck, black-----	3	107
	Coal-----	3	110
	Sand-----	20	130
	Shale-----	2	132
	Sand-----	2	134
	Shale-----	3	137
	Rock-----	5	142
	Sand, colored water-----	12	154
	Shale-----	16	170
	Rock-----	1	171
	Shale-----	55	226
	Rock-----	1	227
	Shale-----	8	235

134-93-35DCD, Continued
Mott No. 1

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Tongue River Formation, Continued:			
	Rock-----	1	236
	Shale-----	64	300
	Rock-----	2	302
	Shale-----	13	315
	Rock-----	1	316
	Shale-----	37	353
Basal Tongue River sandstone:			
	Sand, water-bearing-----	25	378
	Shale-----	6	384

134-93-36DCC
Hettinger County Fair Association
(Log from Moe's Well Drilling)

Altitude: 2408 ft above msl Date drilled: September 1966

Tongue River Formation:			
	Topsail, brown, soft-----	1	1
	Sand, yellow, surface, soft-----	4	5
	Sand, gray, soft-----	1.5	6.5
	Clay, yellow, soft-----	1.5	8
	Clay, gray, hard-----	11.5	19.5
	Coal, black, soft-----	2.5	22
	Clay, gray, hard-----	2	24
	Coal, hard-----	1	25
	Clay, gray, soft-----	.5	25.5
	Sandrock, gray, soft-----	.5	26
	Clay, gray, soft-----	5	31
	Sand, gray, soft-----	5	36
	Coal, hard-----	1.5	37.5
	Clay, gray, hard-----	24.5	62
	Coal, hard-----	2	64
	Clay, gray, soft-----	27	91
	Sand, gray and tan, mixed, soft-----	2	93
	Clay, tan, soft-----	43	136
	Sand, gray, fine, soft, continuing-----	16	152

134-94-4DCD2
A. Ivey
(Log from Moe's Well Drilling)

Altitude: 2479 ft above msl Date drilled: September 1961

Sentinel Butte Formation (?):			
	Sand, surface-----	7	7
	Coal-----	1.2	8.2
	Clay, yellow-----	7.8	16
	Clay, blue-----	4	20
	Sand, continuing-----	31	51

Altitude: 2465 ft above msl

Date drilled: September 1968

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Topsoil, dark-brown, silty to sandy-----	1	1
	Shale, yellowish-gray, silty to very sandy-----	4	5
	Sandstone, yellowish-gray, medium, weakly consolidated	5	10
	Shale, rusty-red, sandy, soft-----	5	15
	Sandstone, dark-greenish-gray, fine to medium, weakly consolidated; with interbedded medium-gray silty shale	5	20
Tongue River Formation:			
	Lignite, black, moderately hard, fractured-----	1	21
	Sandstone, dark-greenish-gray, fine, clayey, soft; contains sandstone concretionary pellets-----	14	35
	Lignite-----	2	37
	Sandstone as above-----	5	42
	Sandstone, fine, indurated-----	3	45
	Shale, light- to medium-gray, silty, bentonitic, soft to slightly brittle-----	13	58
	Shale, brownish-black, carbonaceous-----	7	65
	Sandstone, dark-greenish-gray, very fine to fine, clayey, carbonaceous, soft, friable-----	12	77
	Shale, black, silty, carbonaceous-----	3	80
	Lignite-----	4	84
	Shale, medium-gray and greenish-gray, bentonitic, soft-----	16	100
	Shale, light- to moderate-gray, silty to sandy, highly bentonitic, soft-----	18	118
	Limestone, buff-----	4	122
	Shale, medium-gray, soft; with interbeds of bentonite and soft siltstone-----	15	137
	Lignite-----	1	138
	Shale, brownish-black, carbonaceous-----	6	144
	Lignite-----	1	145
	Shale, brownish-black, carbonaceous-----	5	150
	Sandstone, light-greenish-gray, silt to very fine, very clayey, semiconsolidated-----	10	160
	Sandstone, light-gray, very fine, indurated-----	2	162
	Clay, white, silty to very sandy, soft-----	8	170
	Sandstone, light-olive-gray, very fine, very well-sorted, subround, weakly consolidated-----	25	195
	Shale, silty-----	3	198
	Sandstone as above-----	6	204
	Sandstone as above; but very light gray, very porous--	12	216
	Clay, bentonitic, indurated-----	2	218
	Shale, medium-gray and olive-gray, silty to sandy, bentonitic, slightly brittle-----	9	227
	Siltstone, clayey, semiconsolidated; with interbeds of gray, silty shale-----	18	245
	Shale, black, carbonaceous-----	4	249
	Lignite, black, fissile, hard-----	2	251
	Siltstone, very light-gray, clayey, sandy, moderately consolidated-----	14	265
	Shale, light-olive-gray to brown, silty, carbonaceous--	5	270
	Siltstone as above-----	18	288
	Lignite, black, hard-----	7	295
	Shale, black, carbonaceous-----	6	301
Basal Tongue River sandstone:			
	Siltstone, very light gray to light-olive-gray, clayey, sandy, locally bentonitic, soft-----	9	310
	Sandstone, light-olive-gray, very fine, well-sorted, slightly carbonaceous, weakly consolidated-----	34	344

134-94-8DCC, Continued
NDSWC 3629

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Ludlow Formation (Upper):			
	Shale, brownish-black, carbonaceous; with interbeds of bentonitic clay-----	8	352
	Lignite-----	2	354
	Shale as above-----	6	360
	Siltstone, variegated gray, green, brown, and black, clayey to sandy, carbonaceous, semiconsolidated-----	10	370
	Siltstone as above; with thin seams of lignite-----	15	385
	Shale, light- to medium-gray and brownish-black, silty; with thin interbeds of bentonite, iron-cemented concretionary siltstone, and dark-greenish-gray, soft, clayey sandstone-----	30	415
	Lignite-----	5	420
	Shale, carbonaceous; thin lignite seams-----	15	435
	Shale, greenish-gray, silty-----	5	440
	Shale, brownish-gray, brownish-black, and green, silty and sandy, carbonaceous; numerous shell fragments-----	8	448
	Sandstone, greenish-gray, very fine to fine, soft; abundant shell fragments-----	22	470
Canonball Formation:			
	Shale, medium-gray and light-olive-gray, silty, carbonaceous, brittle-----	10	480
	Shale, medium-gray, silty, smooth, brittle-----	13	493
	Siltstone, light- to medium-gray, clayey, moderately consolidated; with thin interbeds of soft, very fine, clayey sandstone and bentonitic clay-----	27	520
	Siltstone as above; with thin, hard limestone interbeds-----	24	544
	Shale, light- and medium-gray, very silty, soft to slightly brittle; with occasional thin interbeds of concretionary limestone and sandy clay-----	56	600
	Shale, medium-gray and brownish-gray, silty; with occasional thin interbeds of greenish-gray, soft, clayey sandstone and siltstone-----	10	610
	Sandstone, light-olive-gray, fine, well-sorted, sub-angular, semiconsolidated; with indurated sandstone layers from 613 to 615 ft and from 630 to 633 ft-----	29	639
	Shale, medium-gray, silty; with interbeds of soft, clayey, calcareous sandstone and siltstone-----	44	683
	Siltstone, ferruginous (?) concretionary, hard-----	12	695
	Shale, alternating light- and dark-gray, silty to sandy, locally carbonaceous, soft; and fossil shell fragments-----	28	723
Ludlow Formation (Lower):			
	Lignite-----	1	724
	Sandstone, light-greenish-gray, clayey, semiconsolidated-----	9	733
	Shale, light-olive-gray, light-greenish-gray, and brownish-black, silty and sandy, carbonaceous-----	5	738
	Lignite-----	4	742
	Shale as above-----	6	748
	Siltstone and sandstone, clayey, semiconsolidated; with interbeds of shale as above-----	12	760
	Shale, light-olive-gray to brownish-black, silty to sandy, locally carbonaceous; with interbeds of greenish-gray, sandy clay, soft, clayey sandstone, concretionary layers, and fossil shell fragments-----	40	800
	Siltstone, light-olive-gray to brownish-black with green streaks, clayey, sandy, carbonaceous, semiconsolidated-----	19	819
	Lignite-----	4	823

134-94-8DCC, Continued
 NDSWC 3629

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Ludlow Formation (Lower), Continued:			
	Siltstone, light-gray to light-greenish-gray; with dark carbonaceous zones; moderately consolidated. Cuttings appear dry on inside-----	16	839
	Sandstone, indurated-----	4	843
	Shale, gray to brown, silty-----	12	855
	Siltstone, very light gray to brownish-black, clayey, sandy, locally carbonaceous, semiconsolidated; with interbeds of dark-gray, waxy shale and thin lignite layers-----	35	890
	Shale, light-gray and light-greenish-gray, sandy; with interbeds of sandstone as above and green and gray, waxy shale-----	36	926
	Sandstone, light-greenish-gray to greenish-gray, with dark carbonaceous zones, very fine, very clayey, moderately consolidated; with interbeds of black, waxy shale and with some fossil shell fragments-----	14	940
	Lignite-----	1	941
	Shale-----	9	950
	Sandstone as above-----	5	955
	Lignite (?)-----	2	957
	Sandstone as above; with carbonaceous shale interbeds-----	11	968
	Lignite-----	1	969
	Shale, carbonaceous-----	4	973
	Lignite-----	1	974
	Shale, carbonaceous-----	9	983
	Sandstone as above-----	3	986
	Lignite-----	7	993
	Sandstone-----	3	996
Hell Creek Formation:			
	Shale, bentonitic-----	4	1000
	Sandstone, light-olive-gray and dark-greenish-gray, silt to very fine, clayey, carbonaceous, semiconsolidated; with occasional thin clay layers-----	20	1020
	Sandstone, dark-greenish-gray, very fine, well-sorted, subrounded, clean, weakly consolidated-----	30	1050
	Cored 1050-1060. Recovered 10 ft of sandstone, interbedded very fine to fine, 6-32 percent clay and silt, moderately consolidated, porous; but with low permeability-----	10	1060
	Sandstone, dark-greenish-gray, very fine and fine; with occasional interbeds of gray, silty shale, carbonaceous clay, indurated sandstone, concretionary layers, and thin lignite seams; some fossil shells in lower part-----	25	1085
	Shale, light-gray and black, silty and carbonaceous; with interbeds of sandstone as above-----	23	1108
	Siltstone, light-gray and light-greenish-gray, clayey and sandy, soft; with interbeds of dark-gray and green, relatively hard, waxy shale and some thin sandstone layers-----	14	1122
	Sandstone, dark-greenish-gray, very fine, well-sorted, porous, semiconsolidated; with occasional interbeds of indurated sandstone and shale-----	28	1150
	Sandstone, dark-greenish-gray, fine to medium, well-sorted, subangular and subround, porous, weakly consolidated-----	21	1171
	Lignite-----	2	1173
	Sandstone as above-----	3	1176
	Sandstone, light-gray and light-greenish-gray, silt to very fine, clayey, calcareous, semiconsolidated; with interbeds of dark, relatively hard shale-----	24	1200

134-94-8DCC, Continued
NDSWC 3629

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Hell Creek Formation, Continued:			
	Siltstone, light-gray and light-greenish-gray, semi-consolidated; with interbeds of dark-greenish-gray, fine to medium, soft sandstone and dark-gray to brownish-black shale-----	20	1220
	Sandstone, very light-gray to nearly black, very fine to fine, well-sorted, semiconsolidated; with concretions and fossil shell beds-----	36	1256
	Sandstone as above; increasingly clayey and with shale interbeds-----	11	1267
	Shale, brown, carbonaceous-----	29	1296
Fox Hills Formation (?):			
	Sandstone, silt to very fine, semiconsolidated; with interbeds of brownish-black shale and lignite. Poor samples from here on down-----	39	1335
	Shale, brownish-black, carbonaceous; with interbeds of light-gray, clayey, soft siltstone and sandstone and thin lignite seams-----	42	1377
	Lignite-----	2	1379
	Siltstone, light-gray, semiconsolidated; with interbeds of black shale and reddish-brown clay-----	13	1392
	Sandstone, dark-greenish-gray, fine, clean, weakly consolidated-----	18	1410
	Sandstone as above; increasingly shaly-----	13	1423
	Shale, medium- to dark-gray, silty; drills "tight"; occasional hard layers-----	30	1453
	Sandstone, light-gray, very fine, calcareous, indurated-----	5	1458
	Sandstone, shaly, semiconsolidated-----	22	1480
	Shale, dark-gray; with occasional hard layers-----	34	1514
	Sandstone, very fine to fine, lignitic, semiconsolidated; with occasional indurated sandstone and shale layers-----	112	1626
	Shale, dark-gray; with interbeds of sandstone as above-----	34	1660
	Sandstone as above; with occasional shale interbeds---	44	1704
Pierre Formation:			
	Shale, black, fairly hard-----	56	1760
134-94-12DAA A. Tollefson (Log from Moe's Well Drilling)			
Altitude: 2480 ft above msl		Date drilled: September 1964	
Quaternary deposits, undifferentiated:			
	Sand, surface; and gravel-----	16	16
Sentinel Butte Formation:			
	Clay, yellow-----	8	24
	Sand, blue-----	8	32
Tongue River Formation:			
	Coal-----	1	33
	Clay, gray-----	4.5	37.5
	Rock, hard-----	1.5	39
	Coal-----	1	40
	Sand, blue, lumpy-----	4.5	85
	Clay, brown, continuing-----	5	90
Reported dry.			

134-94-12DCD
A. Tollefson
(Log from Moe's Well Drilling)

Altitude: 2448 ft above msl

Date drilled: September 1964

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Quaternary deposits, undifferentiated:			
	Sand, surface-----	7	7
	Gravel-----	.5	7.5
	Sand-----	4.5	12
	Gravel-----	.5	12.5
	Sand, surface-----	3.5	16
Tongue River Formation:			
	Sandrock-----	3	19
	Sand, surface-----	4	23
	Sand, very fine-----	5	28
	Sandrock-----	1	29
	Sand, side of rock at 30 ft-----	1	30
	Sand, very fine-----	12	42
	Clay, gray-----	6	48
	Coal-----	1	49
	Clay, gray-----	3	52
	Coal-----	5.5	57.5
	Clay, gray-----	12.5	70
	Sand-----	7	77
	Coal-----	1	78
	Clay, brown-----	2	80
	Rock-----	.5	80.5
	Clay, gray-----	14.5	95
	Sand, fine-----	12	107
	Rock-----	1	108
	Clay-----	11	119
	Coal-----	1	120
	Clay-----	4	124
	Coal-----	.5	124.5
	Clay-----	10.5	135
	Sand-----	21	156
	Clay, gray, continuing-----	4	160

134-94-17AAA2
G. Larson
(Log from Moe's Well Drilling)

Altitude: 2466 ft above msl

Date drilled: February 1961

Sentinel Butte Formation:			
	Sand, surface-----	5	5
	Sand, green-----	15	20
	Sandrock, brown-----	1	21
	Sand, blue-----	24	45
Tongue River Formation:			
	Coal, hard-----	2	47
	Clay, gray, continuing-----	3.5	50.5

134-94-24CDC
O. Schaible
(Log from Moe's Well Drilling)

Altitude: 2420 ft above msl

Date drilled: July 1961

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation:			
	Sand, surface-----	10	10
	Sand-----	16	26
	Clay, gray-----	4	30
Tongue River Formation:			
	Coal-----	2	32
	Clay, green-----	22	54
	Coal-----	1.5	55.5
	Clay, gray-----	26.5	82
	Coal-----	3	85
	Clay, white-----	9	94
	Clay, brown-----	14	108
	Sand, gray, continuing-----	33	141

134-94-27BED
Moe Estate
(Log from Moe's Well Drilling)

Altitude: 2420 ft above msl

Date drilled: August 1962

Quaternary deposits, undifferentiated (?):			
	Sand, surface-----	18	18
Sentinel Butte Formation:			
	Clay, gray-----	4	22
	Shale-----	2	24
Tongue River Formation:			
	Coal-----	4	28
	Clay, side of rock at 32 ft-----	4	32
	Clay, gray-----	38	70
	Sand-----	8	78
	Clay-----	8	86
	Coal-----	2	88
	Clay-----	2	90
	Coal-----	13	103
	Clay, gray-----	32	135
	Sand-----	9	144
	Coal-----	5	149
	Clay-----	15	164
	Sand, very fine-----	20	184
	Coal-----	9	193
	Clay, green-----	22	215
Basal Tongue River sandstone:			
	Sand, green-----	44	259
	Rock-----	.3	259.3

134-94-28ADC
L. Kouba
(Log from Moe's Well Drilling)

Altitude: 2438 ft above msl

Date drilled: October 1961

Tongue River Formation:			
	Clay-----	23	23
	Sandrock-----	1.5	24.5
	Clay-----	13.5	38

134-94-32AAA1, Continued
Moe Estate

Geologic source	Material	Thickness (feet)	Depth (feet)
Tongue River Formation, Continued:			
	Sand, dry-----	20	295
	Clay and coal-----	15	310
	Clay-----	16	326
Basal Tongue River sandstone:			
	Sand-----	5	331
	Sandrock, white, hard-----	3	334
	Sand-----	46	380
Ludlow Formation (Upper) (?):			
	Clay, continuing-----	10	390

134-94-35CAC
NDGS A-1

Altitude: 2535 ft above msl

Date drilled: June 1969

Sentinel Butte Formation:			
	Soil, brownish-gold, silty, sandy loam-----	1	1
	Sandstone, brownish-gold with greenish-brown zones, weakly consolidated, moist-----	9	10
	Shale, yellow-green, silty, oxidized, soft-----	10	20
	Shale, yellowish-brown, silty, soft-----	5	25
	Shale, brownish-gray, silty, with limonitic layers, soft-----	5	30
	Shale, brownish-gray, silty, soft-----	14	44
	Lignite-----	2	46
	Shale, dark-brown, lignitic, soft-----	9	55
	Shale, brownish-gray, clayey-----	10	65
	Shale, grayish-brown, soft, sticky-----	5	70
	Shale, brown, soft; with oxidized zones-----	5	75
	Shale, tan, clayey, soft, plastic-----	5	80
Tongue River Formation (?):			
	Shale, carbonaceous, soft; with lignite-----	5	85
	Shale, brownish-gray, soft, with lignite chips-----	10	95
	No samples-----	20	115

134-94-35DEB
NDGS F-1

Altitude: 2508 ft above msl

Date drilled: July 1969

Sentinel Butte Formation:			
	Soil, sandy, silty loam-----	1	1
	Shale, silty and sandy, with limonitic zones, soft-----	11	12
	Shale, brownish-gray, clayey, soft; with gypsum crystals-----	1	13
	Shale, lignitic, soft-----	1	14
	Shale, yellowish-tan, plastic-----	1	15
	Lignite, black, wet-----	2.5	17.5
	Shale, brownish-black, lignitic, soft-----	1.5	19
	Shale, gray, clayey; with gypsum crystals-----	4	23
	Shale, lignitic, soft-----	1	24
	Shale, gray-brown, clayey, soft-----	1	25
	Shale, greenish-gray, clayey, soft-----	2	27
	Shale, grayish-brown, clayey, soft; with gypsum crystals-----	2.5	29.5
	Sandstone, concretionary-----	1	30.5
	Shale, clayey, water saturated-----	6	36.5

134-94-35DEB, Continued
NDGS F-1

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Tongue River Formation (?):			
	Lignite; water flowed to surface-----	4.5	41
	Shale, gray, clayey, impermeable, soft-----	13	54

134-95-1C8D
S. Binstock
(Log from Moe's Well Drilling)

Altitude: 2500 ft above msl Date drilled: July 1963

Sentinel Butte Formation:			
	Sand, surface-----	4.5	4.5
	Sandrock-----	.5	5
	Sand, surface-----	17	22
	Sand, blue-----	15.5	37.5
	Rock-----	1	38.5
	Sand-----	7.5	46
	Rock, very hard, continuing-----	5.5	51.5

134-95-1C8D
S. Binstock
(Log from Moe's Well Drilling)

Altitude: 2500 ft above msl Date drilled: July 1963

Sentinel Butte Formation:			
	Sand, surface-----	23	23
	Clay, gray-----	2	25
	Sand, gray-----	.5	25.5
	Rock, gray-----	1.5	27
	Sand, gray, fine-----	35	62
	Clay, gray-----	18	80

134-95-3B8B1
V. Greff
(Log from Moe's Well Drilling)

Altitude: 2535 ft above msl Date drilled: June 1959

Sentinel Butte Formation:			
	Sand, brown-----	40	40
	Sand, blue-----	10	50
Tongue River Formation:			
	Coal-----	13	63
	Clay, gray-----	8	71

134-95-3C8D
V. Greff
(Log from Moe's Well Drilling)

Altitude: 2460 ft above msl Date drilled: August 1961

Quaternary deposits, undifferentiated:			
	Sand, surface-----	15	15
Tongue River Formation:			
	Coal-----	1	16
	Sand-----	8	24

134-95-13ACD, Continued
Regent No. 1

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Ludlow Formation (Upper) (?), Continued:			
	Shell, hard-----	1	348
	Clay, sandy-----	10	358
	Coal-----	4	362
Cannonball Formation:			
	Clay-----	6	368
	Clay, sandy-----	10.7	378.7
	Sand, hard-----	4	382.7
	Clay, sandy-----	51.8	434.5
	Rock-----	1	435.5
	Clay, sandy-----	55.5	491
	Clay, gray-----	16.8	507.8
	Rock-----	.2	508
	Clay, gray-blue-----	18	526
	Sand, blue-----	20	546

134-95-13CDD1
R. Huffman
(Log from Moe's Well Drilling)

Altitude: 2493 ft above msl

Date drilled: July 1963

Sentinel Butte Formation:			
	Sand, surface-----	9.5	9.5
	Sandrock-----	1.5	11
	Sand, surface-----	12	23
	Clay, gray-----	8	31
Tongue River Formation:			
	Coal-----	1.5	32.5
	Clay, gray-----	11.5	44
	Sand-----	11	55
	Coal-----	5.5	60.5
	Clay, gray-----	4.5	65
	Sand, gray-----	12	77
	Rock, soft-----	1.5	78.5
	Clay, gray-----	26.5	105
	Sand, gray-----	3	108
	Coal-----	1	109
	Sand, gray, continuing-----	11	120

134-95-14ABB
C. Kunze
(Log from Moe's Well Drilling)

Altitude: 2486 ft above msl

Date drilled: June 1963

Sentinel Butte Formation:			
	Sand-----	5	5
	Clay-----	19	24
Tongue River Formation:			
	Coal-----	.5	24.5
	Clay-----	2.5	27
	Sand, water-----	8.5	35.5
	Rock-----	.5	36
	Clay-----	9	45
	Rock-----	2	47
	Sand, water-----	3	50
	Clay-----	2	52
	Coal-----	14	66
	Clay-----	32	98
	Sand-----	32	130

134-95-20AAA
NDSWC 3530

Altitude: 2572 ft above msl

Date drilled: September 1967

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Shale, dusky-yellow to yellowish-green, silty to sandy, soft-----	17	17
	Shale, light-olive-gray, silty, soft; with interbeds of variegated light-colored, soft siltstone and sandy shale-----	25	42
Tongue River Formation:			
	Lignite-----	1	43
	Shale, light-gray, silty to sandy, lignitic, soft-----	10	53
	Lignite, black, hard-----	3	56
	Shale, medium-gray, silty-----	9	65
	Sandstone, light-greenish-gray to brownish-black, very fine, clayey, semiconsolidated-----	2	67
	Lignite, black-----	4	71
	Shale, light- to medium-gray, silty to sandy, moderately soft-----	22	93
	Shale, light-gray, silty, bentonitic, soft-----	5	98
	Lignite, black, hard-----	4	102
	Shale, greenish-gray with brownish-black streaks, fine, sandy, soft-----	3	105
	Lignite-----	2	107
	Shale, greenish-gray, sandy-----	3	110
	Clay, white, bentonitic, crumbly-----	3	113
	Lignite, black-----	1	114
	Shale, carbonaceous-----	3	117
	Lignite-----	1	118
	Clay, yellowish-gray, bentonitic, soft, crumbly-----	4	122
	Shale, greenish-gray, silty-----	5	127
	Siltstone, clayey, soft-----	2	129
	Shale, light-gray, bentonitic-----	6	135
	Shale, light-gray, sandy, micaceous, soft-----	4	139
	Sandstone, light-olive-gray, very fine to fine, sub-round, slightly clayey, weakly consolidated; with thin indurated calcareous layers-----	76	215
	Clay, white, silty, calcareous, soft-----	5	220

134-95-23AAC
J. Lutz
(Log from Moe's Well Drilling)

Altitude: 2480 ft above msl

Date drilled: August 1961

Sentinel Butte Formation:			
	Sand, surface-----	20	20
Tongue River Formation:			
	Coal-----	5	25
	Clay, gray-----	43	68
	Sand-----	21	89
	Coal-----	1	90
	Clay, green-----	20	110
	Clay, brown-----	17	127
	Sand, chunks-----	15	142
	Rock, hard, continuing-----	1	143

134-95-26DAD
R. Anderson
(Log from Moe's Well Drilling)

Altitude: 2540 ft above msl

Date drilled: June 1967

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Sand, surface-----	6	6
	Clay, gray-----	1	7
	Clay, yellow-----	9	16
Tongue River Formation:			
	Coal-----	1	17
	Clay, brown-----	10	27
	Clay, gray-----	18.5	45.5
	Coal-----	2	47.5
	Clay, gray-----	4.5	52
	Sand and clay, gray, mixed-----	10.5	62.5
	Coal-----	.5	63
	Clay, gray-----	.2	63.2
	Coal-----	4.8	68
	Clay-----	21	89
	Rock-----	1.5	90.5
	Clay, gray, side of rock at 134 ft-----	44	134.5
	Coal-----	8.5	143
	Clay, green-----	11	154
	Sand and clay, mixed-----	6	160
	Sand, gray-----	13	173
	Clay, tan-----	20	193
	Coal-----	4	197
	Sand, tan-----	66.5	263.5
	Rock, medium-hard-----	1	264.5
	Sand, coarse-----	27.5	292
	Clay, white-----	34	326
	Rock-----	.5	326.5
	Clay, white-----	10.5	337
	Rock-----	1.5	338.5
Basal Tongue River sandstone:			
	Sand-----	13.5	352
	Rock-----	2	354
	Sand-----	22	376
	Clay, gray-----	20	396
	Sand, gray, very coarse-----	13	409
	Rock-----	1	410

134-95-30CCC
C. Woodruff
(Log from Moe's Well Drilling)

Altitude: 2544 ft above msl

Date drilled: May 1961

Sentinel Butte Formation (?):			
	Sand, surface-----	8	8
	Clay-----	1	9
	Sandrock-----	1	10
	Clay, gray-----	10	20
Tongue River Formation (?):			
	Coal-----	4	24
	Sand, gray-----	15.5	39.5
	Coal-----	1	40.5
	Sand-----	5.5	46
	Rock-----	1.5	47.5
	Coal-----	14.5	62
	Clay-----	13	75

134-95-30CCC, Continued
C. Woodruff

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Tongue River Formation (?), Continued:			
	Sand, gray, coarse-----	39	114
	Rock-----	.5	114.5
	Clay-----	14.5	129
	Coal, continuing-----	3	132

134-95-34CAA
V. Olson
(Log from Moe's Well Drilling)

Altitude: 2562 ft above msl Date drilled: November 1965

Quaternary deposits, undifferentiated:			
	Sand, surface-----	1	1
	Gravel-----	2.5	3.5
Sentinel Butte Formation:			
	Sand, surface-----	22.5	26
	Clay, gray-----	30	56
Tongue River Formation:			
	Coal-----	1	57
	Clay, gray-----	9.2	66.2
	Rock-----	.6	66.8
	Clay, gray-----	6.2	73
	Sand, gray, dry-----	8	81
	Coal-----	3.5	84.5
	Clay, green-----	33.5	118
	Sand, gray-----	5	123
	Clay, gray-----	3	126

134-96-3DDD
NDSWC 3718

Altitude: 2584 ft above msl Date drilled: June 1969

Sentinel Butte Formation:			
	Topsail, black, sandy silt loam-----	1	1
	Sandstone, dark-brownish-gray, silty and clayey, semiconsolidated; dry-----	10	11
	Shale, yellowish-green, yellowish-gray, and moderate-olive-brown with yellow limonite stains, smooth, oxidized, soft-----	13	24
	Sandstone, reddish-brown, oxidized above to medium-to greenish-gray below, very fine and fine, clayey, semiconsolidated; with interbeds of gray, fine indurated sandstone-----	14	38
	Shale, light- and medium-gray, silty; with interbedded yellowish-gray, soft, bentonitic clay-----	9	47
Tongue River Formation:			
	Lignite; with marcasite concretions-----	1	48
	Shale and bentonite as above-----	9	57
	Lignite-----	2	59
	Shale, variegated gray, silty to sandy, bentonitic-----	19	78
	Lignite, black, hard, fractured; takes drilling fluid-----	11	89
	Shale, medium- to dark-gray, silty, smooth, soft, plastic-----	11	100
	Shale, variegated gray and green, silty to sandy; with interbeds of gray, friable siltstone and soft, bentonitic clay-----	14	114

134-96-3DDD, Continued
NDEWC 3718

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Tongue River Formation, Continued:			
	Siltstone, gray, friable; with interbeds of shale and clay as above and thin lignite seams-----	7	121
	Shale, variegated gray and green; with interbedded silty, sandy, bentonitic and carbonaceous layers, and thin lignite seams-----	23	144
	Shale, brownish-black, carbonaceous-----	13	157
	Lignite, black, fissile, hard-----	5	162
	Shale, greenish-gray, silty to sandy-----	5	167
	Lignite-----	2	169
	Shale, brownish-black, carbonaceous-----	7	176
	Siltstone, light-greenish-gray, locally stained light-olive-gray, clayey, moderately consolidated, porous; locally grading to very fine sandstone-----	24	200

134-96-5CCD2
E. Mayer
(Log from Moe's Well Drilling)

Altitude: 2592 ft above msl Date drilled: November 1961

Sentinel Butte Formation:			
	Sand, surface-----	12	12
Tongue River Formation:			
	Coal-----	1	13
	Clay, brown-----	14	27
	Clay, gray-----	11	38
	Coal-----	10	48
	Clay, gray-----	26	74
	Rock-----	2	76
	Clay-----	9	85
	Sand, poor-----	31	116
	Clay, brown-----	2	118
	Sand, poor-----	17	135
	Sand, gray-----	5	140
	Sand-----	20	160

134-96-18BBA2
J. Jung
(Log from Moe's Well Drilling)

Altitude: 2597 ft above msl Date drilled: July 1961

Quaternary deposits, undifferentiated (?):			
	Sand, surface-----	7	7
Tongue River Formation:			
	Clay, white-----	12	19
	Clay, gray-----	17	36
	Sand, fine-----	2	38
	Clay, green-----	31	69
	Rock, hard-----	2	71
	Clay, gray-----	21	92
	Sand, gray, fine-----	7	99
	Clay, gray, continuing-----	22	121

134-96-24CC
Socony-Vacuum, M. Jacobs F-14-24P

Altitude: 2616 ft above msl, K.B., Date drilled: April 1954
2604 ft above msl, G.L.

Total depth: 10,433 ft. See North Dakota Geological Survey well-summary, Circ. 90, 1954.

Altitude: 2610 ft above msl

Date drilled: November 1968

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation:			
	Topsail, black, sandy loam-----	1	1
	Sandstone, yellowish-gray with heavy limonite stains, fine, oxidized, friable-----	10	11
	Lignite-----	1	12
	Shale, medium-olive-brown, sandy, oxidized, soft; dry-	10	22
	Siltstone, light-yellowish-green, clayey to sandy, partly oxidized, soft, slightly plastic-----	11	33
	Shale, light-gray, silty, soft, plastic-----	5	38
Tongue River Formation:			
	Lignite, moderately hard, brittle, fractured; takes drilling fluid-----	3	41
	Shale, light-gray, silty, nonfissile, soft, plastic; becomes carbonaceous downward-----	20	61
	Lignite, black, fissile, hard, fractured; takes drilling fluid-----	4	65
	Shale, carbonaceous-----	5	70
	Sandstone, medium-gray, with dark-greenish-gray spots and dark carbonaceous stains, silt to very fine, clayey, semiconsolidated-----	9	79
	Siltstone, light-gray to light-greenish-gray, soft crumbly-----	7	86
	Siltstone, dark-gray, highly calcareous, indurated---	2	88
	Shale, silty-----	3	91
	Sandstone, medium-gray, silt to very fine, clayey, semiconsolidated-----	7	98
	Siltstone, light-gray and light-greenish-gray, soft crumbly-----	14	112
	Shale, light-gray, silty, bentonitic, soft, plastic---	8	120
	Shale, light- to medium-gray, silty; with interbeds of bentonitic clay and lignite-----	24	144
	Sandstone, light-olive-gray, very fine and fine, sub-angular and subround, slightly carbonaceous, weakly consolidated; takes drilling fluid-----	80	224
	Shale, light-gray, silty, soft, plastic; with interbedded bentonitic clay-----	16	240
	Lignite, black; with pyrite crystals on fracture surfaces-----	5	245
	Shale, dark-greenish-gray and medium-gray, interbedded, silty, bentonitic, soft, slightly plastic-----	5	250
	Sandstone, dark-greenish-gray, very fine, clayey, carbonaceous, semiconsolidated-----	8	258
	Shale, medium-gray, silty, bentonitic, soft-----	6	264
	Lignite, black, fissile, hard, fractured-----	6	270
	Shale, light- and medium-gray, silty, soft; interbedded with soft, clayey siltstone-----	11	281
Basal Tongue River sandstone:			
	Sandstone, light-olive-gray, very fine and fine, sub-angular and subround, fairly clean, slightly carbonaceous, weakly consolidated-----	52	333
	Shale, sandy, slightly carbonaceous-----	5	338
	Sandstone, light-olive-gray, very fine to fine, lignitic; abundant fossil shell fragments; weakly consolidated-----	11	349
	Shale, light- and medium-gray, silty, soft; with soft, shaly sandstone interbeds-----	13	362
	Sandstone, dark-greenish-gray with dark stains, very fine to fine, clayey, carbonaceous, semiconsolidated--	6	368

134-96-25BBB1, Continued
NDSWC 3687

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Cannonball Formation:			
	Shale, variegated gray and green, silty; with interbeds of bentonitic clay-----	12	380
	Shale, mostly medium-gray with greenish-gray and dark-gray, silty to sandy, soft; with thin interbeds of soft, clayey siltstone and sandstone and occasional concretions-----	28	408
	Shale, carbonaceous-----	5	413
	Shale, silty and sandy-----	9	422
	Sandstone, light-gray, very fine, calcareous, indurated-----	2	424
	Sandstone, dark-greenish-gray, very fine, clayey, soft; contains fossil shell fragments-----	13	437
	Shale, medium-gray to dark-gray, silty, slightly brittle-----	3	440
	Sandstone, soft, as above; with shell fragments-----	14	454
	Shale, sandy, carbonaceous-----	8	462
	Sandstone, greenish-gray, very fine, calcareous, indurated-----	4	466
	Shale, variegated gray and green, silty, smooth, moderately hard-----	36	502
	Shale, dark-gray to dark-greenish-gray, silty to sandy-----	8	510
	Sandstone, moderately consolidated-----	2	512
	Shale as above-----	12	524
	Shale, dark-gray with black specks, silty, smooth, brittle; occasional thin hard layers-----	70	594
	Sandstone, dark-greenish-gray, very fine, clayey, slightly carbonaceous, soft-----	4	598
	Sandstone as above; but indurated-----	2	600
	Sandstone, dark-greenish-gray, very fine, clayey, soft	8	608
	Shale, dark-gray and brownish-gray, silty; with black carbonaceous inclusions-----	17	625
	Sandstone, greenish-gray, fine, clayey, soft, friable	25	650
	Shale, dark-gray, silty to sandy; with interbeds of clayey sandstone and occasional concretions-----	22	672
Ludlow Formation (?):			
	Shale, brownish-black, carbonaceous, fissile, fairly hard-----	28	700

134-96-32ADD2
L. Doe
(Log from Mann Drilling Co.)

Altitude: 2710 ft above msl Date drilled: September 1963

Sentinel Butte Formation:			
	Clay, brown, sandy-----	25	25
	Clay, gray-----	18	43
	Coal-----	2	45
	Silt-----	32	77
	Clay, gray-----	11	88
Tongue River Formation (?):			
	Coal-----	2	90
	Silt-----	22	112
	Clay-----	45	157
	Coal-----	2	159
	Clay-----	37	196
	Clay, sandy-----	8	204

134-96-32ADD2, Continued
L. Doe

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Tongue River Formation (?), Continued:			
	Coal-----	11	215
	Clay-----	2	217
	Sandstone, medium-----	8	225
	Clay-----	15	240
	Sandstone, soft-----	.4	240.4

134-97-7ADA1
R. Nelson
(Log from Sander and Son)

Altitude: 2704 ft above msl Date drilled: March 1946

Sentinel Butte Formation (?):			
	Soil, dark, surface-----	2	2
	Clay, yellow, gumbo-----	16	18
	Rock, gray-----	1	19
	Clay, gray, gumbo-----	33	52
Tongue River Formation (?):			
	Coal, black-----	6	58
	Clay, gray, gumbo-----	76	134
	Sand, gray-----	1	135

134-97-7ADD
R. Nelson
(Log from Sander and Son)

Altitude: 2695 ft above msl Date drilled: 1962

Quaternary deposits, undifferentiated (?):			
	Sand-----	17	17
Tongue River Formation:			
	Coal and clay-----	18	35
	Clay-----	41.5	76.5
	Rock-----	1.5	78
	Sand and clay-----	24	102
	Coal, sand, and clay (vein used)-----	8	110
	Clay-----	5	115
	Coal and clay-----	31	146
	Rock, hard-----	2	148
	Clay with coal ledges-----	56	204
	Coal-----	13	217
	Sand, white, seep vein-----	11	228
	Clay-----	7	235

134-97-7BCC
O. Bakke
(Log from Sander and Son)

Altitude: 2694 ft above msl Date drilled: --

Sentinel Butte Formation (?):			
	Clay, brown-----	22	22
	Rock ledge-----	.5	22.5
Tongue River Formation (?):			
	Coal-----	6.5	29

134-97-7B06, Continued
O. Bakke

Geologic Source	Material	Thickness (feet)	Depth (feet)
Tongue River Formation (?), Continued:			
	Clay	21	50
	Rock	1	51
	Clay, gray	34	85
	Clay and sand	25	110
	Sand	10	120
	Clay	2	122

134-97-8C0A2
C. Nelson
(Log from Sander and Son)

Altitude: 2684 ft above msl Date drilled: October 1963

Sentinel Butte Formation (?):
Clay, brown----- 21 21

Geologic Source	Material	Thickness (feet)	Depth (feet)
Tongue River Formation (?):			
	Coal	2.5	23.5
	Clay, gray	12.5	36
	Sand, first vein	7	43
	Clay	5	48
	Coal	3	51
	Clay	1	52
	Coal	3	55
	Clay	4	59
	Coal	2	61
	Clay	37	98
	Sand, vein used	2	100

134-97-9M0C
D. Bohnhoff
(Log from Moe's Well Drilling)

Altitude: 2693 ft above msl Date drilled: October 1961

Geologic Source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Sand, surface	20	20
	Sandrock, soft	2.5	22.5
	Sand, surface	10.5	33
	Sandrock, soft	2	35
	Sand	11	46
	Sand, water	2	48

Geologic Source	Material	Thickness (feet)	Depth (feet)
Tongue River Formation:			
	Coal	10	58
	Clay and sand	12	70
	Clay	12	82
	Sandrock	1.5	83.5
	Sand	16.5	100
	Rock	1	101
	Clay, continuing	10	111

134-97-10CBD2
M. Jung
(Log from Moe's Well Drilling)

Altitude: 2664 ft above msl Date drilled: October 1962

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Sand, surface-----	12	12
	Clay, yellow-----	13	25
Tongue River Formation:			
	Coal-----	12	37
	Clay, green-----	35	72
	Sandrock-----	5	72.5
	Clay-----	12.5	85
	Sand-----	3	88
	Clay-----	13	101

134-97-15BCB
E. Erickson
(Log from Moe's Well Drilling)

Altitude: 2689 ft above msl Date drilled: October 1966

Sentinel Butte Formation:			
	Sand, brown, surface, soft-----	3	3
	Sand, yellow, soft-----	9	12
	Clay, yellow, soft-----	7	19
	Clay, gray, soft-----	5.5	24.5
Tongue River Formation:			
	Coal, hard-----	4.5	29
	Clay, gray, hard-----	1	30
	Coal, hard-----	5	35
	Clay, gray, soft-----	8	43
	Sand, gray, soft-----	15	58
	Clay, gray, hard-----	4.5	62.5
	Sand, gray, hard, tested water at 12 gpm-----	15.5	78
	Clay, gray, hard-----	6	84
	Clay, green, soft-----	16.5	100.5
	Rock, tan, hard-----	3.5	104
	Sand, gray, medium-fine, soft-----	72	176
	Sandrock, gray, very, very hard-----	3	179

134-97-15CCCL
NDSWC 3555

Altitude: 2677 ft above msl Date drilled: October 1967

Sentinel Butte Formation:			
	Topsail, grayish-brown, sandy-----	1	1
	Shale, dusky-yellow with limonite stains, silty, oxidized, soft-----	16	17
Tongue River Formation:			
	Lignite-----	1	18
	Shale, light- to medium-gray, silty, soft-----	31	49
	Siltstone, very light gray to light-greenish-gray, soft, crumbly-----	19	68
	Sandstone, light-olive-gray, very fine, well-sorted, subround, weakly consolidated; becoming somewhat clayey downward-----	53	121

134-97-15CCCL, Continued
NDSWC 3555

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Tongue River Formation, Continued:			
	Siltstone, buff, indurated-----	3	124
	Siltstone, light-gray, clayey, soft-----	3	127
	Siltstone, indurated-----	2	129
	Sandstone, very fine, weakly consolidated; as above---	15	144
	Shale, interbedded light- to dark-gray, silty to sandy, soft-----	22	166
	Siltstone, light-gray, carbonaceous, soft-----	2	168
	Lignite-----	3	171
	Siltstone, soft, as above-----	5	176
	Sandstone, light-gray, very fine, carbonaceous, clayey, semiconsolidated-----	11	187
	Siltstone, sandy, very clayey, carbonaceous, soft-----	7	194
	Lignite-----	2	196
	Siltstone, sandy, very clayey, carbonaceous, soft-----	5	201
	Shale, gray, silty, carbonaceous-----	8	209
	Lignite-----	1	210
	Shale, gray, silty, carbonaceous-----	3	213
	Siltstone, very clayey, carbonaceous, soft-----	8	221
	Lignite, black-----	2	223
	Shale, brownish-gray and black, silty, slightly brittle-----	10	233
	Shale, light-gray to light-greenish-gray, silty, slightly brittle; with thin interbeds of soft, clayey siltstone and sandstone-----	30	263
Basal Tongue River sandstone:			
	Sandstone, light-olive-gray, silt to very fine, weakly consolidated-----	37	300
	Siltstone, variegated gray, sandy, clayey, carbonaceous, soft-----	4	304
	Clay, white, sandy, calcareous, soft-----	9	313
	Sandstone, white to medium-gray, silt to very fine, clayey, weakly consolidated-----	19	332
	Clay as above-----	16	348
	Siltstone, sandy, soft-----	9	357
	Shale, very light to medium-gray, silty-----	3	360
	Siltstone, clayey-----	7	367
	Shale, very light to medium-gray, silty-----	13	380
	Siltstone, medium-gray, clayey, soft-----	15	395
Ludlow Formation (Upper):			
	Shale, silty, carbonaceous-----	5	400
	Siltstone, medium-gray, clayey, soft-----	9	409
	Lignite-----	1	410
	Shale, carbonaceous-----	3	413
Cannonball Formation:			
	Sandstone, greenish-gray, very fine, clayey, semi-consolidated-----	10	423
	Shale, greenish-gray, sandy, soft; with silty and carbonaceous interbeds-----	12	435
	Shale, interbedded light-gray dense to greenish-gray sandy-----	27	462
	Sandstone, indurated-----	2	464
	Shale as above; with interbeds of greenish-gray, clayey, soft sandstone-----	36	500
	Shale, medium-gray, silty, soft-----	21	521
	Sandstone, dark-greenish-gray, very fine, clayey, moderately consolidated; with fossil shell fragments--	11	532
	Shale, interbedded light- to medium-gray tight and dark-greenish-gray sandy-----	35	567
Ludlow Formation (Lower):			
	Lignite-----	2	569
	Shale, brownish-black, sandy, carbonaceous-----	8	577

134-97-15CCCL, Continued
 NDSWC 3555

Geologic source	Material	Thickness (feet)	Depth (feet)
Ludlow Formation (Lower), Continued:			
	Shale, light-gray, light-greenish-gray, and brownish-black, silty to sandy; with occasional thin, indurated siltstone layers-----	15	592
	Siltstone, light-olive-gray, locally carbonaceous, semiconsolidated-----	16	608
	Sandstone, greenish-gray, fine-grained, indurated-----	3	611
	Sandstone, greenish-gray, very fine, clayey, semiconsolidated; with occasional thin, indurated sandstone layers-----	30	641
	Shale-----	14	655
	Shale, carbonaceous-----	10	665
	Sandstone, greenish-gray, very fine, clayey, semiconsolidated-----	8	673
	Sandstone, indurated-----	2	675
	Sandstone, greenish-gray, very fine, clayey, semiconsolidated-----	18	693
	Shale, dark, carbonaceous-----	5	698
	Sandstone, light-greenish-gray to light-olive-gray, very fine, carbonaceous, semiconsolidated; with interbeds of dark, carbonaceous shale and indurated sandstone-----	40	738
	Lignite-----	2	740
	Sandstone, light-gray to brownish-gray, silt to very fine, carbonaceous; with interbeds of indurated sandstone and siltstone-----	15	755
	Lignite-----	2	757
	Sandstone as above-----	16	773
	Shale, gray and green, soft to brittle-----	14	787
	Shale, variegated gray and green, silty; with thin, semiconsolidated siltstone and sandstone interbeds-----	30	817
	Shale, gray to olive-black, fissile, brittle-----	20	837
	Shale, variegated gray and green, soft to brittle; with interbeds of clayey, soft siltstone and sandstone-----	23	860
	Siltstone, light-gray, calcareous, indurated-----	3	863
	Shale, carbonaceous-----	13	876
	Lignite-----	3	879
Hell Creek Formation (?):			
	Shale, brownish-gray, carbonaceous; with thin, buff, calcareous concretionary layers-----	21	900
	Shale, variegated gray, green, and brown, pyritic, moderately hard; with numerous interbeds of semiconsolidated, shaly siltstone and sandstone and thin, hard concretionary layers-----	100	1000
134-97-20DAA P. Johnson (Log from Sander and Son)			
Altitude: 2746 ft above msl		Date drilled: 1951	
Sentinel Butte Formation:			
	Soil, dark, surface-----	2	2
	Clay, yellow, sandy-----	59	61
	Clay, gray-----	14	75
Tongue River Formation (?):			
	Coal and clay, black-----	10	85
	Clay, gray-----	13	98
	Clay, light, sandy-----	1	99
	Clay, light-----	48	147
	Sand, gray, water-----	7	154

134-97-22BCC2
M. Erickson
(Log from Moe's Well Drilling)

Altitude: 2701 ft above msl

Date drilled: October 1966

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Sand, brown, surface, soft	1	1
	CLAY, white, soft	3	4
	Sand, yellow, soft	2	6
	CLAY, gray, hard	8	14
Tongue River Formation:			
	Coal, slack, soft	2	16
	CLAY, gray, soft	2	18
	Coal, slack, soft; tested water at the rate of 4 gpm	7	25
	CLAY, gray, soft	1	26
	Rock, gray, soft	12	38
	CLAY, brown, hard	1	39
	CLAY, gray, hard	12	51
	Coal, soft	1	52
	CLAY, gray, soft	4.5	56.5
	Coal, hard	6	57
	CLAY, green, soft	6.5	63
	CLAY, gray, soft	17	80
	Sand, gray, medium-fine, soft	102	182
	Coal, hard	3	185
	Rock, black, hard	1	186
	Sand, blue, very coarse, soft	17	203
	CLAY, gray, soft	4	207

134-97-28BAA2
W. Johnson
(Log from Sander and Son)

Altitude: 2770 ft above msl

Date drilled: 1960

Sentinel Butte Formation:			
	CLAY, brown	12	12
	CLAY, gray	7	19
	Sand	4	23
	CLAY	10	33
Tongue River Formation (?):			
	CLAY and coal	5	38
	CLAY	17	55
	CLAY and coal	13	68
	CLAY	6	74
	CLAY	13	87
	CLAY and sand		
	Sand, water (first vein, white water - 1 gpm, rises to 87 ft)	15	102
	Coal	6	108
	CLAY and sand	57	165
	CLAY, sand, and coal mixed (second vein - water rises to 140 ft)	20	185
	CLAY	23	208
	Rock	1	209
	CLAY	41	250
	Rock	1	251
	CLAY	13	264
	CLAY, hard	21	285
Basal Tongue River sandstone:			
	Sand, fine (third vein, muddy water - 4 gpm)	35	320
	Sand and clay	50	370

134-97-32DDB2
L. Bohmhoff
(Log from Moe's Well Drilling)

Altitude: 2739 ft above msl

Date drilled: October 1961

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Sand, surface-----	49	49
	Sand, water-----	38	87
Tongue River Formation:			
	Coal-----	3	90
	Clay, continuing-----	1	91

134-97-34DAA3
O. Stermoen
(Log from Moe's Well Drilling)

Altitude: 2794 ft above msl

Date drilled: October 1966

Sentinel Butte Formation:			
	Sand, yellow, surface, soft-----	7	7
	Clay, yellow, hard-----	4	11
	Clay, gray, hard-----	5.5	16.5
	Coal, slack, soft-----	1	17.5
	Clay, gray, hard-----	4.5	22
	Sand, yellow, soft-----	68	90
	Sandstone, gray, medium-hard-----	2.5	92.5
	Sand, yellow, soft-----	6.5	99
	Rock, gray, very hard-----	.5	99.5
	Sand, yellow, soft-----	4.5	104
	Sand, gray, soft, water-----	35.5	139.5
Tongue River Formation:			
	Coal, hard-----	4.5	144
	Clay, gray, hard-----	6	150
	Sand, gray, medium-fine, soft-----	10	160
	Rock, hard-----	1	161
	Sand, gray, coarse, soft, continuing-----	28	189

135-91-6DAA3
E. Hirning
(Log from Moe's Well Drilling)

Altitude: 2461 ft above msl

Date drilled: October 1964

Sentinel Butte Formation:			
	Sand, surface-----	18	18
	Clay, dry-----	7.5	25.5
	Sandrock-----	.5	26
	Clay, gray-----	7	33
Tongue River Formation (?):			
	Coal-----	9.5	42.5
	Rock-----	.5	43
	Clay, green-----	35	78
	Coal-----	.5	78.5
	Clay, green-----	6.5	85
	Coal-----	.5	85.5
	Clay, green-----	4.5	90
	Clay, gray-----	5	95
	Coal-----	3.5	98.5
	Clay, gray-----	2.5	101

135-91-6DAA3, Continued
E. Hirning

Geologic source	Material	Thickness (feet)	Depth (feet)
Tongue River Formation (?), Continued:			
	Coal-----	1	102
	Clay, gray-----	2	104
	Rock-----	1	105
	Clay, gray-----	7	112
	Coal-----	.5	112.5
	Clay, green-----	5	117.5
	Coal-----	.5	118
	Clay, green-----	5	123
	Rock-----	.5	123.5
	Clay, green-----	2.5	126
	Rock-----	.4	126.4
	Clay, green-----	9.6	136
	Clay, green-----	6.5	142.5
	Coal-----	2.5	145
	Clay, green-----	20	165
	Sand, very fine-----	11	176
	Rock, side-----	-	176
	Sand-----	2	178
	Clay, gray-----	65	243
	Coal-----	4	247
	Sand and clay-----	4	251
	Clay, green-----	4	255
	Coal-----	1	256
	Clay, gray-----	10	266
	Rock-----	.2	266.2
	Clay, gray-----	5.8	272
	Coal-----	6	278
	Clay, gray-----	7	285

135-91-8DCC
USGS Conservation Division Drill Hole No. 2
(Log from George Mowat)

Altitude: 2562 ft above msl

Date drilled: 1966

Sentinel Butte Formation:			
	Siltstone, yellowish-gray to dusky-yellow (dry)-----	9.5	9.5
	Sandstone, yellowish-olive-gray (moist), very fine---	8.3	17.8
	Sandstone, orangish-brown (moist), very fine, clayey--	2.2	20
	Sandstone, yellowish-olive-gray (moist), very fine---	3	23
	Claystone, yellowish-gray (dry), olive-gray (wet), slightly silty, slightly carbonaceous-----	7	30
	Claystone, light-olive-gray to dusky-yellow (wet), silty-----	5	35
	Claystone, olive-gray (moist), silty-----	2.8	37.8
	Coal, attrital, hard. Some FeS ₂ present-----	3	40.8
	Siltstone, mottled yellowish- to dusky-yellowish- brown (moist), carbonaceous-----	.8	41.6
	Coal, attrital-----	4	45.6
	Claystone, medium-dark-gray (moist); with carbonaceous fragments-----	3.4	49
	Siltstone and some very fine sandstone, light-gray (dry)-----	8	57
	Siltstone, very light-gray (dry); slightly clayey above grading to silty claystone below-----	7	64
	Claystone, dark-greenish-gray (moist), greenish- gray (dry), silty. Siltier below-----	8	72
	Mudstone, olive-gray (moist)-----	5.2	77.2
	Coal, attrital, hard-----	3	80.2
	Claystone, medium-light-gray (moist), grading to medium-gray (moist) below, fine, silty-----	7.8	88
	Claystone, medium-dark-gray (moist), silty-----	.4	88.4

135-91-8DCC, Continued
USGS Conservation Division Drill Hole No. 2

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation, Continued:			
	Mudstone, light-gray (dry)-----	6.8	95.2
	Claystone, medium-light-gray (dry), silty, slightly carbonaceous-----	.2	95.4
	Claystone, olive-gray (moist) above to light-gray (dry) below, silty-----	11.6	107
	Siltstone, light-gray (dry), clayey-----	6	113
	Claystone, olive-gray (moist), silty, platy, and coated with powdery coal-----	1	114
	Claystone, dusky-yellowish-brown (moist), silty, platy; coated with coaly powder-----	.4	114.4
	Coal, powdery-----	.1	114.5
	Siltstone, dark-greenish-gray (moist), greenish-gray (dry), clayey-----	1.2	115.7
	Siltstone, olive-gray (wet), clayey-----	10.3	126
	Claystone, dark-greenish-gray (wet) above to olive-gray (wet) below, silty-----	9	135
	Siltstone, olive-gray (wet), very clayey-----	5	140
	Claystone, olive-gray (wet), silty-----	7	147
Tongue River Formation:			
	Coal, attrital, hard-----	.5	147.5
	Claystone, olive-gray (wet), silty-----	2.5	150
	Claystone, greenish-gray (wet), slightly silty-----	5	155
	Claystone, greenish-gray (moist), slightly silty-----	10	165
	Siltstone, dark-greenish-gray (moist), clayey-----	5	170
	Siltstone, olive-gray (moist), slightly clayey-----	.2	170.2
	Siltstone, light-gray (dry)-----	2.7	172.9
	Siltstone, light-olive-gray (dry), clayey, laminated--	.4	173.3
	Concretion, medium-light-gray (dry), aphanitic, calcareous, hard-----	.2	173.5
	Siltstone, light-olive-gray (dry), laminated, clayey.		
	Carbonaceous laminations at 198.8 ft-----	36.5	210
	Siltstone, olive-gray (moist), massive, slightly clayey-----	5.2	215.2
	Claystone, light-gray (dry), silty-----	1.8	217
	Siltstone, light-olive-gray (moist), clayey. FeS ₂ concretion 1 inch diameter in this interval-----	3.8	220.8
	Claystone, greenish-gray (moist), silty-----	2.3	223.1
	Siltstone, lower 0.2 ft yellowish-gray (dry) rest greenish-gray (moist), slightly clayey-----	1.1	224.2
	Claystone, light-greenish-gray (dry), silty-----	1.2	225.4
	Siltstone and very fine sandstone, olive-gray (moist), light-gray (dry). A carbonaceous, clayey interval 0.2 ft thick present-----	12.1	237.5
	Siltstone, olive-gray (moist), laminated, clayey-----	2.8	240.3
	Siltstone, light-olive-gray (dry), laminated in part, clayey-----	2.8	243.1
	Sandstone, very fine and siltstone, olive-gray (wet)--	9.9	253
	Sandstone, olive-gray (wet), very fine, poorly consolidated-----	52	305
	Coal, black, attrital, hard-----	.5	305.5
	Sandstone, olive-gray (wet), light-gray (dry), very fine, unconsolidated-----	7.5	313
	Claystone, olive-gray (dry), silty; with scattered mollusk shells-----	.4	313.4
	Claystone, dark-olive-gray (moist) above to dusky-yellowish-brown (moist) below, silty; with a few scattered small mollusk shells, mostly flattened gastropods-----	1.9	315.3
	Claystone, olive-gray (moist), silty; with moderately abundant somewhat fragmented and flattened gastropods, most abundant 315.6 to 315.7 ft-----	1.4	316.7

135-91-8DCC, Continued
 USGS Conservation Division Drill Hole No. 2

Geologic source	Material	Thickness (feet)	Depth (feet)
Tongue River Formation, Continued:			
	Siltstone, dark-yellowish-brown above to dusky-yellowish-brown (dry) below, clayey, carbonaceous; with flattened mollusks scattered throughout and moderately abundant in top 0.2 ft-----	1.3	318
	Iron sulfide (FeS ₂), concretionary layer-----	.1	318.1
	Siltstone, brownish-black (dry), clayey-----	.1	318.2
	Lignite, attrital-----	.2	318.4
	Claystone, brownish-black, (dry), coaly-----	.1	318.5
	Claystone, brownish-gray (wet) top 0.4 ft, rest olive-gray (moist), coarse, silty-----	1	319.5
	Sandstone, light-gray (dry), very fine to fine; with minor laminated siltstone and scattered shells-----	7.2	326.7
	Lignite-----	5.5	332.2
	Claystone, olive-gray (wet), sandy-----	.3	332.5
	Claystone, olive-gray, (moist), slightly silty-----	2.8	335.3
	Siltstone, olive-gray (wet), very slightly clayey-----	1.4	336.7
	Claystone, light-olive-gray (dry), silty-----	1	337.7
	Siltstone, olive-gray (wet)-----	1	338.7
	Claystone, olive-gray (wet), light-gray (dry), silty-----	1	339.7
	Siltstone, olive-gray (wet), light-olive-gray (dry), laminated-----	.6	340.3
Basal Tongue River sandstone:			
	Sandstone, light-gray (dry), fine, friable-----	12.2	352.5
	Sandstone, medium-light-gray (dry), medium-grained, poorly sorted-----	9.8	362.3
	Claystone, olive-gray (wet), very silty-----	.5	362.8
	Sandstone, medium-light-gray (dry), medium to very fine, poorly sorted; with clay pebbles up to 4 mm across. Weakly consolidated, with coal fragments-----	20.2	383
	Sandstone, medium-gray (wet), medium-grained, poorly sorted, weakly consolidated, slightly calcareous-----	12.9	396.9
	Sandstone, light-gray (dry), medium-grained, hard, well cemented, calcareous-----	.8	397.7
	Sandstone, medium-gray (wet), medium-grained, weakly consolidated, slightly calcareous-----	5.3	403

135-91-12CAB2
 L. Schramm
 (Log from Moe's Well Drilling)

Altitude: 2410 ft above msl Date drilled: May 1964

Sentinel Butte Formation:			
	Sand, surface-----	36	36
	Sand, brown-----	6	42
Tongue River Formation (?):			
	Coal-----	3	45
	Clay, green-----	7	52
	Sand, gray, chunk-----	6	58
	Sand, gray, coarse-----	33	91
	Rock-----	1.5	92.5
	Sand, gray, coarse-----	6.7	99.2
	Rock-----	1.3	100.5
	Sand, gray, coarse-----	45.5	146

Section reported to be dry down to 100.5 ft.

135-91-20ACB
S. Roll
(Log from Moe's Well Drilling)

Altitude: 2481 ft above msl

Date drilled: August 1968

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation:			
	Clay, yellow-----	16	16
	Clay, gray-----	3	19
	Coal, dry-----	7	26
	Clay, gray-----	50	76
	Rock-----	5	81
Tongue River Formation (?):			
	Coal-----	8	89
	Clay, brown-----	142	231
	Coal-----	.8	231.8
	Clay, gray-----	8.2	240
	Clay, gray, silty-----	13	253
	Rock, medium-hard-----	2.5	255.5
Basal Tongue River sandstone:			
	Sand, very fine-----	24.5	280
	Rock, hard-----	1	281
	Sand, gray-----	79	360
	Coal-----	2.5	362.5
	Sand, gray, medium-coarse-----	17.5	380
	Rock, soft-----	1	381
	Sand, gray, medium-coarse-----	29	410
	Clay, gray-----	10	420

135-91-21CCC
P. Roll
(Log from Moe's Well Drilling)

Altitude: 2499 ft above msl

Date drilled: September 1961

Sentinel Butte Formation:			
	Sand, surface, dry-----	8	8
	Sand, blue, dry-----	5	13
	Clay, green, dry-----	5	18
	Clay, gray-----	11.5	29.5
	Rock, flint, hard-----	2.5	32
	Clay, gray-----	10	42
Tongue River Formation (?):			
	Coal-----	3.5	45.5
	Clay, gray, continuing-----	14.5	60

135-91-28CCB3
V. Meier
(Log from Moe's Well Drilling)

Altitude: 2500 ft above msl

Date drilled: December 1967

Sentinel Butte Formation:			
	Sand, surface-----	15	15
	Sandrock-----	1.5	16.5
	Sand, yellow-----	23.5	40
	Clay, gray-----	6	46
Tongue River Formation (?):			
	Coal-----	2	48
	Clay, gray-----	23	71

135-91-28CCB3, Continued
V. Meier

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Tongue River Formation (?), Continued:			
	Rock-----	1.5	72.5
	Clay, gray-----	18.5	91
	Rock-----	1.5	92.5
	Sand and clay, gray-----	4.5	97
	Coal-----	1.5	98.5
	Clay and coal layers-----	21.5	120

135-91-31AAD2
T. Meier
(Log from Moe's Well Drilling)

Altitude: 2432 ft above msl Date drilled: July 1968

Tongue River Formation:			
	Sand, surface-----	1	1
	Clay, gray, with coal-----	13	14
	Coal, soft, tested water at the rate of 2 gpm-----	3	17
	Clay, gray, silty-----	53	70
	Sand, gray, very fine to fine-----	34	104
	Coal-----	4	108
	Clay, gray-----	6	114

135-91-32BBB2
M. Frieze
(Log from Moe's Well Drilling)

Altitude: 2445 ft above msl Date drilled: September 1968

Sentinel Butte Formation:			
	Topsoil-----	1	1
	Clay, gray-----	26	27
Tongue River Formation (?):			
	Coal-----	.5	27.5
	Clay, gray-----	9	36.5
	Sandrock, soft-----	.7	37.2
	Clay, gray-----	8.8	46
	Coal-----	3	49
	Clay, gray-----	2	51
	Coal-----	6	57
	Clay, gray-----	20	77
	Sand, gray, very fine, continuing-----	63	140

135-92-2CCC
NDSWC 3669

Altitude: 2523 ft above msl Date drilled: November 1968

Sentinel Butte Formation:			
	Sandstone, black, fine, carbonaceous, weakly consolidated; dry-----	7	7
	Shale, light-olive-gray, sandy, brittle-----	7	14
	Sandstone, yellowish-gray, interbedded medium and fine, weakly consolidated, oxidized; dry-----	5	19
	Sandstone as above; with interbeds of soft siltstone and shale-----	25	44
	Lignite; dry-----	4	48

135-92-2CCC, Continued
NDSWC 3669

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation, Continued:			
	Shale, sandy, soft-----	8	56
	Siltstone, very light-gray, calcareous, soft-----	18	74
	Shale, medium-gray, silty, soft-----	6	80
	Shale, interbedded light-gray to black, silty, carbonaceous, soft-----	21	101

Tongue River Formation:			
	Shale, thinly interbedded very light gray, greenish-gray, to black, silty to sandy, soft-----	12	113
	Siltstone, light-gray, interbedded clayey to sandy, soft-----	27	140
	Lignite, black, hard, fractured-----	8	148
	Shale, interbedded light- and medium-gray, silty to sandy, soft; with thin interbeds of light-gray, very fine, weakly consolidated sandstone-----	52	200

Drilled with air - section penetrated yielded very little water.

135-92-3CCD
F. Mosbrucker
(Log from Moe's Well Drilling)

Altitude: 2565 ft above msl Date drilled: September 1964

Sentinel Butte Formation:			
	Sand, surface-----	8	8
	Clay, yellow-----	5.5	13.5
	Rock-----	1	14.5
	Sand, surface-----	45.5	60
	Sand, gray-----	9	69
	Coal-----	7	76
	Clay, gray, continuing-----	4	80

135-92-14DDD2
J. Ottmar
(Log from Opp Drilling Co.)

Altitude: 2464 ft above msl Date drilled: August 1963

Sentinel Butte Formation:			
	Clay, blue-----	24	24
	Coal, soft-----	1	25
	Clay, yellow-----	5	30
	Sand and clay, blue-----	5	35
Tongue River Formation (?):			
	Clay, blue-----	23	58
	Sand, blue, coarse-----	5	63
	Sand, blue, fine, hard, dry-----	27	90
	Sand, gray-----	12	102
	Sand, blue-----	8	110
	Sand, bluish gray-----	8	118
	Coal, hard-----	1	119
	Clay, sandy-----	5	124
	Clay with strips of coal-----	7	131
	Coal, dry-----	4	135
	Sand, blue-gray, very fine, hard; coarser from 140 to 150 ft-----	16	151
	Clay, sandy-----	2	153

135-92-17DDD
NDSWC 3707

Altitude: 2452 ft above msl

Date drilled: June 1969

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation:			
	Topsoil, black, silty to sandy loam-----	1	1
	Shale, brown, silty and sandy, soft, crumbly; dry----	7	8
	Siltstone, reddish-brown, iron-stained, indurated----	4	12
	Shale, yellowish-gray, silty, brittle-----	8	20
	Shale, variegated light-gray and green, silty; with interbeds of yellowish-gray, bentonitic clay-----	23	43
Tongue River Formation:			
	Lignite, black, hard, fractured-----	4	47
	Shale, medium-gray and brownish-black, carbonaceous, soft, plastic-----	13	60
	Siltstone, very light-gray, soft-----	7	67
	Shale, light-gray, silty, locally carbonaceous-----	3	70
	Lignite, black, hard, brittle-----	9	79
	Clay, medium-gray, bentonitic, soft, plastic-----	10	89
	Siltstone, light-greenish-gray, clayey, soft-----	2	91
	Sandstone, very light gray, silt to very fine, clayey, soft, friable-----	12	103
	Sandstone, gray, indurated-----	3	106
	Shale-----	5	111
	Lignite, black, hard, brittle-----	3	114
	Shale, brownish-black, carbonaceous, soft, plastic----	4	118
	Shale, greenish-gray, silty, soft; with interbeds of soft, friable siltstone-----	25	143
	Shale, greenish-gray, bentonitic-----	2	145
	Siltstone, light-greenish-gray, soft, friable; inter- bedded with very fine, soft sandstone-----	9	154
	Shale, brownish-black and black, carbonaceous, soft; with thin interbeds of shaly lignite-----	17	171
	Sandstone, light-olive-gray, very fine, clayey, slightly carbonaceous, semiconsolidated-----	8	179
	Shale, greenish-gray, silty, bentonitic, soft-----	1	180
	Shale, black and brownish-black, carbonaceous, brittle-----	5	185
	Siltstone, very light-gray to light-greenish-gray, clayey, semiconsolidated-----	15	200

135-92-18ACA2
C. Reinert
(Log from Moe's Well Drilling)

Altitude: 2450 ft above msl

Date drilled: October 1960

Sentinel Butte Formation:			
	Sand, surface-----	8	8
	Clay, gray-----	31	39
Tongue River Formation:			
	Coal-----	1	40
	Clay, green-----	7	47
	Clay, gray-----	18	65
	Sand, very fine-----	5	70
	Clay, gray-----	26	96
	Coal-----	2	98
	Clay, gray-----	2	100

135-92-24CDD2
R. Wetzstein
(Log from Moe's Well Drilling)

Altitude: 2421 ft above msl

Date drilled: May 1967

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation (?):			
	Sand, surface-----	3	3
	Clay, yellow-----	8	11
Tongue River Formation (?):			
	Coal-----	2	13
	Clay, green-----	7	20
	Sand, yellow-----	48	68
	Clay, gray-----	23	91
	Rock-----	4.5	95.5
	Clay, gray-----	6.5	102
	Coal-----	5	107
	Clay, gray-----	2	109
	Coal-----	1.5	110.5
	Clay, brown-----	21.5	132
	Sand-----	2	134
	Clay, gray-----	10	144
	Sand, gray-----	18	162
	Clay, gray-----	13	175
	Sand, fine-----	23	198
	Coal-----	1.5	199.5
	Clay, gray-----	5.5	205

135-93-1BCB2
A. Swindler
(Log from Moe's Well Drilling)

Altitude: 2532 ft above msl

Date drilled: March 1964

Sentinel Butte Formation:			
	Sand, surface-----	40	40
	Coal, water (2 gpm)-----	4	44
Sentinel Butte-Tongue River Formations, undifferentiated:			
	Sand and clay, mixed-----	136	180
Tongue River Formation:			
	Sand, gray, medium-----	60	240
	Clay, gray-----	12	252

135-93-2AAA
NDSWC 3722

Altitude: 2545 ft above msl

Date drilled: June 1969

Sentinel Butte Formation:			
	Siltstone, dark-brown, clayey, soft, jointed; dry-----	12	12
	Shale, yellowish-gray, yellowish-green, and light-gray, silty; with yellow, limonitic concretions along fractures and joints-----	11	23
	Lignite and brownish-black, carbonaceous shale-----	6	29
	Shale, light-greenish-gray-----	11	40
	Shale, green and greenish-gray; with interbedded light- and medium-gray, silty, semiconsolidated sandstone-----	20	60
	Shale, greenish-gray, silty-----	8	68
	Sandstone, greenish-gray, very fine, silty and clayey, lignitic near bottom, soft-----	12	80
	Lignite, black, fissile, moderately hard-----	1	81
	Shale, variegated grays and greens, silty; with bentonitic clay seams-----	22	103

135-93-2AAA, Continued
NDEWC 3722

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Tongue River Formation:			
	Lignite-----	2	105
	Shale-----	2	107
	Lignite-----	2	109
	Shale, variegated grays, greens, and browns, silty to sandy; contains thinly interbedded lignite and bentonitic clay-----	6	115
	Lignite-----	3	118
	Shale as above-----	38	156
	Sandstone, light-olive-gray and greenish-gray, very fine, silty to clayey, carbonaceous, lignitic near bottom, soft-----	37	193
	Sandstone, light-olive-gray, very fine, semiconsolidated and interbedded gray and green shale-----	5	198
	Lignite-----	3	201
	Shale, variegated grays and greens, silty to sandy; interbedded with bentonitic clay and green, lignitic, clayey, fine sandstone-----	39	240
	Sandstone, dark-greenish-gray, fine and very fine, semiconsolidated; contains interbedded white, chalky, sandy clay and indurated sandstone-----	38	278
	Siltstone, light-gray to light-olive-gray, sandy, lignitic, soft-----	22	300
	Shale, variegated grays, greens, and browns, silty to sandy; with some interbedded bentonitic and lignitic shale-----	20	320
	Sandstone, light-olive-gray to light-brownish-gray, very fine, clayey, carbonaceous, soft-----	13	333
	Shale, light- to medium-gray, silty, bentonitic, locally lignitic; with interbedded fine, clayey, soft sandstone and indurated fine sandstone-----	27	360
	Lignite, black, hard-----	5	365
	Shale, light-greenish-gray, silty; with interbedded soft siltstone, dark-green, waxy shale, and brown to black, carbonaceous shale-----	35	400
	Sandstone, very fine, clayey, soft-----	30	430
	Shale, medium-gray, silty-----	9	439
	Lignite-----	2	441
	Shale, light-greenish-gray, silty; interbedded with thin, semiconsolidated, very fine sandstone and carbonaceous and lignitic shale. Lignite at 451 to 453 and 469 to 470 ft-----	97	538
Basal Tongue River sandstone:			
	Sandstone, greenish-gray and light-olive-gray, very fine and fine, clayey, weakly consolidated, carbonaceous-----	55	593
	Siltstone, gray, weakly consolidated-----	24	617
	Sandstone, indurated-----	4	621
Cannonball Formation:			
	Shale, gray and green, silty, locally bentonitic; with some interbedded semiconsolidated, very fine sandstone; rock from 733 to 734 ft-----	164	785
	Sandstone, green, very fine and fine, slightly clayey, fossiliferous, soft-----	15	800
	Shale, medium- to dark-gray, silty-----	7	807
	Sandstone, semiconsolidated-----	3	810
	Shale, medium- to dark-gray and brownish-gray, silty to sandy, carbonaceous, brittle, interbedded-----	50	860

135-93-GABA
M. Messer
(Log from Moe's Well Drilling)

Altitude: 2500 ft above msl

Date drilled: December 1966

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Sand, surface, soft-----	18	18
	Clay, yellow, soft-----	10	28
	Sand, tan, soft-----	1	29
	Clay, yellow, hard-----	6	35
	Sand and clay, gray, mix, soft-----	3	38
	Rock, gray, very hard-----	1.5	39.5
	Clay, brown, hard-----	1.5	41
	Rock, gray, soft-----	.5	41.5
	Sand, brown-----	3.5	45
	Sand, gray, soft, wet-----	8.8	53.8
	Rock, gray, soft-----	.2	54
	Sand, gray, coarse-----	26	80
	Rock, gray, very hard-----	.1	80.1

135-93-12CCC
NDSWC 3553

Altitude: 2438 ft above msl

Date drilled: October 1967

Sentinel Butte Formation:			
	Topsail-----	1	1
	Siltstone, dusky-yellow, clayey, soft; with iron-cemented layers or concretions-----	4	5
	Clay, yellowish-gray-----	5	10
	Clay, yellowish-gray, lignitic-----	5	15
	Lignite-----	1	16
	Shale, greenish-gray-----	4	20
	Shale, medium-gray; with interbedded siltstone and limestone-----	8	28
	Clay, bentonitic-----	10	38
Tongue River Formation:			
	Shale, medium-gray, silty-----	11	49
	Lignite-----	1	50
	Shale, medium-gray, silty and sandy-----	10	60
	Siltstone, light-gray, clayey to sandy, soft-----	40	100
	Sandstone, gray, very fine, weakly consolidated; and white, chalky, soft siltstone-----	15	115
	Lignite-----	1	116
	Shale, medium-gray, lignitic; becoming silty with depth-----	24	140
	Sandstone, gray, very fine, weakly consolidated; with some interbedded light-gray, soft siltstone and clayey, soft sandstone-----	90	230
	Siltstone, light-gray to brownish-gray, sandy and clayey, carbonaceous at base, semiconsolidated-----	10	240
	Lignite-----	3	243
	Shale, light-greenish-gray, silty, carbonaceous-----	10	253
	Lignite-----	2	255
	Shale, variegated grays, greens, and brown, silty-----	15	270
	Sandstone, olive-gray, very fine, clayey, semi-consolidated-----	10	280
	Shale, medium-gray, silty, fossiliferous-----	14	294
	Siltstone, dark-brownish-black, sandy, carbonaceous, soft; and interbedded brownish-gray, weakly consolidated, fine sandstone-----	31	325

135-93-12CCC, Continued
NDSWC 3553

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Tongue River Formation, Continued:			
	Sandstone, light-greenish-gray, very fine to fine, clayey, semiconsolidated; with interbedded variegated shale, locally lignitic-----	27	352
	Lignite-----	5	357
Basal Tongue River sandstone:			
	Sandstone, light-greenish-gray, very fine to fine, clayey, semiconsolidated; with interbedded variegated shale-----	21	378
	Sandstone and siltstone, light-greenish-gray carbonaceous, pyritic, interbedded, soft; fossiliferous from 400 to 420 ft-----	68	446
Cannonball Formation:			
	Siltstone, gray, clayey, moderately consolidated, brittle-----	54	500
	Shale, medium-gray, silty, brittle-----	50	550
	Sandstone, greenish-gray, hard-----	8	558
	Shale, medium-gray, silty; with thin sandstone beds---	52	610
Ludlow Formation:			
	Sandstone, dark-greenish-gray, fine to medium, well-sorted, subangular, lignitic, semiconsolidated; with some variegated, soft, clayey siltstone and shale, fossiliferous-----	78	688
	Shale, medium- to dark-gray, silty to sandy; with siltstone and thin limestone beds-----	70	758
	Shale, dark-gray and brownish-gray; contains some semiconsolidated sandstone or siltstone-----	42	800
	Shale, sandstone, siltstone, and lignite, thinly bedded; lignite at 843 to 845 and 855 to 857 ft-----	57	857
Hell Creek Formation (?):			
	Clay, bentonitic-----	4	861
	Sandstone, gray, semiconsolidated-----	11	872
	Shale, gray-----	9	881
	Sandstone, gray, shaly, semiconsolidated; with shale interbeds-----	19	900

135-93-23AAA
USGS Auger Test 29

Altitude: 2483 ft above msl

Date drilled: August 1968

Sentinel Butte Formation:			
	Sandstone, yellowish-brown, very fine to fine, silty, calcareous, clay binder, weakly consolidated-----	10	10
	Shale, dusky-yellow-green, silty-----	4	14
	Shale, light-brown, calcareous-----	1	15
	Shale, light-olive-gray, silty-----	5	20
	Shale, dark-gray and light-brown; silty laminae-----	3	23
	Lignite, black, powdered-----	2	25
	Shale, medium-dark-gray, silty; with black carbonaceous laminae-----	5	30
	Shale, medium-dark-gray, silty, calcareous; with a few yellowish-brown streaks-----	10	40
	Shale, dark-gray, silty, calcareous-----	30	70
Tongue River Formation (?):			
	No sample-----	5	75

Altitude: 2625 ft above msl

Date drilled: June 1969

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Quaternary deposits, undifferentiated:			
	Loam, black, sandy-----	1	1
	Sand, dark-brown, fine and medium, moderately well sorted; dry-----	3	4
Sentinel Butte Formation:			
	Siltstone, dusky-yellow, brittle, semiconsolidated; dry-----	3	7
	Siltstone, light-olive-gray, lignitic and carbonaceous, semiconsolidated-----	11	18
	Siltstone, light-olive-gray, sandy, semiconsolidated-----	4	22
	Shale, brownish-black, silty, carbonaceous-----	7	29
	Shale, light- and medium-gray, silty; interbedded with some clayey, soft siltstone and very fine sandstone-----	15	44
	Lignite-----	1	45
	Siltstone, light-gray, clayey, semiconsolidated; with some medium-gray clay, thin lignite seams, and very fine, silty, carbonaceous sandstone-----	38	83
	Lignite-----	2	85
	Shale, medium-gray; interbedded with light-gray to light-greenish-gray, bentonitic clay-----	23	108
	Sandstone, brownish-greenish-gray, very fine, clayey, semiconsolidated; with minor beds of brownish-black, carbonaceous clay-----	27	135
	Siltstone, light- to medium-gray, clayey to sandy, semiconsolidated-----	3	138
	Shale, light-greenish-gray, silty, bentonitic-----	18	156
	Lignite, black, hard-----	2	158
	Shale, brownish-black, carbonaceous-----	7	165
	Lignite, black, hard-----	2	167
	Shale, medium-gray, silty-----	10	177
	Lignite, black, hard-----	3	180
	Shale, medium-gray, silty, bentonitic, soft to slightly hard-----	8	188
	Siltstone, light-gray, clayey, moderately soft-----	26	214
Tongue River Formation (?):			
	Shale, medium-gray, silty, bentonitic, brittle, slightly hard-----	17	231
	Lignite, black, hard, brittle-----	3	234
	Shale, medium-gray, silty, bentonitic, slightly hard; interbedded with greenish-gray shale-----	39	273
	Lignite, black, hard, fissile-----	5	278
	Shale, medium-dark-gray, silty-----	6	284
	Lignite, black, hard-----	1	285
	Siltstone, very light gray, calcareous, moderately soft-----	4	289
	Sandstone, light-olive-gray, very fine, semiconsolidated-----	11	300

135-93-36CCC
USGS Auger Test 30

Altitude: 2565 ft above msl

Date drilled: August 1968

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation:			
	Siltstone, moderate-yellowish-brown, clayey, sandy, calcareous, soft-----	5	5
	Siltstone, moderate-olive-brown, clayey, soft; contains a few very coarse sand grains-----	5	10
	Siltstone, yellowish-brown, sandy, soft-----	10	20
	Shale, black, silty; interbedded with light-olive-gray, silty shale-----	5	25
	Shale, medium-dark-gray, silty, calcareous-----	15	40
	Shale, dusky-yellowish-brown-----	5	45
	Lignite (poor sample)-----	5	50
	Shale, black; interbedded with siltstone-----	5	55
	Shale, dark-gray, silty, calcareous-----	10	65
	No sample-----	5	70

135-94-2CDC
L. DeWit
(Log from Moe's Well Drilling)

Altitude: 2535 ft above msl

Date drilled: October 1962

Sentinel Butte Formation:			
	Sand, surface-----	15	15
	Sand, water-----	4	19
	Coal-----	4	23
	Clay, gray, continuing-----	8	31

135-94-6ADD2
R. Dalmus
(Log from Moe's Well Drilling)

Altitude: 2625 ft above msl

Date drilled: October 1964

Sentinel Butte Formation:			
	Sand, surface-----	34	34
	Coal-----	4	38
	Clay, gray-----	6	44
	Coal-----	.5	44.5
	Clay, gray, continuing-----	3.5	48

135-94-19CCC2
NDSWC 3528

Altitude: 2521 ft above msl

Date drilled: September 1967

Sentinel Butte Formation:			
	Topsoil, dark-brown, sandy loam-----	1	1
	Shale, yellowish-gray to dusky-yellow, silty to sandy, oxidized, soft-----	25	26
	Sandstone, yellowish-gray, fine to medium, subangular to subround, semiconsolidated-----	10	36
	Sandstone, light-olive-gray to greenish-gray, fine to medium, clean, weakly consolidated-----	11	47
	Sandstone, light-greenish-gray, indurated-----	4	51
	Sandstone, greenish-gray, medium, weakly consolidated-----	2	53
	Sandstone, light-greenish-gray, calcite cement, indurated-----	3	56

135-94-19CCC2, Continued
NDSWC 3528

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation, Continued:			
	Sandstone, greenish-gray, fine to medium, subangular to subround, clean, weakly consolidated-----	27	83
	Shale, light- to medium-gray, silty-----	19	102
	Clay, white, bentonitic-----	9	111
Tongue River Formation:			
	Shale, light- to medium-gray, silty; occasional concretions-----	19	130
	Lignite-----	.2	130.2
	Shale as above-----	1.3	131.5
	Concretion-----	.5	132
	Lignite-----	5	137
	Clay, medium-gray, bentonitic-----	17	154
	Shale, light-olive-gray, sandy, lignitic, soft-----	14	168
	Shale, medium-gray, smooth, slightly brittle-----	9	177
	Shale, light-greenish-gray to brownish-gray, sandy, lignitic, soft-----	7	184
	Shale, light-gray, silty, bentonitic, soft-----	8	192
	Shale, greenish-gray, sandy-----	3	195
	Sandstone, indurated-----	3	198
	Shale, medium-gray, soft-----	2	200

135-94-20DAD2
L. Nasset
(Log from Moe's Well Drilling)

Altitude: 2536 ft above msl Date drilled: September 1962

Sentinel Butte Formation:			
	Sand, surface, dry-----	7	7
	Clay, yellow, dry-----	9	16
	Coal, dry-----	6	22
	Clay, gray, dry-----	2	24
	Coal, hard, dry-----	3.5	27.5
	Clay, green to gray-----	10.5	38
	Sand, yellow-----	27	65
	Sand, blue-----	7.5	72.5
	Sandrock-----	.5	73
	Sand, blue-----	34	107
	Clay, gray-----	4	111
	Sand, blue-----	17.5	128.5
	Rock, continuing-----	4.5	133

135-94-27BBB
NDSWC 3676

Altitude: 2569 ft above msl Date drilled: November 1968

Sentinel Butte Formation:			
	Topsoil, black, sandy loam-----	1	1
	Sandstone, yellowish-gray, fine and medium, clayey, oxidized, weakly consolidated; dry-----	8	9
	Shale, light-olive-gray with iron stains, brittle, fractured-----	1	10
	Sandstone, yellowish-gray with iron stains, fine, weakly consolidated; dry-----	6	16
	Shale, light-olive-gray, silty, fissile; dry-----	9	25
	Shale, medium-gray, massive, dense-----	10	35
	Lignite, black, fissile, hard; with shale break-----	5	40

135-94-27BBB, Continued
NDSWC 3676

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation, Continued:			
	Shale, medium- to dark-gray and black, carbonaceous---	6	46
	Lignite-----	3	49
	Shale, carbonaceous-----	2	51
	Lignite-----	1	52
	Shale-----	2	54
	Lignite-----	2	56
	Shale, carbonaceous-----	3	59
	Siltstone, very light gray, clayey, soft-----	6	65
	Shale, black, carbonaceous-----	6	71
	Lignite, black, hard-----	2	73
	Shale, greenish-gray to light-gray, bentonitic, soft--	14	87
	Lignite, black, hard-----	4	91
	Shale, carbonaceous-----	1	92
	Lignite-----	2	94
	Shale, dark-gray and black, carbonaceous, bentonitic, fairly hard-----	7	101
	Shale, medium-gray, silty, soft; with thin interbeds of bentonitic clay-----	28	129
	Shale, dark-gray to brownish-black, carbonaceous-----	8	137
	Shale, dark-gray, silty to sandy-----	5	142
	Shale, dark-gray to brownish-black, silty to sandy---	7	149
	Sandstone, medium-gray to greenish-gray, medium, well-sorted, subangular, weakly consolidated-----	10	159
	Sandstone, fine, calcite cemented, hard-----	1	160
	Shale, interbedded light- and medium-gray, silty; with thin seams of bentonitic clay-----	15	175
Tongue River Formation (?):			
	Shale, medium-gray, silty to sandy, brittle-----	25	200

135-94-28CBB2
C. Carlson
(Log from Moe's Well Drilling)

Altitude: 2515 ft above msl

Date drilled: March 1968

Sentinel Butte Formation:			
	Sand, surface-----	9	9
	Coal, slack-----	7	16
	Clay, brown-----	7	23
	Sand, blue-----	24.5	47.5
	Rock, medium-hard-----	.5	48
	Sand, gray, continuing-----	12	60

135-94-30DDA
L. Prince
(Log from Moe's Well Drilling)

Altitude: 2530 ft above msl

Date drilled: May 1962

Sentinel Butte Formation:			
	Sand, surface-----	5	5
	Coal-----	13	18
	Clay-----	20	38
	Sand, water-----	22	60
	Rock-----	4.5	64.5
	Sand, water, good-----	75.5	140
	Clay-----	1	141

135-94-31CCC
NDSWC 3675

Altitude: 2478 ft above msl

Date drilled: November 1968

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation:			
	Topsoil, black, sandy loam-----	1	1
	Sandstone, yellowish-gray, fine and medium, subangular, weakly consolidated; with interbeds of reddish-brown and brownish-black, carbonaceous clay and concretionary ironstone-----	12	13
	Sandstone, dark-greenish-gray, medium, well-sorted, subangular and subround, weakly consolidated; water-saturated-----	8	21
	Sandstone, greenish-gray, interbedded fine and medium, weakly consolidated-----	22	43
	Sandstone as above; with occasional interbeds of very fine, soft sandstone and siltstone-----	31	74
	Sandstone, greenish-gray, very silty, semiconsolidated-----	14	88
	Shale, light-greenish-gray, silty, soft-----	6	94
	Siltstone, very light gray, silty, soft-----	2	96
	Shale, light- to medium-gray, fissile, brittle-----	19	115
Tongue River Formation:			
	Lignite, black, fissile, hard-----	7	122
	Shale, light- to dark-gray, carbonaceous-----	7	129
	Shale as above; with interbeds of lignite-----	11	140
	Shale, light- and medium-gray, silty, bentonitic-----	9	149
	Siltstone, very light gray, clayey, moderately consolidated-----	12	161
	Siltstone as above; thinly interbedded with dark-gray shale and light-gray, very fine, clayey, soft sandstone-----	21	182
	Shale, interbedded medium-gray and light-greenish-gray; with occasional thin layers of clayey, soft sandstone-----	18	200

135-94-33DDD
R. Prince
(Log from Moe's Well Drilling)

Altitude: 2535 ft above msl

Date drilled: April 1962

Sentinel Butte Formation:			
	Sand, surface-----	9.5	9.5
	Coal-----	.5	10
	Sand, surface-----	5	15
	Clay-----	5	20
	Sand, surface-----	45	65
	Rock and water sand-----	4	69
	Sand, water-----	29	98
	Rock-----	3	101
	Sand, water-----	11	112
	Rock-----	2	114
	Sand-----	41	155
	Clay-----	6	161

135-95-LAAA
A. Honeyman
(Log from Moe's Well Drilling)

Altitude: 2626 ft above msl

Date drilled: August 1968

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Clay, yellow-----	30	30
	Coal-----	1	31
	Clay, gray, shell at 42 ft-----	14	45
	Sand, gray, silty-----	12	57
	Clay, gray-----	6	63
	Coal-----	8	71
	Clay, gray-----	8	79
	Rock-----	.2	79.2
	Clay, gray-----	22.8	102
	Coal-----	8	110
	Clay, gray-----	4	114
	Coal-----	1	115
	Clay, gray-----	36	151
	Coal-----	2	153
	Clay, gray-----	9	162
	Coal-----	3	165
	Clay, green-----	4.5	210
	Sand, gray, very fine to medium-----	22	232
	Rock, medium-hard-----	4	236
	Sand, gray, medium-----	14	250
	Clay, gray-----	7	257

135-95-11DAA
R. Kouba
(Log from Moe's Well Drilling)

Altitude: 2715 ft above msl

Date drilled: November 1963

Sentinel Butte Formation:			
	Sand, surface-----	62	62
	Sand, red-----	23	85
	Coal-----	.5	85.5
	Sand, red-----	2.5	88
	Clay, gray-----	10.5	98.5
	Coal-----	6	104.5
	Clay, gray-----	25	129.5
	Coal-----	5.5	135
	Sand, gray-----	7	142
	Coal and sand-----	9	151
	Clay-----	1	152
	Coal and sand-----	3	155
	Clay, gray-----	3	158
	Coal-----	10	168
	Clay, gray-----	7	175
	Sand-----	47.5	222.5
	Rock-----	2.5	225
	Sand-----	4.5	229.5
	Rock-----	.5	230
	Sand, gray, continuing-----	25	255

135-95-14ADD
B. Neprash
(Log from Moe's Well Drilling)

Altitude: 2591 ft above msl

Date drilled: May 1961

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation:			
	Sand, surface-----	5	5
	Clay, gray-----	32	37
	Rock-----	.5	37.5
	Clay, gray-----	2.5	40
	Clay, green-----	10	50
	Coal-----	6	56
	Sand, brown, fine-----	12	68
	Coal-----	1.5	69.5
	Clay-----	1.5	71
	Coal-----	4	75
	Clay, gray-----	2	77
	Coal-----	5	82
	Clay-----	2	84
	Coal-----	1	85
	Clay-----	1	86
	Coal-----	10	96
	Sand, coarse, continuing-----	54	150

135-95-19DNC2
H. Schroeder
(Log from Moe's Well Drilling)

Altitude: 2515 ft above msl

Date drilled: November 1966

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation (?):			
	Sand, surface, soft-----	4	4
	Clay, yellow, soft-----	1	5
Tongue River Formation:			
	Coal, hard-----	.5	5.5
	Clay, gray, hard-----	8	13.5
	Rock, white, soft-----	1.5	15
	Clay, gray, soft-----	1.5	16.5
	Coal, soft-----	.5	17
	Sand and clay, brown, mixed, soft-----	3	20
	Coal, slack, soft-----	5	25
	Sand, tan, soft-----	2	27
	Sand, gray, soft, continuing-----	54	81

135-95-22AAA
WDSWC 3677

Altitude: 2592 ft above msl

Date drilled: November 1968

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Quaternary deposits, undifferentiated:			
	Topsoil, dark-brown, sandy-----	1	1
	Sand, medium to very coarse, subround, oxidized; and gravel, iron-stained, mostly concretions-----	11	12
Sentinel Butte Formation:			
	Shale, yellowish-gray, silty to sandy, oxidized, soft; dry-----	4	16
	Sandstone, yellow to yellowish-green, subangular, weakly consolidated, oxidized; dry-----	22	38
	Sandstone, light-greenish-gray, fine, calcite cemented, hard-----	5	43

135-95-22AAA, Continued
NDSWC 3677

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation, Continued:			
	Sandstone, yellowish-gray to yellowish-green, iron-stained, subangular, silty, weakly consolidated, oxidized-----	38	81
	Sandstone, greenish-gray, fine to medium, subangular and subround, clean; some lignite specks; weakly consolidated-----	14	95
	Sandstone, dark-greenish-gray, fine, indurated-----	1	96
	Shale, medium-gray, smooth, slightly plastic-----	4	100
	Shale, medium-gray, silty, bentonitic, moderately soft and plastic-----	40	140
	Shale, interbedded light- and medium-gray; with thin bentonitic clay seams-----	8	148
	Shale, medium-gray, bentonitic, smooth-----	3	151
Tongue River Formation:			
	Lignite, black, fissile, hard-----	3	154
	Shale, medium- to dark-gray, bentonitic, tight-----	8	162
	Lignite-----	4	166
	Shale, interbedded light- and medium-gray, silty to sandy, soft-----	22	188
	Lignite, black, hard-----	3	191
	Shale, black, carbonaceous-----	2	193
	Sandstone, light-gray, very fine, well-sorted, sub-round, clean, weakly consolidated-----	9	202
	Shale, light-gray, silty, soft-----	5	207
	Sandstone, weakly consolidated, as above-----	7	214
	Shale, medium-gray, tight-----	6	220

135-95-35ADC
W. Gion
(Log from Moe's Well Drilling)

Altitude: 2497 ft above msl Date drilled: August 1959

Sentinel Butte Formation:			
	Sand, surface-----	15	15
	Sand-----	32	47
Tongue River Formation:			
	Coal-----	2	49
	Clay-----	1	50

135-96-8ABB
E. Hellekson
(Log from Sander and Son)

Altitude: 2577 ft above msl Date drilled: 1959

Sentinel Butte Formation:			
	Sand-----	10	10
	Clay-----	60	70
	Rock-----	3	73
	Clay-----	37	110
	Sand, blue-----	30	140

135-96-8DDA
 E. Hellekson
 (Log from Sander and Son)

Altitude: 2544 ft above msl

Date drilled: --

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Clay-----	23	23
	Sand, fine-----	2	25
	Clay-----	18	43
	Sand and rock ledges - seep vein-----	17	60
	Clay-----	2	62
	Sand, water; and rock ledges-----	38	100

135-96-10BAA
 A. Krebs
 (Log from Moe's Well Drilling)

Altitude: 2589 ft above msl

Date drilled: May 1964

Sentinel Butte Formation:			
	Sand, surface-----	5	5
	Clay, gray-----	20	25
	Sand and clay, mixed-----	2	27
	Sand, gray-----	3	30
	Clay-----	7	37
	Coal-----	1.5	38.5
	Sand, gray-----	1.5	40
	Clay, gray-----	7	47
	Coal-----	5.5	52.5
	Clay, green-----	3.5	56
	Sand and clay, mixed-----	9	65
	Clay, gray-----	7	72
	Coal-----	10.5	82.5
	Clay, green-----	.5	83
	Sand, green-----	10	93
	Clay, gray-----	1	94
	Sand, gray-----	6	100
	Rock-----	.2	100.2
	Sand, gray-----	8.8	109
	Clay, brown-----	10	119
	Sand-----	24	143
	Rock-----	.8	143.8
	Clay-----	9.2	153
Tongue River Formation:			
	Coal-----	10	163
	Clay, gray-----	13	176
	Rock-----	1	177
	Clay, gray-----	53	230
	Clay, brown-----	6	236
	Coal-----	34	270
	Clay, brown-----	3	273
	Coal-----	4	277
	Clay, gray-----	2	279
	Sand, gray, continuing-----	39	318

135-96-20BBB2
P. Mesling
(Log from Sander and Son)

Altitude: 2557 ft above msl

Date drilled: July 1948

Geologic source	Material	Thickness (feet)	Depth (feet)
	Cellar-----	6	6
Sentinel Butte Formation:			
	Clay, gray, sandy-----	3	9
	Sandrock, gray-----	6	15
	Sand, light-gray-----	27	42
	Sand, blue, water-----	1	43
	Sand, gray-----	9	52
	Clay, dark, sandy-----	3	55
Tongue River Formation:			
	Coal, black-----	5	60

135-96-28BDA
O. Austin
(Log from Moe's Well Drilling)

Altitude: 2569 ft above msl

Date drilled: --

Sentinel Butte Formation:			
	Sand, surface-----	35	35
	Clay-----	22	57
Tongue River Formation:			
	Coal-----	10	67
	Clay-----	3	70
	Coal-----	1	71
	Clay-----	6	77
	Rock-----	.5	77.5
	Clay-----	2.5	80
	Rock-----	1	81
	Clay-----	5	86
	Coal-----	2	88
	Clay-----	14	102
	Coal-----	1.5	103.5
	Clay-----	18.5	122
	Clay, green-----	5	127
	Rock-----	3.2	130.2
	Clay-----	7.8	138
	Rock-----	3	141
	Clay-----	7	148
	Rock-----	3	151
	Clay-----	7	158
	Sand, continuing-----	32	190

135-96-29DAA2
J. Mesling
(Log from Sander and Son)

Altitude: 2578 ft above msl

Date drilled: 1960

Sentinel Butte Formation:			
	Sand, brown-----	9	9
	Sand, blue-----	18	27
	Rock ledge-----	.5	27.5
	Sand, blue (seep vein)-----	16.5	44
	Clay-----	32	76

135-96-29DAA2, Continued
J. Mesling

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Tongue River Formation:			
	Clay and coal ledges-----	3	79
	Rock-----	1	80
	Coal-----	8	88
	Clay-----	51	139
	Rock-----	1	140
	Clay and sand-----	24	164
	Rock-----	.5	164.5
	Clay-----	3.5	168
	Rock-----	1	169
	Clay, sandy-----	21	190
	Sand, hard-----	22	212
	Clay, brown-----	8	220
	Sand, blue-----	4	224
	Coal-----	6	230
	Sand and coal-----	20	250

135-97-1BBC
E. Schorsch
(Log from Moe's Well Drilling)

Altitude: 2596 ft above msl Date drilled: October 1959

Quaternary deposits, undifferentiated:			
	Sand, surface-----	15	15
	Gravel, running-----	1	16
Sentinel Butte Formation:			
	Clay-----	2.5	18.5
	Sandstone, hard-----	3.5	22
	Sand, surface-----	18	40
	Clay-----	9	49
	Sand, white-----	31	80

135-97-4ADD2
New England 8
(Log from Layne-Minnesota)

Altitude: 2593 ft above msl Date drilled: May 1968

Sentinel Butte Formation:			
	Topsoil-----	2.5	2.5
	Sand and sandstone layers about 0.1 ft thick; with streaks of sandy clay-----	44.5	47
	Clay and coal streaks (coal 2 ft thick)-----	9	56
	Clay, sandy-----	5	61
	Hardpan, black and brown-----	4	65
	Sand, sandrock, and clay streaks; layers about 0.1 ft-----	4	69
	Sand, coal, and streaks of clay-----	6	75
	Coal, sand, and streaks of clay. Little hard streaks of sandstone-----	3	78
	Coal, sand, and sandstone, very fine, hard-----	24.3	102.3
	Coal-----	2.7	105

Altitude: 2567 ft above msl

Date drilled: September 1968

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Quaternary deposits, undifferentiated:			
	Topsoil, dark-brown, sandy loam-----	1	1
	Clay, yellowish-gray, silty-----	1	2
	Sand and gravel, rusty, angular-----	2	4
Sentinel Butte Formation:			
	Shale, yellowish-gray, silty, oxidized-----	10	14
	Sandstone, dark-greenish-gray, medium, well-sorted, subangular and subround, weakly consolidated-----	18	32
	Shale, yellowish-gray, soft; with small ironstone concretions-----	6	38
	Sandstone, light-greenish-gray, indurated; with interbeds of medium, semiconsolidated sandstone and black, sandy, carbonaceous shale-----	6	44
	Shale, dark-gray to dark-brownish-gray, smooth-----	15	59
	Lignite, black, fissile, hard-----	7	66
	Shale, medium-gray, silty, soft; with bentonitic seams-----	10	76
	Lignite, black, fissile, hard; interbeds of brown to black shale-----	6	82
	Shale, light- to medium-gray, very silty-----	6	88
	Sandstone, light- to medium-gray, silt to very fine, bentonitic, soft-----	19	107
	Shale, light- to medium-gray, very silty and bentonitic; with interbeds of soft siltstone and carbonaceous shale-----	15	122
	Lignite-----	2	124
	Shale, light-greenish-gray, smooth, slightly brittle--	16	140
	Shale, interbedded light-greenish-gray and light-olive-gray (carbonaceous), bentonitic, moderately soft-----	15	155
	Sandstone, light-olive-gray and dark-greenish-gray, fine, well-sorted, lignitic, semiconsolidated-----	36	191
	Sandstone as above; but very fine to silty locally; contains abundant lignite fragments; with thin shale streaks-----	11	202
	Sandstone, semiconsolidated, fairly clean; hole flowed estimated 30 to 40 gpm of water-----	16	218
	Shale, sandy-----	10	228
	Sandstone, dark-greenish-gray, fine to medium, clayey, many lignite specks, semiconsolidated to weakly consolidated-----	18	246
Tongue River Formation:			
	Lignite, black, pyritic, soft-----	4	250
	Sandstone, dark-greenish-gray, medium, clayey, soft; with interbeds of variegated gray and green, silty shale, buff siltstone, and white bentonite. Samples appear generally lighter colored from here downward--	16	266
	Sandstone, greenish-gray, silt to very fine, clayey, semiconsolidated-----	14	280
	Shale, light-greenish-gray, silty; with thin interbeds of dark-gray, calcareous siltstone-----	10	290
	Shale as above; with thin lignite interbeds-----	10	300
	Shale, light- to dark-gray, bentonitic-----	5	305
	Siltstone, calcareous, or concretion-----	2	307
	Shale, light- to dark-gray, bentonitic, carbonaceous--	9	316
	Lignite, black, fissile-----	13	329
	Shale, light-greenish-gray and light-gray with tan and reddish-brown carbonaceous stains, very silty, moderately soft, slightly brittle-----	3	332

135-97-4DCA, Continued
NDSWC 3628

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Tongue River Formation, Continued:			
	Sandstone, light-olive-gray, fine, well-sorted, sub-angular, micaceous, semiconsolidated-----	11	343
	Lignite, black, fissile, moderately hard-----	10	353
	Shale, light-gray with carbonaceous stains, silty; with thin, black shale and lignite interbeds-----	30	383
	Limestone, dark-gray, pyritic, hard-----	3	386
	Shale, light-gray, silty, bentonitic, locally brownish-black, carbonaceous-----	34	420
	Shale, olive-gray, silty to sandy; with thin interbeds of fine, semiconsolidated sandstone-----	24	444
Basal Tongue River sandstone:			
	Sandstone, light-olive-gray, medium, well-sorted, sub-round, with lignite and mica specks, clean, weakly consolidated-----	35	479
	Shale, olive-gray with green and brown tints, silty; with interbeds of carbonaceous shale and sandy shale--	25	504
	Sandstone, semiconsolidated to indurated; with shale interbeds-----	9	513
	Shale, light-olive-gray and olive-gray, silty, bentonitic-----	5	518
	Lignite-----	3	521
	Sandstone, greenish-gray, fine, clayey, micaceous, soft; with numerous small fossil shell fragments-----	16	537
	Shale, sandy-----	10	547
	Sandstone, very fine, indurated-----	4	551
Cannonball Formation:			
	Shale, olive-gray, very silty, smooth-----	9	560
	Shale, light-olive-gray, silty to sandy, moderately soft-----	40	600
	Shale as above; but olive-gray and slightly brittle--	52	652
	Sandstone, dark-greenish-gray, very fine and fine, clayey, moderately consolidated-----	9	661
	Sandstone, dark-gray, calcareous cement, indurated---	1	662
	Shale, olive-gray, silty, moderately soft; with thin interbeds of clayey, soft sandstone-----	30	692
	Sandstone, light-olive-gray, fine to medium, sub-angular and subround, somewhat micaceous, fairly clean, weakly consolidated-----	33	725
Ludlow Formation:			
	Shale, carbonaceous-----	3	728
	Lignite, black, fissile, hard-----	3	731
	Sandstone, greenish-gray with carbonaceous stains, fine, clayey, soft; with interbeds of light-olive-gray, silty shale-----	12	743
	Shale, olive-gray, silty, moderately soft-----	27	770
	Shale, olive-gray to dark-gray, silty-----	10	780
	Shale, very light-gray, very silty to sandy-----	10	790
	Sandstone, silt to very fine, clayey, soft; with interbeds of calcareous, indurated sandstone and light-olive-gray, silty shale-----	27	817
	Lignite, black and brownish-black, soft-----	3	820
	Sandstone, light-olive-gray to dark-greenish-gray, silt to very fine, clayey, semiconsolidated; with interbeds of green, calcareous, indurated sandstone, light-olive-gray, silty shale, and white, sandy clay--	30	850
	Sandstone and shale as above; with fossil shell fragments-----	35	885
	Shale, olive-gray, silty, smooth, moderately soft-----	27	912
	Sandstone, silt to very fine, indurated-----	8	920
	Shale, dark-brownish-gray to brownish-black, silty, smooth, fairly hard-----	10	930

135-97-4DCA, Continued
NDSWC 3628

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Ludlow Formation, Continued:			
	Sandstone, shaly, moderately consolidated-----	9	939
	Shale, olive-gray, greenish-gray, and brownish-black, silty, soft-----	19	958
	Lignite, black, fissile, moderately hard-----	3	961
	Sandstone, greenish-gray, fine, clayey, moderately consolidated-----	11	972
	Sandstone as above; but very fine to fine; with interbeds of indurated sandstone-----	18	990
	Sandstone, light-greenish-gray, very fine to fine, clayey, soft; with thin interbeds of indurated sandstone and lignite-----	4	994
	Shale, reddish-brown, sandy, carbonaceous; with thin interbeds of sandstone as above and lignite-----	20	1014
	Lignite-----	2	1016
	Shale as above-----	3	1019
	Lignite-----	1	1020
	Sandstone, light-greenish-gray and light-olive-gray, silt to very fine, clayey, moderately consolidated----	12	1032
	Shale, carbonaceous-----	8	1040
	Lignite-----	1	1041
	Shale, carbonaceous-----	6	1047
	Lignite-----	2	1049
Hell Creek Formation (?):			
	Sandstone, light-greenish-gray, silt to very fine, clayey, moderately consolidated to indurated; with interbeds of brown, silty, carbonaceous shale. Becomes more shaly downward-----	58	1107
	Shale, carbonaceous-----	11	1118
	Sandstone as above-----	15	1133
	Shale, brown, silty-----	7	1140
	Sandstone, light-greenish-gray, silt to very fine, very clayey, soft-----	20	1160
	Sandstone as above; with thin interbeds of light-olive-gray shale and lignite; with a few fossil shell fragments-----	32	1192
	Shale, silty-----	8	1200
	Sandstone, light-greenish-gray to greenish-gray, silt to very fine, clayey, carbonaceous, semiconsolidated; with interbeds of silty shale-----	24	1224
	Sandstone, dark-greenish-gray, silt to fine, sub-angular, slightly calcareous, semiconsolidated; with thin indurated layers-----	24	1248
	Shale, variegated gray and brown, silty to sandy; with thin interbeds of soft, shaly sandstone-----	51	1299
Fox Hills Formation (?):			
	Sandstone, clayey, semiconsolidated-----	8	1307
	Shale, sandy-----	4	1311
	Sandstone, dark-greenish-gray, fine to medium, sub-angular to subround, slightly calcareous, clean, weakly consolidated-----	30	1341
	Shale, clayey, carbonaceous; with thin lignite seams--	10	1351
	Sandstone as above-----	9	1360
	Shale, sandy; with thin, soft sandstone interbeds--	8	1368
	Sandstone, dark-greenish-gray, fine to medium, sub-angular and subround, somewhat clayey, slightly calcareous, weakly consolidated; with interbeds of shale and indurated sandstone-----	24	1392
	Core: Recovered 6 ft; sandstone, dark-greenish-gray, fine to medium, noncalcareous, partly clayey and semiconsolidated, partly clean and very weakly consolidated-----	12	1404

135-97-15CCA
R. Johnson
(Log from Sander and Son)

Altitude: 2616 ft above msl

Date drilled: 1951

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Soil, dark, surface-----	2	2
	Clay, yellow-----	22	24
	Clay, gray-----	32	56
	Rock, gray-----	1	57
	Clay, light-----	23	80
	Coal, black-----	3	83
	Clay, light-gray, sandy-----	17	100
	Rock, blue and water sand-----	8	108

135-97-31ADD2
B. Sorenson
(Log from Moe's Well Drilling)

Altitude: 2725 ft above msl

Date drilled: April 1966

Sentinel Butte Formation:			
	Sand, surface, soft-----	7	7
	Clay, yellow, soft-----	15.5	22.5
	Clay, gray, hard-----	9	31.5
	Coal, slack, soft-----	2.5	34
	Clay, green, hard-----	2	36
	Clay, gray, hard-----	3	39
	Coal, hard-----	5	44
	Clay, gray-----	4	48
	Coal-----	1	49
	Clay and sand mixed, soft-----	6	55
	Clay, gray, soft-----	2.5	57.5
	Coal, hard-----	.5	58
	Clay, gray-----	12	70
	Sand and clay mixed, gray, soft-----	2	72
	Clay, gray-----	17.5	89.5
	Rock, gray, very hard-----	.5	90
	Clay, blue, soft-----	2	92
Tongue River Formation (?):			
	Coal, hard-----	2	94
	Clay, gray, hard-----	12	106
	Coal, soft, wet-----	8.5	114.5
	Clay, gray, hard-----	.5	115

135-97-32AAD
D. Sorenson
(Log from Sander and Son)

Altitude: 2730 ft above msl

Date drilled: 1949

Sentinel Butte Formation:			
	Soil, dark, surface-----	2	2
	Clay, light-----	8	10
	Clay, dark, sandy-----	55	65
	Rock, gray-----	1	66
	Clay, light, gumbo-----	39	105
Tongue River Formation (?):			
	Clay, dark-----	15	120
	Clay, gray-----	14	134
	Rock, gray-----	1	135
	Clay, gray-----	47	182
	Coal, black, water-----	2	184

Altitude: 2685 ft above msl

Date drilled: September 1967

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Roadfill, gray clay-----	7	7
Sentinel Butte Formation:			
	Shale, light-yellowish-green with heavy limonite stains, smooth-----	23	30
	Shale, light-gray, silty, smooth-----	7	37
	Shale, medium-gray, silty, slightly brittle, very tight-----	8	45
	Shale, light-gray, silty, smooth, tight-----	6	51
	Shale, gray with brownish-black streaks, silty to sandy, carbonaceous, soft-----	4	55
Tongue River Formation:			
	Lignite, black, hard-----	3	58
	Shale, brownish to olive-black, silty, smooth, very tight-----	5	63
	Lignite, black, hard-----	2	65
	Shale, light-gray, silty to sandy, soft, tight-----	11	76
	Sandstone, light-greenish-gray, fine, calcite cement, hard-----	2	78
	Shale, light-gray, sandy, soft-----	4	82
	Sandstone as above-----	2	84
	Shale, light- to medium-bluish-gray, soft, tight-----	16	100
	Sandstone, dark-gray, highly calcareous, indurated-----	2	102
	Clay, white, sandy, calcareous, soft-----	1	103
	Sandstone, greenish-gray, fine, calcite cement, moderately indurated-----	3	106
	Shale, greenish-gray, smooth, very tight-----	8	114
	Lignite, black, hard-----	4	118
	Bentonite, yellowish-gray, soft, crumbly-----	3	121
	Shale, light-greenish-gray, silty-----	4	125
	Bentonite-----	1	126
	Shale as above-----	3	129
	Lignite, black, hard-----	4	133
	Shale, light- to medium-gray, silty, moderately soft-----	14	147
	Shale, dark-gray, silty, slightly brittle, very tight-----	4	151
	Shale, light-gray, silty to sandy, soft, fairly tight-----	6	157
	Shale, medium-gray, slightly brittle, smooth, tight-----	8	165
	Shale, light-gray to light-olive-gray, silty to sandy, soft-----	5	170
	Bentonite-----	1	171
	Shale as above-----	2	173
	Sandstone, light-olive-gray, silt to fine, slightly calcareous, micaceous, semiconsolidated-----	5	178
	Shale, medium-gray, smooth, tight-----	9	187
	Lignite, black, hard-----	4	191
	Shale, black, clayey, carbonaceous, soft-----	2	193
	Sandstone, light-olive-gray, fine, weakly consolidated-----	4	197
	Shale, light-gray, sandy, soft-----	3	200

136-91-2CDC
 USGS Conservation Division Drill Hole 5
 (Log from George Mowat)

Altitude: 2280 ft above msl Date drilled: 1966

Geologic source	Material	Thickness (feet)	Depth (feet)
Tongue River Formation:			
	Claystone, light-olive-gray (moist), quite silty-----	10	10
	Siltstone, light-olive-gray (dry), clayey. At 13 ft depth iron-stained, dusky-yellow (dry)-----	3	13
	Claystone, light-olive-gray (dry), silty-----	1.5	14.5
	Lignite-----	.2	14.7
	Siltstone, pale-brown (dry), clayey-----	3.3	18
	Lignite-----	.5	18.5
	Claystone, light-olive-gray (moist), silty-----	3.5	22
	Claystone, olive-gray, coated with dusky-yellow stain (dry), silty-----	1.5	23.5
	Siltstone, light-olive-gray (dry), calcareous, hard--	2	25.5
	Claystone, light-olive-gray (dry), silty-----	3	28.5
	Coal-----	2	30.5
	Claystone, grayish-blue-green above, medium-light-gray below (moist), silty-----	9.5	40
	Siltstone, light-olive-gray (moist)-----	10	50
	Claystone, light-olive-gray (moist), silty-----	2.6	52.6
	Coal-----	1.4	54
	Claystone, dark-greenish-gray grading to greenish-black (moist) at bottom, silty-----	6	60

136-91-20BAB
 W. Rokusek
 (Log from Moe's Well Drilling)

Altitude: 2377 ft above msl Date drilled: June 1961

Quaternary deposits, undifferentiated (?):			
	Sand, surface-----	8	8
	Clay-----	4	12
	Gravel and clay-----	2	14
Tongue River Formation:			
	Clay-----	6	20
	Clay, brown-----	25	45
	Rock, hard-----	3	48
	Clay, brown-----	32	80
	Sand-----	15	95
	Coal-----	4	99
	Clay, continuing-----	2	101

136-91-20DDD
 NDSWC 3668

Altitude: 2413 ft above msl Date drilled: November 1968

Sentinel Butte Formation:			
	Sandstone, reddish-yellow, dusky-yellow, and yellowish-gray, medium, poorly sorted, weakly consolidated, oxidized-----	25	25
Tongue River Formation:			
	Shale, black, silty, carbonaceous, brittle-----	4	29
	Siltstone, light-gray, semiconsolidated; interbedded with very fine, semiconsolidated sandstone-----	21	50
	Shale, medium-gray, silty, soft, plastic-----	4	54
	Sandstone, dark-greenish-gray, fine, clayey, semi-consolidated; doesn't yield water when drilling with air-----	26	80

136-91-20DDD, Continued
NDSWC 3668

Geologic source	Material	Thickness (feet)	Depth (feet)
Tongue River Formation, Continued:			
	Siltstone, very light-gray, clayey, semiconsolidated; with interbeds of soft, very fine sandstone-----	30	110
	Shale, medium-gray and greenish-gray, silty, locally carbonaceous, moderately soft-----	28	138
	Lignite-----	2	140
	Shale as above-----	3	143
	Sand, black, fine, well-sorted, carbonaceous, semi-consolidated-----	7	150
	Shale, light-greenish-gray, silty-----	3	153
	Sandstone, white, fine, clayey, calcareous, semi-consolidated-----	9	162
	Shale, interbedded light- to dark-gray, silty to sandy, soft-----	12	174
	Sandstone, light-gray, very fine, clayey, semi-consolidated; with interbeds of shale as above-----	25	199
	Shale, medium- to dark-gray, carbonaceous, fissile to blocky-----	17	216
	Lignite-----	5	221
	Shale as above-----	2	223
	Sandstone, light-gray, very fine, thinly interbedded clayey and silty, semiconsolidated-----	14	237
	Sandstone, light-gray, very fine and fine, semi-consolidated-----	5	242
	Sandstone as above; with shale interbeds-----	5	247
	Sandstone, light-gray, very fine and fine, semi-consolidated-----	26	273
	Shale, very light gray, very silty, soft, tight-----	13	286
	Sandstone, very fine, indurated-----	5	291
	Shale as above-----	9	300

136-91-21CDC
O. Klein
(Log from Opp Drilling Co.)

Altitude: 2416 ft above msl Date drilled: July 1963

Sentinel Butte Formation:			
	Sand, gray, dry-----	23	23
	Clay-----	12	35
Tongue River Formation (?):			
	Sand, blue, dry-----	13	48
	Clay, blue-----	3	51
	Sand, blue, dry-----	31	82
	Rock, very hard-----	1	83
	Sand, blue, dry-----	15	98
	Clay, brown-----	2	100
	Rock, very hard-----	2	102
	Sand, blue-----	32	134

136-91-30DAC
R. Klein
(Log from Moe's Well Drilling)

Altitude: 2490 ft above msl Date drilled: September 1961

Sentinel Butte Formation:			
	Sand, surface-----	50	50
	Sand, water-----	10	60
	Clay, green, continuing-----	10	70

136-92-1CDD
M. Hertz
(Log from Moe's Well Drilling)

Altitude: 2430 ft above msl

Date drilled: November 1964

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation:			
	Sand, surface-----	3	3
	Clay, yellow-----	4	7
	Clay, gray-----	4.5	11.5
	Coal-----	1	12.5
	Sand and clay mixed-----	17.5	30
	Clay, gray-----	9.5	39.5
	Coal-----	.5	40
	Clay, gray-----	4	44
	Sand, gray-----	4	48
	Clay, gray-----	16.2	64.2
	Sandrock-----	.8	65
	Clay, gray-----	5	70
	Sand, green-----	6	76
	Clay, gray-----	3	79
	Sand, green-----	5	84
	Coal-----	1	85
	Clay, gray-----	4	89
	Sand, gray-----	1	90
	Clay, gray-----	2	92
	Sand, gray-----	19	111
	Rock, hard-----	1.8	112.8
	Sand-----	56.2	169
	Sandrock, soft-----	3	172

136-92-2BCA
P. Maier
(Log from Moe's Well Drilling)

Altitude: 2404 ft above msl

Date drilled: July 1967

Sentinel Butte Formation:			
	Sand, surface-----	7	7
	Clay, gray-----	9	16
	Coal-----	2	18
	Sand, green-----	3	21
	Clay, gray-----	23	44
	Sand-----	11	55
	Clay, brown-----	2	57
	Clay, gray-----	7	64
	Sand and clay mixed-----	4	68
Tongue River Formation (?):			
	Clay, gray-----	25	93
	Rock, gray, hard-----	1	94
	Clay, gray-----	9	103
	Sand, medium-coarse-----	86	189
	Clay, gray-----	1	190

136-92-2GDA
 J. Luithle
 (Log from Moe's Well Drilling)

Altitude: 2442 ft above msl

Date drilled: 1968; deepened
 December 1969

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation:			
	Topsoil-----	1	1
	Clay, yellow-----	21	22
	Clay, gray-----	12	34
	Clay, green-----	11	45
	Clay, gray-----	13.5	58.5
	Coal-----	1	59.5
	Clay, gray-----	55.5	115
Tongue River Formation (?):			
	Clay, brown-----	5	120
	Clay, gray-----	19	139
	Rock, hard-----	2	141
	Clay, gray-----	8.5	149.5
	Rock, soft-----	4.5	154
	Clay, gray-----	6	160
	Sand, gray, with shells-----	76	236
	Clay, brown-----	44	280
Basal Tongue River sandstone:			
	Sand, gray-brown-----	75	355
	Clay, gray-----	20	375
	Sand, white-----	20	395
	Rock, hard-----	1	396
	Clay, gray-----	19	415
	Sand, gray, coarse, with lignite chips-----	55	470
Cannonball Formation:			
	Clay, brown-----	10	480
Interpreted from electric log:			
	Sandstone, semiconsolidated-----	20	500
	Shale; with occasional thin interbeds of clayey, soft siltstone and sandstone-----	122	622
Ludlow Formation (?):			
	Sandstone, semiconsolidated-----	42	664
	Shale-----	16	680

136-92-7CAA2
 M. Steiner
 (Log from Moe's Well Drilling)

Altitude: 2412 ft above msl

Date drilled: October 1963

Sentinel Butte Formation:			
	Sand, surface-----	6	6
	Clay, gray-----	11	17
	Sand, yellow-----	16.2	33.2
	Rock-----	1.3	34.5
	Sand, surface-----	3	37.5
	Coal-----	.5	38
	Clay, gray-----	5	43
	Sand, gray-----	1	44
	Clay, gray-----	2	46
	Coal-----	2.5	48.5
	Clay, gray-----	3	51.5
	Coal-----	2	53.5
	Sand, gray-----	8.5	62

136-92-7CCA2, Continued
M. Steiner

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation, Continued:			
	Clay, gray-----	3.5	65.5
	Coal-----	1	66.5
	Clay, gray-----	.5	67
	Coal-----	1	68
	Sand, gray-----	25.5	93.5
Tongue River Formation (?):			
	Coal-----	.5	94
	Clay, gray-----	13	107
	Sand, gray-----	20.5	127.5
	Rock-----	1.5	129
	Sand, gray-----	9.5	138.5
	Coal-----	2.5	141
	Clay, gray-----	37	178
	Rock-----	4	182
	Clay, gray-----	4	186

136-92-11BAA
J. Luthle
(Log from Moe's Well Drilling)

Altitude: 2475 ft above msl

Date drilled: May 1966

Sentinel Butte Formation:			
	Clay, yellow, soft-----	12.5	12.5
	Coal, soft, dry-----	.5	13
	Clay, yellow, soft-----	5	18
	Clay, gray, soft-----	8	26
	Coal, soft, dry-----	1.5	27.5
	Rock, white, hard-----	8.7	36.2
	Clay, gray, soft-----	39.3	75.5
	Rock, white, very hard-----	.5	76
	Clay, gray, hard-----	15	91
	Coal, soft, dry-----	.5	91.5
	Clay, gray, soft-----	16.5	108
	Clay, brown, hard-----	3	111
	Clay, gray, soft-----	35	146
Tongue River Formation (?):			
	Clay, gray, soft-----	37	183
	Sand, gray, fine, soft-----	18.2	201.2
	Rock, black, very hard-----	3.8	205
	Sand, gray, fine, soft-----	2.5	207.5
	Rock, gray, medium-hard-----	.5	208
	Sand, gray, fine, soft-----	23	231
	Rock, gray, soft-----	2.8	233.8
	Sand, gray, fine, soft-----	21.2	255
	Clay, brown, hard-----	6	261
	Coal, hard, dry-----	2	263
	Coal, soft, dry-----	4	267
	Clay, gray, soft-----	28	295
Basal Tongue River sandstone:			
	Sand, gray, coarse, soft-----	60	355
	Rock, gray, hard-----	.5	355.5
	Clay, brown, soft-----	4.5	360

136-92-12AAA
USGS Conservation Division Drill Hole 4
(Log from George Mowat)

Altitude: 2401 ft above msl

Date drilled: 1966

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation:			
	Soil and silty claystone below, moderate-olive-brown (dry)-----	5	5
	Claystone, dusky-yellow (dry), silty-----	5	10
	Claystone, mottled moderate-olive-brown and light-olive-gray (dry), silty-----	1.4	11.4
	Claystone, light-olive-gray (dry), silty; with abundant seams of moderate-brown (dry), carbonaceous claystone-----	1	12.4
	Claystone, dark-yellowish-brown (dry), silty-----	2.6	15
	Claystone, olive-brown (dry), very silty-----	5	20
	Claystone, olive-gray to light-olive-gray (dry), silty-----	5	25
	Claystone, medium-dark-gray (moist)-----	5	30
	Claystone, olive-gray (moist), silty-----	4	34
	Siltstone, light-gray (dry), coarse, pure-----	6	40
	Sandstone, light-gray (dry), very fine; scattered ironstone concretions-----	5	45
	Siltstone, light-olive-gray (moist), slightly clayey--	5	50
	Sandstone, light-olive-gray (dry), very fine-----	5	55
	Sandstone, light-olive-gray (dry), very fine; with small amount of claystone-----	5	60
	Siltstone, light-olive-gray (dry), coarse, pure-----	5	65
	Sandstone, light-olive-gray (dry) above to moderate-olive-brown (moist) below, speckled with dark grains, fine to medium-----	25	90
	Sandstone, olive-gray (dry), coarse-----	5	95
	Sandstone, olive-gray (dry), fine-----	5	100
	Sandstone, olive-gray (dry), fine to medium-----	12.7	112.7
	Sandstone, olive-gray (wet), light-olive-gray (dry), medium-----	16.8	129.5
Tongue River Formation (?):			
	Siltstone, light-olive-gray (dry), coarse, laminated---	2	131.5
	Siltstone, light-gray (dry)-----	11.1	142.6
	Sandstone, light-gray (dry), medium-grained, hard, calcareous cemented; with 1/2-in claystone pebbles and coal fragments up to 2-in long-----	.7	143.3
	Coal, attrital, hard-----	.2	143.5
	Claystone, dark-greenish-gray, silty-----	3	146.5
	Concretion, light-olive-gray (wet), light-gray (dry), aphanitic, calcareous; in silty claystone-----	2.1	148.6
	Claystone, light-olive-gray (dry); silty above, carbonaceous, medium-light-gray (dry) below-----	8.9	157.5
	Siltstone, light-gray, clayey-----	2.5	160
	Claystone, light-gray (dry), silty. Lower 0.5 ft carbonaceous-----	2.4	162.4
	Siltstone, light-olive-gray (wet), light-gray (dry), very coarse, slightly clayey-----	5.8	168.2
	Sandstone, light-olive-gray (wet), light-gray (dry), very fine-----	2	170.2
	Claystone, olive-gray (wet), very slightly silty-----	2.3	172.5
	Siltstone, light-olive-gray (wet), with thin nearly black laminae, very slightly clayey, micaceous-----	4.4	176.9
	Claystone, dusky-yellowish-brown (moist)-----	1.2	178.1
	Lignite, attrital, hard-----	1.1	179.2
	Claystone, olive-gray (moist), silty-----	.5	179.7
	Lignite, attrital, hard-----	1.9	181.6
	Claystone, olive-gray (moist)-----	.6	182.2
	Claystone, olive-black (moist), carbonaceous, coaly---	.2	182.4
	Lignite, impure; with several 1/8-in to 1/16-in partings of claystone-----	.9	183.3

136-92-12AAA, Continued
USGS Conservation Division Drill Hole 4

Geologic source	Material	Thickness (feet)	Depth (feet)
Tongue River Formation (?), Continued:			
	Claystone, light-olive-gray (moist), silty. A		
	carbonaceous parting at 186.6 ft-----	3.4	186.7
	Siltstone, light-olive-gray (moist)-----	2.5	189.2
	Sandstone, light-olive-gray (moist), very fine-----	2.6	191.8
	Siltstone, light-olive-gray (moist), finer below-----	2.2	194
	Claystone, medium-light-gray (moist), silty-----	.9	194.9
	Lignite-----	.1	195
	Claystone, medium-gray (dry), carbonaceous-----	.5	195.5
	Claystone, very light gray (dry), silty-----	.8	196.3
	Siltstone, light-olive-gray (wet)-----	.1	196.4
	Claystone, very light gray (dry), silty-----	2.2	198.6
	Siltstone, light-olive-gray (wet)-----	.1	198.7
	Claystone, very light gray (dry), silty-----	2.9	201.6
	Sandstone, light-olive-gray (wet), very fine-----	2.2	203.8
	Lignite-----	.1	203.9
	Claystone, dusky-yellowish-brown (moist)-----	.2	204.1
	Lignite-----	.9	205
	Claystone, grayish-brown (moist), silty-----	.1	205.1
	Lignite; with thin ironstone seams near top, clay		
	seams lowest 0.2 ft-----	1.3	206.4
	Claystone, dark-olive-gray (moist)-----	.1	206.5
	Lignite-----	.7	207.2
	Claystone, black; and clayey lignite-----	.2	207.4
	Lignite, clayey; and pure lignite-----	.2	207.6
	Claystone, olive-gray (wet)-----	.2	207.8
	Lignite-----	.1	207.9
	Claystone, olive-gray (wet), silty-----	.8	208.7
	Lignite-----	.3	209
	Claystone, coaly-----	.2	209.2
	Claystone and coaly claystone-----	.4	209.6
	Lignite-----	.1	209.7
	Claystone, coaly-----	.2	209.9
	Lignite-----	.1	210
	Coal, clayey, impure-----	.4	210.4
	Claystone, light-olive-gray (moist), light-gray (dry),		
	silty, carbonaceous-----	2	212.4
	Siltstone, light-gray (dry), clayey; grading to pure		
	siltstone below-----	2.1	214.5
	Sandstone, very light-gray (dry); very fine, to		
	coarse siltstone-----	2.4	216.9
	Siltstone, light-gray (dry), laminated, clayey to		
	quite clayey-----	1.5	218.4
	Claystone, medium-light-gray (moist), slightly silty,		
	homogeneous-----	1.4	219.8
	Siltstone, light-olive-gray (moist), pure to lami-		
	nated-----	.7	220.5
	Claystone, olive-gray (moist), silty-----	1.9	222.4
	Siltstone, olive-gray (moist), clayey-----	.8	223.2
	Claystone, olive-gray (moist), silty, carbonaceous;		
	quite silty below-----	2.6	225.8
	Siltstone, light-olive-gray (moist), clayey, lami-		
	nated-----	1.2	227
	Sandstone, light-olive-gray (dry), very fine-----	13.4	240.4
	Siltstone, olive-gray (moist), clayey; laminated in		
	part. Ironstone concretions 241.2 to 241.3 ft-----	1.3	241.7
	Claystone, olive-gray (wet). Scattered $\frac{1}{4}$ -in iron-		
	stone concretions-----	9	250.7
	Mudstone, olive-gray (wet). Mollusk shells-----	.2	250.9
	Claystone, light-olive-gray (dry), silty-----	6.5	257.4
	Siltstone, light-olive-gray (dry); with very abundant		
	gastropod and small pelecypod shells-----	.7	258.1
	Coquina, dusky-yellowish-brown (dry), gastropod and		
	small pelecypod, with shells mostly broken. In a		
	carbonaceous, silty claystone matrix-----	.4	258.5

136-92-12AAA, Continued
 USGS Conservation Division Drill Hole 4

Geologic source	Material	Thickness (feet)	Depth (feet)
Tongue River Formation (?), Continued:			
	Lignite, attrital, pure-----	8.3	266.8
	Claystone, dusky-yellowish-brown (dry), carbonaceous; with coal fragments-----	1.9	268.7
	Claystone, olive-gray (moist), silty-----	6.8	275.5
	Claystone, light-brownish-gray (dry), noncalcareous with carbonaceous fragments, hard, cemented-----	.8	276.3
	Claystone, olive-gray (wet), silty-----	1.7	278
Basal Tongue River sandstone (?):			
	Sandstone, olive-gray (wet), fine; top foot clayey----	12	290

136-92-12BCC2
 M. Hertz
 (Log from Moe's Well Drilling)

Altitude: 2429 ft above msl

Date drilled: November 1963

Sentinel Butte Formation:			
	Sand, surface-----	41.8	41.8
	Sandrock-----	1.2	43
	Sand, surface-----	11.5	54.5
	Sandrock-----	.3	54.8
	Sand, surface-----	26.2	81
	Sandrock-----	.5	81.5
	Sand, surface-----	5.5	87
	Clay, gray-----	2	89
	Sand, surface-----	1	90
	Rock, hard-----	1.2	91.2
	Sand, surface-----	.8	92
	Clay, gray-----	1.5	93.5
	Sand, surface-----	1	94.5
	Rock, very hard-----	3	97.5
	Sand, surface-----	18.5	116
	Rock, hard-----	2.5	118.5
	Sand-----	23	141.5
	Sandrock-----	1.5	143
	Sand, gray-----	8	151
	Sandrock-----	7	158
	Sand, gray-----	9	167
	Sandrock-----	12	179

136-92-15AAA
 NDSWC 3667

Altitude: 2405 ft above msl

Date drilled: November 1968

Sentinel Butte Formation:			
	Topsail, black, sandy loam-----	1	1
	Sandstone, yellowish-gray, dusky-yellow, and reddish-yellow, fine and medium, subangular and subround, clean, weakly consolidated, oxidized; dry-----	19	20
	Sandstone, light-olive-gray, fine, well-sorted, subangular and subround, weakly consolidated; dry-----	11	31
	Shale, light-gray, silty, smooth, soft, plastic-----	3	34
	Lignite-----	2	36
	Shale, light- and medium-gray, silty and sandy, soft; with interbeds of brownish-black, carbonaceous shale--	24	60
	Sandstone, dark-greenish-gray to brownish-black, fine, clayey, semiconsolidated-----	8	68
	Shale as above-----	7	75
	Clay, bentonitic-----	3	78

136-92-15AAA, Continued
NDSWC 3667

Geologic source	Material	Thickness (feet)	Depth (feet)
Tongue River Formation (?):			
	Shale, medium-gray, silty; with thin bentonitic clay seams-----	25	103
	Lignite-----	3	106
	Shale as above-----	4	110
	Sandstone, fine, semiconsolidated-----	6	116
	Shale as above-----	2	118
	Lignite-----	2	120
	Shale as above-----	2	122
	Siltstone, very light gray, soft-----	6	128
	Shale, interbedded light- and medium-gray, silty and sandy-----	4	132
	Siltstone, light-gray, clayey, soft-----	4	136
	Shale as above-----	4	140
	Siltstone, very light gray, soft; with interbeds of light- and medium-gray, silty and sandy shale-----	8	148
	Sandstone, light-gray, silt to very fine, weakly consolidated-----	10	158
	Shale, variegated gray and green, silty and sandy, carbonaceous; with interbeds (2 to 8 ft thick) of clayey, soft siltstone-----	42	200
	Sandstone, light-greenish-gray, very fine, well-sorted, weakly consolidated-----	7	207
	Shale, green, tight-----	2	209
	Sandstone as above-----	12	221
	Shale, light- to dark-gray, silty, lignitic; with interbeds of clayey, soft siltstone-----	29	250
	Sandstone, light-gray, very fine, indurated-----	2	252
	Sandstone, greenish-gray, very fine, clayey, semi-consolidated; with thin interbeds of shale-----	10	262
	Sandstone, dark-greenish-gray, fine, well-sorted, with lignite specks, weakly consolidated-----	7	269
	Shale, medium-gray, silty, fairly hard-----	17	286
	Lignite, black, hard-----	11	297
	Shale, brownish-black, silty, carbonaceous, smooth, tight-----	3	300

136-92-16CDD

G. Hertz

(Log from Moe's Well Drilling)

Altitude: 2410 ft above msl

Date drilled: July 1964

Sentinel Butte Formation:

Sand, surface-----	12.5	12.5
Sand, gray-----	17.5	30
Coal-----	2	32
Sandrock, continuing-----	5	37

136-92-17DDD2

G. Hertz

(Log from Moe's Well Drilling)

Altitude: 2432 ft above msl

Date drilled: November 1966

Sentinel Butte Formation:

Sand, surface-----	3	3
Sand, brown, soft-----	2	5
Clay, yellow, hard-----	14	19
Sandstone, white, soft-----	1	20
Sand, brown, soft-----	10	30
Sand, blue, coarse, continuing-----	40	70

136-92-18ACA2
E. Swantson
(Log from Moe's Well Drilling)

Altitude: 2402 ft above msl

Date drilled: April 1966

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Sand, surface, soft-----	1	1
	Clay, gray, hard-----	5.5	6.5
	Coal, soft-----	1	7.5
	Clay, yellow, hard-----	10	17.5
	Sand and clay, mixed, soft-----	12.5	30
	Sand, gray, coarse, soft-----	40	70
	Sand, gray, coarse, hard-----	17.5	87.5
	Clay, gray, hard-----	1.5	89

136-92-26ADD2
S. Greff
(Log from Moe's Well Drilling)

Altitude: 2457 ft above msl

Date drilled: November 1962

Sentinel Butte Formation:			
	Sand, surface-----	4	4
	Clay, yellow-----	12	16
	Clay, black-----	2.5	18.5
	Coal-----	5.5	24
	Clay-----	7	31
	Sandrock-----	1	32
	Clay, gray-----	14	46
	Clay, green-----	42	88
Tongue River Formation (?):			
	Coal-----	.2	88.2
	Clay-----	1.8	90
	Sand-----	2	92
	Rock-----	.5	92.5
	Clay, gray; rock at bottom-----	34.5	127
	Clay, green-----	22	149
	Sand, green, chunk-----	11	160
	Clay, gray-----	10	170
	Sand, gray, chunk-----	13	183
	Coal-----	1	184
	Clay, gray-----	19	203
	Coal-----	2	205
	Clay, gray-----	18	223
	Sand-----	2	225
	Clay-----	15	240
	Sand, gray, fine-----	3	243
	Clay, gray-----	14	257
	Coal-----	8	265
	Clay, gray, continuing-----	8	273

136-92-26CDD
USGS Conservation Division Drill Hole 3
(Log from George Mowat)

Altitude: 2530 ft above msl

Date drilled: 1966

Sentinel Butte Formation:			
	Sandy loam, dusky-yellowish-brown (dry) at surface to dark-yellowish-brown at 5 ft depth-----	5	5
	Siltstone, light-olive-gray (moist)-----	4.4	9.4
	Claystone, light-olive-gray (moist), silty-----	.1	9.5
	Coal, brown, powdery, weathered-----	.8	10.3

136-92-26CDD, Continued
 USGS Conservation Division Drill Hole 3

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation, Continued:			
	Claystone, light-olive-gray (dry), with slight brownish hue, silty-----	2.7	13
	Mudstone, light-olive-gray (slightly moist). The siltstone component is quite fine-----	22	35
	Siltstone, olive-gray (moist), clayey-----	15	50
	Claystone, olive-gray (moist), silty-----	5	55
	Sandstone, light-olive-gray (moist), very fine-----	15	70
	Sandstone, olive-gray (moist), fine to very fine-----	5	75
	Sandstone, light-olive-gray (moist), medium to fairly well sorted-----	18	93
	Coal-----	3	96
	Claystone, olive-gray (wet), silty-----	6.5	102.5
	Coal, attrital, hard-----	.1	102.6
	Claystone, olive-gray (wet), very slightly silty, carbonaceous; with thin coal parting at base-----	.2	102.8
	Claystone, dark-greenish-gray (wet) silty-----	1.1	103.9
	Siltstone, dark-greenish-gray (wet), clayey-----	.2	104.1
	Claystone, olive-gray (wet), silty-----	.3	104.4
	Siltstone, olive-gray (moist), clayey-----	12.6	117
	Claystone, dark-yellowish-brown (moist) above, dusky-yellowish-brown below, silty, carbonaceous-----	1.5	118.5
	Coal, attrital, hard-----	.7	119.2
	Claystone, olive-gray (wet), silty-----	.3	119.5
	Coal, silty and clayey, very hard-----	1.2	120.7
	Claystone, olive-gray (wet), silty-----	14.3	135
	Claystone, greenish-gray (wet), slightly silty-----	5	140
	Claystone, greenish-gray (wet), slightly silty-----	5	145
	Claystone, light-olive-gray (dry), silty, with abundant coal fragments and seams-----	2.3	147.3
	Claystone, light-greenish-gray (dry), silty; with minor amounts of coal fragments-----	.8	148.1
	Siltstone to very fine sandstone, very light-gray (dry), medium-gray (wet); with a small number of veinlets and fragments of coal and claystone-----	13.9	162
Tongue River Formation (?):			
	Coal-----	1.9	163.9
	Claystone, medium-light-gray to greenish-gray (wet), very light gray (dry), silty-----	10.4	174.3
	Claystone, silty; with two thin seams of coal-----	.1	174.4
	Claystone, olive-gray (wet), silty-----	.2	174.6
	Coal-----	.3	174.9
	Half coal, half claystone in thin seams-----	.1	175
	Lignite, attrital, pure-----	.5	175.5
	Claystone parting, pale-yellowish-brown, very silty-----	.1	175.6
	Coal, very clayey, impure; estimated 60 percent coal-----	.9	176.5
	Claystone, dark-yellowish-brown (wet), light-olive-gray (dry), with a tinge of yellowish-brown, silty, carbonaceous, and coaly-----	.8	177.3
	Claystone, light-olive-gray (wet), silty-----	4.1	181.4
	Coal, attrital-----	1.2	182.6
	Claystone, olive-gray (moist), silty-----	.6	183.2
	Siltstone, light-olive-gray (moist)-----	.4	183.6
	Claystone, light-olive-gray (moist), silty-----	.4	184
	Coal top third, rest carbonaceous claystone, dark-olive-gray (wet), with brownish tinge-----	.2	184.2
	Claystone, dark-greenish-gray (wet), silty-----	.8	185
	Siltstone, light-greenish-gray (dry), fine-----	3	188
	Siltstone, greenish-gray (moist), clayey-----	.6	188.6
	Claystone, greenish-gray (moist), light-greenish-gray (dry), silty-----	7	195.6
	Siltstone, dark-greenish-gray (wet), light-gray (dry), clayey-----	1.4	197

136-92-26CDD, Continued
 USGS Conservation Division Drill Hole 3

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Tongue River Formation (?), Continued:			
	Siltstone, light-gray (dry); clayey above, sandstone below. Gradational unit-----	1	198
	Siltstone, light-olive-gray (moist), very slightly clayey; with very fine sandstone and clayey sandstone-----	5.8	203.8
	Sandstone and siltstone, olive-gray (wet), very fine, very clayey-----	15	218.8
	Sandstone and siltstone, dark-yellowish-brown (moist), very fine, clayey, carbonaceous-----	1.5	220.3
	Sandstone, dusky-yellowish-brown (moist), clayey; with 0.1 ft iron sulfide layer at 221 ft-----	1.5	221.8
	Sandstone, pale-yellowish-brown (dry), very fine, coaly; with less than 30 percent coal-----	.2	222
	Sandstone, pale-yellowish-brown (dry), very fine-----	.7	222.7
	Sandstone, dark-yellowish-brown (moist), light-brownish-gray (dry), very fine, coaly; and slightly clayey siltstone-----	6	228.7
	Claystone, medium-light-gray (dry), silty; with a few coal fragments in top foot-----	5.1	233.8
	Coal, attrital, pure, hard-----	.9	234.7
	Claystone, medium-light-gray (dry), silty. At 238.2 ft a 0.1 ft ironstone concretion-----	7.1	241.8
	Siltstone, dusky-yellow (dry), calcareous cemented, hard-----	.1	241.9
	Claystone, light-gray (dry), silty-----	.8	242.7
	Claystone, medium-gray, (dry), very slightly silty-----	.2	242.9
	Siltstone, light-gray (dry)-----	1.3	244.2
	Claystone, olive-gray (dry), very slightly silty-----	.2	244.4
	Coal, attrital-----	1.2	245.6
	Claystone, light-olive-gray (dry), silty; with thin coal seams at 251.9 and 252 ft-----	7	252.6
	Coal-----	.1	252.7
	Claystone, light-gray (dry), silty-----	1.8	254.5
	Coal, attrital, pure; with 0.04 ft ironstone concretion at base-----	2.4	256.9
	Coal-----	1	257.9
	Claystone, light-olive-gray (dry)-----	1.1	259
	Coal-----	.5	259.5
	Claystone, olive-gray (moist), silty-----	9.4	268.9
	Siltstone and sandstone, light-gray (dry)-----	6.4	275.3
	Sandstone, olive-gray (wet), very fine above to medium below. Scattered shells, coal fragments, and a 0.3 ft claystone parting-----	10	285.3
	Sandstone, olive-gray (wet), fine-----	9.4	294.7
	Claystone, light-olive-gray (wet), silty-----	.8	295.5
	Siltstone, olive-gray (wet)-----	3.6	299.1
	Coal, clayey, impure-----	.3	299.4
	Claystone, light-olive-gray (wet), silty-----	1.5	300.9
	Siltstone, olive-gray (wet), clayey-----	.6	301.5
	Claystone, olive-gray (wet), silty-----	.5	302
	Sandstone, olive-gray (wet), fine-----	3.3	305.3

136-92-32ACA3
 N. Reinert
 (Log from Moe's Well Drilling)

Altitude: 2472 ft above msl

Date drilled: September 1960

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Sand, surface-----	7	7
	Clay, yellow-----	12	19
	Coal-----	2	21
	Clay, green-----	11	32
	Rock-----	.5	32.5
	Clay-----	21.5	54
	Sand, fine, dry-----	1	55
	Clay, green-----	5	60
	Clay, brown-----	8	68
	Coal-----	6	74
	Clay, green-----	14	88
	Sand, fine-----	2	90

136-92-32ACB
 N. Reinert
 (Log from Moe's Well Drilling)

Altitude: 2483 ft above msl

Date drilled: December 1961

Sentinel Butte Formation:			
	Sand, surface-----	12	12
	Sandrock-----	1	13
	Sand, surface-----	5	18
	Junk-----	13	31
	Coal-----	2	33
	Sand-----	26	59
	Sandrock-----	2	61
	Sand-----	8	69
	Clay, green-----	13	82
	Coal-----	6	88
	Clay-----	2	90
	Clay-----	15	105
	Sand-----	18	123
	Clay, brown-----	7	130
Tongue River Formation (?):			
	Clay, gray-----	21	151

136-93-2CBC
 P. Miller
 (Log from Moe's Well Drilling)

Altitude: 2462 ft above msl

Date drilled: 1968

Sentinel Butte Formation:			
	Topsoil-----	1	1
	Clay, yellow-----	35.5	36.5
	Rock-----	.5	37
	Clay, gray-----	62	99
	Sand, gray-----	47	146
	Rock, medium-hard-----	7.5	153.5
	Sand, gray, medium-----	43.5	197
Tongue River Formation (?):			
	Clay, brown-----	5	202

136-93-10AEB2
L. Miller
(Log from Moe's Well Drilling)

Altitude: 2480 ft above msl

Date drilled: May 1960

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Dirt, surface-----	9	9
	Clay-----	6	15
	Coal, slack-----	2	17
	Clay-----	6	23
	Sand-----	3	26
	Rock, sandstone-----	2	28
	Gravel-----	2	30
	Clay, gray-----	71	101
	Rock, hard-----	.5	101.5
	Clay-----	53.5	155
	Sand-----	31	186
	Sandrock-----	2	188
Tongue River Formation (?):			
	Clay-----	4.5	192.5

136-93-14AAA2
USGS Auger Test 28

Altitude: 2430 ft above msl

Date drilled: 1968

Sentinel Butte Formation:			
	Sandstone, light-olive-gray, very fine to fine, well-rounded to subangular, clayey, mostly quartz grains, semiconsolidated-----	5	5
	Shale, dark-yellowish-brown, silty, sandy, non-calcareous, soft-----	5	10
	Shale as above; but moderate-yellowish-brown-----	5	15
	Shale, moderate-brown, silty, sandy, noncalcareous, soft, plastic-----	4.5	19.5
	Shale, black, silty, somewhat sandy, noncalcareous-----	.5	20
	Shale, yellowish-brown, silty, noncalcareous, soft, plastic-----	5	25
	Shale, light-olive-gray with medium-gray spots and yellowish streaks, silty, calcareous, soft-----	5	30
	Shale, medium-dark-gray, silty, calcareous, plastic-----	5	35
	Shale as above; water-saturated-----	8	43
	Sandstone (?), soft-----	2	45
	Rock, hard--calcareous sandstone (?)-	.1	45.1

136-93-14CBC
N. Mayer
(Log from Moe's Well Drilling)

Altitude: 2510 ft above msl

Date drilled: September 1961

Sentinel Butte Formation:			
	Sand, surface-----	5	5
	Rock, soft-----	3	8
	Sand, surface-----	23	31
	Rock-----	.5	31.5
	Sand, green-----	8.5	40
	Rock-----	.5	40.5
	Sand-----	13.5	54
	Clay, green-----	2	56
	Coal-----	1	57
	Clay, green-----	29	86

136-93-14CBC, Continued
N. Mayer

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation, Continued:			
	Rock-----	.2	86.2
	Clay, gray-----	27.8	114
	Sandrock, white-----	3	117
	Sand, blue, coarse, continuing-----	62	179

136-93-15BCD
J. Roth
(Log from Moe's Well Drilling)

Altitude: 2590 ft above msl Date drilled: April 1961

Sentinel Butte Formation:			
	Sand, surface-----	10	10
	Clay, gray-----	28	38
	Clay, green, with 2-in rock at 45 ft-----	10	48
	Coal-----	1	49
	Clay, gray-----	4	53
	Coal and clay-----	2.5	55.5
	Rock, side-----	.3	55.8
	Clay, green-----	31.7	87.5
	Rock, hard-----	2.5	90
	Clay, gray-----	5	95
	Sand, very fine-----	25	120
	Sand, medium-----	28	148
	Coal-----	.5	148.5
	Clay-----	2.5	151
	Sand-----	7	158
	Coal-----	10	168
	Clay-----	24	192
	Sand-----	3.5	195.5
	Rock-----	.5	196
	Sand-----	14	210
	Rock-----	.2	210.2
	Sand, continuing-----	19.8	230

136-93-17DCC3
F. Mayer
(Log from Moe's Well Drilling)

Altitude: 2590 ft above msl Date drilled: October 1962

Sentinel Butte Formation:			
	Sand, surface-----	17	17
	Clay, gray-----	4	21
	Coal-----	1.5	22.5
	Clay, gray-----	5.5	28
	Clay, green-----	3	31
	Sand, gray-----	16	47
	Clay, gray-----	28	75
	Clay and sand mixed-----	29	104
	Coal-----	4.5	108.5
	Clay, gray-----	8.5	117
	Sand, gray-----	.5	117.5
	Clay, gray-----	7	124.5
	Coal-----	2.5	127
	Clay, brown-----	4	131

136-93-18AAA2
F. Thomas
(Log from Moe's Well Drilling)

Altitude: 2635 ft above msl

Date drilled: May 1966

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation:			
	Sand, yellow, surface, soft-----	11	11
	Clay, yellow, soft-----	5	16
	Clay, gray, hard-----	7	23
	Sand, gray, soft-----	4	27
	Clay, gray, hard-----	1	28
	Sand, gray, soft-----	3.5	31.5
	Coal, hard; yielded water at the rate of 1 quart per minute-----	.5	32
	Clay, gray, hard-----	6	38
	Sand, gray, soft-----	7.5	45.5
	Rock, gray, hard-----	2.5	48
	Sand, gray, soft-----	4.5	52.5
	Clay, gray, soft-----	4.3	56.8
	Sand, green, hard-----	1.2	58
	Coal, hard, dry-----	1	59
	Clay, gray, hard-----	23.5	82.5
	Coal, hard, dry-----	1.5	84
	Clay, gray, hard-----	1.5	85.5
	Rock, gray, medium-hard-----	.5	86
	Clay, gray, hard-----	16.5	102.5
	Coal, hard, dry-----	1	103.5
	Clay, green, hard-----	24	127.5
	Rock, tan, very hard-----	.3	127.8
	Clay, brown, soft-----	17.7	145.5
	Coal, hard, dry-----	.5	146
	Clay, brown, hard-----	1	147
	Coal, hard, dry-----	4	151
	Clay, gray, hard-----	25.8	176.8
	Coal, hard, dry-----	1.7	178.5
	Clay, tan, soft-----	9.5	188
	Clay, green, hard-----	6	194
	Rock, very hard-----	.2	194.2
	Clay, tan, soft-----	6.8	201
	Sand, gray-tan, soft, dry-----	17	218
	Clay, gray, soft-----	5	223
	Sand, gray, soft-----	22	245
	Rock, gray, hard-----	2.5	247.5
	Sand, gray, soft-----	45.5	293
Tongue River Formation (?):			
	Clay, gray, hard-----	1	294

136-93-20ABB
F. Mayer
(Log from Moe's Well Drilling)

Altitude: 2560 ft above msl

Date drilled: September 1964

Sentinel Butte Formation:			
	Sand, surface-----	9	9
	Coal, dry-----	2	11
	Clay, gray-----	15.5	26.5
	Coal-----	.5	27
	Clay, gray-----	2	29
	Sand and clay, mixed-----	2.5	31.5
	Clay, brown-----	36.5	68
	Sand, brown-----	1	69
	Coal-----	7	76
	Clay, gray-----	9	85

136-93-20ABB, Continued
F. Mayer

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation, Continued:			
	Coal-----	1	86
	Clay, gray-----	5.5	91.5
	Rock-----	.3	91.8
	Clay, gray-----	1.2	93
	Coal-----	2	95
	Sand, medium-----	6	101
	Sand, very coarse-----	53.8	154.8
Tongue River Formation:			
	Coal-----	3.2	158
	Clay, gray, continuing-----	4	162

136-93-20CBB
F. Mayer
(Log from Moe's Well Drilling)

Altitude: 2510 ft above msl

Date drilled: August 1961

Sentinel Butte Formation:			
	Clay, yellow-----	19	19
	Sand, black-----	5	24
	Coal-----	2.5	26.5
	Clay, gray-----	26.5	53
	Coal-----	2	55
	Clay-----	1	56
	Coal-----	1.5	57.5
	Sand, green-----	9.5	67
	Clay, gray-----	12	79
Tongue River Formation:			
	Coal-----	1	80
	Clay-----	19.5	99.5
	Clay, green-----	28.5	128
	Sand, gray-----	7	135
	Clay, gray-----	18	153
	Coal-----	.5	153.5
	Clay, gray-----	4.5	158
	Rock-----	1.7	159.7
	Clay-----	5.3	165
	Sand-----	1	166
	Clay, gray-----	19	185
	Sand-----	5	190
	Clay, gray, side of rock at 202 ft-----	12	202
	Sand-----	2	204
	Coal-----	1	205
	Clay-----	10	215
	Coal-----	1	216
	Clay, gray-----	19	235
	Sand-----	3	238
	Clay-----	9	247
	Coal-----	.5	247.5
	Rock, very hard-----	.7	248.2
	Clay, white-----	21.8	270
	Sand-----	8	278
	Coal-----	2	280
	Clay, continuing-----	3	283

136-93-22AAA2
N. Mayer
(Log from Moe's Well Drilling)

Altitude: 2473 ft above msl

Date drilled: May 1960

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Dirt, surface-----	7	7
	Clay-----	6	13
	Coal, slack-----	2	15
	Clay-----	48	63
	Rock-----	.5	63.5
	Clay-----	9.5	73
	Sand-----	45	118
	Clay, continuing-----	4	122

136-93-25BBB
NDSWC 3552

Altitude: 2421 ft above msl

Date drilled: November 1967

Sentinel Butte Formation:			
	Topssoil, dark-brown, sandy loam-----	1	1
	Shale, dusky-yellow, silty, soft, fractured-----	3	4
	Shale, yellowish-gray, silty, brittle-----	6	10
	Lignite, black, fissile, fractured; takes drilling fluid-----	2	12
	Shale, brownish-gray, silty, carbonaceous, soft, tight-----	6	18
	Lignite, black, fissile, hard-----	4	22
	Shale, interbedded light- to medium-gray and greenish-gray, silty, slightly brittle, tight-----	18	40
	Lignite (?)-----	2	42
	Shale, light- and medium-gray, silty; with thin beds of soft, crumbly bentonite-----	10	52
	Lignite-----	1	53
	Shale, medium-gray-----	3	56
	Sandstone, greenish-gray, fine, soft; with fossil shell fragments-----	7	63
	Shale, gray, bentonitic-----	9	72
Tongue River Formation:			
	Shale, medium-gray; thinly interbedded with light-olive-gray, soft siltstone and lignite seams-----	21	93
	Siltstone, light-olive-gray, sandy, calcareous, soft-----	16	109
	Shale, greenish-gray, silty, slightly brittle, tight; with thin interbeds of shaly, soft sandstone-----	7	116
	Lignite; with shale interbeds-----	3	119
	Siltstone, light-olive-gray, calcareous, soft-----	17	136
	Sandstone, dark-greenish-gray, indurated-----	3	139
	Sandstone, dark-greenish-gray, fine, slightly clayey, semiconsolidated-----	14	153
	Shale, light-greenish-gray, silty, smooth, soft, slightly brittle, tight-----	17	170
	Sandstone, light-olive-gray, very fine to fine, sub-angular, clean, weakly consolidated; except for indurated bottom 2 ft-----	42	212
	Shale, light-greenish-gray, silty, smooth, brittle-----	4	216
	Sandstone, light-gray, silt to fine, clayey, soft-----	4	220

136-93-30ABA3
C. Bittenbinder
(Log from Moe's Well Drilling)

Altitude: 2498 ft above msl

Date drilled: September 1960

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Sand, surface-----	8	8
	Sand, white-----	27	35
	Sand, blue-----	43	78
	Clay-----	3	81

136-93-32ADC
T. Burghart
(Log from Moe's Well Drilling)

Altitude: 2472 ft above msl

Date drilled: August 1962

Quaternary deposits, undifferentiated:			
	Sand, surface-----	7	7
	Clay, yellow-----	8	15
	Gravel-----	7	22
Sentinel Butte Formation:			
	Sand, very fine-----	28	50
	Clay-----	5	55
	Rock, white, soft-----	1	56
	Clay, gray-----	36	92
	Sand-----	13	105
Tongue River Formation (?):			
	Coal-----	1.5	106.5
	Clay-----	13.5	120

136-93-34BCB2
L. Jordon
(Log from Moe's Well Drilling)

Altitude: 2515 ft above msl

Date drilled: April 1968

Sentinel Butte Formation:			
	Sand, yellow, surface-----	5	5
	Clay, white, with sand and coal-----	70	75
	Sand, gray, dry-----	17	92
	Clay, gray-----	1	93
	Sand, gray, continuing-----	7	100

136-94-3DDD
NDSWC 3666

Altitude: 2568 ft above msl

Date drilled: November 1968

Sentinel Butte Formation:			
	Topsoil, black, sandy loam-----	1	1
	Sandstone, fine and medium, subangular, calcareous; mostly weakly consolidated but with thin indurated and concretionary layers; oxidized; dry-----	14	15
	Shale, brownish-gray, silty, finely micaceous, non-calcareous, soft-----	5	20
	Shale as above; with interbeds of sandstone as above--	18	38
	Lignite-----	1	39

136-94-3DDD, Continued
 NDSWC 3666

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation, Continued:			
	Shale, light- and medium-gray, silty, smooth, slightly brittle, tight-----	11	50
	Lignite, hard-----	2	52
	Shale, interbedded light- and medium-gray and gray-green, silty, brittle; with a few thin interbeds of very fine, soft sandstone and concretion layers-----	9	61
	Lignite-----	1	62
	Shale, carbonaceous-----	1	63
	Lignite-----	1	64
	Shale, gray and brown, silty, bentonitic-----	11	75
	Lignite-----	2	77
	Shale, gray and brown, silty, bentonitic-----	2	79
	Siltstone, very light gray, clayey, soft; with interbeds of very fine, soft sandstone. This section of the hole yields water--drilling with air-----	6	85
	Shale, gray, bentonitic-----	2	87
	Siltstone and sandstone as above; with trace of pyritic, indurated siltstone and thin shale interbeds-----	8	95
	Lignite-----	1	96
	Shale, light-gray, bentonitic; with interbeds of clayey, soft siltstone-----	12	108
	Lignite-----	1	109
	Shale, bentonitic-----	2	111
	Lignite-----	1	112
	Shale, bentonitic-----	3	115
	Lignite-----	2	117
	Shale, interbedded light- to medium-gray, silty and bentonitic-----	3	120
	Lignite-----	1	121
	Shale as above-----	2	123
	Lignite-----	1	124
	Shale as above-----	3	127
	Lignite-----	1	128
	Shale as above-----	1	129
	Sandstone, very fine to fine, subangular, weakly consolidated-----	2	131
	Shale as above-----	1	132
	Lignite-----	1	133
	Shale as above-----	2	135
	Lignite-----	1	136
	Shale as above-----	9	145
	Sandstone, light-olive-gray, silt to very fine, semiconsolidated; yields water-----	7	152
	Shale, light-gray, silty-----	2	154
	Siltstone, olive-gray, clayey, soft-----	4	158
	Shale, light-gray, silty, becomes bentonitic downward-----	8	166
	Sandstone, very light gray, very fine to fine, clayey, calcareous, semiconsolidated; with interbeds of light-gray, bentonitic clay-----	4	170
	Sandstone as above; mostly fine; some thin layers of indurated sandstone-----	10	180
	Lignite-----	1	181
	Shale; with interbeds of soft siltstone-----	6	187
	Sandstone, dark-greenish-gray, fine, well-sorted, subangular to subround; contains fossil shell fragments; weakly consolidated; yields water-----	21	208
	Shale, very light gray, very silty; with thin interbeds of sandstone as above and siltstone-----	8	216
	Sandstone, dark-greenish-gray, very fine, well-sorted; contains lignite flakes; weakly consolidated-----	4	220
	Sandstone as above; but partly fine, subangular-----	6	226
	Shale-----	2	228
	Sandstone as above-----	7	235
	Sandstone, dark-greenish-gray, very fine to fine, mostly very fine; contains lignite flakes; weakly consolidated; with thin shale interbeds-----	5	240

136-94-10BDA2
J. Wegh
(Log from Moe's Well Drilling)

Altitude: 2583 ft above msl

Date drilled: July 1961

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Sand, surface-----	7	7
	Clay, yellow-----	18	25
	Clay, gray-----	13.5	38.5
	Coal-----	3	41.5
	Clay, gray-----	2.5	44
	Coal-----	.5	44.5
	Clay-----	1.5	46
	Coal-----	.5	46.5
	Clay, gray-----	16.5	63
	Coal-----	4	67
	Sand, gray-----	18	85
	Clay, gray-----	2	87
	Coal-----	1	88
	Clay, gray-----	17	105
	Coal-----	1	106
	Clay, gray-----	2.5	108.5
	Rock-----	.3	108.8
	Clay, green-----	11.2	120
	Sand-----	9	129
	Clay, gray-----	12	141

136-94-30CDC
M. Koppinger
(Log from Moe's Well Drilling)

Altitude: 2696 ft above msl

Date drilled: November 1967

Sentinel Butte Formation:			
	Sand, surface-----	1	1
	Clay, yellow-----	3	4
	Clay, gray-----	54	58
	Coal-----	3	61
	Clay, gray-----	33	94
	Sand, gray-----	20	114
	Clay, green-----	6	120

136-94-31BAB2
M. Koppinger
(Log from Moe's Well Drilling)

Altitude: 2699 ft above msl

Date drilled: September 1958

Sentinel Butte Formation:			
	Sand, surface, rock at 36 ft-----	45	45
	Sand, blue-----	2	47
	Clay, gray-----	38	85
	Sand, fine-----	2	87
	Rock, gray, flint-----	1.2	88.2
	Sand, gray-----	18.8	107
	Coal-----	4	111
	Clay, brown-----	3	114
	Coal-----	4	118
	Clay, green, continuing-----	2	120

Section from surface to 87 ft reported dry.

136-94-33CBC
D. Pekas
(Log from Moe's Well Drilling)

Altitude: 2582 ft above msl Date drilled: September 1960

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Sand, surface-----	27	27
	Sand-----	10	37
	Clay, gray-----	13	50

136-94-34AAB2
K. Jahner
(Log from Moe's Well Drilling)

Altitude: 2540 ft above msl Date drilled: September 1962

Sentinel Butte Formation:			
	Sand, surface-----	15	15
	Clay-----	3	18
	Sand, surface-----	6	24
	Sand, blue-----	4	28
	Clay, gray-----	8	36
	Coal-----	2	38
	Clay, gray-----	10	48
	Rock, white-----	1.5	49.5
	Coal-----	3.5	53
	Clay-----	14	67
	Sand-----	3	70
	Coal-----	4.5	74.5
	Clay, gray, continuing-----	5.5	80

136-95-13AAA
NDSWC 3529

Altitude: 2582 ft above msl Date drilled: September 1967

Quaternary deposits, undifferentiated:			
	Topsoil, dark-brownish-gray, sand loam, fractured; dry-----	2	2
	Sand, light-olive-gray, silt to fine, slightly clayey-----	5	7
	Gravel, dark-brown, fine, angular; mostly chert, iron-stone, and concretion chips-----	2	9
Sentinel Butte Formation:			
	Shale, dusky-yellow to yellowish-gray, very sandy, oxidized, soft, very slightly plastic-----	20	29
	Shale, light-greenish-gray, silty, soft-----	11	40
	Shale, light-olive-gray, silty to sandy, smooth, moderately soft-----	15	55
	Lignite, black, hard-----	3	58
	Shale, light- to medium-gray, smooth, nonfissile-----	18	76
	Shale, light-gray, sandy, with bentonitic streaks, soft-----	9	85
	Shale, light-greenish-gray, sandy, micaceous, soft-----	13	98
	Shale, interbedded light- and medium-gray, silty, smooth, tight-----	15	113
	Shale, black, silty, carbonaceous-----	5	118
	Lignite, black, hard-----	2	120
	Shale, interbedded light- and medium-gray, silty, smooth, tight-----	17	137
	Shale, light-gray, silty, bentonitic, smooth, tight-----	11	148
	Lignite, black, hard; with thin interbeds of black, carbonaceous, soft clay-----	12	160

136-95-13AAA, Continued
NDSWC 3529

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation, Continued:			
	Shale, greenish-gray, silty, tight-----	4	164
	Shale, light-gray, silty and sandy, micaceous, smooth, tight-----	11	175
	Shale, medium-gray, silty, smooth, very tight-----	14	189
	Sandstone, very fine to fine, clayey, soft-----	10	199
	Lignite, black, hard-----	4	203
	Shale, light- to medium-gray, bentonitic, smooth, tight-----	11	214
	Lignite, black, hard-----	2	216
	Shale, variegated gray and green, silty to sandy (green shale more sandy), moderately soft, slightly brittle-----	24	240
	Shale, medium-gray, silty, smooth, slightly brittle, tight-----	9	249
Tongue River Formation:			
	Shale, brownish-black, sandy, carbonaceous, soft, plastic-----	3	252
	Lignite, black, hard-----	2	254
	Shale, light-gray, silty, bentonitic, smooth, tight---	7	261
	Sandstone, light-greenish-gray, very fine to fine, clayey, soft-----	8	269
	Shale, light- to medium-gray, moderately soft; with streaks of white, bentonitic clay-----	9	278
	Sandstone, light-greenish-gray, very fine to fine, clayey, soft-----	14	292
	Shale, medium- to dark-gray, silty, smooth, slightly brittle, tight-----	8	300

136-95-21BBB
K. Pahlmeyer
(Log from Moe's Well Drilling)

Altitude: 2668 ft above msl

Date drilled: October 1963

Sentinel Butte Formation:			
	Sand, surface-----	13	13
	Clay, gray-----	10	23
	Coal-----	2.5	25.5
	Clay, gray-----	2	27.5
	Coal-----	3.5	31
	Sand and clay-----	17	48
	Rock-----	.8	48.8
	Sand-----	6.2	55
	Clay, gray-----	26	81

136-96-19DDD
M. Herberholz
(Log from Moe's Well Drilling)

Altitude: 2698 ft above msl

Date drilled: September 1961

Quaternary deposits, undifferentiated:			
	Sand, surface-----	15	15
	Gravel-----	2	17
Sentinel Butte Formation:			
	Clay, yellow-----	8	25
	Coal-----	2	27

136-96-19DDD, Continued
M. Herberholz

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation, Continued:			
	Sand, green, very fine-----	23	50
	Sand, gray, medium-----	9	59
	Coal-----	7	66
	Clay, brown-----	1	67
	Coal-----	1	68
	Sand, green-----	6.2	74.2
	Rock, gray, hard-----	2.6	76.8
	Clay, gray-----	18.2	95
	Sand, gray, medium-----	2	97
	Clay, green-----	2	99
	Coal-----	2	101
	Sand and clay-----	14	115
	Sand, gray, medium-----	2	117
	Sand and clay-----	8	125

136-96-20BBC2
S. Boehm
(Log from Moe's Well Drilling)

Altitude: 2763 ft above msl Date drilled: September 1966

	Topsoil-----	3	3
Sentinel Butte Formation:			
	Sand, yellow, surface, soft-----	4	7
	Clay, yellow, soft-----	4.5	11.5
	Clay, gray, hard-----	.5	12
	Rock, medium-hard-----	3	15
	Clay, yellow, soft-----	9	24
	Sand, gray, soft-----	6.5	30.5
	Coal, hard-----	1.5	32
	Clay, gray, hard-----	3	35

136-96-24AAA
NDSWC 3719

Altitude: 2713 ft above msl Date drilled: July 1969

Sentinel Butte Formation:			
	Topsoil, brownish-black, silty loam-----	1	1
	Siltstone, yellowish-gray, clayey, oxidized, soft; dry-----	4	5
	Sandstone, brownish-gray, fine and medium, weakly consolidated; with ironstone and siltstone concretions	7	12
	Lignite, shaly-----	2	14
	Shale-----	4	18
	Lignite, shaly-----	2	20
	Shale, dusky-yellow, with iron and carbonaceous stains, silty and sandy, soft-----	3	23
	Sandstone, gray, fine, well-sorted; mostly semicon- solidated but with some indurated layers; with inter- beds of silty, soft shale-----	17	40
	Sandstone, light-olive-gray to greenish-gray, very fine to fine, clayey, weakly consolidated; with interbeds of medium-gray, silty shale and dark, carbonaceous shale-----	11	51
	Shale, carbonaceous-----	4	55
	Lignite-----	1	56
	Shale, medium-gray, silty, bentonitic, soft, plastic--	9	65
	Shale, black, carbonaceous, soft, crumbly-----	4	69

136-96-24AAA, Continued
NDSWC 3712

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation, Continued:			
	Shale, greenish-gray, bentonitic, soft, plastic-----	14	83
	Shale, greenish-gray, silty to sandy, soft-----	3	86
	Lignite-----	1	87
	Shale as above; with interbeds of black, carbonaceous, crumbly shale-----	16	103
	Shale, interbedded medium-gray and greenish-gray, silty and sandy, soft; with thin interbeds of soft, greenish-gray, clayey sandstone-----	19	122
	Shale as above; but very sandy, bentonitic-----	20	142
	Sandstone, dark-greenish-gray, fine to medium, locally clayey; contains lignite grains and shell fragments; weakly consolidated-----	16	158
	Shale, bentonitic-----	2	160
	Sandstone, light-olive-gray and greenish-gray, silt to very fine, clayey, contains pyrite nodules, soft, slightly plastic; with thin interbeds of bentonitic clay-----	35	195
	Lignite; with shale interbeds-----	8	203
	Lignite-----	3	206
	Shale, variegated gray, green, and brown, silty, locally carbonaceous and pyritic, soft, and plastic to brittle-----	14	220
	Shale, medium-gray, very silty, bentonitic, smooth, moderately soft, tight-----	37	257
	Lignite, black, fissile, moderately hard-----	6	263
	Shale, brownish-black, carbonaceous-----	3	266
	Shale, medium-gray, silty and bentonitic-----	10	276
Tongue River Formation:			
	Lignite-----	1	277
	Shale, medium-gray, silty, soft-----	8	285
	Sandstone, dark-gray, very fine, indurated-----	2	287
	Shale, medium-gray, very silty and sandy, crumbly-----	8	295
	Shale, brownish-black, carbonaceous, tight-----	5	300

136-96-30AAD3
M. and H. Herberholz
(Log from Moe's Well Drilling)

Altitude: 2704 ft above msl Date drilled: October 1960

Sentinel Butte Formation:			
	Sand, surface-----	10	10
	Clay, brown-----	19	29
	Coal-----	4	33
	Clay, blue-----	9	42
	Sand, blue-----	1	43
	Rock-----	.5	43.5
	Sand-----	2.5	46
	Coal-----	8.5	54.5
	Clay, green-----	5.5	60
	Clay, gray-----	26.5	86.5
	Coal-----	4.5	91
	Clay-----	28	119
	Coal-----	1	120
	Clay-----	4	124
	Clay, brown-----	1	125
	Coal-----	10	135
	Clay-----	13	148
	Rock, soft-----	1	149
	Clay-----	1	150
	Rock, hard-----	.2	150.2

The section from 10 to 54.5 ft tested 5 gm. The section from 54.5 to 150.2 was reported dry.

136-96-32BAA1
 N. Rettinger
 (Log from Moe's Well Drilling)

Altitude: 2652 ft above msl

Date drilled: October 1961

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Quaternary deposits, undifferentiated:			
	Sand, surface-----	10	10
Sentinel Butte Formation:			
	Clay-----	12	22
	Coal-----	1	23
	Clay-----	3	26
	Coal-----	1.5	27.5
	Clay-----	4.5	32
	Sand-----	3	35
	Coal-----	3	38
	Sand-----	3	41
	Clay-----	16.5	57.5
	Coal-----	.5	58
	Clay-----	41	99
	Rock-----	1	100
	Clay-----	2.5	102.5
	Rock-----	5.5	108
	Clay, brown-----	4	112
	Rock-----	1.5	113.5
	Clay, brown-----	3.5	117
	Coal-----	2	119
	Clay, gray, continuing-----	12	131

136-97-3BAD
 V. Steier
 (Log from Moe's Well Drilling)

Altitude: 2807 ft above msl

Date drilled: September 1961

Golden Valley Formation:			
	Sand, surface-----	45	45
	Rock, very hard-----	6	51
Sentinel Butte Formation (?):			
	Sand, surface-----	41	92
	Sandrock-----	3	95
	Sand, blue-----	5	100
	Sand, water-----	5	105
	Coal-----	1	106
	Sand-----	8	114
	Clay-----	5	119
	Coal-----	5	124
	Clay-----	28	152
	Coal-----	6	158
	Coal and clay-----	7	165
	Rock-----	2.5	167.5
	Sand-----	9.5	177
	Rock-----	.5	177.5
	Clay, continuing-----	24.5	202

Tested 1 gpm at 202 ft.

136-97-3CAD
V. Steier
(Log from Sander and Son)

Altitude: 2829 ft above msl Date drilled: --

Geologic source	Material	Thickness (feet)	Depth (feet)
Golden Valley Formation:			
	Clay-----	5	5
	Sand-----	7	12
Sentinel Butte Formation:			
	Coal, slack-----	5	17
	Clay-----	23	40
	Sand, gray-----	4	44
	Clay-----	26	70
	Sand, blue-----	23	93
	Clay, blue-----	33	126
	Coal and clay-----	14	140
	Clay, gray-----	17	157
	Rock-----	4	161
	Clay-----	6	167
	Rock-----	1.5	168.5
	Clay and sand-----	42.5	211
	Rock-----	1	212
	Clay and coal ledges-----	83.5	295.5
	Rock-----	2	297.5
	Clay, soft-----	35.5	333
Tongue River Formation (?):			
	Clay and coal-----	9	342
	Rock-----	1	343
	Clay, hard-----	70	413

136-97-8CAA3
P. Lenhardt
(Log from Moe's Well Drilling)

Altitude: 2799 ft above msl Date drilled: November 1967

Golden Valley Formation:			
	Sand, surface-----	3	3
	Sand and clay, yellow-----	8	11
Sentinel Butte Formation:			
	Coal, slack-----	1	12
	Clay, gray-----	11	23
	Clay, green-----	1	24
	Sand, green-----	3	27
	Clay, gray, with soft sandstone at 35 ft-----	34	61
	Coal-----	3.5	64.5
	Clay, gray-----	20.5	85
	Sand, gray-----	29	114
	Clay, white-----	4	118
	Coal-----	9	127
	Clay, gray-----	12	139
	Coal-----	9.5	148.5
	Clay, gray-----	17	165.5
	Coal-----	1	166.5
	Clay, gray-----	63.5	230
	Sand, gray-----	26	256
	Coal-----	2	258
	Clay, white-----	2	260

Altitude: 2758 ft above msl

Date drilled: September 1967

Geologic source	Material	Thickness (feet)	Depth (feet)
	Roadfill (?)-----	5	5
Sentinel Butte Formation:			
	Coal, slack-----	2	7
	Shale, yellowish-gray, silty to sandy, soft, fractured-----	6	13
	Shale, dusky-yellow to yellowish-gray, soft, tight-----	10	23
	Shale, light-olive-gray to olive-gray, silty, smooth, tight-----	9	32
	Shale, medium-gray, silty, smooth, tight-----	12	44
	Lignite, black, hard-----	7	51
	Shale, light- to medium-gray, silty to sandy, bentonitic, soft-----	2	53
	Shale, light-gray, sandy, soft-----	7	60
	Shale, medium- to dark-gray, silty, smooth, tight-----	6	66
	Sandstone, dark-gray, very fine, calcareous, indurated, fractured-----	6	72
	Shale, medium-gray, silty, smooth, tight-----	5	77
	Shale, light- to medium-gray, silty, soft; with thin streaks of yellowish-gray bentonite-----	4	81
	Shale, variegated light- to dark-gray, silty, moderately soft, smooth, tight-----	22	103
	Lignite, black, fissile-----	5	108
	Shale, medium-gray, silty to sandy, bentonitic, moderately soft-----	7	115
	Shale, light-gray, sandy, moderately soft, brittle-----	3	118
	Lignite-----	1	119
	Shale as above; but silty, tight-----	7	126
	Shale, greenish-gray, silty, with very fine sand, soft, sticky-----	12	138
	Lignite-----	1	139
	Shale as above-----	2	141
	Lignite-----	1	142
	Shale, medium-gray, bentonitic, moderately soft-----	10	152
	Shale, light-greenish-gray, silty, smooth, slightly brittle, tight-----	4	156
	Sandstone, greenish-gray, very fine and fine, sub-angular and subround, weakly consolidated-----	12	168
	Sandstone, light-greenish-gray, fine, calcite cement, indurated-----	3	171
	Shale, very light gray, sandy, calcareous, soft, plastic-----	5	176
	Shale, light-gray, silty to sandy, moderately soft, tight-----	7	183
	Shale, brownish-black, sandy, carbonaceous, soft, plastic-----	3	186
	Lignite, black, hard-----	4	190
	Shale, greenish-gray, silty, smooth, slightly brittle, tight-----	6	196
	Sandstone, light-greenish-gray, silt to very fine, soft-----	3	199
	Shale, light-gray to light-greenish-gray, sandy, soft, plastic-----	7	206
	Shale, light-gray, bentonitic; becomes dark-gray, silty downward-----	6	212
	Lignite, black, hard-----	5	217
	Shale, greenish-gray, silty, smooth, slightly brittle, tight-----	6	223
	Sandstone, light-greenish-gray, silt to fine, sub-round, semiconsolidated-----	15	238
	Shale, light-gray, very sandy, highly calcareous, soft, plastic-----	4	242

136-97-15DAD, Continued
NDSWC 3533

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation, Continued:			
	Sandstone, light-greenish-gray, very fine, slightly clayey, soft-----	33	275
	Sandstone, light-greenish-gray, fine, calcite cement, indurated-----	3	278
	Sandstone, greenish-gray, fine, subround, weakly consolidated-----	8	286
	Sandstone, fine, moderately indurated-----	2	288
	Sandstone, light-greenish-gray, silt to fine, semi-consolidated-----	20	308
	Shale, light-gray, very sandy, calcareous, soft, plastic-----	8	316
	Shale, medium-gray, silty, smooth, slightly brittle, tight-----	4	320

136-97-32CBB
New England
(Log from Moe's Well Drilling)

Altitude: 2586 ft above msl Date drilled: November 1967

Quaternary deposits, undifferentiated:			
	Sand, surface-----	3	3
	Gravel-----	4	7
Sentinel Butte Formation:			
	Coal-----	1	8
	Clay, yellow-----	10	18
	Clay, gray-----	59	77
	Clay, sandy-----	4	81
	Clay, brown-----	4	85
	Coal-----	5	90
	Clay, gray-----	5	95
	Coal-----	2	97
	Clay, brown-----	6	103
	Clay, gray, silty-----	41	144
	Sand, very fine-----	19	163
	Clay, gray-----	4	167
	Rock-----	.2	167.2

136-97-34DDD
Pletan Estate
(Log from Sander and Son)

Altitude: 2621 ft above msl Date drilled: November 1946

Quaternary deposits, undifferentiated (?):			
	Sand, surface, dark-----	1	1
	Gravel sand-----	10	11
Sentinel Butte Formation:			
	Sand, gray-----	49	60
	Sand, blue-----	9	69

STARK COUNTY

137-91-4DAA1
J. Conlon
(Log from Moe's Well Drilling)

Altitude: 2146 ft above msl Date drilled: May 1963

Geologic source	Material	Thickness (feet)	Depth (feet)
Quaternary deposits, undifferentiated:			
	Sand, surface-----	20	20
	Gravel-----	2	22
Tongue River Formation:			
	Clay, blue-----	56.5	78.5
	Rock-----	.5	79
	Clay, gray-----	31	110
	Sand-----	11	121
	Coal, hard-----	5	126
	Clay-----	13	139
	Clay, green-----	4	143
	Coal-----	3	146
	Clay, brown, continuing-----	6	152

137-91-4DAA2
J. Conlon
(Log from Bandy Drilling Co.)

Altitude: 2144 ft above msl Date drilled: 1967

Quaternary deposits, undifferentiated:			
	Sand, surface, and gravel-----	38	38
Tongue River Formation:			
	Shale, gray-----	90	128
	Shale and coal streaks-----	21	149
Basal Tongue River sandstone:			
	Sandstone-----	70	219
	Rock, hard-----	2	221
	Sandstone-----	16	237
	Rock, hard-----	5	242
	Sandstone-----	45	287
Canonball Formation:			
	Shale, gray-----	180	467
	Rock, hard-----	3	470
	Shale, blue-----	26	496
	Sandstone-----	34	530
	Shale, blue-----	33	563
	Sandstone-----	13	576
	Shale, blue-----	24	600

137-91-10BBB
USGS Conservation Division Drill Hole 7
(Log from George Mowat)

Altitude: 2202 ft above msl Date drilled: 1966

Tongue River Formation:			
	Sandstone, yellowish-gray (moist), very fine-----	4.5	4.5
	Siltstone, yellow-gray (moist), slightly clayey-----	1.5	6
	Claystone, light-olive-gray (moist), silty-----	7	13
	Claystone, olive-gray (moist), silty, carbonaceous---	2.2	15.2
	Claystone, dark-yellowish-brown (moist), carbonaceous-	.3	15.5
	Lignite-----	1.4	16.9

137-91-10BBB, Continued
 USGS Conservation Division Drill Hole 7

Geologic source	Material	Thickness (feet)	Depth (feet)
Tongue River Formation, Continued:			
	Claystone, dusky-yellow-brown (moist), carbonaceous---	2.1	19
	Claystone, medium-light-gray (moist), silty-----	4	23
	Coal-----	.1	23.1
	Shale, dusky-yellow-brown (moist), carbonaceous-----	1.9	25
	Claystone, olive-gray (moist), silty; siltier below---	3	28
	Siltstone, medium-light-gray (moist), clayey; at 30.1 ft is a hard, calcareous, aphanitic, medium-light-gray (dry) concretion-----	7	35
	Claystone, medium-light-gray (moist), silty-----	3	38
	Siltstone, medium-light-gray (moist), clayey-----	9	47
	Claystone, medium-gray (moist) above grading to medium-dark-gray (moist) below, silty-----	3	50
	Claystone, olive-gray (moist), silty-----	3	53
	Coal-----	.1	53.1
	Claystone, olive-gray (moist), silty-----	1.9	55
	Claystone, olive-gray (moist), silty-----	3	58
	Claystone, dark-greenish-gray (moist), silty-----	6.5	64.5
	Claystone, black, coaly-----	.1	64.6
	Claystone, olive-gray (moist), silty-----	3.4	68
	Siltstone, light-olive-gray (moist)-----	3	71
	Claystone, dark-greenish-gray (moist), silty-----	2	73
	Siltstone, light-olive-gray (moist)-----	1	74
	Claystone, dark-yellowish-brown (moist), carbonaceous-----	.5	74.5
	Siltstone, light-olive-gray (moist), clayey-----	6.5	81
	Claystone, light-olive-gray (moist), silty-----	1	82
	Claystone, light-olive-gray (moist); with abundant lenses of coal-----	2	84
	Claystone, light-olive-gray (moist), silty-----	2	86
	Claystone, greenish-gray (moist), silty-----	5	91
	Claystone, dark-greenish-gray (moist), silty-----	1	92
	Claystone, greenish-gray (moist), silty-----	2	94
	Claystone, greenish-gray (moist), silty-----	1	95
	Claystone, dark-greenish-gray (moist), silty, softer--	3	98
	Claystone, olive-gray (moist), silty-----	2	100
	Claystone, medium-gray (moist), silty-----	2	102
	Claystone, olive-gray, silty-----	4	106
	Claystone, dark-greenish-gray, silty-----	.5	106.5
	Claystone, olive-gray (moist), silty-----	2.5	109
	Claystone, olive-gray (moist), very silty-----	1	110
	Siltstone, olive-gray (moist)-----	2	112
	Claystone, olive-gray (moist), very silty-----	2	114
	Claystone, brownish-olive-gray, silty; with shells---	1	115
	Claystone, dark-greenish-gray (moist), silty; with pyrite concretion at top and scattered shells-----	6.5	121.5
	Siltstone, dark-greenish-gray (wet), clayey-----	1.7	123.2
	Siltstone and very fine sandstone, light-gray (dry)---	5.1	128.3
	Siltstone, dusky-yellow-brown (wet), carbonaceous-----	.2	128.5
	Claystone, dusky-yellowish-brown (wet), silty; with abundant shells-----	.1	128.6
	Siltstone, light-olive-gray (wet)-----	.2	128.8
	Claystone, olive-gray (moist); with abundant shells---	.1	128.9
	Claystone, olive-gray (moist), silty; with a few scattered shells-----	1.1	130
	Claystone, dusky-yellow-brown (wet) above grading to olive-gray (wet) below, silty; abundant mollusk shells from 130.7 to 130.8 and 131.1 to 131.2 ft-----	1.2	131.2
	Claystone, olive-gray (moist), silty. A pyrite concretion 0.06-ft in diameter at 136.6 ft. A hard, calcareous, medium-light-gray (dry) layer or concretion from 136.9 to 137.1 ft. Abundant shells in silty, dusky-yellow-brown (moist) claystone from 140.4 to 140.5 ft-----	9.8	141

137-91-18CCD
 USGS Conservation Division Drill Hole 8
 (Log from George Mowat)

Altitude: 2347 ft above msl

Date drilled: 1966

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Quaternary deposits, undifferentiated:			
	Soil-----	3	3
Sentinel Butte Formation:			
	Siltstone, yellowish-gray (dry)-----	.2	3.2
	Siltstone, yellowish-gray (dry), clayey-----	2.8	6
	Siltstone, yellowish-brownish-gray (dry)-----	.5	6.5
	Siltstone, yellowish-gray (dry), clayey-----	4	10.5
	Claystone, light-olive-gray (moist), silty-----	3.5	14
	Siltstone, yellowish-gray (dry), clayey-----	1	15
	Siltstone, yellowish-gray (dry)-----	.5	15.5
	Siltstone, yellowish-gray (dry), slightly clayey-----	.5	16
	Sandstone, yellowish-gray (dry), very fine; grading to siltstone-----	5.1	21.1
	Sandstone, very light gray (dry), very fine, hard, well-cemented, calcareous; grading to siltstone-----	.6	21.7
	Sandstone above, yellowish-gray (dry), very fine, grading to siltstone below-----	2.8	24.5
	Claystone, yellowish-gray (dry), silty-----	.5	25
	Siltstone, yellowish-gray (dry)-----	.8	25.8
	Sandstone, yellowish-gray (dry), fine-----	.8	26.6
	Claystone, dark-yellowish-orange (dry), soft; ironstone layer-----	.5	27.1
	Siltstone, light-olive-gray (moist), very slightly clayey-----	1.4	28.5
	Claystone, light-olive-gray (moist), slightly silty---	.5	29
	Siltstone, yellowish-gray (dry), clayey-----	.5	29.5
	Claystone, light-olive-gray (moist), slightly silty---	1	30.5
	Claystone, light- to medium-light-gray (dry), silty; siltier and darker below-----	4.5	35
	Claystone, olive-gray (wet), light-gray (dry), slightly carbonaceous; with pyrite particles-----	4.5	39.5
	Lignite, attrital-----	.3	39.8
	Claystone, black, carbonaceous-----	.1	39.9
	Lignite-----	2.3	42.2
	Siltstone, pale-yellowish-brown to very pale-orange (dry), clayey-----	.3	42.5
	Siltstone, greenish-gray (dry), clayey-----	1.2	43.7
	Siltstone, greenish-gray (dry), clayey; laminated above, harder and light-gray (dry) below-----	2.5	46.2
	Sandstone, medium-gray (wet), very fine-----	3.1	49.3
	Siltstone, very light gray (dry)-----	.5	49.8
	Siltstone, light-gray (dry), slightly clayey, laminated-----	1.4	51.2
	Sandstone, light-gray, (dry), fine, slightly clayey-----	.8	52
	Siltstone, light-olive-gray (wet), clayey-----	2	54
Tongue River Formation:			
	Claystone, light-olive-gray, slightly silty-----	6	60
	Claystone, dark-greenish-gray (wet), light-gray (dry), slightly silty-----	5	65
	Claystone, light-olive-gray (wet), light-gray (dry), slightly silty; with lignite from 69.6 to 69.7 and from 69.8 to 69.9 ft-----	5	70
	Claystone, light-olive-gray, silty-----	5	75
	Siltstone, olive-gray (wet), light-olive-gray (dry), clayey; with thin light-gray (dry) sandstone lamina at base-----	6	81
	Claystone, light-olive-gray above, light-gray (dry) below, silty-----	6	87
	Claystone, dark-yellowish-brown (wet), carbonaceous---	3	90

137-91-18CCD, Continued
 USGS Conservation Division Drill Hole 8

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Tongue River Formation, Continued:			
	Claystone, olive-gray (dry), carbonaceous-----	1.8	91.8
	Lignite-----	.2	92
	Siltstone, olive-gray (wet), light-gray (dry), very slightly clayey, laminated-----	2.2	94.2
	Sandstone, olive-gray (wet), very fine, laminated-----	.2	94.4
	Siltstone, olive-gray (wet), light-gray (dry), clayey, laminated-----	1	95.4
	Claystone, olive-gray (wet), light-gray (dry), silty--	2.9	98.3
	Claystone, olive-greenish-gray (wet), silty-----	9.7	108
	Claystone, dark-greenish-gray (wet), medium to very light gray (dry), very silty, cross-bedded and slightly laminated. Thin veinlets of calcite from 112.3 to 112.5 ft-----	4.5	112.5
	Siltstone, very light gray (dry), calcareous, cross-bedded, hard-----	1.4	113.9
	Claystone, dark-greenish-gray (wet), medium to very light gray (dry), very silty, cross-bedded and laminated-----	2.1	116
	Lignite-----	.5	116.5
	Claystone, dark- to dusky-yellow-brown (dry), silty--	.1	116.6
	Siltstone, light-gray (dry), clayey-----	2.1	118.7
	Claystone, olive-gray (wet), light-olive-gray (dry), silty-----	.3	119
	Claystone as above; with 0.03-ft thick irregular coal seams-----	.4	119.4
	Lignite-----	.2	119.6
	Claystone, greenish-gray (dry), silty-----	2.4	122
	Siltstone, light-gray (dry), clayey-----	.3	122.3
	Siltstone, light-gray (dry)-----	.2	122.5
	Siltstone, light-gray (dry), slightly clayey-----	5.6	128.1
	Claystone, very light gray (dry), silty-----	.8	128.9
	Claystone, dusky-yellow-brown (dry), silty-----	.7	129.6
	Claystone, olive-gray (wet), light-gray (dry), silty--	4.7	134.3
	Lignite, attrital-----	.1	134.4
	Claystone, olive-gray (wet), silty; with thin streaks of coaly, carbonaceous shale at base-----	.2	134.6
	Claystone, olive-gray (wet), light-gray (dry); carbonaceous zone at 134.7 ft-----	1.1	135.7
	Lignite-----	.2	135.9
	Claystone, light-olive-gray (dry), olive-gray (wet), silty-----	1	136.9
	Claystone, brownish-olive-gray (dry), carbonaceous---	.1	137
	Lignite-----	.1	137.1
	Claystone, dusky-yellow-brown (dry)-----	.1	137.2
	Lignite; with parting of dusky-yellow-brown, silty claystone-----	.3	137.5
	Claystone, olive-gray (wet); with a few coal seams---	.2	137.7
	Lignite; with parting of dusky-yellow-brown to olive-gray, (dry) claystone-----	.3	138
	Claystone, light-olive-gray (dry); with a few coal seams-----	.1	138.1
	Lignite; with partings of dusky-yellow-brown (dry), carbonaceous claystone-----	.8	138.9
	Claystone, olive-black (dry)-----	.3	139.2
	Lignite-----	.1	139.3
	Claystone, light-gray (dry), dark-greenish-gray (wet)-	2.3	141.6
	Sandstone, olive-gray (wet), very fine, slightly clayey. A pyrite concretion 0.15-ft thick at 141.8 ft	.6	142.2
	Claystone, dark-olive-gray (wet), silty-----	.8	143
	Claystone, black, coaly, carbonaceous-----	.3	143.3
	Claystone, olive-gray (wet), silty-----	.7	144
	Siltstone, olive-gray (wet), clayey-----	.2	144.2
	Claystone, light-olive-gray (dry), slightly silty----	1	145.2
	Lignite; with thin siltstone parting just below top---	1.8	147

137-91-18CCD, Continued
 USGS Conservation Division Drill Hole 8

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Tongue River Formation, Continued:			
	Claystone, light-olive-gray (wet), slightly silty; with scattered mollusk shells-----	2.3	149.3
	Claystone, brownish-black (dry), coaly-----	.2	149.5
	Claystone, dark-greenish-gray (wet), silty-----	.5	150
	Claystone, dark-greenish-gray (wet), silty; very silty 150.7 to 152.4 ft-----	3.2	153.2
	Claystone, dusky-yellowish-brown (dry), coaly; with a few seams of coal-----	.7	153.9
	Claystone, greenish-gray (wet), very silty-----	2.6	156.5
	Claystone, olive- to dark-greenish-gray (wet), slightly silty-----	1.5	158
	Claystone, greenish-gray (moist), very light gray (dry), silty-----	1.7	159.7
	Siltstone, greenish- to olive-gray (moist), clayey-----	1.1	160.8
	Siltstone, greenish-gray (wet)-----	1.2	162
	Claystone, greenish-gray (wet), very light gray (dry), silty-----	4.4	166.4
	Siltstone, pale-yellowish-brown-gray (dry); top third slightly clayey-----	.6	167
	Siltstone, dark-yellowish-brown (dry), clayey-----	.5	167.5
	Claystone, light-gray (dry), olive-gray (wet), slightly silty-----	1.8	169.3
	Claystone, brownish-black (wet), olive-gray (dry), silty-----	.6	169.9
	Lignite-----	.3	170.2
	Claystone, brownish-black (wet), olive-gray (dry), silty-----	.1	170.3
	Claystone, dusky-yellowish-brown (wet), light-olive-gray (dry), silty-----	.5	170.8
	Siltstone, pale-yellowish-brown (dry), hard-----	.1	170.9
	Siltstone, olive-gray (wet), pure, soft-----	.3	171.2
	Siltstone, light-gray (dry), slightly clayey, slightly laminated-----	3.4	174.6
	Claystone, light-olive-gray (dry), silty-----	.2	174.8
	Siltstone, light-gray (dry), clayey-----	.4	175.2
	Claystone, light-olive-gray (dry), silty-----	.3	175.5
	Siltstone, light-gray (dry), clayey, laminated-----	.4	175.9
	Claystone, light-olive-gray (dry), silty-----	1.6	177.5
	Claystone, light-olive-gray (dry), silty; with abundant carbonaceous and thin coaly seams-----	.4	177.9
	Claystone, light-gray (dry), silty-----	1.5	179.4
	Siltstone, light-olive-gray (dry), slightly clayey, micaceous-----	.3	179.7
	Lignite-----	1.2	180.9
	Claystone, light-gray (dry), silty-----	1.6	182.5
	Claystone, dark-greenish-gray (wet), light-gray (dry), silty-----	.3	182.8
	Lignite, attrital, hard-----	1.6	184.4
	Siltstone, pale-yellow-brown (dry); with 0.1 ft of lignite at base-----	.4	184.8
	Siltstone, light-olive-gray (dry), clayey, laminated-----	.2	185
	Siltstone, light-olive-gray (dry); basal 0.6 ft clayey, unconsolidated-----	3.5	188.5
	Claystone, very light gray (dry), silty-----	.8	189.3
	Siltstone, light-olive-gray (moist), clayey, laminated-----	.3	189.6
	Claystone, very light-gray (dry), silty-----	1.6	191.2
	Siltstone, very light-gray (dry), clayey-----	.2	191.4
	Claystone, light-olive-gray (moist), very light gray (dry), silty-----	1.6	193
	Claystone, olive-gray (moist), silty; mollusk shell at base-----	2.5	195.5

137-91-18CCD, Continued
 USGS Conservation Division Drill Hole 8

Geologic source	Material	Thickness (feet)	Depth (feet)
Tongue River Formation, Continued:			
	Claystone, dark-greenish-gray (wet), slightly silty---	.5	196
	Siltstone, light-greenish-gray (dry), fine, clayey---	.9	196.9
	Siltstone, greenish-gray (wet), slightly clayey, micaceous-----	1.7	198.6
	Claystone, greenish-gray (wet), silty-----	.3	198.9
	Siltstone, light-olive-gray (moist), slightly clayey--	.1	199
	Sandstone, light-olive-gray (wet), silt to very fine, unconsolidated and soft-----	5.1	204.1
	Siltstone, light-olive-gray (moist), yellow-gray (dry), slightly clayey-----	.4	204.5
	Claystone, very light gray (dry), light-olive-gray (wet), slightly silty-----	3.1	207.6
	Claystone, dusky-yellow-brown (dry), carbonaceous; with lignite laminae and mollusk shells-----	.2	207.8
	Claystone, light-gray (dry), olive-gray (wet), slightly silty-----	3.5	211.3
	Lignite-----	.4	211.7
	Claystone, dark-greenish- to olive-gray (wet), silty--	.6	212.3
	Siltstone, light-olive-gray (wet), very slightly clayey-----	1.7	214
	Claystone, olive-gray (moist), silty; shell fragments at 214.4 ft-----	.6	214.6
	Lignite-----	.5	215.1
	Sandstone, olive-gray (wet), very fine-----	5.7	220.8
	Claystone, dark-yellowish-brown (moist) grading to olive-gray (moist) in lowest 0.1 ft, silty; vertical coal seam present-----	.5	221.3
	Coal, dusky-yellow-brown (dry); clayey below-----	.1	221.4
	Claystone, brownish-olive-gray (moist), silty-----	.7	222.1
	Claystone, dark-greenish-gray (wet), silty-----	1.7	223.8
	Siltstone, greenish-gray (dry), very clayey-----	1.1	224.9
	Siltstone, yellowish-gray (dry), slightly clayey-----	1.2	226.1
	Siltstone, greenish-gray (moist)-----	.6	226.7
	Siltstone, greenish-gray (moist), clayey-----	.2	226.9
	Siltstone, light-gray (dry)-----	.4	227.3
	Claystone, light-gray (dry), olive-gray (moist), silty-----	.5	227.8
	Claystone, light-greenish-gray (dry), dark-greenish-gray (wet), silty-----	8.6	236.4
	Siltstone, light-gray (dry)-----	.1	236.5
	Siltstone, olive-gray (wet), clayey, slightly laminated-----	2.3	238.8
	Claystone, olive-gray (wet), silty; mollusk shell at 239.5 ft-----	1.1	239.9
	Siltstone and very fine sandstone, light-gray (dry)---	3.3	243.2
	Claystone, olive-gray (wet), silty-----	.5	243.7
	Siltstone, olive-gray (wet), clayey; large mollusk shells (pelecypods) at base-----	.3	244
	Siltstone, dark-yellowish-brown (moist), slightly clayey; carbonaceous laminae-----	.8	244.8
	Siltstone, olive-gray (wet), clayey-----	1.3	246.1
Basal Tongue River sandstone:			
	Sandstone, olive-gray (wet), very fine-----	2.9	249
	Sandstone, olive-gray (wet), light-gray (dry), fine, calcareous, hard, cross-bedded; basal 0.4 ft softer with abundant carbonaceous laminae-----	2	251
	Sandstone, light-gray (dry), fine; with abundant shells at base; very weakly consolidated-----	19	270

137-91-22DAC3
T. Roll
(Log from Bandy Drilling Co.)

Altitude: 2173 ft above msl

Date drilled: 1967

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Quaternary deposits, undifferentiated:			
	Soil, surface-----	4	4
Tongue River Formation:			
	Clay, yellow-----	30	34
	Sandstone-----	17	51
	Shale, blue-----	43	94
	Coal-----	3	97
	Shale, blue-----	33	130
	Shale, sandy-----	17	147
	Shale, blue-----	25	172
Basal Tongue River sandstone:			
	Sandstone-----	81	253
Cannonball Formation:			
	Shale, gray-----	157	410
	Sandstone-----	15	425
	Shale, blue-----	118	543
	Shale, sandy-----	37	580
	Shale, blue-----	65	645
	Sandstone-----	47	692
Hell Creek Formation (?):			
	Shale, blue-----	122	814
	Sandstone-----	20	834
	Shale, blue-----	35	869
	Sandstone-----	29	898
	Shale, blue-----	49	947
	Sandstone-----	31	978
	Shale, blue-----	22	1000

137-92-4BCB
T. Rebel
(Log from Moe's Well Drilling)

Altitude: 2315 ft above msl

Date drilled: September 1961

Sentinel Butte Formation:			
	Clay, yellow-----	25	25
	Sand, green-----	7.5	32.5
	Rock-----	.5	33
	Sand, gray-----	17	50
	Clay, gray-----	4	54
	Rock-----	2.5	56.5
	Sand-----	6.5	63
Tongue River Formation (?):			
	Clay, gray-----	32	95
	Sand-----	2	97
	Clay, green-----	22	119
	Coal-----	3.5	122.5
	Clay, green-----	12.5	135
	Sand-----	5	140
	Clay-----	4	144
	Coal-----	3	147
	Clay-----	18	165
	Coal-----	2	167
	Clay, gray-----	10	177
	Sand, gray-----	5.5	182.5

137-92-4BCB, Continued
T. Rebel

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Tongue River Formation (?), Continued:			
	Rock-----	1.5	184
	Clay, gray, continuing-----	18	202
Section reported "dry" from the surface to 122.5 ft.			

137-92-9CCC
USGS Auger Test 25

Altitude: 2352 ft above msl Date drilled: August 1968

Quaternary deposits, undifferentiated:			
	Clay, moderate-yellowish-brown, silty, calcareous, with scattered pebbles, slightly plastic-----	5	5
Sentinel Butte Formation:			
	Shale, light-olive-gray, silty, noncalcareous, slightly plastic-----	10	15
	Shale, light-olive-gray, silty, calcareous, soft-----	5	20
	Shale, moderate-yellowish-brown, silty, calcareous, soft-----	12	32
	Sandstone, greenish-gray to moderate-yellowish-brown, very fine to fine, calcareous, moderately consolidated	3	35

137-92-22AAC2
A. Schank
(Log from Moe's Well Drilling)

Altitude: 2273 ft above msl Date drilled: July 1964

Quaternary deposits, undifferentiated:			
	Clay-----	20	20
	Gravel-----	4	24
Tongue River Formation:			
	Sand, surface-----	10	34
	Sand, gray, coarse-----	34	68
	Rock, gray, hard-----	3.5	71.5
	Sand-----	5	76.5
	Rock, red-----	.5	77
	Sand, coarse and chunky-----	44	121

137-92-27DDD3
F. Kuntz
(Log from Moe's Well Drilling)

Altitude: 2320 ft above msl Date drilled: June 1968

Quaternary deposits, undifferentiated (?):			
	Sand, brown, surface-----	22	22
Tongue River Formation:			
	Rock, tan, soft-----	2	24
	Sand, tan, dry-----	12	36
	Sand, gray, shell at 46 ft-----	11	47
	Rock-----	2.5	49.5
	Sandrock, porous, water-----	9.5	59
	Clay, gray-----	1	60

137-92-29AAA
USGS Auger Test 26

Altitude: 2366 ft above msl

Date drilled: August 1968

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation:			
	Shale, dusky-yellow, silty, with a few sand grains, calcareous; with numerous highly calcareous white streaks and splotches-----	5	5
	Shale, moderate-olive-brown, with gray and black mottlings, silty, noncalcareous, soft-----	5	10
	Shale, moderate-yellowish-brown, silty, calcareous, soft-----	2	12
	Shale, medium-dark-gray, noncalcareous, with reddish-black, carbonaceous splotches, soft-----	3	15
	Shale, grayish-black, silty, noncalcareous, soft-----	5	20
	Shale, dark-yellowish-brown, silty, noncalcareous, soft-----	5	25
	Shale, pale-brown to black, silty, noncalcareous, soft; contains small yellow grains of hard material-----	5	30
	Siltstone, dark-greenish-gray, clayey, moderately consolidated; hard drilling-----	10	40
	Siltstone as above;with scattered sand grains-----	5	45

137-92-32DCD
USGS Auger Test 27

Altitude: 2461 ft above msl

Date drilled: August 1968

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation:			
	Shale, light-olive-gray with moderate-reddish-brown and orange streaks and splotches, silty, calcareous, soft-----	10	10
	Shale, moderate-yellowish-brown with gray and orange mottling, silty, calcareous, soft-----	5	15
	Shale, black, carbonaceous, with olive to light-gray calcareous clay inclusions, soft; contains lignite fragments and a few sand grains-----	5	20
	Shale, dark-gray, noncalcareous, soft; grading downward into:-----	2	22
	Lignite-----	3	25
	Shale, medium-dark-gray, silty, noncalcareous, soft; with scattered lignite fragments-----	10	35
	Shale, black to dark-greenish-gray, silty, noncalcareous, soft; contains numerous very fine, rounded to subangular particles and lignite fragments-----	5	40
	Shale as above; but grayish-black-----	5	45
	Shale, dark-gray, noncalcareous, soft; contains scattered small pebbles-----	10	55
	Shale, medium-dark-gray, silty, calcareous, soft-----	10	65
	Shale as above; with scattered sand grains-----	10	75
	Shale as above; with small lignite fragments-----	10	85
	Shale, olive-black, soft; with scattered sand grains and lignite fragments-----	5	90
	No sample-----	4	94
	Siltstone, medium-dark-gray, clayey, noncalcareous, moderately consolidated-----	1	95

137-92-33BBB
NDSWC 3706

Altitude: 2410 ft above msl

Date drilled: June 1969

Geologic source	Material	Thickness (feet)	Depth (feet)
	Fill-----	4	4
Sentinel Butte Formation:			
	Shale, brownish-black and brownish-gray, silty and sandy, carbonaceous, oxidized, soft-----	5	9
	Shale, moderate-olive-brown, silty to sandy, oxidized, soft-----	11	20
	Siltstone, dusky-yellow to yellowish-gray, soft, friable-----	14	34
	Shale, yellowish-green, silty, fairly hard-----	2	36
	Lignite-----	3	39
	Shale, medium-gray and greenish-gray interbedded, silty; with thin streaks of yellowish-gray, bentonitic clay-----	19	58
	Sandstone, light-olive-gray, very fine, clayey, lignitic, semiconsolidated-----	9	67
	Shale, dark-green, silty, slightly hard, waxy, crumbly; with streaks of olive-gray, clayey siltstone-----	13	80
	Sandstone, light-olive-gray, very fine to fine, clayey, lignitic, semiconsolidated-----	14	94
	Shale, light-green, silty, soft-----	2	96
	Sandstone as above-----	10	106
	Clay, light-green, bentonitic-----	4	110
	Sandstone as above; with streaks of dark-greenish-gray, hard, calcareous sandstone at 113, 118, and 131 ft-----	32	142
	Clay, greenish-gray, bentonitic, plastic-----	2	144
Tongue River Formation:			
	Lignite-----	1	145
	Shale, medium-gray, silty, soft-----	11	156
	Shale, greenish-gray, silty; with occasional black, carbonaceous streaks-----	10	166
	Shale as above; but medium-gray to olive-gray-----	17	183
	Sandstone, dark-gray, very fine, limy-----	2	185
	Shale as above; lignitic-----	15	200

137-93-10CDC
J. Haas
(Log from Moe's Well Drilling)

Altitude: 2505 ft above msl

Date drilled: August 1962

Sentinel Butte Formation:			
	Sand, surface-----	28	28
	Clay-----	11	39
	Sand-----	3	42
	Clay, gray-----	4	46
	Coal-----	2	48
	Clay-----	2	50
	Coal-----	1	51
	Sand-----	14	65
	Clay-----	5	70
	Coal-----	2	72
	Clay-----	21	93
	Coal-----	1	94
	Clay-----	14	108
	Coal-----	5	113
	Clay-----	5	118
	Sand-----	8	126
	Coal-----	5	131
	Clay, gray, continuing-----	13	144
Section reported "dry" from the surface to 70 ft.			

137-93-25AAA3
Schreiber Bros.
(Log from Moe's Well Drilling)

Altitude: 2487 ft above msl

Date drilled: October 1961

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Sand, surface-----	40	40
	Coal-----	2	42
	Clay, gray-----	4	46
	Rock-----	.5	46.5
	Clay-----	18.5	65
	Sand-----	3	68
	Coal-----	2	70
	Clay-----	6	76
	Coal and sand-----	11	87
	Clay-----	10	97
	Coal-----	1	98
	Clay-----	2	100
	Coal-----	1	101
	Clay-----	4	105
	Sand, water-----	10	115
	Clay, gray-----	25	140
	Sand, water-----	8	148
	Rock, hard-----	1.5	149.5
	Sandrock-----	18.5	168
	Rock, hard-----	5	173
	Sand, water-----	27	200

137-93-34BAA2
M. Jordan
(Log from Moe's Well Drilling)

Altitude: 2571 ft above msl

Date drilled: May 1968

Sentinel Butte Formation:			
	Clay and coal mixed-----	32	32
	Clay, gray-----	13	45
	Coal-----	2	47
	Clay, gray-----	113	160
	Sand, gray, chunk-----	51.5	211.5
	Rock, yellow-gray, continuing-----	.5	212

137-94-4C8C
NDSWC 3542

Altitude: 2545 ft above msl

Date drilled: September 1967

Sentinel Butte Formation:			
	Siltstone, yellow-brown, calcareous, thin-bedded-----	1	1
	Shale, brown, silty to very fine, sandy, soft-----	26.5	27.5
	Sandstone, gray, silt to very fine, very calcareous, hard-----	2.5	30
	Shale, brown, as above-----	3	33
	Shale, gray, silty, firm-----	15	48
	Lignite-----	3	51
	Shale, green, silty, firm; occasional thin lignite streaks-----	6	57
	Lignite-----	1	58
	Shale as above-----	13	71
	Lignite-----	1	72
	Shale as above-----	10	82
	Shale, gray, silty; softer, more plastic than above--	15	97

137-94-4CBC, Continued
 NDSWC 3542

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation, Continued:			
	Lignite-----	3	100
	Shale, gray, soft, plastic; occasional thin streaks of lignite-----	38	138
	Lignite-----	1	139
	Shale, brownish-gray, silty to very fine sandy, soft--	11	150
	Lignite; with carbonaceous shale break in middle-----	9	159
	Shale as above-----	12	171
	Sandstone, gray, very fine, clayey, soft; with interbeds of gray, soft, plastic shale-----	17	188
	Siltstone, gray, calcareous, hard-----	2	190
	Shale, gray, soft, plastic-----	3	193
	Siltstone, hard, as above-----	3	196
	Shale, brownish-gray, silty, soft-----	11	207
	Lignite-----	1	208
	Shale, brownish-gray, soft, plastic-----	7	215
Tongue River Formation:			
	Shale, brownish-gray, slightly silty, soft, firm to plastic; thin streaks of lignite-----	21	236
	Sandstone, brownish-gray, very fine, clayey, soft----	23	259
	Shale as above-----	16	275
	Lignite-----	1	276
	Shale, brownish-gray, soft, plastic-----	4	280
	Siltstone, gray, very calcareous, hard-----	1	281
	Shale, brownish-gray, silty, soft-----	11	292
	Siltstone, hard, as above-----	2	294
	Shale, brownish-gray, soft, plastic-----	11	305
	Shale, brownish-gray, silty, soft-----	15	320
	Clay, light-gray, bentonitic; with concretion fragments-----	5	325
	Shale, brownish-gray, soft, plastic-----	7	332
	Lignite-----	2	334
	Shale, brownish-gray, soft-----	21	355
	Lignite, shaly, silicified-----	2	357
	Shale, brownish-gray, soft, plastic to firm-----	6	363
	Lignite-----	3	366
	Shale as above-----	34	400
	Sandstone, brownish-gray, very fine, clayey, semi-consolidated; with interbeds of shale as above-----	15	415
	Lignite-----	1	416
	Sandstone, gray, silt to very fine, clayey, soft; with interbeds of shale-----	4	420
	Lignite-----	4	424
	Sandstone; with shale interbeds as above-----	13	437
	Shale, gray, soft, plastic-----	7	444
	Shale, gray, silty, soft-----	6	450
	Shale, brownish-gray, soft, plastic-----	8	458
	Lignite-----	2	460
	Shale, gray, soft, plastic-----	3	463
	Sandstone, gray, silt to very fine, clayey, soft; occasional thin streaks of clay and lignite-----	37	500
	Shale, greenish-gray, silty to very fine sandy, bentonitic, soft-----	8	508
	Lignite-----	1	509
	Shale as above-----	8	517
Basal Tongue River sandstone:			
	Sandstone, yellowish-gray, fine, hard-----	1	518
	Shale, gray, soft, plastic-----	4	522
	Sandstone, brownish-gray, silt to very fine, clayey, with lignite specks, semiconsolidated-----	5	527
	Sandstone as above; but cleaner, less clayey-----	14	541
	Sandstone as above; clayey-----	5	546
	Shale, gray, silty to very fine sandy; shell fragments-----	4	550

137-94-4C8C, Continued
 NDSWC 3542

Geologic source	Material	Thickness (feet)	Depth (feet)
Basal Tongue River sandstone, Continued:			
	Shale, gray, silty to very fine sandy; with interbeds of very fine, clayey sandstone. Shell fragments at 565 ft-----	42	592
	Sandstone, gray, silt to very fine, clayey, semi-consolidated-----	25	617
Ludlow Formation (Upper):			
	Shale, gray, silty to very fine sandy, soft-----	4	621
	Lignite-----	4	625
	Shale, brownish-gray, silty, soft-----	19	644
	Lignite-----	1	645
	Shale as above-----	6	651
	Lignite-----	5	656
	Shale as above-----	11	667
Cannonball Formation:			
	Sandstone, brownish-gray, silt to fine, very clayey, locally lignitic, semiconsolidated-----	28	695
	Sandstone as above; nonlignitic-----	10	705
	Sandstone, silt to very fine; less clayey-----	5	710
	Sandstone, brownish-gray, silt to very fine above, very fine to fine below, clayey, slightly calcareous, semiconsolidated-----	47	757
	Sandstone, very light gray, very fine to fine, very calcareous, hard-----	4	761
	Sandstone, medium-gray, very fine to fine, subround, clayey, semiconsolidated; abundant thin interbeds of very light-gray, bentonitic clay-----	17	778
	Shale, greenish-gray, silty to very fine sandy-----	15	793
	Shale as above; with shell fragments-----	7	800
Ludlow Formation (Lower):			
	Shale, greenish-gray, silty to very fine sandy; with thin streaks of lignite-----	3	803
	Sandstone, brownish-gray, very fine to fine, clayey, semiconsolidated-----	8	811
	Sandstone as above; but less clayey; occasional streaks of brownish-gray, silty clay-----	19	830
	Lignite-----	2	832
Hell Creek Formation (?):			
	Sandstone, brownish-gray, silt to very fine, clayey, semiconsolidated-----	6	838
	Shale, brownish-gray, silty to very fine sandy, soft--	4	842
	Sandstone, brownish-gray, silt to very fine, subangular, semiconsolidated-----	18	860
	Sandstone as above; but with increased clay cement, more cohesive, interbedded with and grading downward to:-----	25	885
	Shale, brownish-gray, silty to very fine sandy-----	15	900

137-94-12BBB3
 R. Messmer
 (Log from Moe's Well Drilling)

Altitude: 2532 ft above msl

Date drilled: September 1964

Sentinel Butte Formation:			
	Sand, surface-----	11	11
	Clay, gray-----	3	14
	Coal-----	3	17
	Clay, gray-----	26	43

137-94-22BBC4
C. Martin
(Log from Moe's Well Drilling)

Altitude: 2565 ft above msl Date drilled: September 1969

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation:			
	Sand, yellow, surface-----	23	23
	Clay, gray-----	13	36
	Lignite-----	3.5	39.5
	Clay, gray-----	4.5	44
	Sand, gray, very fine. Section down to here tested		
	1.5 gpm of water-----	14	58
	Clay, gray-----	46	104
	Sand, gray, chunk with shells-----	43	147
	Rock, yellow, hard-----	1.5	148.5
	Sand-----	3.5	152
	Rock-----	1	153
	Sand, gray, medium-coarse-----	15.5	168.5
	Rock-----	2	170.5
	Sand, gray-----	5.5	176
	Clay, gray, with brown streaks-----	4	180

137-94-22DAC3
J. Jordan
(Log from Moe's Well Drilling)

Altitude: 2622 ft above msl Date drilled: June 1961

Sentinel Butte Formation:			
	Sand, surface-----	15	15
	Coal-----	2	17
	Clay-----	5	22
	Sand-----	8	30
	Clay-----	12	42
	Coal-----	4	46
	Clay-----	44	90
	Rock, hard-----	1	91
	Clay-----	53	144
	Rock-----	1	145
	Clay-----	9	154
	Sand-----	2	156
	Clay-----	9	165
	Sand-----	53	218

137-94-26DDC2
N. Gutenkunst
(Log from Moe's Well Drilling)

Altitude: 2595 ft above msl Date drilled: September 1964

Sentinel Butte Formation:			
	Sand, surface-----	18.5	18.5
	Coal, wet-----	2	20.5
	Clay, green-----	3.5	24
	Coal-----	.5	24.5
	Clay, gray-----	28.5	53
	Coal-----	2	55
	Clay, gray-----	67.5	122.5
	Coal-----	.5	123
	Clay, gray-----	11	134
	Coal-----	2	136
	Clay, gray-----	5	141

137-94-32BBB1
D. Grundhauser
(Log from Moe's Well Drilling)

Altitude: 2670 ft above msl

Date drilled: October 1961

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Golden Valley Formation:			
	Rock and sand-----	5	5
Sentinel Butte Formation (?):			
	Sand, surface-----	12	17
	Sand, surface, and rock mixed-----	47	64
	Sand, blue-----	1	65
	Coal-----	.5	65.5
	Clay, gray-----	2.5	68
	Coal-----	2	70
	Clay, green-----	9	79
	Sand, gray-----	8	87
	Rock-----	.8	87.8
	Sand-----	3.7	91.5
	Rock-----	.5	92
	Clay, gray, continuing-----	18	110

137-94-34CBC3
J. Herold
(Log from Moe's Well Drilling)

Altitude: 2600 ft above msl

Date drilled: March 1968

Sentinel Butte Formation:			
	Sand, surface-----	54	54
	Coal-----	6.5	60.5
	Sand, gray, very, very fine-----	16.5	77
	Clay, gray-----	78	155
	Coal-----	7	162
	Clay, grayish-green-----	58	220
	Sand, green, chunk-----	25	245
	Rock, very hard-----	4	249
	Sand, green, chunk-----	18	267
	Rock-----	1	268
	Sand, green, medium-coarse-----	12	280

137-95-5DCD2
P. Morel
(Log from Mann Drilling Co.)

Altitude: 2623 ft above msl

Date drilled: January 1968

Quaternary deposits, undifferentiated:			
	Gravel-----	8	8
Sentinel Butte Formation:			
	Sand, brown-----	20	28
	Coal-----	1	29
	Clay, gray-----	28	57
	Coal-----	3	60
	Clay, gray-----	74	134
	Sand, fine-----	7	141
	Coal-----	4	145
	Clay, gray-----	.5	145.5

137-95-9DDA2
M. Reindel
(Log from Moe's Well Drilling)

Altitude: 2667 ft above msl

Date drilled: 1927

Deepened: 1962

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation:			
	Unknown-----	200	200
	Clay, gray-----	19	219
	Sand, coarse, continuing-----	31	250

137-95-10AAB
H. Biel
(Log from Moe's Well Drilling)

Altitude: 2650 ft above msl

Date drilled: September 1965

Sentinel Butte Formation:			
	Sand, surface-----	14	14
	Rock-----	--	14
	Clay, gray-----	13	27
	Sand, gray-----	10	37
	Rock, soft-----	1	38
	Clay, gray-----	5	43
	Coal-----	2	45
	Sand, brown-----	2	47
	Coal, wet-----	1.5	48.5
	Clay, gray-----	20	68.5
	Sand and clay mixed-----	5	73.5
	Rock, hard-----	1.7	75.2
	Clay, gray-----	16.8	92
	Coal-----	.5	92.5
	Clay, gray-----	1	93.5
	Coal, wet-----	3.5	97
	Sand, white-----	36	133
	Clay, gray-----	1.5	134.5
	Rock-----	2.5	137
	Sand, clay, and coal-----	21	158
	Clay, green, continuing-----	4	162

137-95-11CBD2
F. Baar
(Log from Moe's Well Drilling)

Altitude: 2717 ft above msl

Date drilled: 1969

Golden Valley Formation:			
	Sand, surface-----	1	1
	Clay, yellow-----	26	27
	Sand and clay mixed, yellow-----	9	36
Sentinel Butte Formation:			
	Sand, gray-----	2	38
	Coal-----	1	39
	Clay, green-----	8	47
	Clay, gray-----	43	90
	Coal-----	1.5	91.5
	Clay, gray-----	18.5	110
	Sand, gray, clayey-----	9	119
	Rock, gray sandstone, medium-hard-----	3	122
	Clay, gray-----	22	144
	Clay, green-----	20	164
	Sand, gray, very, very fine-----	8	172
	Clay, gray-----	31	203
	Clay, gray-----	59	262
	Sand, gray with black specks, chunk-----	13	275
	Clay, gray-----	.3	275.3

137-95-14AAA2
A. Gabbert
(Log from Moe's Well Drilling)

Altitude: 2715 ft above msl

Date drilled: August 1964

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Sand, surface-----	10	10
	Sand, gray-----	47	57
	Sand, gray, coarse-----	9	66
	Coal-----	4	70
	Clay, gray, continuing-----	.3	70.3

137-95-17DDD
NDSWC 3721

Altitude: 2700 ft above msl

Date drilled: June 1969

Golden Valley Formation (?):

Sandstone, reddish-brown, fine, well-sorted, sub-angular, heavily iron-stained, semiconsolidated----- 8 8

Sentinel Butte Formation:

Shale, varicolored yellowish-green, yellowish-gray, reddish-brown, brownish-black, and light-gray, silty; smooth above, brittle below----- 23 31
Lignite----- 5 36
Sandstone, green to dark-greenish-gray, very fine, clay cement, semiconsolidated----- 12 48
Shale, medium-gray, silty, bentonitic, brittle----- 12 60
Shale as above; locally carbonaceous; with interbeds of light-gray, friable siltstone and dark-greenish-gray, clayey sandstone----- 20 80
Shale, variegated medium-gray, pinkish-gray, purplish-gray, and brownish-gray, silty, locally carbonaceous; with interbeds of green and light-olive-gray, fine, clayey sandstone----- 6 86
Lignite----- 8 94
Shale, carbonaceous----- 6 100
Shale, light-medium-gray with brownish-black carbonaceous stains, silty to sandy, crumbly----- 20 120
Shale, gray and greenish-gray, silty to sandy; with interbeds of clayey, semiconsolidated sandstone----- 20 140
Sandstone, greenish-gray, very fine, carbonaceous, with clay cement, semiconsolidated----- 15 155
Sandstone, greenish-gray, very fine, indurated----- 5 160
Sandstone, dark-greenish-gray, fine, slightly clayey, semiconsolidated----- 20 180
Sandstone, indurated----- 1 181
Sandstone, dark-greenish-gray, fine, slightly clayey, semiconsolidated----- 10 191
Lignite----- 4 195
Shale, medium-gray, silty to sandy, bentonitic, brittle----- 19 214
Lignite, shaly----- 6 220
Shale as above----- 11 231
Lignite----- 5 236
Shale, greenish-gray, silty----- 17 253
Sandstone, greenish-gray, fine, clay cement, semiconsolidated----- 4 257
Sandstone, indurated----- 2 259
Sandstone, greenish-gray, fine, clayey; with interbeds of silty shale----- 18 277
Shale, light-medium-gray to light-greenish-gray, silty, brittle; with thin interbeds of lignite and clayey sandstone----- 10 287

137-95-17DDD, Continued
 NDSWC 3721

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation, Continued:			
	Shale as above; with thin sandstone interbeds-----	6	293
	Lignite-----	2	295
	Shale, light-medium-gray, silty-----	10	305
	Clay, bentonitic-----	2	307
Tongue River Formation:			
	Shale, medium-gray, silty, carbonaceous-----	19	326
	Sandstone, greenish-gray and light-olive-gray, fine, clayey, soft-----	12	338
	Shale, medium-gray to brownish-black-----	4	342
	Lignite, shaly-----	6	348
	Shale as above-----	15	363
	Sandstone, greenish-gray and light-olive-gray, silt to very fine, clayey, carbonaceous, semiconsolidated, tight; containing shell fragments;with interbeds of medium-gray, bentonitic, silty shale and thin streaks of lignite-----	55	418
	Lignite-----	4	422
	Shale with sandstone interbeds as above-----	18	440
	Shale, medium-gray, silty, bentonitic and lignitic---	6	446
	Sandstone, greenish-gray, fine, clayey, carbonaceous, semiconsolidated-----	24	470
	Shale, medium-gray, silty, bentonitic, brittle-----	11	481
	Lignite-----	7	488
	Shale, medium-light-gray, very silty-----	7	495
	Siltstone, light-gray to light-olive-gray, clayey; with interbeds of green and gray, fissile shale-----	7	502
	Lignite-----	4	506
	Shale, green and gray-----	8	514
	Lignite-----	3	517
	Siltstone as above-----	8	525
	Lignite-----	7	532
	Siltstone, light-gray and light-greenish-gray, shaly, lignitic, semiconsolidated, brittle-----	16	548
	Lignite-----	1	549
	Siltstone as above; grading downward to:-----	6	555
Basal Tongue River sandstone:			
	Sandstone, light-olive-gray and light-greenish-gray, silt to very fine, clayey; contains shell fragments; semiconsolidated-----	15	570
	Lignite-----	1	571
	Shale, carbonaceous, sandy-----	13	584
	Lignite-----	3	587
	Sandstone as above-----	24	611
Ludlow Formation:			
	Shale, brownish-gray, silty to sandy, carbonaceous, plastic to slightly brittle-----	30	641
	Lignite-----	4	645
	Siltstone, light-olive-gray, semiconsolidated; with interbeds of lignite and sandstone-----	13	658
	Shale, brownish-gray, carbonaceous-----	17	675
	Lignite-----	3	678
	Siltstone as above; with interbeds of brown, silty, carbonaceous shale and lignite-----	12	690
	Lignite-----	6	696
	Siltstone, shale, and lignite interbedded. The shales are variegated grays, greens, and browns and are silty and carbonaceous-----	30	726
	Lignite-----	3	729
	Shale, carbonaceous-----	7	736
	Lignite-----	3	739
	Siltstone, shale, and lignite interbedded-----	26	765
	Lignite-----	15	780
	Siltstone, shale, and lignite interbedded-----	20	800

137-95-21BCC
M. Raab, Jr.
(Log from Moe's Well Drilling)

Altitude: 2706 ft above msl

Date drilled: October 1962

Geologic source	Material	Thickness (feet)	Depth (feet)
Golden Valley Formation:			
	Sand, surface-----	3	3
	Sand, white-----	15	18
	Clay, white-----	4	22
	Clay, blue-----	10	32
Sentinel Butte Formation:			
	Sandrock-----	3.8	35.8
	Clay-----	7.2	43
	Coal-----	2	45
	Clay, green-----	13	58
	Sand-----	10	68
	Sandrock-----	1.5	69.5
	Clay-----	7.5	77
	Rock-----	2	79
	Sand-----	15	94
	Clay-----	19	113
	Coal-----	1.5	114.5
	Clay, white-----	10.5	125
	Clay-----	21	146
	Sand, green-----	23	169
	Sandrock-----	1.5	170.5
	Sand, green-----	27.5	198
	Clay, continuing-----	4	202

The sections from the surface to 45 ft and from 113 to 146 ft reported dry by the driller. The section from 45 to 113 ft tested 0.5 gpm of water and 146 to 202 ft tested 8 gpm.

137-95-23BAA
A. Gabbert
(Log from Moe's Well Drilling)

Altitude: 2663 ft above msl

Date drilled: August 1964

Golden Valley Formation (?):			
	Sand, surface-----	1	1
	Clay, yellow-----	10	11
Sentinel Butte Formation:			
	Clay, gray-----	11	22
	Sand, brown-----	2	24
	Clay, gray-----	6	30
	Clay, green-----	6	36
	Sand, gray-----	6	42
	Coal-----	1	43
	Clay, white-----	10	53
	Sand, brown and gray-----	97	150
	Sand, gray, wet-----	19	169
	Rock-----	1	170

137-95-28ABB
 C. Koppinger
 (Log from Moe's Well Drilling)

Altitude: 2686 ft above msl

Date drilled: October 1962

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Golden Valley Formation:			
	Sand, surface-----	19	19
Sentinel Butte Formation:			
	Coal-----	1	20
	Clay, brown-----	4	24
	Clay, green-----	3	27
	Clay, gray-----	28	55
	Rock-----	.5	55.5
	Clay, gray-----	2.5	58
	Rock-----	.5	58.5
	Sand, gray-----	28	86.5
	Rock, hard-----	.7	87.2
	Clay, white-----	12.8	100
	Coal-----	.5	100.5
	Rock-----	14	114.5
	Sand, very fine-----	8.5	123
	Clay, green-----	5	128
	Sand, gray, coarse-----	39	167
	Rock, very hard-----	1.5	168.5
	Sand-----	1.5	170
	Rock-----	9.5	179.5
	Sand-----	10.5	190
	Clay, continuing-----	3	193

137-95-28BAA2
 C. Koppinger
 (Log from Mann Drilling Co.)

Altitude: 2686 ft above msl

Date drilled: October 1964

Golden Valley Formation:			
	Sand, brown-----	22	22
Sentinel Butte Formation:			
	Lignite-----	4	26
	Clay-----	104	130
	Sand-----	65	195
Sentinel Butte-Tongue River Formations, undifferentiated:			
	Clay-----	285	480
Tongue River Formation:			
	Sand-----	20	500

137-96-12BAA3
 F. Kuntz
 (Log from Moe's Well Drilling)

Altitude: 2615 ft above msl

Date drilled: September 1969

	Topsoil-----	1	1
Golden Valley Formation:			
	Sand, surface-----	2	3
	Clay, yellow-----	21	24

137-96-12BAA3, Continued
F. Kuntz

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation:			
	Clay, gray-----	20	44
	Sand, gray-----	3	47
	Clay, gray-----	2.5	49.5
	Rock-----	2.5	52
	Clay-----	10	62
	Sand, gray, chunky-----	8	70
	Clay, gray-----	2	72
	Rock-----	2.5	74.5
	Clay, gray, sandy-----	15.5	90
	Clay, gray-----	7	97
	Coal-----	2	99
	Clay, light-gray-----	25	124
	Coal-----	3	127
	Clay, gray-----	15	142
	Coal-----	2	144
	Clay, gray-----	8	152
	Clay, gray, sandy-----	42	194
	Sand, green-----	56	250

137-96-19CBC3
J. Weiler
(Log from Moe's Well Drilling)

Altitude: 2678 ft above msl

Date drilled: October 1969

	Topsail-----	1	1
Sentinel Butte Formation:			
	Sand, surface-----	12	13
	Clay, gray-----	16	29
	Coal-----	5	34
	Clay, gray, sandy-----	5	39
	Clay, gray-green-----	160.8	199.8
	Sandrock, medium-hard-----	2.2	202
	Clay, white-----	16	218
	Clay, brown, sandy-----	7	225
	Clay, gray-----	25	250
	Sand, green, chunky-----	37	287
	Clay, gray-----	18	305
Tongue River Formation (?):			
	Sand, gray, chunk-----	5	310
	Clay, gray-----	45	355
	Sand, gray-green, chunky-----	30	385
	Sandrock, gray, soft-----	1	386
Tongue River-Ludlow-Cannonball Formations, undifferentiated:			
	Clay, gray, silty-----	299	685
Cannonball Formation:			
	Sand, gray-green-----	94.5	779.5
	Clay, gray-----	.5	780
Cannonball-Ludlow-Hell Creek Formations, undifferentiated:			
	No description-----	320	1100

Altitude: 2640 ft above msl

Date drilled: September 1967

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Quaternary deposits, undifferentiated:			
	Topsoil, dark-brown, sandy loam-----	1	1
	Clay, yellowish-gray and dusky-yellow, silty to sandy; and dark-brown, medium to coarse sand and fine gravel-----	17	18
Sentinel Butte Formation:			
	Sandstone, dusky-yellow and reddish-brown, very fine to fine, slightly silty, lignitic and micaceous, semi-consolidated-----	5	23
	Sandstone as above; but greenish-gray-----	27	50
	Lignite-----	2	52
	Shale, variegated white, gray, and pastel green, silty, smooth-----	5	57
	Lignite-----	2	59
	Shale, medium-gray, silty to sandy, fairly soft; with hard, calcareous layers and streaks of bentonite-----	37	96
	Shale and clay, brownish-black, carbonaceous-----	4	100
	Shale, medium-gray and greenish-gray; with thin bentonite streaks-----	22	122
	Shale as above; but silty and with streaks of greenish-gray, semiconsolidated sandstone and lignite-----	12	134
	Lignite-----	2	136
	Shale, medium-gray, bentonitic; with thin lignite seams-----	11	147
	Shale, light-greenish-gray to very light-gray, very silty; with thin, hard, calcareous layers-----	19	166
	Shale, dark-greenish-gray to brownish-black, lignitic; with thin streaks of dark-greenish-gray, clayey, semiconsolidated sandstone-----	16	182
	Sandstone, medium-gray, silt to very fine, clayey; with interbeds of light-greenish-gray, silty shale-----	17	199
	Shale, light-olive-gray, silty to sandy, lignitic, soft-----	4	203
	Lignite-----	1	204
	Shale as above-----	4	208
	Lignite-----	10	218
	Shale, light-gray, silty; with thin lignite streaks-----	19	237
	Bentonite-----	1	238
	Sandstone, indurated-----	2	240
	Shale, medium-gray to brownish-black, lignitic and bentonitic-----	12	252
	Clay, bentonitic-----	4	256
Tongue River Formation:			
	Shale, light-greenish-gray to brownish-gray, silty to sandy-----	28	284
	Lignite-----	19	303
	Shale, medium-gray and greenish-gray, silty; with thin calcareous and bentonitic streaks-----	7	310
	Lignite-----	3	313
	Shale, medium-gray, silty-----	14	327
	Sandstone, light-greenish-gray, very fine to fine; appears porous, but not very permeable; semiconsolidated; occasional interbeds of shale as above-----	31	358
	Sandstone, light-greenish-gray, very fine to fine, indurated-----	3	361
	Shale, medium-gray, silty, bentonitic, slightly brittle-----	10	371
	Lignite-----	2	373
	Shale, medium-gray, silty to sandy-----	29	402
	Lignite-----	7	409
	Shale as above-----	13	422
	Lignite-----	1	423
	Shale as above-----	3	426

137-96-22CCCL, Continued
 NDSWC 3534

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Tongue River Formation, Continued:			
	Lignite-----	4	430
	Shale-----	3	433
	Lignite-----	6	439
Basal Tongue River sandstone:			
	Sandstone, light-olive-gray, very fine to fine, sub- rounded, lignitic, weakly consolidated-----	8	447
	Shale-----	3	450
	Sandstone as above-----	33	483
	Lignite-----	1	484
	Shale, light-gray to light-greenish-gray, silty to very fine sandy, lignitic, slightly brittle-----	9	493
	Shale as above; with thin interbeds of light-greenish- gray to brownish-black, very fine, semiconsolidated sandstone-----	24	517
	Sandstone as above; with interbeds of shale as above--	12	529
Ludlow Formation (Upper):			
	Lignite-----	3	532
	Shale, light-gray to light-greenish-gray and brownish- black, very silty-----	26	558
	Lignite-----	1	559
	Shale, light-gray, silty, calcareous, lignitic-----	7	566
	Lignite-----	6	572
Cannonball Formation:			
	Shale, light-gray, silty, bentonitic-----	9	581
	Sandstone, very light-gray to yellowish-gray, silt to very fine, calcareous, semiconsolidated; readily washes out in drilling mud-----	10	591
	Sandstone, gray, very fine, very calcareous, indurated	4	595
	Sandstone, light-olive-gray, silt to very fine, calcareous, semiconsolidated-----	40	635
	Shale, white to brownish-black, bentonitic, partly lignitic; with interbeds of semiconsolidated to indurated siltstone and very fine sandstone-----	38	673
	Sandstone, light-olive-gray to greenish-gray, silt to very fine, semiconsolidated; interbeds of shale and soft siltstone and a few indurated sandstone layers-----	45	718
Ludlow Formation (Lower):			
	Siltstone, light-gray, very fine, sandy, semi- consolidated, lignitic-----	4	722
	Lignite-----	12	734
	Sandstone, light-olive-gray, silt to very fine, lignitic-----	19	753
	Shale, medium-gray-----	19	772
	Sandstone, green, fine, semiconsolidated-----	14	786
	Clay, light-gray, bentonitic-----	3	789
	Shale, medium-gray, brittle-----	11	800

137-97-23CCC
NDSWC 3678

Altitude: 2684 ft above msl

Date drilled: November 1968

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Quaternary	deposits, undifferentiated: Sand, interbedded and mixed with clay, silt, and detrital sandstone and concretion fragments, oxidized (colluvium)-----	9	9
Sentinel Butte Formation:			
	Sandstone, light-olive-gray, fine, clayey, semi- consolidated, partly oxidized-----	9	18
	Shale, light- to medium-gray, sandy, slightly plastic- Lignite-----	8 6	26 32
	Shale, light- and medium-gray, silty; interbedded with gray, semiconsolidated siltstone-----	21	53
	Shale, green, blocky-----	4	57
	Siltstone, light-gray, semiconsolidated-----	5	62
	Shale, medium-gray, soft, bentonitic-----	10	72
	Lignite-----	8	80
	Shale, light-gray, silty, soft-----	6	86
	Shale, green, dense, blocky-----	2	88
	Shale, light- and medium-gray, silty, bentonitic; with thin interbeds of semiconsolidated siltstone and very fine sandstone-----	44	132
	Sandstone, gray, silt to very fine, clayey, semi- consolidated-----	9	141
	Shale as above; with thin interbeds of sandstone as above-----	7	148
	Lignite-----	3	151
	Shale, light- and medium-gray; with thin interbeds of lignite-----	14	165
	Lignite-----	3	168
	Shale as above; with thin interbeds of lignite-----	16	184
	Shale, dark-gray, carbonaceous-----	16	200

137-97-31BDD
G. Ehlig

(Log from Mann Drilling Co.)

Altitude: 2755 ft above msl

Date drilled: July 1965

Sentinel Butte Formation:			
	Clay-----	37	37
	Clay, sandy-----	4	41
	Clay-----	60	101
	Clay, sandy-----	45	146
	Clay-----	28	174
	Coal-----	5	179
	Clay-----	37	216
	Sandstone-----	2	218
	Sand-----	3	221
	Sandstone-----	4	225
	Sand-----	30	255
	Sandstone-----	.3	255.3

137-98-4BAC
B. Lantz

(Log from Mann Drilling Co.)

Altitude: 2768 ft above msl

Date drilled: December 1963

Sentinel Butte Formation:			
	Sand, brown, fine-----	85	85
	Clay, gray, sandy-----	5	90
	Sand, gray-----	30	120

Altitude: 2744 ft above msl

Date drilled: May 1969

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation:			
	Shale, nearly white to light-gray, silty, bentonitic; with interbeds of soft, white siltstone, locally limonite stained. Small iron concretions-----	32	32
	Shale, gray to dark-gray, silty, bentonitic; small iron concretions-----	5	37
	Lignite-----	2	39
	Shale, medium-gray to dark-greenish-gray, silty to sandy; with interbeds of white, pink, and green sandy clay and yellowish bentonitic clay-----	21	60
	Shale, medium-dark-gray, silty to sandy; with thin interbeds of buff, indurated siltstone and bentonite and soft layers of sandy clay and bentonitic clay----	11	71
	Sandstone, dark-gray, silt to very fine, semiconsolidated-----	13	84
	Lignite-----	1	85
	Sandstone, dark-greenish-gray, fine, well-sorted, weakly consolidated-----	3	88
	Shale, light- to medium-dark-gray, silty and sandy, moderately soft-----	8	96
	Sandstone as above-----	6	102
	Shale as above; with thin sandstone and soft clay interbeds-----	9	111
	Sandstone, gray, indurated-----	2	113
	Shale as above; with thin interbeds of semiconsolidated sandstone and bentonitic clay-----	12	125
	Lignite-----	6	131
	Sandstone, dark-greenish-gray, clayey, semiconsolidated-----	12	143
	Shale, dark-gray, silty-----	8	151
	Sandstone as above-----	4	155
	Shale as above-----	5	160
	Lignite, brownish-----	3	163
	Shale, medium-dark-gray, silty, bentonitic-----	5	168
	Sandstone, gray, very fine, clayey, semiconsolidated--	6	174
	Shale as above-----	2	176
	Lignite, brownish-black, soft-----	7	183
	Shale, variegated grays and greens, silty, slightly brittle; with sandy and bentonitic streaks, some thin hard layers-----	34	217
	Lignite-----	2	219
	Siltstone, medium- to medium-dark-gray, clayey; interbedded with light-medium-gray, very fine, clayey sandstone and bentonitic clay-----	19	238
	Shale, variegated grays, greens, and browns, silty, carbonaceous, bentonitic, with sandy streaks, slightly brittle-----	20	258
	Siltstone, light-medium-gray, clayey, semiconsolidated; with interbeds of bentonite and indurated sandstone---	21	279
	Lignite-----	1	280
	Siltstone as above-----	6	286
	Shale as above-----	14	300
	Siltstone, light- and medium-gray, clayey, semi-consolidated; with bentonitic interbeds-----	21	321
	Shale as above; bentonitic at base-----	5	326
Tongue River Formation:			
	Lignite, black, hard, fissile-----	8	334
	Shale, light-gray, very silty, moderately soft-----	12	346
	Siltstone, light-medium-gray, clayey, lignitic and bentonitic, semiconsolidated-----	5	351
	Shale as above-----	3	354

137-98-12EBB, Continued
NDSWC 3693

Geologic source	Material	Thickness (feet)	Depth (feet)
Tongue River Formation, Continued:			
	Sandstone, very fine, silty and clayey, micaceous, semiconsolidated-----	8	362
	Shale, medium-gray and brownish-gray, silty, soft to slightly brittle, smooth; grading to:-----	4	366
	Siltstone, clayey, semiconsolidated-----	12	378
	Shale, medium-gray and greenish-gray, very silty; with interbeds of light-medium-gray, semiconsolidated siltstone-----	26	404
	Sandstone, greenish-gray, very fine, clayey, semiconsolidated-----	20	424
	Lignite-----	6	430
	Siltstone, light-medium-gray, semiconsolidated; with interbeds of very fine, clayey sandstone-----	8	438
	Shale, light- to medium-gray, silty, bentonitic, soft; with siltstone interbeds-----	11	449
	Lignite-----	2	451
	Shale with siltstone interbeds, as above-----	20	471
	Lignite-----	2	473
	Shale with siltstone interbeds, as above-----	24	497
	Lignite-----	3	500
	Shale as above; increasingly silty and sandy downward-----	30	530
	Shale, black, carbonaceous-----	8	538
	Lignite-----	3	541
	Siltstone, light-gray, semiconsolidated; with interbeds of dark-gray and green shale-----	17	558
	Lignite-----	1	559
	Siltstone as above; with thin streaks of lignite and carbonaceous shale-----	30	589
Basal Tongue River sandstone:			
	Sandstone, light-olive-gray, very fine to fine, subangular to subround, locally clayey, semiconsolidated-----	36	625
Ludlow Formation (Upper):			
	Lignite-----	11	636
	Shale, carbonaceous; interbedded with light- to medium-gray, clayey siltstone-----	18	654
	Lignite-----	3	657
Cannonball Formation:			
	Siltstone, very light- to medium-gray, clayey, semiconsolidated-----	4	661
	Shale, carbonaceous-----	8	669
	Sandstone, light-olive-gray, very fine to fine, subangular, 90 percent quartz, calcareous, semiconsolidated; with H ₂ S odor-----	31	700
	Sandstone as above; but very weakly consolidated to unconsolidated-----	40	740
	Cored: Recovered 3 ft of sandstone, very fine to fine, subangular, 90 percent quartz, calcareous, consolidated but friable-----	10	750
	Sandstone as above; shaly streaks toward base-----	24	774
Ludlow Formation (Lower):			
	Clay, black, sandy, carbonaceous-----	2	776
	Lignite-----	1	777
	Shale, brownish-black and greenish-gray, fissile, slightly brittle-----	13	790
	Sandstone (from E-log, not in samples)-----	10	800

137-99-98BB
NDSWC 3537

Altitude: 2724 ft above msl

Date drilled: September 1967

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Quaternary	deposits, undifferentiated: Sand, dusky-yellow to yellowish-gray and green, very fine to fine, clayey and silty; with thin interbeds of medium sand and fine gravel; dry-----	12	12
Sentinel Butte Formation:			
	Sandstone, yellowish-green, very fine to fine, clayey, silty, semiconsolidated; dry-----	12	24
	Shale, light-gray, silty, thinly laminated, moderately soft-----	6	30
	Shale, olive-gray, silty to sandy, moderately soft----	11	41
	Shale, light- to medium-gray-----	11.5	52.5
	Lignite-----	.5	53
	Shale as above-----	1.5	54.5
	Lignite-----	1.5	56
	Clay, light-gray, silty, bentonitic-----	3	59
	Shale, light- to medium-gray, silty, slightly brittle, smooth-----	8	67
	Shale, brownish-black, oily stains, slightly hard----	8	75
	Lignite, black, tight-----	7	82
	Sandstone, dark-greenish-gray, very fine, clayey, semiconsolidated-----	26	108
	Lignite-----	1	109
	Sandstone as above-----	3	112
	Lignite-----	1	113
	Shale, greenish-gray to medium-gray, silty, smooth----	7	120
	Lignite, black, hard-----	8	128
	Shale as above-----	8	136
	Lignite, black, hard-----	2	138
	Shale, medium-gray and greenish-gray, silty, smooth, slightly hard-----	20	158
	Clay, light-gray, bentonitic, soft-----	5	163
	Shale, dark-greenish-gray, sandy, moderately soft----	12	175
	Shale, greenish-gray, silty, smooth, slightly hard----	7	182
	Clay, light-gray, bentonitic, soft-----	11	193
	Shale, greenish-gray, very silty, moderately soft----	5	198
	Shale, silty, slightly hard and brittle-----	2	200

137-99-24DDD
NDSWC 3679

Altitude: 2722 ft above msl

Date drilled: November 1968

Sentinel Butte Formation:			
	Sandstone, yellowish-gray and dusky-yellow, fine, semiconsolidated; interbeds of siltstone and clay----	22	22
	Shale, brownish-black, carbonaceous, fissile; dry----	3	25
	Lignite-----	1	26
	Sandstone as above-----	8	34
	Sandstone, medium- to dark-gray, very fine to fine, subangular and subrounded, quartzose and lignitic, with silty interbeds-----	19	53
	Sandstone, greenish-gray, silt to very fine, limy, indurated-----	2	55
	Shale, light-gray, silty, soft-----	3	58
	Sandstone, medium- to dark-gray, very fine and fine; becoming brownish-black, carbonaceous downward-----	25	83
	Shale, light- to medium-gray, silty, smooth, moderately soft-----	3	86
	Lignite, black, fissile, hard-----	8	94
	Shale as above-----	10	104

137-99-24DDD, Continued
NDSWC 3679

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation, Continued:			
	Shale, dark-gray, smooth, slightly hard-----	3	107
	Shale, medium-gray, moderately soft-----	24	131
	Shale, black, fissile, hard, smooth-----	4	135
	Lignite, black, hard-----	11	146
	Shale, medium-gray, silty, soft, crumbly-----	12	158
	Shale, light- and medium-gray, silty to sandy, moderately soft-----	34	192
	Sandstone, light-gray, silt to fine, clayey, semi-consolidated-----	33	225
	Lignite, black, fissile, hard-----	1	226
	Shale, dark-gray, smooth, hard-----	5	231
	Lignite, black, hard, fissile-----	1	232
	Clay, carbonaceous, bentonitic-----	5	237
Tongue River Formation:			
	Shale, dark-gray, smooth, hard-----	9	246
	Shale, light-gray, very silty, moderately soft-----	12	258
	Lignite, black, hard-----	7	265
	Shale, black, carbonaceous, moderately hard-----	2	267
	Shale, light-gray, silty, moderately soft-----	33	300

138-91-11DDD
NDSWC 3704

Altitude: 2415 ft above msl

Date drilled: June 1969

Sentinel Butte Formation:			
	Shale, yellow-brown, silty, calcareous, soft, plastic-----	7	7
	Lignite-----	1	8
	Shale as above-----	8	16
	Siltstone, yellow-brown, clayey, calcareous, semi-consolidated; with interbeds of shale as above. Color becomes more grayish downward-----	22	38
	Shale, olive-gray, carbonaceous, soft, plastic-----	2	40
	Shale, dark-brown, carbonaceous, soft; with thin lignite streaks-----	12	52
	Shale, olive-gray, sandy, soft-----	10	62
	Shale, greenish-gray, soft, plastic-----	6	68
	Lignite-----	6	74
	Shale as above-----	13	87
	Siltstone, light-gray, very calcareous, thin-bedded, hard-----	3	90
	Shale as above-----	2	92
	Lignite-----	1	93
	Sandstone, gray, very fine, clayey, noncalcareous, biotitic, semiconsolidated-----	8	101
	Shale, greenish-gray, silty, soft, plastic-----	9	110
	Siltstone, greenish-gray, clayey, calcareous, semi-consolidated-----	6	116
	Lignite-----	1	117
	Siltstone as above-----	4	121
	Shale, brownish-gray, slightly calcareous, soft-----	3	124
	Lignite-----	1	125
	Shale as above-----	3	128
	Lignite-----	1	129
	Shale, light-brownish-gray, silty, slightly calcareous	20	149
	Lignite-----	1	150
	Shale as above-----	3	153
	Lignite-----	2	155
	Shale as above-----	2	157
	Lignite-----	2	159

138-91-28AAD1, Continued
R. Winkler

Geologic source	Material	Thickness (feet)	Depth (feet)
Tongue River Formation (?), Continued:			
	Clay, gray-----	6.5	190
	Sand, with side of rock at 200 ft-----	32	222
	Rock-----	1.5	223.5
	Sand-----	23.5	247
	Coal-----	4	251
	Clay, gray, continuing-----	12	263

138-91-30ABD2
E. Sprecher
(Log by Midwest Well and Pipe Co.)

Altitude: 2201 ft above msl Date drilled: 1952

Quaternary deposits, undifferentiated:			
	"Surface"-----	3	3
Tongue River Formation:			
	Sand, brown-----	15	18
	Quicksand-----	8	26
	Rock, white, soft-----	4	30
	Sand-----	5	35
	Shale, dark, sandy-----	8	43
	Sandstone, gray-----	9	52
	Clay, blue-----	12	64
	Clay-----	12	76
	Sand, blue, fine-----	18	94
	Clay, white-----	10	104
	Shale, white-----	24	128
	Coal-----	3	131
	Clay, white-----	11	142
	Coal-----	2	144
	Clay, white-----	16	160
	Stone, brown-----	7	167
	Clay, blue, "little"-----	6	173
	Clay, white-----	20	193
	Coal, soft-----	7	200
	Clay, blue-----	26	226
	Sand, blue, fine-----	18	244

138-91-30ABD3
E. Sprecher
(Log from Mann Drilling Co.)

Altitude: 2201 ft above msl Date drilled: May 1966

Quaternary deposits and Tongue River Formation, undifferentiated:			
	Clay, sandy, brown-----	17	17
Tongue River Formation:			
	Sand, gray, silty-----	26	43
	Sandstone, broken-----	6	49
	Clay, gray, sandy-----	56	105
	Sand-----	22	127
	Clay, gray, sandy-----	11	138
	Coal-----	2	140
	Clay, gray, sandy-----	55	195
Basal Tongue River sandstone:			
	Sand-----	7	202
	Coal-----	4	206

138-92-5AAA, Continued
USGS Auger Test 23

Geologic source	Material	Thickness (feet)	Depth (feet)
Quaternary deposits, undifferentiated, Continued:			
	Clay, medium-gray, silty, calcareous; with streaks of yellowish-gray, highly calcareous clay and very fine to coarse gravel (possibly cavings)-----	5	30
Sentinel Butte Formation:			
	Shale, black, noncalcareous; contains lignite fragments; tough-----	2	32
	Shale, bluish-gray, silty, noncalcareous, tough-----	8	40
	Shale, light-gray, silty, calcareous, with carbonaceous streaks, tough-----	5	45
	Shale, greenish-gray to dark-greenish-gray, silty, tough-----	5	50
	No sample-----	10	60
	Sandstone, very fine to medium, clayey, semiconsolidated; wet-----	5	65
	No sample - probably sandstone as above-----	13	78
	No sample; hard drilling at 78 and 108 ft-----	47	125

138-92-17DBD
C. Alpert
(Log from Moe's Well Drilling)

Altitude: 2352 ft above msl

Date drilled: July 1963

Sentinel Butte Formation:			
	Clay-----	22	22
	Coal-----	3	25
	Clay, gray-----	2	27
	Sand, gray-----	8	35
	Rock, gray, very hard-----	1	36
	Sand, gray, dry; with side rock at 55.8 ft-----	26	62
	Sand-----	16	78
	Clay, gray-----	4	82
	Sand-----	16	98
Tongue River Formation (?):			
	Clay, gray-----	38	136
	Rock-----	.2	136.2
	Clay, green-----	36.8	173
	Sand, green, fine-----	8.2	181.2
	Rock, very hard-----	3.8	185
	Sand, green, chunk-----	17	202
	Coal-----	3	205
	Clay, gray-----	17	222

138-92-210CC
USGS Auger Test 24

Altitude: 2185 ft above msl

Date drilled: August 1968

Quaternary deposits, undifferentiated:			
	Silt, sandy, calcareous-----	10	10
	No sample - material dry and loose-----	5	15
	Clay, silty, sandy, calcareous; with fine to coarse gravel-----	5	20
	Sand, very fine to very coarse, clayey; wet-----	5	25
	Clay, silty, sandy; with some gravel-----	5	30
	No samples-----	30	60
Tongue River Formation:			
	Hard drilling, but no samples-----	8	68

138-92-28CCC
NDSWC 3705

Altitude: 2285 ft above msl

Date drilled: June 1969

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Quaternary deposits, undifferentiated:			
	Topsoil, yellowish-brown, sandy loam-----	1	1
	Sand, dark-brown, fine, carbonaceous-----	4	5
	Sand, medium to coarse, moderately well-sorted, sub- rounded, predominately quartz, clean-----	13	18
	Sand, fine, well-sorted, subrounded-----	3	21
	Gravel, fine, well-sorted, subangular and subrounded, heavily iron-stained-----	7	28
Sentinel Butte Formation:			
	Siltstone, very light-gray, sandy, slightly clayey, calcareous, semiconsolidated-----	14	42
	Shale, dark-gray and black, silty, carbonaceous, plastic-----	11	53
Tongue River Formation:			
	Lignite, black, hard, brittle-----	4	57
	Shale, greenish-gray, silty, plastic, smooth-----	7	64
	Siltstone, light-greenish-gray, clayey, semiconsoli- dated, slightly plastic-----	3	67
	Shale, medium-gray and greenish-gray, moderately plastic; with silty streaks-----	13	80
	Lignite, black, hard, brittle-----	4	84
	Shale, medium-gray, silty, smooth, plastic-----	16	100

138-92-32DDD
NDSWC 3547

Altitude: 2352 ft above msl

Date drilled: October 1967

Sentinel Butte Formation:			
	Topsoil, light-brown, sandy loam-----	2	2
	Shale, dusky-yellow and yellowish-gray, with yellow and red iron stains, silty to sandy, soft; fractured in upper 10 ft-----	8	10
	Shale, light-gray and yellowish-gray, silty, moderately soft, plastic-----	14	24
	Lignite-----	1	25
	Shale, light-gray to brownish-black, silty, plastic, sticky-----	10	35
	Shale, greenish-gray, silty-----	7	42
	Sandstone, greenish-gray, clayey, semiconsolidated, plastic-----	5	47
	Lignite-----	1	48
	Shale, brownish-black, carbonaceous-----	3	51
	Shale, light- to medium-gray, silty, calcareous, plastic-----	12	63
	Sandstone, greenish-gray, very fine to fine, lignitic and micaceous, semiconsolidated; with occasional clayey streaks-----	47	110
	Shale, dark-gray to olive-black, soft, plastic-----	4	114
	Clay, white, silty, bentonitic-----	2	116
Tongue River Formation:			
	Shale, variegated gray, black, and green, silty, soft, plastic-----	15	131
	Lignite-----	1	132
	Shale as above; becoming bentonitic downward-----	26	158
	Shale, black, carbonaceous, soft-----	10	168
	Lignite-----	5	173
	Shale, light-gray to greenish-gray and light-olive- gray, silty, soft, plastic-----	28	201

138-92-32DDD, Continued
NDSWC 3547

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Tongue River Formation, Continued:			
	Clay, white, silty, calcareous-----	3	204
	Lignite, black, fissile, hard-----	3	207
	Sandstone, light-olive-gray, very fine, slightly clayey, semiconsolidated-----	4	211
	Lignite-----	2	213
	Sandstone as above, calcareous-----	20	233
	Shale, variegated gray and green, silty, lignitic-----	9	242
	Lignite-----	5	247
	Siltstone, light-olive-gray, highly calcareous, semiconsolidated; with lenses of very fine, semi-consolidated sandstone-----	27	274
	Clay, very light gray, silty, bentonitic, sticky, fossiliferous (clam shell)-----	8	282
	Shale, greenish-gray and gray, silty, soft-----	27	309
	Sandstone, gray with black specks, silt to very fine, calcareous, hard-----	2	311
	Lignite, shaly-----	1	312
	Siltstone, light-olive-gray, clayey, semiconsolidated-----	8	320
	Shale as above, with streaks of siltstone as above-----	10	330
	Siltstone, very light gray and greenish-gray, very fine, sandy, bentonitic, semiconsolidated-----	14	344
	Shale, gray and green, silty-----	12	356
	Siltstone, variegated gray and green, very fine sandy, bentonitic, semiconsolidated-----	18	374
	Shale, grayish-green, silty, highly fossiliferous, slightly brittle; with interbeds of semiconsolidated siltstone-----	12	386
	Siltstone, light-gray to light-olive-gray, locally greenish, clayey to sandy, semiconsolidated; with interbeds of white, soft bentonite and clam coquina-----	22	408
	Lignite; with shaly break in center-----	6	414
	Shale, reddish to brownish-gray, carbonaceous-----	8	422
	Shale, dark-gray, silty, moderately soft and brittle-----	7	429
	Siltstone, light-olive-gray, clayey to sandy, semi-consolidated-----	9	438
	Sandstone, dark-greenish-gray, very fine, indurated-----	3	441
	Shale, silty-----	9	450
	Siltstone, semiconsolidated as above; with interbeds of variegated silty to sandy shale and clayey, carbonaceous siltstone-----	30	480
	Shale, light- to medium-gray and greenish-gray, silty, smooth, slightly brittle; with interbeds of soft, black, carbonaceous clay-----	23	503
	Shale, variegated gray and green, moderately soft-----	14	517
Basal Tongue River sandstone:			
	Sandstone, light-greenish-gray, very fine to fine, silty to clayey, semiconsolidated-----	23	540
	Sandstone, dark-greenish-gray, fine to medium, moderately well-sorted, subrounded. Contains shell fragments-----	20	560
	Sandstone as above; taking water-----	15	575
	Sandstone, light-greenish-gray, very fine, clayey, semiconsolidated; with streaks of brown, carbonaceous shale and shell fragments-----	25	600
	Shale, brown, sandy-----	12	612
	Sandstone, light-greenish-gray, very fine; increasingly clayey with depth; semiconsolidated; with several indurated streaks and occasional shell fragments-----	69	681
Cannonball Formation:			
	Shale, white and gray, sandy; with interbeds of clayey sandstone and scattered pyrite crystals-----	33	714

138-92-32DDD, Continued
NDSWC 3547

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Cannonball Formation, Continued:			
	Siltstone, light-olive-gray, clayey to sandy, soft but slow drill penetration; with interbeds of dark shale-----	11	725
	Shale, light- to medium-gray, silty; with interbeds of siltstone as above-----	98	823
	Sandstone, greenish-gray, silt to very fine, slightly clayey, semiconsolidated; with interbeds of indurated sandstone-----	27	850
	Shale, brown, sandy; with thin layers of limestone---	7	857
	Sandstone, light-olive-gray, silt to very fine, very clayey, bentonitic, semiconsolidated; with soft, sandy clay interbeds-----	32	889
Ludlow Formation:			
	Lignite, black, hard-----	4	893
	Clay, brown, carbonaceous, bentonitic (?)-----	3	896
Hell Creek Formation (?):			
	Sandstone, light-greenish-gray to brownish-gray, fine, clayey, carbonaceous, semiconsolidated-----	14	910
	Shale, sandy, carbonaceous-----	13	923
	Sandstone as above-----	28	951
	Shale, dark-gray and dark-greenish-gray, silty to sandy, moderately soft and plastic to slightly brittle; slow drilling-----	11	962
	Sandstone, brownish-gray, silty, clayey, carbonaceous, semiconsolidated; with silty shale interbeds--	13	975
	Shale, brownish-gray, silty, sandy, carbonaceous; with interbeds of clayey sandstone and siltstone-----	17	992
	Siltstone, light-olive-gray and light-greenish-gray, clayey, semiconsolidated-----	12	1004
	Shale, silty, soft-----	4	1008
	Siltstone as above; becoming sandy downward-----	5	1013
	Sandstone, gray, green, and brownish-gray, very fine to fine, carbonaceous, semiconsolidated; indurated at base-----	11	1024
	Shale, gray with brown carbonaceous specks; shell fragments-----	12	1036
	Lignite, shaly-----	1	1037
	Shale, lignitic-----	8	1045
	Shale, brown, silty, carbonaceous; with thin streaks of clayey siltstone, semiconsolidated to indurated----	55	1100

138-93-9CAC
J. Elkins
(Log from Mann Drilling Co.)

Altitude: 2327 ft above msl

Date drilled: February 1964

Sentinel Butte Formation:			
	Clay, brown, sandy-----	22	22
	Clay, gray-----	7	29
	Coal, slack-----	2	31
	Clay, gray, sandy-----	13	44
	Coal-----	2	46
	Clay, gray-----	84	130
	Clay, green-----	3	133
	Clay, gray-----	9	142
	Coal-----	.5	142.5
	Clay, gray-----	17.5	160

138-93-9CAC, Continued
J. Elkins

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation, Continued:			
	Clay, gray, sandy-----	20	180
	Clay, green-----	17	197
	Sandstone, medium-----	1	198
	Clay, gray-----	23	221
	Sandstone-----	2.5	223.5
Tongue River Formation (?):			
	Clay, gray-----	23.5	247
	Coal-----	1	248
	Clay, gray-----	26	274
	Coal-----	6	280
	Clay, gray-----	40	320
	Clay, gray, sandy-----	5	325
	Clay, gray-----	40	365
	Clay, green-----	5	370
	Clay, gray-----	105	475
	Sandstone, medium-----	7	482
	Clay, gray, with lignite stringers-----	123	605
	Clay, sandy-----	25	630
Basal Tongue River sandstone (?):			
	Sandstone, soft-----	10	640

138-93-17AAC2
G. Bobb
(Log from Mann Drilling Co.)

Altitude: 2208 ft above msl Date drilled: March 1967

Quaternary deposits, undifferentiated:			
	Clay, brown, sandy-----	19	19
	Gravel-----	1	20
Sentinel Butte Formation:			
	Clay, gray-----	36	56
	Lignite-----	3	59
	Clay, gray-----	2	61
	Sandstone-----	1	62
	Clay, gray-----	74	136
Tongue River Formation (?):			
	Clay, gray-----	24	160
	Lignite-----	4	164
	Clay, gray-----	71	235
	Sand, fine-----	5	240
	Lignite-----	5	245

Deepened later to 580 ft, no log.

138-93-24AAC
J. Hummel
(Log from Moe's Well Drilling)

Altitude: 2199 ft above msl Date drilled: October 1963

Quaternary deposits, undifferentiated:			
	Sand, surface-----	14	14
	Gravel-----	7	21

138-93-24AAC, Continued
J. Hummel

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Tongue River Formation:			
	Sand, gray-----	1.5	22.5
	Rock, hard-----	1	23.5
	Sand, gray-----	2.5	26
	Coal-----	5.5	31.5
	Clay, green-----	4.5	36
	Sand, gray-----	6	42
	Clay, gray-----	6	48
	Sandrock-----	1.5	49.5
	Sand-----	1.5	51
	Clay, gray-----	32	83
	Coal-----	3.5	86.5
	Sand, lump-----	14.5	101
	Rock-----	1.5	102.5
	Clay, gray-----	6.5	109
	Coal-----	1	110
	Clay, white-----	3	113
	Rock-----	4	117
	Clay, white-----	18	135
	Rock-----	2	137
	Sand, gray-----	41	178
	Coal-----	1	179
	Sand-----	6.5	185.5
	Sandrock-----	2	187.5
	Sand, lump-----	14.5	202
	Sand, gray, side rock at 217 ft-----	15	217
	Clay, white-----	10	227
	Coal-----	3	230
	Clay, green-----	29	259
	Rock-----	1	260
	Clay, green-----	9	269
	Coal-----	11	280
	Clay, green-----	18	298
Basal Tongue River sandstone:			
	Sand, white, fine-----	7	305
	Rock-----	.5	305.5
	Sand, fine-----	54.5	360
	Rock, very hard-----	1	361
	Sand, fine-----	12.5	373.5
	Rock-----	.5	374
	Clay, gray, continuing-----	6	380

138-93-30BAB5
D. Holz
(Log from Mann Drilling Co.)

Altitude: 2353 ft above msl

Date drilled: October 1967

Sentinel Butte Formation:

	Clay, brown, sandy-----	17	17
	Coal-----	2	19
	Clay, gray-----	58	77
	Sandstone, soft-----	2	79
	Clay, gray-----	41	120

Tongue River Formation (?):

	Clay, gray-----	32	152
	Lignite-----	7	159
	Clay, gray-----	30	189
	Sandstone-----	1	190
	Clay, gray-----	51	241
	Lignite-----	4	245
	Clay, gray-----	33	278
	Sand-----	12	290

138-94-17CDC2
 J. Schiwal
 (Log from Moe's Well Drilling)

Altitude: 2447 ft above msl

Date drilled: August 1968

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Sand, surface-----	9.5	9.5
	Sandrock-----	1.5	11
	Clay, yellow-----	7	18
	Sand, yellowish-gray-----	12	30
	Sand, yellow-----	9.8	39.8
	Rock-----	2.2	42
	Sand, blue, tested 1 gpm of water-----	24	66
	Clay, gray-----	28	94
	Coal-----	4	98
	Clay, gray-----	19	117
Tongue River Formation:			
	Sand, gray, chunky-----	8	125
	Clay, gray-----	136.5	261.5
	Rock-----	1	262.5
	Clay, gray-----	37.5	300

138-95-6BAA
 NDSWC 3691

Altitude: 2507 ft above msl

Date drilled: March 1969

Quaternary deposits, undifferentiated (?):			
	Topsoil, dark-brown, sandy loam-----	1	1
	Sand, yellowish-brown to greenish-gray, medium; with some coarse sand and fine gravel, subangular, unconsolidated to slightly consolidated - colluvium(?)	15	16
Sentinel Butte Formation:			
	Shale, yellowish-green, sandy, oxidized, soft-----	10	26
	Lignite, soft, weathered-----	1	27
	Shale, yellowish-green, medium-gray, and light-purple, silty-----	4	31
	Lignite as above-----	2	33
	Shale, light-yellowish-green, smooth; with thin indurated layers-----	11	44
	Sandstone, yellowish-green, very fine to medium, locally clayey, micaceous, oxidized, semiconsolidated; with thin streaks of light-greenish-gray shale-----	20	64
	Sandstone as above; but very fine to fine-----	12	76
	Sandstone, dark-greenish-gray, fine, indurated-----	2	78
	Sandstone, dark-greenish-gray, fine, clayey, semi-consolidated; with thin interbeds of indurated sandstone and white, sandy, limy clay-----	44	122
	Siltstone, tan, very hard-----	3	125
	Sandstone as above; but with thin brownish-black carbonaceous streaks-----	28	153
	Shale, medium-gray, bentonitic, smooth-----	8	161
	Lignite, brown and black, crumbly to brittle; with shaly break near center-----	4	165
	Shale, variegated gray, silty and sandy, carbonaceous, moderately soft-----	32	197
	Lignite; with shaly break-----	4	201
	Shale, very light-greenish-gray with dark stains, silty, carbonaceous, moderately hard-----	8	209
	Lignite-----	1	210
	Shale as above-----	8	218
	Sandstone, light-olive-gray, silt to very fine, lignitic; becomes shaly downward-----	19	237

138-95-6BAA, Continued
NDSWC 3691

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation, Continued:			
	Lignite-----	3	240
	Shale, gray and brown, very silty, carbonaceous-----	10	250
	Lignite-----	8	258
	Sandstone, dark-greenish-gray, very fine to fine, very clayey, semiconsolidated-----	2	260
	Shale as above-----	7	267
	Sandstone as above; carbonaceous; with thin layers of cleaner, semiconsolidated sandstone, indurated sandstone, and white, sandy clay-----	53	320
	Sandstone as above; but somewhat more clayey and with shell fragments-----	40	360
	Siltstone, light-gray to greenish-gray and brownish-black, carbonaceous, moderately consolidated-----	20	380
	Clay, bentonitic-----	4	384
Tongue River Formation:			
	Siltstone, light-gray to greenish-gray and brownish-black, carbonaceous; interbedded with sandy shale and bentonitic clay-----	16	400
	Shale, light- to medium-gray with some green, very silty, smooth, moderately brittle; with thin interbeds of soft, clayey siltstone and white, bentonitic clay-----	29	429
	Lignite-----	4	433
	Shale, gray to brownish-black and pastel-green, silty, brittle; with thin clayey siltstone interbeds-----	23	456
	Lignite-----	1	457
	Shale as above; with thin bentonitic layers-----	16	473
	Lignite-----	1	474
	Shale, bentonitic-----	3	477
	Lignite-----	2	479
	Shale, mostly medium-gray with light-green, brown, and black, very silty, bentonitic-----	11	490
	Lignite-----	3	493
	Sandstone, greenish-gray, very fine to fine, very clayey, semiconsolidated; with thin interbeds of indurated sandstone and white, soft, sandy clay. Fossil shell fragments in upper part-----	35	528
	Shale, medium-gray, silty to sandy, bentonitic, brittle-----	15	543
	Siltstone, medium-gray and greenish-gray, lignitic, semiconsolidated; grading to very fine, clayey sandstone-----	15	558
	Lignite-----	1	559
	Siltstone and sandstone as above-----	4	563
	Lignite-----	1	564
	Siltstone and sandstone as above-----	8	572
	Lignite-----	4	576
	Siltstone and sandstone as above; with occasional layers of indurated siltstone and of shale-----	24	600
	Siltstone and very clayey sandstone, moderately consolidated and brittle; contains shell fragments-----	40	640
	Siltstone, light- to medium-gray; with interbeds of medium-gray to black shale-----	30	670
	Lignite-----	7	677
	Siltstone and shale as above-----	21	698
	Lignite-----	1	699
	Siltstone and shale as above-----	4	703
	Lignite-----	2	705
	Siltstone and shale as above-----	8	713
Basal Tongue River sandstone:			
	Sandstone, light-olive-gray, very fine, well-sorted, subangular, semiconsolidated-----	4	717

138-95-6BAA, Continued
NDSWC 3691

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Basal Tongue River sandstone, Continued:			
	Sandstone as above; but with calcareous cement, indurated-----	3	720
	Siltstone, very light gray and light-greenish-gray, carbonaceous, semiconsolidated; with interbedded very fine sandstone-----	11	731
	Lignite-----	1	732
	Shale, dark-----	7	739
	Siltstone as above; with interbeds of dark shale-----	49	788
	Lignite-----	3	791
	Siltstone, light-greenish-gray, with some dark stains, moderately consolidated; with occasional shale interbeds-----	49	840
	Siltstone as above; with interbeds of light-olive-gray, very fine sandstone, increasingly sandy downward-----	15	855
	Sandstone, light-olive-gray, very fine, moderately consolidated-----	19	874
Ludlow Formation (Upper):			
	Shale, variegated gray and green, silty to sandy, fissile; with thin interbeds of siltstone and very fine sandstone-----	7	881
	Lignite; with two shaly breaks-----	15	896
	Shale, dark, carbonaceous, brittle; with interbeds of soft siltstone. Contains shell fragments-----	14	910
	Lignite-----	2	912
	Shale as above; with thin interbeds of lignite and hard, calcareous siltstone. Contains shell fragments-----	20	932
	Clay, white, bentonitic-----	3	935
	Shale, brownish-gray to brownish-black, carbonaceous; with thin interbeds of hard, calcareous siltstone-----	39	974
Cannonball Formation:			
	Siltstone, tan above to very light-greenish-gray, sandy, clayey, semiconsolidated-----	26	1000

138-95-21DDC
NDSWC 3688

Altitude: 2536 ft above msl

Date drilled: November 1968

Quaternary deposits, undifferentiated:			
	Topsoil, black, very fine sandy loam-----	1	1
	Sand, yellowish-gray, silt to fine, oxidized; dry-----	5	6
	Gravel, fine and medium, angular, rusty-----	2	8
Sentinel Butte Formation:			
	Siltstone, light-olive-gray, clayey-----	6	14
	Sandstone, light-gray with yellow and brown tints, very fine and fine, interbedded-----	20	34
	Siltstone, light-gray, clayey, semiconsolidated-----	8	42
	Lignite-----	1	43
	Shale, black, carbonaceous-----	3	46
	Siltstone, variegated gray and green, clayey, semiconsolidated; with interbeds of gray and green, soft shale-----	18	64
	Shale, gray and green, soft; with occasional siltstone interbeds-----	20	84
	Sandstone, dark-greenish-gray, silt to fine, subangular and subround, mainly quartz grains, slightly clayey, semiconsolidated; wet-----	36	120

138-96-16ADA
NDSWC 3536

Altitude: 2508 ft above msl

Date drilled: September 1967

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Topsoil, dark-brown, sandy loam-----	2	2
	Sandstone, yellowish-green, fine to medium, sub- angular and subround, quartzose, lignitic, semi- consolidated-----	53	55
	Sandstone, dark-greenish-gray, fine to medium, slightly clayey, semiconsolidated-----	10	65
	Shale, interbedded light- and dark-gray, silty-----	16	81
	Shale, lignitic-----	4	85
	Lignite, black with brown stains, soft; water-bearing- Shale, variegated brown and green, silty, slightly brittle-----	2	87
	Shale, medium-gray, slightly silty-----	3	90
	Shale, olive-gray, sandy, moderately soft-----	6	96
	Shale, olive-gray, sandy, moderately soft-----	5	101
	Lignite-----	2	103
	Shale, light-gray to light-greenish-gray; with lignitic streaks-----	7	110
	Shale, greenish-gray, silty-----	2	112
	Sandstone, light-greenish-gray, fine, well-sorted, subangular, slightly clayey, semiconsolidated-----	18	130
	Clay, light-gray, silty, bentonitic, soft-----	7	137
	Shale, greenish-gray, silty, slightly brittle-----	1	138
	Lignite, black, moderately hard-----	3	141
	Clay, brownish-gray to brownish-black, carbonaceous, moderately soft-----	5	146
	Lignite, black, hard-----	5	151
	Clay, light-gray, silty, bentonitic, crumbly-----	4	155
	Sandstone, dark-greenish-gray, fine to medium, sub- angular to subround; numerous lignite flakes; semi- consolidated-----	7	162
	Core: Recovered 6 ft; 4 ft of lignite, black hard; 2 ft of shale, medium-gray with light-gray and dark carbonaceous streaks, silty, smooth-----	8	170

138-96-21DDE2
NDSWC 3535

Altitude: 2607 ft above msl

Date drilled: September 1967

Geologic source	Material	Thickness (feet)	Depth (feet)
Golden Valley Formation:			
	Shale, dusky-yellow and yellowish-green, with yellow and red iron stains, silty and sandy, oxidized, moderately soft; dry-----	11	11
	Siltstone, dusky-yellow, semiconsolidated, radio- active (off-scale on gamma-ray log)-----	6	17
	Siltstone, light-gray to dusky-yellow, clayey, semi- consolidated; not radioactive-----	4	21
	Shale, light-yellowish-green, sandy, moderately soft--	3	24
	Sandstone, light-olive-gray, very fine to fine, semiconsolidated-----	6	30
	Shale, light-yellowish-gray, radioactive (off-scale on gamma-ray log)-----	8	38
	Shale, light-gray, sandy, soft-----	2	40
	Sandstone, light-olive-gray, fine, well-sorted, sub- round, clean, semiconsolidated-----	3	43
	Shale, light-gray, sandy, soft-----	2	45
	Sandstone as above-----	5	50
	Shale, light-gray, silty, moderately soft-----	7	57
	Shale, white to very light gray, silty to sandy, soft--	19	76
	Sandstone, white to very light greenish gray, very fine and fine, clayey, noncalcareous, semiconsolidated	48	124

138-96-21DDD2, Continued
NDSWC 3535

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Golden Valley Formation, Continued:			
	Sandstone, white, fine to medium, clean, semiconsolidated-----	6	130
	Shale, white, silty, soft, smooth, soapy-----	4	134
Sentinel Butte Formation:			
	Sandstone, dark-greenish-gray with black lignite flakes, medium, well-sorted, subround, clean, semi-consolidated-----	16	150
	Shale, light-greenish-gray, sandy, bentonitic, soft, crumbly-----	6	156
	Sandstone, dark-greenish-gray, fine and medium, fairly clean, semiconsolidated-----	27	183
	Shale, white to light-greenish-gray, sandy, moderately soft-----	5	188
	Sandstone as above-----	33	221
	Shale, light-gray, sandy, bentonitic, smooth, moderately soft-----	4	225
	Shale, dark-gray, silty to sandy-----	12	237
	Shale, dark-gray, silty-----	11	248
	Lignite-----	1	249
	Shale, black, soft, lignitic-----	2	251
	Shale, olive-gray, silty to sandy-----	22	273
	Shale, medium-gray, silty-----	15	288
	Clay, light-gray, silty, bentonitic-----	3	291
	Shale, olive-gray, sandy, carbonaceous, moderately soft-----	4	295
	Sandstone, light-olive-gray, fine to medium, semi-consolidated-----	9	304
	Shale, olive-gray, sandy-----	8	312
	Lignite-----	1	313
	Shale, medium-gray, silty, very tight-----	14	327
	Lignite, black, hard-----	5	332
	Shale, interbedded medium-gray and greenish-gray, silty; becoming brownish and carbonaceous downward-----	22	354
	Lignite, black, moderately hard, fractured-----	4	358
	Shale, variegated brown, gray, and green, silty, smooth-----	9	367
	Sandstone, greenish-gray, fine, semiconsolidated-----	9	376
	Shale, carbonaceous-----	3	379
	Lignite-----	3	382
	Shale, brownish-black, carbonaceous-----	1	383
	Shale, pastel green, moderately soft, smooth-----	2	385
	Shale, gray, sandy, slightly brittle-----	8	393
	Shale, greenish-gray, silty, smooth-----	7	400

138-96-28AAA
NDSWC 3535A

Altitude: 2594 ft above msl

Date drilled: May 1969

Golden Valley Formation:			
	Topsoil, black, silty-----	1	1
	Shale, yellowish-brown, silty, soft-----	12	13
	Lignite, thin-bedded-----	1	14
	Shale, yellowish-gray, silty, soft-----	16	30
	Shale, dark-gray, lignitic, laminated-----	5	35
	Shale, purplish-gray, soft, plastic-----	3	38
	Shale, light-bluish-gray, silty, soft-----	9	47
	Shale, brownish-gray, silty to sandy, soft-----	4	51
	Siltstone, light-bluish-gray, clayey, semiconsolidated-----	9	60
	Siltstone, very light bluish gray, very fine, sandy, clayey, semiconsolidated-----	15	75

138-96-28AAA, Continued
NDSWC 3535A

Geologic source	Material	Thickness (feet)	Depth (feet)
Golden Valley Formation, Continued:			
	Sandstone, very light bluish green, silt to very fine, clayey, finely micaceous, semiconsolidated-----	10	85
	Sandstone as above; but light-greenish-gray-----	10	95
	Sandstone as above, light-bluish-gray-----	3	98
	Shale, light-greenish-gray, silty, very fine, sandy, soft-----	4	102
Sentinel Butte Formation:			
	Sandstone, light-bluish-gray, greenish-gray, and brownish-gray, silt to very fine, clayey, semi-consolidated-----	18	120
	Sandstone as above; but less clayey-----	15	135
	Sandstone, light-greenish-gray and brownish-gray, silt to very fine; more clayey than above; semi-consolidated-----	25	160
	Shale, light-greenish-gray, very silty to very fine sandy, micaceous, soft-----	10	170
	Siltstone, light-greenish-gray, clayey, semiconsolidated-----	5	175
	Sandstone, light-gray, very fine, clayey, micaceous, semiconsolidated-----	10	185
	Sandstone, grayish-brown, very fine to medium, somewhat clayey, micaceous, semiconsolidated-----	5	190
	Shale, gray with brown streaks, sandy, carbonaceous, soft-----	5	195
	Shale, gray with brown streaks, slightly silty, soft-----	15	210
	Shale, medium-gray, soft, plastic-----	10	220

138-96-33DDA
NDSWC 3720

Altitude:	2528 ft above msl	Date drilled:	June 1969
Quaternary deposits, undifferentiated:			
	Topsoil, yellowish-gray, sandy loam-----	1	1
	Sand, reddish-brown, medium to very coarse, sub-angular to subround; with interbeds of fine to medium gravel-----	15	16
Golden Valley Formation:			
	Sandstone, yellow to light-gray, silt to very fine, somewhat clayey, micaceous, semiconsolidated-----	4	20
	Sandstone as above; but light-gray to light-greenish-gray, noncalcareous-----	28	48
Sentinel Butte Formation:			
	Sandstone, greenish-gray with black lignite grains, fine to medium, slightly clayey, semiconsolidated-----	10	58
	Lignite-----	1	59
	Sandstone as above; with layers of clean, nonclayey, slightly consolidated sandstone; becoming lignitic downward-----	17	76
	Lignite-----	2	78
	Shale, medium-gray, silty, brittle, smooth; interbedded with yellowish, bentonitic clay and concretionary siltstone-----	13	91
	Lignite-----	1	92
	Shale as above-----	3	95
	Lignite-----	1	96
	Shale as above-----	6	102
	Lignite-----	1	103

138-97-7DDD
 NDSWC 21-748
 (Modified from Schmid, 1963)

Altitude: 2647 ft above msl

Date drilled: August 1962

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
White River Formation:			
	Siltstone, pinkish-gray, highly calcareous, oxidized, semiconsolidated-----	16	16
	Siltstone, light-brown, sandy, calcareous, semiconsolidated-----	4	20
	Siltstone, pale-olive; with granular size spherical concretions; semiconsolidated-----	15	35
	Siltstone, light-brown, calcareous, semiconsolidated-----	4	39
	Shale, pale-blue-green, slightly calcareous-----	1	40
Golden Valley Formation (?):			
	Shale, grayish-orange-pink, slightly calcareous; with sand sized quartz grains-----	25	65
	Shale, very pale-orange, slightly calcareous; with sand sized quartz grains; soft-----	20	85
	Shale, light-greenish-gray, slightly calcareous; with sand sized quartz grains, soft-----	10	95
	Sandstone, medium to very coarse, clayey (pale-blue-green), predominantly quartz, semiconsolidated-----	15	110
	Shale, light-greenish-gray, slightly lignitic, soft-----	3	113
	Shale, light-greenish-gray and light-olive-brown, partially oxidized, slightly lignitic, soft-----	4	117
	Siltstone, grayish-blue-green, semiconsolidated-----	15	132
	Shale, variegated (black, brown, purple, green, etc.), soft-----	17	149
Sentinel Butte Formation:			
	Sandstone, very fine to fine, subangular, predominantly quartz, semiconsolidated-----	46	195
	Sandstone, fine to coarse, subround, predominantly quartz, semiconsolidated; with some brown shale-----	29	224
	Siltstone, greenish-gray, semiconsolidated; with some very fine sand grains and lignite flecks-----	24	248
	Shale, very light gray; with some very fine to medium quartz sand-----	69	317
	Siltstone, olive-gray, with some lignitic material, semiconsolidated-----	43	360

138-97-20BDD3
 E. Herauf
 (Log from Mann Drilling Co.)

Altitude: 2656 ft above msl

Date drilled: October 1967

White River Formation:			
	Clay, brown, sandy-----	22	22
Golden Valley Formation (?):			
	Clay, buff-----	36	58
	Clay, blue, sandy-----	18	76
Sentinel Butte Formation (?):			
	Sandstone, hard-----	2	78
	Sand-----	7	85

138-98-3CCC
 N.P. DX 360-22
 (Log from Northern Pacific Railway Co.)

Altitude: 2590 ft above msl Date drilled: 1962

Geologic source	Material	Thickness (feet)	Depth (feet)
Golden Valley Formation:			
	Clay, yellow, sandy-----	23	23
Sentinel Butte Formation:			
	Lignite, soft-----	2	25
	Lignite, hard-----	3	28
	Clay, gray-----	14	42
	Clay, brown, with two small lignite layers-----	2	44
	Clay, blue, soft-----	6	50
	Clay, gray-----	30	80
	Lignite, hard-----	2	82
	Clay, gray-----	1	83
	Lignite-----	1	84
	Clay, gray-----	10	94
	Lignite, hard-----	2	96
	Clay, gray-----	20	116
	Lignite, hard-----	2	118
	Clay, gray-----	4	122
	Rock, hard-----	2	124
	Clay, gray-----	1	125
	Lignite, trace-----	1	126
	Clay, gray-----	14	140

138-99-1CBC
 N. Fischer
 (Log from Mann Drilling Co.)

Altitude: 2570 ft above msl Date drilled: February 1965

Sentinel Butte Formation:			
	Clay-----	92	92
	Clay, sandy-----	3	95
	Clay-----	11	106
	Clay, sandy-----	3	109
	Clay-----	54	163
	Sandstone-----	1	164
	Clay-----	19	183
	Coal-----	11	194
	Clay-----	15	209
	Rock-----	2	211
	Clay-----	11	222
	Clay, sandy-----	14	236
	Sand, medium-----	19	255

138-99-17AAA
 NDSWC 3538

Altitude: 2665 ft above msl Date drilled: September 1967

Sentinel Butte Formation:			
	Topsoil, dark-brownish-gray, silty loam-----	1	1
	Shale, dusky-yellow and yellowish-gray, silty, oxidized, moderately soft-----	17	18
	Shale, light- and medium-gray, silty-----	11	29
	Shale, light-greenish-gray and greenish-gray, silty-----	9	38
	Lignite, black, hard-----	6	44
	Shale, light-gray, silty-----	4	48

138-99-17AAA, Continued
NDSWC 3538

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation, Continued:			
	Sandstone, light-gray to light-olive-gray, silt to very fine, somewhat clayey, semiconsolidated-----	15	63
	Shale, dark-gray, silty, smooth, slightly brittle-----	5	68
	Shale, variegated gray and green, silty, smooth-----	30	98
	Lignite, black, hard-----	11	109
	Shale, carbonaceous-----	2	111
	Sandstone, light-gray to light-greenish-gray, silt to very fine, bentonitic, semiconsolidated-----	4	115
	Shale, variegated gray, green, and brown, silty, smooth-----	32	147
	Sandstone, light-gray to light-greenish-gray, silt to very fine, somewhat clayey, lignitic, semiconsolidated	16	163
	Shale, dark-gray to brownish-gray, silty, carbonaceous, slightly brittle-----	10	173
	Shale, variegated gray and green, silty, smooth-----	27	200

138-99-240CC
NDSWC 3690

Altitude: 2620 ft above msl

Date drilled: December 1968

Quaternary deposits, undifferentiated:

	Topsoil, black, silty loam-----	1	1
	Clay, very light gray and yellowish-gray, silty, marly, soft, plastic; with interbeds of fine to coarse sand and silt, oxidized-----	36	37
Sentinel Butte Formation:			
	Shale, light-gray, silty, soft-----	7	44
	Lignite, black, hard, brittle-----	4	48
	Shale, light-green, bentonitic-----	4	52
	Shale, light-gray, silty, soft, plastic-----	8	60
	Shale, variegated gray, green, and brown, silty to very fine sandy; becoming sandier and carbonaceous with depth-----	40	100
	Sandstone, greenish-gray, very fine, calcareous, semiconsolidated-----	4	104
	Shale, brownish-gray, sandy, carbonaceous, soft-----	4	108
	Sandstone as above; but very calcareous, indurated----	5	113
	Sandstone, semiconsolidated-----	5	118
	Shale, variegated gray, green, and brownish-black, silty, fissile, soft to slightly brittle-----	44	162
Tongue River Formation:			
	Lignite, black, pyritic, fissile, hard; with shaly break-----	13	175
	Shale, carbonaceous-----	7	182
	Clay, bentonitic-----	3	185
	Shale, interbedded medium-gray and dark-greenish-gray with brownish-black stains, silty and sandy, carbonaceous, moderately soft, nonplastic-----	33	218
	Sandstone, light-greenish-gray, very fine, calcareous, indurated-----	4	222
	Shale, interbedded light-gray and light-greenish-gray, very silty to sandy, moderately soft-----	29	251
	Shale, brownish-black carbonaceous-----	4	255
	Lignite-----	3	258
	Shale, variegated gray, sandy; with interbeds of light-olive-gray, very fine, carbonaceous, semiconsolidated sandstone-----	32	290
	Shale, carbonaceous-----	5	295
	Lignite, black, hard, fissile-----	4	299

138-99-24000, Continued
NDSWC 3690

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Tongue River Formation, Continued:			
	Shale, variegated light-gray and green, silty; with thin interbeds of soft, bentonitic clay-----	21	320
	Sandstone, light-greenish-gray to light-olive-gray, silt to very fine, somewhat clayey, calcareous, semiconsolidated, porous-----	16	336
	Siltstone, light-greenish-gray to light-olive-gray, very fine, sandy, somewhat clayey, calcareous, moderately consolidated-----	36	372
	Shale, light-greenish-gray, silty, bentonitic, slightly brittle-----	6	378
	Lignite, black, hard-----	9	387
	Shale, black, hard-----	2	389
	Siltstone, light-olive-gray and light-greenish-gray, very fine, sandy, locally carbonaceous, semiconsolidated-----	11	400
	Siltstone as above; with thin interbeds of brownish-black, fissile shale-----	20	420
	Siltstone as above; very porous-----	21	441
	Shale, brownish-black, carbonaceous, hard-----	2	443
	Sandstone, greenish-gray, very fine, indurated-----	3	446
	Shale, variegated light-gray, green, and white, silty, locally bentonitic; with thin interbeds of siltstone and sandstone, semiconsolidated to moderately consolidated-----	54	500
	Shale, light-greenish-gray, very silty, fairly hard, tight-----	20	520
	Shale, interbedded light-gray and green, very silty-----	11	531
	Lignite-----	5	536
	Shale, black, carbonaceous, to dark-green, waxy-----	17	553
Basal Tongue River sandstone:			
	Sandstone, light-olive-gray, silt to very fine, subangular and subround; predominantly quartz, with traces of lignite, pyrite, and mica and streaks of carbonaceous shale-----	72	625
Cannonball Formation:			
	Shale, variegated gray and green, silty to sandy; with thin carbonaceous and bentonitic layers; moderately hard and brittle-----	15	640
	Shale, medium- and dark-gray with carbonaceous stains, silty-----	20	660
	Shale as above; occasional hard siltstone concretions-----	15	675
	Shale, dark-greenish-gray and brownish-black, sandy, slightly brittle, fissile-----	32	707
	Sandstone, dark-greenish-gray, fine, well-sorted, subangular; predominantly quartz with some greenish granules, mica, and lignite flakes; semiconsolidated; with a few shaly interbeds. Takes drilling fluid-----	68	775
Ludlow Formation:			
	Shale, brownish-black, carbonaceous, hard-----	20	795
	Lignite-----	5	800
	Shale, brownish-black and dark-greenish-gray, sandy, carbonaceous and pyritic-----	13	813
	Sandstone, dark-greenish-gray, very fine, calcareous, indurated-----	5	818
	Shale, dark-greenish-gray and brownish-black, sandy, fissile-----	22	840

139-91-5BEB
T. Neidhart
(Log from Opp Drilling Co.)

Altitude: 2358 ft above msl

Date drilled: October 1958

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation:			
	Clay, blue-----	36	36
	Coal, dry-----	1	37
	Clay, blue-----	18	55
	Rock, hard-----	1	56
	Clay, blue-----	4	60
	Coal, hard, dry-----	3	63
	Clay, blue-----	2	65
	Sand, blue, medium-grain, nice, dry-----	15	80
	Coal, hard, with 4 gpm of white water-----	.5	80.5
	Clay, blue-----	31.5	112
	Coal, hard, dry-----	5	117
	Sand-----	.2	117.2
	Coal, hard, dry-----	2.8	120
	Clay, blue-----	1	121
	Sand, blue, nice-----	17	138
	Clay, blue-----	22	160
	Sand, blue, with seepage-----	5	165
	Clay, blue, sandy, with 2 gpm seepage-----	15	180
	Rock, hard-----	2	182
	Clay, blue, sandy-----	13	195
	Clay, blue-----	20	215
	Sand, grayish-blue, some seepage-----	21	236
Tongue River Formation (?):			
	Coal, hard, dry-----	1	237
	Clay, blue, sandy-----	9	246
	Coal, hard, dry-----	1	247
	Clay, blue-----	3	250
	Clay, gray-----	20	270
	Sand, gray-----	4	274
	Rock, hard, blue-----	1.5	275.5
	Clay, blue-----	20.5	296
	Coal, hard, yielded water at 1 gpm-----	9	305
	Clay, blue, hard-----	1	306

139-91-11DCD1 and 11DCD2
North Dakota Highway Dept.
Composite interpretive log, based on driller's logs
from Frederickson's, Inc. and Mann Drilling Co.,
examination of electric and gamma-ray logs, and
incomplete samples from 139-91-11dcd1 starting
at 695 feet (30-to 100-foot intervals)

Altitude: 2432 ft above msl

Date drilled: 1967, 1969

	Fill and soil-----	4	4
Sentinel Butte Formation:			
	Shale, yellowish-gray to buff, silty-----	29	33
	Lignite-----	1	34
	Shale, carbonaceous-----	11	45
	Shale, yellowish-gray, silty to sandy-----	10	55
	Lignite-----	2	57
	Shale as above-----	23	80
	Shale, carbonaceous-----	6	86
	Shale, gray, silty-----	23	109
	Lignite-----	4	113
	Shale, gray, silty; with thin interbeds of lignite and soft, clayey sandstone and siltstone-----	89	202

139-91-11DCD1 and 11DCD2, Continued
North Dakota Highway Dept.

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation, Continued:			
	Shale, carbonaceous-----	16	218
	Lignite-----	10	228
	Shale, gray, sandy-----	12	240
	Shale, bentonitic-----	5	245
Tongue River Formation:			
	Shale, sandy-----	5	250
	Sandstone, clayey, semiconsolidated; with shale interbeds-----	50	300
	Shale, gray, silty to sandy; with interbeds of clayey, soft siltstone and sandstone and occasional thin lignites-----	95	395
	Lignite-----	4	399
	Shale-----	14	413
	Lignite-----	7	420
	Shale, carbonaceous-----	14	434
	Lignite-----	5	439
	Shale-----	3	442
	Sandstone, clayey, semiconsolidated; with shale interbeds-----	45	487
	Shale, silty to sandy-----	29	516
	Lignite-----	6	522
	Shale, carbonaceous-----	2	524
	Lignite-----	1	525
	Shale, carbonaceous-----	6	531
	Siltstone (?)-----	2	533
	Shale-----	6	539
	Sandstone, semiconsolidated-----	11	550
	Lignite-----	6	556
	Shale-----	15	571
	Lignite-----	3	574
	Shale-----	2	576
	Lignite-----	6	582
	Sandstone, clayey, lignitic, semiconsolidated; with interbeds of carbonaceous shale and lignite-----	9	591
	Shale-----	9	600
	Sandstone as above-----	13	613
	Shale-----	4	617
	Lignite-----	11	628
	Sandstone as above-----	8	636
	Shale-----	3	639
Basal Tongue River sandstone:			
	Sandstone, very fine, lignitic-----	34	673
	Sandstone as above; but increasingly clayey-----	4	677
	Lignite-----	8	685
	Shale, carbonaceous-----	6	691
	Sandstone, very fine, subangular to subround, semi- consolidated-----	23	714
Ludlow Formation (Upper):			
	Shale, gray, silty, locally carbonaceous; with thin layers of lignite and clayey siltstone and very fine sandstone-----	28	742
	Sandstone, very fine, clayey, semiconsolidated; with thin interbeds of shale and lignite-----	49	791
	Shale, gray, silty, locally carbonaceous-----	15	806
	Sandstone as above-----	17	823
	Sandstone and shale as above; interbedded with thin lignite layers-----	40	863

139-91-11DCD1 and 11DCD2, Continued
North Dakota Highway Dept.

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Cannonball Formation:			
	Siltstone, gray-brown, clayey, semiconsolidated; with interbeds of very fine, clayey, soft sandstone and silty, bentonitic and carbonaceous shale-----	79	942
	Shale, gray and brown, silty-----	26	968
Ludlow Formation (Lower):			
	Lignite-----	4	972
	Shale, gray and brown, silty-----	8	980
	Siltstone, gray and brown, clayey, carbonaceous, semiconsolidated-----	14	994
	Sandstone, very fine, subangular, semiconsolidated-----	10	1004
	Shale, bentonitic (?) or carbonaceous-----	4	1008
	Sandstone as above-----	8	1016
	Shale-----	10	1026
	Lignite-----	7	1033
	Shale, bentonitic-----	14	1047
	Siltstone, gray-brown, clayey, semiconsolidated-----	6	1053
	Shale, gray-brown, silty-----	12	1065
	Siltstone as above-----	7	1072
	Lignite-----	4	1076
	Shale, gray-brown, silty-----	7	1083
	Sandstone, very fine, subangular, semiconsolidated-----	6	1089
	Siltstone, gray-brown, mostly clayey, semiconsolidated; but with some thin calcareous indurated layers-----	17	1106
	Shale, silty-----	6	1112
	Lignite-----	4	1116
Hell Creek Formation:			
	Shale, bentonitic (?)-----	6	1122
	Siltstone, semiconsolidated; with a few thin indurated layers interbedded with shale-----	35	1157
	Sandstone, silt to very fine, subangular, contains lignite flakes, clayey, mostly semiconsolidated; with occasional thin shale interbeds-----	33	1190
	Sandstone as above; but cleaner-----	18	1208
	Shale-----	4	1212
	Sandstone as above-----	3	1215
	Shale-----	6	1221
	Sandstone, very fine, indurated-----	7	1228
	Shale-----	2	1230
	Sandstone as above-----	2	1232
	Shale-----	4	1236
	Sandstone as above; and shale, interbedded-----	11	1247
	Shale; with sandstone interbeds-----	19	1266
	Sandstone, clean, mostly semiconsolidated; with indurated layer 1273-1275 ft-----	23	1289
	Shale, bentonitic-----	7	1296
	Sandstone, indurated (?) or possibly lignite-----	4	1300
	Shale-----	7	1307
	Sandstone, indurated (?)-----	5	1312
	Shale; with thin siltstone interbeds-----	27	1339
	Siltstone, indurated (?) or possibly lignite-----	6	1345
	Shale, gray-brown, silty, bentonitic-----	7	1352
	Siltstone, gray-brown, clayey, bentonitic in part, slightly calcareous, weakly to moderately consolidated; interbedded with silty, bentonitic shale-----	48	1400
	Sandstone, very fine to fine, indurated (?) or possibly lignite-----	6	1406
	Sandstone, very fine to fine, subangular, semiconsolidated; interbedded with gray-brown, silty shale-----	40	1446
	Shale as above; with interbeds of sandstone as above and thin lignite seams-----	61	1507

139-91-11DCD1 and 11DCD2, Continued
North Dakota Highway Dept.

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Fox Hills Formation:			
	Sandstone, very fine to fine, subangular, clean, semiconsolidated-----	47	1554
	Shale, dark-brown; with thin, very fine sandstone interbeds and possibly thin lignite seams-----	36	1590
	Sandstone, very fine to fine, mostly very fine, semiconsolidated-----	42	1632
	Shale, dark-brown; with interbeds of bentonitic, slightly calcareous, soft siltstone and very fine sandstone-----	65	1697
	Sandstone, silt to fine, mostly very fine, mostly semiconsolidated; with interbeds of gray-green, bentonitic shale, thin layers of calcareous, indurated sandstone, and lignite-----	32	1729
	Shale, interbedded gray and green, silty and bentonitic-----	21	1750
	Sandstone as above; indurated in part-----	6	1756
	Shale; interbedded with clayey siltstone and sandstone, increasingly shaly downward-----	24	1780
Pierre Formation:			
	Shale, gray-brown, silty to sandy, bentonitic; interbedded with clayey, soft siltstone, becomes less silty and sandy with depth-----	120	1900

139-91-18ACD
Northern Pacific Railway
(Log from Northern Pacific Railway Co.)

Altitude: 2418 ft above msl

Date drilled: March 1927

Sentinel Butte Formation:			
	Clay, yellow-----	12	12
	Hardpan-----	39	51
	Coal-----	2	53
	Hardpan-----	51	104
	Clay, brown-----	5	109
	Coal-----	6	115
	Clay, blue-----	26	141
	Clay, brown-----	5	146
	Clay, blue-----	21	167
	Hardpan-----	50	217
	Clay, blue-----	27	244
	Coal-----	7	251
	Clay, blue-----	17	268
Tongue River Formation (?):			
	Clay, blue-----	16	284
	Coal-----	3	287
	Clay, blue-----	29	316
	Rock-----	1	317
	Sandstone, soft, water-bearing-----	10	327

139-91-19CCB
USBR DH 30 (PR)

Altitude: 2392 ft above msl

Date drilled: February 1957

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Shale, weathered (fat clay)-----	2.4	2.4
	Shale, gray, weathered; with salt crystals-----	9.8	12.2
	Clay, black, lignitic; with seams of lignite at 14 and 19 ft-----	10.3	22.5
	Shale, gray, sandy-----	2.3	24.8

139-91-19DDA
USBR DH 29 (PR)

Altitude: 2480 ft above msl

Date drilled: February 1957

Sentinel Butte Formation:			
	Topsail-----	1	1
	Shale, brown, sandy-----	17	18
	Shale, black-----	5	23
	Shale, gray, sandy-----	1.6	24.6

Water table reported not reached.

139-91-21DDD
NDSWC 3665

Altitude: 2412 ft above msl

Date drilled: November 1968

Sentinel Butte Formation:			
	Topsail, black, sandy loam-----	1	1
	Shale, yellowish-gray and dusky-yellow, silty and sandy, blocky, oxidized, fractured; dry-----	17	18
	Shale, brownish-black, silty, carbonaceous, fissile, brittle-----	8	26
	Shale, light-greenish-gray, silty, bentonitic, moderately soft-----	14	40
	Lignite, black, moderately hard, brittle-----	3	43
	Shale, medium-gray, silty, smooth-----	7	50
	Sandstone, greenish-gray, fine, clayey, moderately soft-----	13	63
	Shale; with interbeds of sandstone as above-----	9	72
	Sandstone, indurated-----	2	74
	Shale; with interbeds of semiconsolidated sandstone--	6	80
	Shale, dark-greenish-gray, sandy-----	10	90
	Shale, brownish-black, carbonaceous-----	6	96
	Lignite, black, fissile, hard-----	6	102
	Shale, interbedded light- and medium-gray and dark-greenish-gray, silty to sandy-----	18	120
	Shale, dark-greenish-gray, less silty and sandy than above; moderately soft; contains fossil shell fragments-----	18	138
	Lignite, black, hard-----	4	142
	Shale, black, smooth-----	2	144
	Shale, interbedded medium-gray and dark-greenish-gray, sandy-----	18	162
	Shale, variegated gray, silty to sandy-----	10	172
	Lignite-----	2	174
	Shale as above-----	4	178
	Lignite-----	1	179
	Shale, medium- to dark-gray, silty, smooth, fairly hard, tight-----	9	188
	Shale, medium-gray, bentonitic-----	3	191

139-91-21DDD, Continued
NDSWC 3665

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Tongue River Formation:			
	Lignite (?)-----	2	193
	Shale, medium- to dark-gray, silty, tight-----	7	200
	Shale, medium-gray, silty, moderately soft, slightly plastic to brittle, tight-----	30	230
	Shale, white, very sandy, soft, plastic-----	5	235
	Sandstone, light-greenish-gray, very fine, indurated-----	2	237
	Shale-----	3	240
	Sandstone, light-olive-gray, silt to fine, weakly consolidated; with shale interbeds. Yields water when drilling with air-----	16	256
	Sandstone, indurated-----	2	258
	Shale-----	1	259
	Sandstone; weakly consolidated as above, but cleaner, with fewer shale breaks-----	18	277
	Shale, light-gray, silty, smooth, tight; with few thin, soft sandstone interbeds-----	9	286
	Sandstone, light-olive-gray to brownish-gray, fine, well-sorted, subround, carbonaceous, weakly consolidated-----	14	300

139-91-24DAA
USER Auger Hole 46

Altitude: 2448 ft above msl

Date drilled: February 1957

Sentinel Butte Formation:			
	Topsoil, brown sand-----	1	1
	Sand, brown, fine, uniform, silty, trace of clay to clayey; slight HCl reaction; moist-----	12	13
	Clay, gray, fat, plastic, firm; damp-----	3	16
Water table reported not reached.			

139-91-33ACD2
M. Diede
(Log from Opp Drilling Co.)

Altitude: 2343 ft above msl

Date drilled: March 1963

Sentinel Butte Formation:			
	Clay, blue-----	56	56
	Sand, gray, dry-----	11	67
	Coal, hard; tested 2 gpm of water-----	1	68
	Sand, silty-----	60	128
	Sandrock-----	1	129
Tongue River Formation (?):			
	Clay, blue, and getting sandy-----	56	185
	Sand, blue, very fine; turning to clay at bottom-----	27	212

139-92-5DAB
NDSWC 319
(Modified from Powell and Paulson, 1961)

Altitude: 2448 ft above msl

Date drilled: 1950

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation:			
	Shale, buff to gray, highly calcareous-----	4	4
	Shale, buff; numerous rust colored streaks and pockets-----	34	38
	Shale, light-gray-----	12	50
	Shale, hard-----	5	55
	Shale, dark-brownish-purple, carbonaceous, hard, plastic-----	5	60
	Shale and siltstone interbedded; mostly very light gray clay and thin bands of buff, soft siltstone (core from 60 to 70 ft, about 50 percent complete)-----	10	70
	Shale, siltstone, and very fine sandstone, light-gray to gray, soft-----	24	94
	Lignite (core from 90 to 100 ft, about 70 percent complete)-----	7	101
	Shale, light-gray, sandy, micaceous; contains poorly preserved leaves and carbonized wood (core from about 100 to 110 ft)-----	5	106
	Shale, gray; contains numerous poorly preserved leaves and carbonized wood fragments. About 0.5 ft of lignite at bottom-----	4	110
	Shale, gray-----	15	125
	Lignite-----	3	128
	Shale, gray and brown-----	20	148
	Lignite-----	2	150
	Shale, gray and brown-----	4	154
	Lignite-----	3	157
	Shale, brown, carbonaceous-----	3	160
	Shale, gray; with brown shale interbeds-----	40	200
	Shale, light-gray-----	30	230
Tongue River Formation (?):			
	Shale, light-gray-----	38	268
	Shale, green-----	2	270
	Shale, light-gray-----	30	300
	Shale, dark-brown, carbonaceous; and fine, semiconsolidated sandstone-----	10	310
	Shale, gray, sandy; and thin beds of very fine semiconsolidated sandstone. Core from 330 to 340 ft. very similar to material in 100 to 110 ft, not as micaceous and contains a greater percentage of sand. Small bits of partly carbonized wood scattered throughout core-----	39	349
	Lignite-----	2	351
	Shale, light-gray-----	29	380
	Shale, light-gray, sandy-----	9	389
	Shale, greenish-gray (?)-----	13	402
	Lignite-----	3	405
	Shale, gray (core from 430 to 440 ft, about 60 percent complete and badly disturbed and broken in places during process of extracting from barrel)-----	25	430
	Shale, light-gray-----	3	433
	Shale, brown, carbonaceous; and brown lignite. Many plant impressions-----	2	435
	Shale, light-olive-gray, sandy, micaceous; plant fragments-----	4	439
	Shale, purple, plastic-----	.5	439.5
	Lignite-----	.5	440
	Shale, light-olive-gray, sandy-----	5	445
	Shale, gray-----	43	488
	Lignite-----	2	490

139-92-5DAB, Continued
NDSWC 319

Geologic source	Material	Thickness (feet)	Depth (feet)
Tongue River Formation (?), Continued:			
	Shale, gray-----	35	525
	Shale, light-greenish-gray, not very sandy, micaceous; (core from 530 to 540 ft, about 75 percent complete)--	25	550
	Rock, very hard; requiring the use of rock bit, no sample obtained-----	3	553
	Sandstone, semiconsolidated; reported by drillers; no sample-----	6	559
	Shale, dark-gray-----	11	570

139-92-5DCA
NDSWC 321
(Modified from Powell and Paulson, 1961)

Altitude: 2448 ft above msl

Date drilled: 1950

Sentinel Butte Formation:			
	Topsoil, brown-----	2	2
	Shale, light-olive, highly calcareous-----	12	14
	Shale, light-gray; with ferruginous concretions-----	28	42
	Lignite and carbonaceous, soft shale-----	1	43
	Shale, very light gray to white, soft-----	38	81
	Lignite-----	7	88
	Shale, carbonaceous-----	2	90
	Shale, light-gray, soft-----	12	102
	Lignite; interbedded with gray shale-----	18	120
	Shale, gray, soft-----	8	128
	Shale, black, carbonaceous-----	2	130
	Shale, gray, soft-----	6	136
	Lignite-----	1	137
	Shale, green and gray, interbedded-----	23	160
	Shale, light-gray, soft-----	18	178
	Shale, black, carbonaceous, soft-----	2	180
	Shale, light-gray, soft-----	6	186
	Shale, brown, soft-----	8	194
	Shale, dark-gray, soft-----	17	211
	Shale, grayish-white-----	6	217
Tongue River Formation (?):			
	Shale, dark-gray, soft-----	13	230
	Shale, light-gray-----	32	262
	Shale, light-green, soft-----	6	268
	Shale, dark-gray, soft-----	34	302
	Lignite-----	1	303
	Shale, gray, soft; interbedded with brown, carbonaceous shale-----	9	312
	Lignite-----	4	316
	Shale, gray, soft-----	10	326
	Rock, siliceous-----	1	327
	Shale, light-gray, sandy, soft-----	12	339
	Lignite-----	2	341
	Shale, light-gray; hard drilling. Lost about 440 gallons of drilling fluid-----	39	380
	Shale, light-brown, soft-----	4	384
	Shale, dark-brown, soft-----	4	388
	Shale, gray; several thin layers of carbonaceous clay and lignite-----	12	400
	Shale, greenish-gray, soft-----	10	410
	Shale, light-gray-----	15	425
	Shale, light-greenish-gray, soft; siliceous rock at 455 ft-----	35	460

139-92-5DCA, Continued
NDSWC 321

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Tongue River Formation (?), Continued:			
	Shale; interbedded with siltstone and light-gray, very fine, quartzitic, micaceous sandstone-----	22	482
	Shale, light-gray to white, calcareous, soft-----	34	516
	Shale, light-brown, soft-----	2	518
	Shale, greenish-gray-----	10	528
	Rock, indurated; hard drilling-----	1	529
	Shale, dark-gray, hard; contains fairly abundant pelecypod shell fragments-----	41	570
Basal Tongue River sandstone:			
	Sandstone, light-gray, fine, silty, semiconsolidated; drilled easily-----	47	617
Ludlow Formation (Upper):			
	Lignite-----	.5	617.5
	Shale, dark-gray, soft-----	70.5	688
	Lignite and carbonaceous shale-----	7	695
	Shale, gray-----	7	702
	Sandstone, gray, fine, silty, clayey, semiconsolidated	38	740
Cannonball Formation:			
	Shale, gray, soft-----	33	773
	Sandstone, fine, semiconsolidated-----	5	778
	Shale, gray-----	76	854

139-92-5DDA
NDSWC 320
(Modified from Powell and Paulson, 1961)

Altitude: 2450 ft above msl

Date drilled: 1950

Sentinel Butte Formation:			
	Shale, buff to gray, soft-----	8	8
	Shale, brown, carbonaceous-----	2	10
	Lignite-----	3	13
	Shale, light-gray, soft; with limonitic nodules-----	8	21
	Shale, buff, soft-----	6	27
	Shale, light-gray-----	7	34
	Shale, black, carbonaceous-----	1	35
	Shale, light-gray to gray-----	23	58
	Shale, brown to black, carbonaceous-----	5	63
	Lignite-----	1	64
	Shale, light-gray, soft-----	3	67
	Lignite-----	1	68
	Shale, very light gray, soft-----	18	86
	Shale, dark-gray, hard; "slate rock"-----	2.5	88.5
	Shale, light-gray-----	12.5	101
	Lignite and shale, interbedded; samples show mostly lignite-----	16	117
	Shale, light-gray, soft-----	13	130

139-92-8ABB2
J. Erdle
(Log from Moe's Well Drilling)

Altitude: 2460 ft above msl

Date drilled: September 1966

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation:			
	Clay, gray, hard-----	31	31
	Sand, tan, soft-----	17.5	48.5
	Sand, gray, soft-----	1.5	50
	Rock, very hard-----	1.5	51.5
	Sand, tan, soft-----	4.5	56
	Sand, gray, soft-----	10	66
	Clay, brown, hard-----	2	68
	Clay, gray, hard-----	1	69
	Sand, brown, soft-----	5	74
	Coal-----	4	78
	Clay, brown, hard-----	9	87
	Clay, gray, hard-----	4	91

139-92-17DDD
USGS Auger Test 22

Altitude: 2439 ft above msl

Date Drilled: August 1968

Sentinel Butte Formation:			
	Shale, interbedded light-olive-gray, iron-stained, silty and black, noncalcareous, soft, plastic-----	5	5
	Shale, moderate-yellowish-brown, silty, sandy, non-calcareous, soft, moderately plastic-----	5	10
	Shale, light-olive-gray, silty, noncalcareous, soft, plastic-----	5	15
	Shale, interbedded light-olive-gray and light-brown, silty, calcareous, soft, plastic, partly oxidized-----	5	20
	Shale, dark-yellowish-brown to moderate-yellowish-brown, silty, calcareous, soft, moist-----	5	25
	Siltstone and fine sandstone, weakly consolidated; water saturated; samples unreliable from here on down-----	7	32
	Shale, pale-yellowish-brown, silty, calcareous, soft-----	6	38
	Shale, black, carbonaceous, silty (?), soft; wet; or lignite (?), "black muck"-----	5	43
	Shale, dark-greenish-gray, noncalcareous, soft, plastic-----	2	45
	No sample-----	15	60
	No sample; probably soft, carbonaceous shale or slack lignite; "black muck"-----	5	65
	Shale, black, carbonaceous (?), soft; or lignite-----	3	68
	Shale, gray (?), hard-----	.2	68.2

139-92-22DDA
USBR Auger Hole 42

Altitude: 2408 ft above msl

Date drilled: February 1957

Sentinel Butte Formation:			
	Topsoil, brown, silty sand-----	1	1
	Sand, brown, fine, uniform; trace of silt to silty; dense; dry-----	4	5
	Clay, brown and gray, silty; trace of very fine sand; clean; medium plasticity; slow to moderate HCl reaction; moist-----	5	10
	Clay, gray with occasional dark-brown iron oxide stains, plastic, firm; moist; with occasional black, lignitic clay seams-----	6	16
Water table reported not reached.			

Altitude: 2378 ft above msl

Date drilled: June 1969

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Quaternary deposits, undifferentiated:			
	Topsoil, black, sandy silt loam-----	1	1
	Gravel, iron-stained, fine to medium, poorly sorted, angular to subround, sandy; composed mostly of sandstone, limestone, and concretion pebbles-----	6	7
Sentinel Butte Formation:			
	Shale, black, soft, plastic-----	3	10
	Lignite, hard, fractured-----	4	14
	Sandstone, light-olive-gray to greenish-gray, fine, clayey, soft-----	11	25
	Shale, light-olive-gray, silty, smooth, tight-----	5	30
	Siltstone, light-gray, calcareous, soft-----	3	33
	Siltstone as above; but with thin interbeds of bentonitic clay, carbonaceous shale, and lignite-----	9	42
	Shale, light- to medium-gray and brownish-black, silty-----	2	44
	Lignite-----	2	46
	Shale as above-----	4	50
	Sandstone, dark-greenish-gray, clayey, soft-----	2	52
	Shale as above; thin bentonitic streaks-----	8	60
	Shale, variegated gray, silty, bentonitic-----	7	67
	Shale, variegated gray, silty-----	9	76
	Shale, green, crumbly-----	4	80
	Shale, variegated gray, green, and brown, silty to occasionally sandy, carbonaceous and bentonitic, brittle and tight-----	9	89
	Lignite-----	1	90
	Sandstone, greenish-gray, clayey, carbonaceous, soft; interbedded with shale as above-----	8	98
	Shale, variegated gray, green, and brown, predominantly green and light-olive-gray, silty, bentonitic, smooth, moderately brittle, tight; with interbeds of clayey, soft siltstone-----	28	126
	Shale as above; but predominantly green-----	4	130
	Shale, carbonaceous-----	10	140
	Lignite, black, moderately hard-----	6	146
	Shale, predominantly green, silty to sandy, bentonitic, brittle, tight-----	8	154
	Lignite-----	2	156
	Shale as above; with interbedded brownish-black, carbonaceous shale, dark-greenish-gray, sandy shale, light-gray, soft siltstone, and thin lignite seams----	27	183
	Clay, yellowish-white, bentonitic-----	1	184
Tongue River Formation:			
	Sandstone, greenish-gray, silt to very fine, shaly, semiconsolidated; with interbeds of indurated sandstone and lignite-----	14	198
	Shale, brown, carbonaceous; with thin lignite laminae-----	4	202
	Sandstone as above; interbedded with gray and green shale-----	5	207
	Sandstone as above-----	13	220
	Sandstone as above; greenish-gray and light-olive-gray; with thin seams of hard bentonite and lignite-----	19	239
	Sandstone, greenish-gray, fine, clayey, soft, slightly plastic; with a few thin shaly interbeds-----	23	262
	Sandstone as above; but very fine to fine-----	33	295
	Shale, carbonaceous-----	3	298
	Shale, medium-gray, silty, moderately soft and plastic-----	8	306

139-92-25BBB, Continued
NDSWC 3703

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Tongue River Formation, Continued:			
	Sandstone, dark-greenish-gray, fine, clayey, soft----	3	309
	Sandstone, indurated-----	3	312
	Sandstone, dark-greenish-gray, fine, clayey, soft; with occasional layers of medium, clean, weakly consolidated sandstone and sandy shale-----	33	345
	Shale, brownish-black, carbonaceous-----	6	351
	Sandstone as above-----	4	355
	Shale as above-----	3	358
	Sandstone as above-----	4	362
	Shale, carbonaceous-----	10	372
	Lignite-----	1	373
	Shale, brownish-black, silty, smooth, brittle, tight--	4	377
	Shale, green, bentonitic-----	3	380

139-92-29AAA
NDSWC 3546

Altitude: 2397 ft above msl

Date drilled: October 1967

	Roadfill-----	15	15
Sentinel Butte Formation:			
	Shale, yellowish-gray and dusky-yellow with limonite stains, silty and sandy, soft, oxidized-----	7	22
	Shale as above; but light-olive-gray, silty; harder than above-----	4	26
	Lignite, black, fissile, hard-----	3	29
	Shale, thinly interbedded light- to dark-gray, silty to sandy, fissile, slightly brittle-----	36	65
	Sandstone, greenish-gray, very fine, carbonaceous, soft, crumbly-----	4	69
	Shale, medium-greenish-gray, sandy, soft, brittle----	9	78
	Sandstone, very fine, slightly clayey, semiconsolidated, crumbly-----	5	83
	Shale, medium-gray, silty, smooth, tight-----	3	86
	Sandstone, brownish-black, very fine, clayey, carbonaceous, soft-----	4	90
	Siltstone, light-olive-gray, clayey, semiconsolidated, smooth-----	3	93
	Shale, variegated white and gray, silty, slightly brittle; with thin bentonite seams-----	19	112
	Limestone (?), gray, moderately hard, fractured (possibly calcareous, indurated siltstone or sandstone)-----	4	116
	Shale, light- to medium-gray, silty, smooth, slightly brittle; with thin bentonite seams-----	14	130
	Shale, brownish-black, silty, carbonaceous and lignitic, slightly brittle-----	6	136
	Shale, dark-green, silty, smooth, tight-----	4	140
	Shale, medium-gray, silty, tight-----	8	148
	Shale, variegated gray, brown, and black, silty, smooth, slightly brittle, tight-----	16	164
	Sandstone, dark-greenish-gray, very fine, shaly, soft--	7	171
	Shale, light- to medium-gray and greenish-gray, smooth, tight-----	10	181
	Lignite, black, hard-----	2	183
	Siltstone, white to light-olive-gray, smooth, soft----	5	188
	Sandstone, greenish-gray, silt to very fine, moderately soft-----	5	193
	Sandstone as above; but light-gray, clayey-----	6	199
	Shale, dark-gray to brownish-gray, sandy, carbonaceous, soft-----	3	202

139-92-29AAA, Continued
NDSWC 3546

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation, Continued:			
	Sandstone, light-gray to light-greenish-gray, very fine, clayey, moderately soft-----	10	212
	Lignite, black, hard-----	3	215
	Shale, light- to dark-gray, silty, smooth, tight; interbedded with thin bentonitic clay seams-----	13	228
Tongue River Formation:			
	Lignite, black, hard-----	3	231
	Shale, light-gray to greenish-gray, silty, smooth, brittle, tight-----	5	236
	Sandstone, semiconsolidated (?); no samples-----	4	240

139-93-19CCB
USBR Drill Hole 31 (PR)

Altitude: 2449 ft above msl Date drilled: March 1957

Sentinel Butte Formation:			
	Sand, brown, silty-----	6	6
	Silt, brown, alkaline-----	1.5	7.5
	Sand, brown, fine, silty, compact-----	4.5	12
	Sand, brown, fine, compact-----	12.5	24.5

139-93-26DDC
J. Hardmeyer
(Log from Moe's Well Drilling)

Altitude: 2447 ft above msl Date drilled: July 1967

Sentinel Butte Formation:			
	Sand and clay, mixed, gray-----	16	16
	Coal-----	1	17
	Sand and clay, mixed, gray-----	8.5	25.5
	Coal-----	2.5	28

139-93-27AAA
NDSWC 3686

Altitude: 2466 ft above msl Date drilled: November 1968

Sentinel Butte Formation:			
	Sandstone, yellowish-gray, iron-stained, very fine and fine, weakly consolidated, oxidized; dry-----	31	31
	Lignite-----	2	33
	Sandstone, greenish-gray, fine, well-sorted, sub-angular, clean, weakly consolidated-----	6	39
	Lignite-----	1	40
	Shale, light- to dark-gray, silty and sandy (sandy layers iron-stained), partly oxidized; with thin interbeds of dry, fractured lignite-----	20	60
	Shale, medium-gray, silty to sandy, smooth, soft, moderately plastic-----	20	80
	Shale as above; locally carbonaceous and bentonitic--	20	100
	Shale, medium-gray, carbonaceous-----	11	111
	Lignite; interbedded with shale-----	4	115
	Shale, pinkish-gray, bentonitic-----	5	120
	Shale, greenish-gray, bentonitic; with interbeds of light-olive-gray, clayey, soft siltstone-----	25	145

139-93-27AAA, Continued
NDSWC 3686

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation, Continued:			
	Lignite-----	2	147
	Shale, variegated light- and dark-gray, bentonitic-----	7	154
	Lignite-----	3	157
	Shale, medium-gray, bentonitic, soft-----	7	164
	Lignite-----	3	167
	Shale, medium-gray, silty, bentonitic; with interbedded greenish-gray, fine, clayey, soft sandstone and buff, indurated siltstone-----	17	184
	Lignite-----	3	187
	Shale, brownish-black, silty, carbonaceous, moderately soft-----	7	194
	Shale, medium-gray, silty, bentonitic and lignitic-----	6	200
	Shale, medium-gray to light-olive-gray, silty, smooth, moderately soft, slightly plastic, tight-----	4	204
	Sandstone, greenish-gray, fine, clayey, semiconsolidated-----	5	209
	Shale as above-----	12	221
	Siltstone, very light gray, soft, slightly plastic; with interbeds of very fine, indurated sandstone-----	12	233
	Shale, white, very soft, sticky-----	4	237
	Lignite, black, fractured-----	4	241
	Shale, black, carbonaceous-----	1	242
	Sandstone, brown, clayey, carbonaceous, soft-----	6	248
	Shale, light-olive-gray, silty and sandy, soft, slightly plastic-----	12	260
	Shale, light-medium-gray, silty, smooth, soft, moderately plastic-----	20	280
	Shale, light-medium-gray, bentonitic-----	5	285
Tongue River Formation:			
	Shale, light-medium-gray, silty-----	9	294
	Shale, green, bentonitic-----	4	298
	Sandstone, greenish-gray, fine, clayey, soft, non-plastic-----	16	314
	Shale, light-olive-gray, silty to sandy, moderately soft, slightly plastic-----	2	316
	Shale, brownish-gray, carbonaceous-----	10	326
	Lignite-----	4	330
	Shale, brownish-gray, carbonaceous-----	10	340
	Shale, variegated gray, green, and black, silty and sandy, soft, plastic-----	6	346
	Lignite-----	2	348
	Shale as above-----	7	355
	Lignite-----	2	357
	Shale, light-olive-gray, silty and sandy, bentonitic and carbonaceous-----	14	371
	Sandstone, light-greenish-gray, very fine, clayey, soft, slightly plastic-----	5	376
	Shale, medium-gray, greenish-gray, and brownish-black, moderately soft-----	11	387
	Lignite, hard, brittle-----	7	394
	Shale, bentonitic, moderately soft-----	6	400
	Sandstone, brownish-gray, very fine and fine, very clayey, carbonaceous, soft-----	13	413
	Sandstone as above; but light-greenish-gray, non-carbonaceous-----	10	423
	Sandstone as above; but very fine to fine, moderately consolidated-----	12	435
	Sandstone as above; with interbeds of medium-gray, bentonitic, soft shale, brownish-black, sandy carbonaceous shale, and white, sandy, soft clay-----	13	448
	Shale, variegated as above; with interbeds of sandstone as above-----	19	467

139-93-27AAA, Continued
NDSWC 3686

Geologic source	Material	Thickness (feet)	Depth (feet)
Tongue River Formation, Continued:			
	Sandstone as above; with interbeds of light-greenish-gray, silty shale-----	13	480
	Shale, light-greenish-gray, silty-----	10	490
	Lignite-----	4	494
	Shale, silty, carbonaceous-----	11	505
	Lignite-----	2	507
	Sandstone, light-olive-gray, fine, well-sorted, semiconsolidated; contains fossil shell fragments-----	13	520
	Shale, light-greenish-gray and brownish-black, silty, carbonaceous; with thin lignite laminae-----	14	534
	Lignite-----	5	539
	Shale, light-gray and brownish-gray, carbonaceous; with thin layers of lignite-----	16	555
	Sandstone, very light gray to light-greenish-gray, silt to very fine, semiconsolidated, nonplastic-----	8	563
	Shale, light-gray, silty, moderately soft, smooth, tight-----	5	568
	Siltstone or sandstone, dark-gray, calcareous, indurated-----	4	572
	Siltstone, very light gray to light-greenish-gray, sandy, semiconsolidated-----	11	583
	Shale, medium-green to dark-gray, carbonaceous, smooth, moderately soft, slightly plastic, tight; with thin lignite laminae-----	4	587
Basal Tongue River sandstone:			
	Sandstone, dark-greenish-gray, very fine, clayey, moderately consolidated; contains fossil pelecypods---	17	604
	Shale, light-gray and light-greenish-gray, silty, bentonitic, smooth, slightly brittle, tight-----	10	614
	Sandstone, light-gray to light-greenish-gray, very fine and fine, semiconsolidated-----	6	620
	Shale, white, sandy-----	3	623
	Sandstone, indurated-----	2	625
	Siltstone, semiconsolidated-----	5	630
	Shale, white, sandy-----	3	633
	Lignite-----	2	635
	Shale, sandy-----	4	639
	Sandstone, semiconsolidated-----	2	641
	Shale, sandy; carbonaceous at base-----	7	648
	Lignite-----	3	651
	Sandstone, light-olive-gray, fine, well-sorted, sub-angular, almost all quartz, weakly to moderately consolidated-----	9	660
	Sandstone, greenish-gray, very fine, calcareous, indurated-----	4	664
	Sandstone, light-olive-gray, fine, well-sorted, sub-angular and subround; almost all quartz; weakly to moderately consolidated except for thin indurated layers; appears porous and permeable; continuing-----	56	720

139-94-7CED1
H. Koller
(Log from Mann Drilling Co.)

Altitude: 2303 ft above msl

Date drilled: September 1965

Quaternary deposits, undifferentiated:

Sand, surface-----	3	3
Sand and gravel-----	13	16

139-94-7CBD1, Continued
H. Koller

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation:			
	Clay-----	3	19
	Coal-----	1	20
	Clay-----	43	63
	Coal-----	1	64
	Clay-----	55	119
	Sandstone-----	2	121
	Clay, sandy-----	25	146
	Clay-----	35	181
Tongue River Formation (?):			
	Rock-----	2	183
	Clay-----	81	264
	Coal-----	5	269
	Clay-----	31	300

139-94-8CDD
Northern Pacific Railway
(Log from Northern Pacific Railway Co.)

Altitude: 2349 ft above msl

Date drilled: June 1928

Sentinel Butte Formation:			
	Clay, yellow-----	20	20
	Clay-----	20	40
	Clay, sandy; water-bearing-----	.4	40.4
	Clay-----	9.6	50

139-94-8DBC2
R. Laub
(Log from Mann Drilling Co.)

Altitude: 2385 ft above msl

Date drilled: February 1964

Sentinel Butte Formation:			
	Clay, brown, sandy-----	20	20
	Clay, gray-----	4	24
	Clay, gray, sandy-----	21	45
	Lignite-----	4	49
	Clay, gray-----	43	92
	Sandstone-----	2	94
	Clay, gray-----	25	119
	Lignite-----	1	120
	Clay, gray-----	26	146
	Lignite-----	2	148
	Clay, gray-----	34	182
	Sandstone-----	2	184
	Clay, gray-----	48	232
	Sandstone-----	2	234
	Clay, gray-----	31	265
Tongue River Formation (?):			
	Sand, very fine-----	4	269
	Clay, gray-----	58	327
	Lignite-----	3	330
	Clay, gray-----	55	385
	Clay, gray, sandy-----	20	405
	Lignite-----	5	410
	Clay, gray-----	14	424
	Sandstone-----	3	427

139-94-8DBC2, Continued
R. Laub

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Tongue River Formation (?), Continued:			
	Clay, gray, sandy-----	43	470
	Sandstone-----	2	472
	Clay, gray-----	123	595
	Lignite-----	2	597
	Clay, gray and brown, sandy-----	28	625
Basal Tongue River sandstone:			
	Sand; water-bearing-----	45	670

139-94-17ABD
Gladstone Parish
(Log from Mann Drilling Co.)

Altitude: 2348 ft above msl Date drilled: July 1965

Sentinel Butte Formation:			
	Sand, brown-----	60	60
	Clay-----	220	280
Tongue River Formation (?):			
	Sand-----	5	285
	Clay-----	130	415
	Sand-----	10	425
	Clay-----	199	624
Basal Tongue River sandstone:			
	Sand-----	46	670

139-94-20CBB
NDSWC 3699

Altitude: 2479 ft above msl Date drilled: June 1969

Quaternary deposits, undifferentiated:			
	Topsoil, dark-brown, sandy loam-----	1	1
	Sand, yellowish-gray, fine and medium, subangular and subround; consisting predominantly of grains of quartz and other silicates, plus limestone, dolomite, concretion, and sandstone particles-----	16	17
	Sand as above; but heavily iron-stained, coarse and very coarse-----	3	20
	Sand as above; interbedded with rusty-brown, fine, subangular gravel-----	22	42
	Sand and clay, black, carbonaceous-----	17	59
	Sand, iron-stained, fine to very coarse, predominantly medium to coarse; interbedded with rusty-brown, fine, subangular gravel. Gravel constitutes about 30 percent of interval-----	21	80
	Clay, yellowish-gray to dusky-yellow, with carbonaceous laminae, very sandy, soft, oxidized; with thin interbeds of sand and gravel-----	13	93
Sentinel Butte Formation:			
	Sandstone, light-gray, very fine, indurated-----	3	96
	Lignite, poor-----	2	98
	Shale, medium-gray to light-greenish-gray, silty to sandy, bentonitic, moderately soft-----	5	103
	Lignite-----	1	104
	Shale as above-----	2	106
	Lignite-----	2	108
	Shale, silty, carbonaceous-----	8	116
	Lignite-----	2	118

139-94-20CBB, Continued
NDSWC 3699

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation, Continued:			
	Siltstone, semiconsolidated-----	3	121
	Shale, medium-gray, silty to sandy-----	9	130
	Lignite-----	1	131
	Shale as above; interbedded with semiconsolidated siltstone and fine, clayey sandstone, and thin bentonite and lignite seams-----	5	136
	Sandstone, light-greenish-gray, very fine, clayey, locally carbonaceous, soft-----	10	146
	Shale, gray, silty-----	5	151
	Sandstone, light-gray and light-greenish-gray, silt to very fine, clayey, locally carbonaceous, soft-----	22	173
	Shale, silty-----	2	175
	Lignite-----	2	177
	Shale, silty-----	2	179
	Siltstone, light-gray, clayey, soft, moderately plastic; with interbeds of brownish-black, carbonaceous, soft siltstone and thin bentonitic clay layers-----	13	192
	Shale, silty-----	8	200
	Siltstone, very light gray to light-gray, light-greenish-gray, and light-olive-gray with brownish-black streaks, clayey, bentonitic, carbonaceous, smooth, soft; with thin lignite laminae-----	39	239
	Shale, light-gray, silty, soft-----	4	243
	Siltstone, light-gray, very clayey, bentonitic, carbonaceous, lignitic, soft-----	14	257
	Shale, light-gray, silty, bentonitic, soft-----	4	261
	Siltstone as above-----	4	265
	Clay, yellowish-white, bentonitic-----	2	267
Tongue River Formation (?):			
	Lignite, brownish-black, hard-----	6	273
	Shale, brownish-black, carbonaceous-----	1	274
	Lignite-----	1	275
	Shale, carbonaceous-----	4	279
	Lignite-----	2	281
	Shale, light-medium-gray, silty, bentonitic-----	2	283
	Sandstone, light-gray, very fine, very hard-----	2	285
	Shale as above; with soft clayey siltstone interbeds--	15	300
Installed 1 1/4-inch plastic casing with 3-ft screen to 80 ft - dry.			
139-94-20DEC USER Drill Hole 41 (PR)			
Altitude: 2475 ft above msl		Date drilled: March 1957	
Quaternary deposits, undifferentiated:			
	Silt, brown, sandy-----	2	2
	Sand, brown, medium; with small gravels-----	5	7
Sentinel Butte Formation (?):			
	Sand, gray and brown, fine; with lignite slack-----	13.5	20.5
	Sand, brown, medium to coarse-----	5.5	26
	Sand, brown and gray, fine, compact-----	9	35
Water table reported not reached.			

139-94-20DCC
NDSWC 3698

Altitude: 2488 ft above msl

Date drilled: May 1969

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Quaternary deposits, undifferentiated:			
	Topsoil, black, sandy loam-----	1	1
	Sand, yellowish-brown to rusty-red, medium to coarse, well-sorted, subangular and subround. Predominantly quartz grains, plus feldspar, shale, and ironstone; takes drilling fluid-----	19	20
	Sand as above; but heavily iron-stained, coarse and very coarse; with fine, subangular and subrounded gravel and some medium gravel-----	27	47
	Clay, yellowish-gray, silty, oxidized, soft; probably dry-----	2	49
	Sand and gravel as above-----	2	51
	Clay as above-----	2	53
	Sand and gravel as above-----	7	60
	Sand, iron-stained, interbedded medium and coarse, subangular and subround, clean, oxidized-----	28	88
Sentinel Butte Formation:			
	Sandstone, greenish-gray, fine, micaceous, soft-----	15	103
	Sandstone, greenish-gray, fine, micaceous, slightly indurated-----	1	104
	Shale, medium-gray, silty, bentonitic, soft, moderately plastic, tight-----	5	109
	Lignite-----	1	110
	Shale as above-----	14	124
	Shale as above; but becomes dark-greenish-gray and increasingly sandy downward-----	14	138
	Sand, very fine, calcite cemented, hard-----	4	142
	Shale, medium-gray, bentonitic, smooth, soft, tight---	18	160
Installed 1 1/4-inch plastic casing with 3-ft screen at 90 ft - dry.			

139-94-22DCA
USBR Drill Hole 129 (PR)

Altitude: 2272 ft above msl

Date drilled: August 1957

Quaternary deposits, undifferentiated:			
	Sand, tan, silty-----	15.2	15.2
	Sand, medium to coarse; with gravel-----	4.3	19.5
Sentinel Butte Formation:			
	Shale, gray, sandy-----	5.5	25

139-94-23CDA
USBR Auger Hole 35

Altitude: 2374 ft above msl

Date drilled: February 1957

Sentinel Butte Formation:			
	Topsoil, brown, sandy-----	1	1
	Sand, brown, fine, uniform; trace of clay to silty; dry-----	2	3
	Silt, tan, sandy, dry, firm-----	5	8
	Clay, shale-----	8	16

Water table reported not reached.

Altitude: 2362 ft above msl

Date drilled: September 1967

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation:			
	Shale, yellowish-gray, and yellowish-green with iron stains, silty, soft, fractured-----	17	17
	Shale, light- to medium-gray, smooth, moderately soft, tight-----	16	33
	Lignite-----	2	35
	Shale as above; slightly fissile-----	25	60
	Shale, medium-gray to greenish-gray, moderately soft--	13	73
	Shale, carbonaceous-----	7	80
	Lignite-----	3	83
	Shale, black, carbonaceous, soft-----	3	86
	Lignite-----	1	87
	Shale, black, as above-----	4	91
	Shale, greenish-black, sandy-----	6	97
	Sandstone, dark-greenish-gray, very fine, clayey, semiconsolidated-----	8	105
	Sandstone, light-greenish-gray, indurated-----	2	107
	Shale, light-gray, silty, smooth, tight-----	9	116
	Sandstone, greenish-gray, fine, uniform, semiconsolidated; becomes clayey downward-----	14	130
	Shale, carbonaceous-----	3	133
	Lignite-----	1	134
	Shale, variegated gray and green, silty, moderately soft-----	10	144
	Limestone (?), or possibly calcareous indurated siltstone-----	2	146
	Shale as above-----	14	160
	Shale, medium-gray, bentonitic (?), nonfissile, very tight-----	20	180
Tongue River Formation:			
	Sandstone, dark-greenish-gray to greenish-black, very fine, clayey, carbonaceous, soft-----	10	190
	Lignite-----	3	193
	Sandstone as above-----	8	201
	Sandstone, indurated-----	2	203
	Shale, light-greenish-gray, silty, tight-----	18	221
	Shale, variegated green and gray, silty to sandy, moderately soft-----	29	250
	Shale, brownish-black, lignitic-----	2	252
	Shale, variegated green and gray, silty to sandy, moderately soft-----	4	256
	Shale, greenish-gray, silty-----	11	267
	Sandstone, very fine, slightly clayey, soft-----	7	274
	Shale as above-----	7	281
	Sandstone, light-greenish-gray, silt to very fine, soft-----	5	286
	Shale, light-gray, tight-----	16	302
	Sandstone, indurated-----	4	306
	Sandstone, greenish-gray, very fine and fine, clean, weakly consolidated, porous-----	7	313
	Shale-----	3	316
	Sandstone as above-----	19	335
	Lignite-----	2	337
	Shale, carbonaceous-----	1	338
	Sandstone as above-----	6	344
	Shale, light-greenish-gray, smooth, tight-----	5	349
	Shale, dark-greenish-gray, sandy, moderately soft-----	12	361
	Shale, medium-gray, silty-----	11	372
	Shale, light-gray, silty, moderately soft-----	13	385
	Shale, medium-gray, sandy, soft-----	12	397
	Sandstone, greenish-gray, fine, soft-----	11	408
	Shale, carbonaceous-----	8	416

139-94-23DCC, Continued
NDSWC 3543

Geologic source	Material	Thickness (feet)	Depth (feet)
Tongue River Formation, Continued:			
	Sandstone as above-----	7	423
	Shale, medium- to dark-gray, sandy-----	13	436
	Sandstone, very light gray to light-gray, very fine, soft-----	5	441
	Shale, silty to sandy-----	5	446
	Lignite-----	2	448
	Siltstone, very light gray, soft-----	15	463
	Lignite-----	2	465
	Shale, carbonaceous, soft-----	4	469
	Lignite-----	2	471
	Shale, carbonaceous, soft-----	2	473
	Sandstone, very light gray to light-gray, very fine, soft; interbedded with soft siltstone-----	6	479
	Shale, silty to sandy-----	3	482
	Siltstone, light-gray, soft-----	1	483
	Shale, silty to sandy-----	6	489
Basal Tongue River Sandstone:			
	Sandstone, light-gray, very fine, soft; with interbeds of soft siltstone-----	14	503
	Shale, light-gray, silty, slightly brittle-----	10	513
	Siltstone, gray, calcareous, indurated-----	1	514
	Shale as above-----	6	520
	Siltstone, very light gray, soft, crumbly-----	6	526
	Shale, light-gray, tight; contains fossil shell fragments-----	6	532
	Sandstone, light-olive-gray, fine, semiconsolidated--	5	537
	Siltstone, light-gray, semiconsolidated-----	3	540
	Sandstone, light-olive-gray, fine, weakly consolidated	5	545
	Shale, dark-gray, silty, slightly brittle-----	4	549
	Sandstone, light-olive-gray, fine, well-sorted, sub-round, clean, weakly consolidated-----	62	611
	Shale, light-greenish-gray, silty, moderately soft---	5	616
	Siltstone (?) light-greenish-gray, clayey, soft-----	6	622
Ludlow Formation (Upper):			
	Shale, variegated gray and green, silty and sandy; carbonaceous inclusions-----	15	637
	Sandstone, shaly, semiconsolidated-----	4	641
	Shale as above-----	4	645
	Lignite-----	5	650
	Shale as above; with interbeds of semiconsolidated sandstone-----	33	683
	Lignite-----	7	690
Cannonball Formation:			
	Sandstone, indurated-----	1	691
	Sandstone, light-greenish-gray and greenish-gray, silt to fine, clayey, carbonaceous, semiconsolidated--	5	696
	Sandstone, indurated-----	2	698
	Shale, silty, light-gray to light-greenish-gray, silty, smooth, slightly brittle, very tight-----	41	739
	Siltstone, clayey, carbonaceous, soft-----	10	749
Ludlow Formation (Lower):			
	Lignite-----	1	750
	Shale, dark-gray, silty, carbonaceous-----	6	756
	Sandstone, dark-greenish-gray, clayey, semiconsolidated	13	769
	Shale, dark-gray, smooth, slightly brittle, very tight-----	18	787
	Lignite-----	1	788
	Shale as above; interbedded with light-gray, soft siltstone-----	12	800

139-94-23DDA
 USBR Drill Hole 130 (PR)

Altitude: 2340 ft above msl

Date drilled: August 1957

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Clay, brown, silty-----	17.8	17.8
	Shale, brown and gray; soft in upper portion-----	12.1	29.9

Water table reported not reached.

139-94-28BCC
 NDSWC 3700

Altitude: 2483 ft above msl

Date drilled: June 1969

Quaternary deposits, undifferentiated:			
	Topsoil, dark-brown, sandy loam-----	1	1
	Sand, moderate-olive-brown to yellowish-brown, interbedded silt to fine, fine, and medium; well-sorted within each layer; subangular and subround; almost all quartz; oxidized-----	19	20
	Sand, iron-stained, medium to very coarse, subangular and subround, almost all quartz; with iron-stained, fine, subangular gravel consisting of silicates, sandstone, and concretion fragments; takes drilling fluid-----	49	69
	Sand and gravel as above; but dusky-yellow, carbonaceous, oxidized-----	4	73
	Clay, carbonaceous, sandy-----	3	76
	Sand, silty, slightly cohesive-----	9	85

Sentinel Butte Formation:			
	Sandstone, greenish-gray, very fine, slightly clayey, soft-----	8	93
	Siltstone, medium-gray, sandy, soft-----	8	101
	Shale, light-medium-gray, silty, smooth, soft, slightly plastic-----	3	104
	Sandstone, dark-greenish-gray, very fine, clayey, carbonaceous, soft-----	6	110
	Shale, medium-gray, bentonitic, smooth, moderately soft, tight-----	14	124
	Sandstone, clayey, soft-----	4	128
	Shale, sandy, carbonaceous-----	2	130
	Lignite-----	2	132
	Shale as above-----	2	134
	Lignite-----	2	136
	Shale as above-----	4	140

Installed 1 $\frac{1}{4}$ -inch plastic casing with 3-ft screen to 80 ft - dry.

139-94-32DBD4
 Birdsall Ranch
 (Log from Moe's Well Drilling)

Altitude: 2340 ft above msl

Date drilled: July 1963

Sentinel Butte Formation (?):			
	Sand, surface-----	20	20
	Clay, blue-----	2.5	22.5
	Coal, wet-----	2.5	25
	Clay, gray-----	11	36
	Sand, green-----	22	58
	Clay, gray-----	5	63

139-95-1ABD1 and 1ABD2 (Composite)
 E. Tormaschy
 (Log from Moe's Well Drilling)

Altitude: 2394 ft above msl

Date drilled: August 1966

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Sand, yellow, surface, soft-----	2	2
	Sand and clay, yellow, soft-----	19	21
	Sand, yellow, surface, soft-----	18	39
	Coal, slack, soft-----	3	42
	Clay, brown, hard-----	4	46
	Rock, green, hard-----	.2	46.2
	Clay, green, soft-----	20.8	67
	Sand and clay, gray, soft; with side of hard rock at 70 ft-----	14	81
	Rock, gray, soft-----	1.8	82.8
	Sand, gray-----	18.2	101
	Clay, gray-----	4.5	105.5
	Coal-----	.5	106
	Clay, gray-----	22	128
	Sand, gray-----	9	137
	Coal-----	.5	137.5
	Clay, brown-----	.5	138
	Coal-----	1	139
	Clay, gray-----	14	153
	Clay, green-----	27	180
	Coal-----	2	182
	Clay, green-----	15	197
	Sandstone, brown-----	2.5	199.5
	Clay, gray-----	9.5	209
	Sand and clay, brown, mixed-----	2	211
	Rock, brown-----	1	212
	Sand, gray-----	8.5	220.5
	Coal-----	.5	221
	Sand, gray, coarse-----	3	224
	Clay, gray-----	16	240

139-95-1DAB
 North Dakota Highway Dept.
 (Log from Mana Drilling Co.)

Altitude: 2322 ft above msl

Date drilled: October 1967

Quaternary deposits, undifferentiated:			
	Clay, brown, sandy-----	17	17
	Sand and gravel-----	2	19
Sentinel Butte Formation:			
	Clay, gray-----	4	23
	Lignite-----	3	26
	Clay, gray-----	6	32
	Sandstone-----	1	33
	Clay, gray, sandy-----	26	59
	Lignite-----	4	63
	Clay, gray-----	35	98
	Lignite-----	3	101
	Clay, gray-----	15	116
	Lignite-----	2	118
	Clay, gray-----	2	120

Test hole produced 10 gpm of water at 61 ft, 10 gpm at 101 ft, and 20 gpm at 120 ft.

139-95-1DDA
 North Dakota Highway Dept.
 Interpretive log based on driller's log from
 Mann Drilling Co., electric log, and gamma-
 ray log

Altitude: 2312 ft above msl

Date drilled: December 1966

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation:			
	Shale, brown, sandy-----	15	15
	Sandstone, indurated-----	1	16
	Shale, gray-----	18	34
	Lignite-----	1	35
	Shale, gray-----	5	40
	Lignite-----	2	42
	Shale, gray, carbonaceous-----	9	51
	Shale, gray, silty-----	31	82
	Shale, black, lignitic-----	3	85
	Shale, gray, silty-----	23	108
	Sandstone, indurated-----	2	110
	Sandstone, semiconsolidated-----	28	138
	Shale-----	38	176
	Lignite-----	4	180
	Shale, gray-----	15	195
	Shale, sandy-----	21	216
	Siltstone, gray, clayey, soft-----	4	220
	Shale-----	6	226
	Siltstone as above-----	9	235
	Shale, carbonaceous-----	7	242
	Lignite-----	2	244
	Shale, gray-----	13	257
	Sandstone, indurated-----	1	258
	Shale, gray, sandy-----	10	268
	Sandstone, moderately consolidated-----	2	270
	Shale, bentonitic (?)-----	5	275
Tongue River Formation:			
	Shale, gray, silty to sandy-----	57	332
	Lignite-----	1	333
	Shale, gray-----	15	348
	Siltstone, gray, clayey, soft-----	12	360
	Shale, gray-----	12	372
	Lignite-----	4	376
	Shale, sandy-----	88	464
	Shale, gray-----	45	509
	Lignite-----	2	511
	Shale, gray-----	8	519
	Lignite-----	2	521
	Shale, gray-----	37	558
	Lignite-----	4	562
	Shale, gray-----	11	573
Basal Tongue River sandstone:			
	Sandstone; indurated in part-----	9	582
	Shale, white, clayey, soft-----	5	587
	Sandstone, clayey, semiconsolidated-----	3	590
	Shale as above-----	8	598
	Sandstone, semiconsolidated-----	9	607
	Shale as above-----	9	616
	Siltstone, clayey, soft-----	22	638
Ludlow Formation (Upper):			
	Shale-----	8	646
	Lignite-----	2	648
	Shale, carbonaceous-----	2	650
	Shale, silty, carbonaceous-----	10	660

139-95-LDDA, Continued
North Dakota Highway Dept.

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Ludlow Formation (Upper), Continued:			
	Siltstone, clayey, carbonaceous, mostly semiconsolidated; indurated at base-----	14	674
	Shale-----	13	687
	Siltstone, clayey; with shale interbeds-----	14	701
	Sandstone, indurated-----	4	705
	Shale, dark-gray-----	2	707
	Siltstone, dark-gray, clayey-----	7	714
	Shale, dark-gray-----	7	721
	Sandstone, moderately consolidated-----	4	725
	Shale, dark-gray, silty to sandy-----	7	732
	Sandstone, semiconsolidated-----	11	743
	Shale-----	2	745
	Lignite-----	3	748
	Shale, sandy-----	9	757
	Lignite (?)-----	2	759
	Shale, carbonaceous-----	5	764
	Shale, dark-gray, silty-----	13	777
	Lignite (?)-----	3	780
Cannonball Formation (?):			
	Shale, dark-gray; with occasional thin, clayey siltstone interbeds-----	37	817
	Siltstone, clayey, soft-----	7	824
	Shale, silty-----	3	827
	Siltstone as above-----	6	833
	Shale, silty-----	10	843
	Sandstone, indurated-----	4	847
	Shale, dark-gray, sandy-----	56	903
Ludlow Formation (Lower):			
	Shale, black-----	30	933
	Lignite-----	3	936
	Shale, dark-gray; interbedded with thin, clayey, moderately consolidated sandstone-----	31	967
	Shale, dark-gray; with occasional thin, clayey sandstone and possibly lignite interbeds-----	59	1026
	Shale, bentonitic (?)-----	3	1029
Hell Creek Formation (?):			
	Shale, dark-gray, silty; with occasional thin interbeds of clayey siltstone and sandstone-----	101	1130
	Siltstone, clayey, soft; with interbeds of shale-----	51	1181
	Shale, dark-gray-----	33	1214
	Sandstone, clayey, semiconsolidated to moderately consolidated; interbedded with shale-----	62	1276
	Shale, silty to sandy-----	69	1345
	Sandstone, clayey, semiconsolidated to moderately consolidated-----	10	1355
	Shale, sandy to silty-----	50	1405
	Siltstone, clayey, soft-----	7	1412
	Shale, silty to sandy-----	36	1448
	Sandstone, clayey, semiconsolidated-----	25	1473
	Shale, dark-gray; increasingly sandy downward-----	64	1537
Fox Hills Formation:			
	Sandstone, clayey, semiconsolidated-----	20	1557
	Shale, dark-gray, sandy; with thin sandstone interbeds-----	32	1589
	Sandstone, semiconsolidated; cleaner than above-----	28	1617
	Shale, dark-gray-----	12	1629
	Sandstone, clayey, semiconsolidated-----	29	1658
	Shale, dark-gray, sandy in part, bentonitic-----	21	1679
	Sandstone, clayey, semiconsolidated-----	10	1689

139-95-1DDA, Continued
North Dakota Highway Dept.

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Fox Hills Formation, Continued:			
	Shale, dark-gray; increasingly sandy downward-----	14	1703
	Sandstone, clayey, semiconsolidated-----	19	1722
	Sandstone, semiconsolidated; cleaner than above-----	28	1750
	Sandstone, clayey, semiconsolidated; with sandy shale interbeds-----	21	1771
	Shale, dark-gray, sandy; with thin sandstone interbeds	39	1810

139-95-19CBB
USBR Drill Hole 40 (PR)

Altitude: 2492 ft above msl

Date drilled: March 1957

Sentinel Butte Formation:			
	Topsoil, sandy-----	2	2
	Clay, brown and gray, silty-----	4	6
	Clay (shale) and lignite, weathered-----	1.5	7.5
	Clay (shale), gray-----	10.5	18
	Sand, brown, fine, compact, dense-----	6.7	24.7

Water table reported not reached.

139-95-20BBB
NDSWC 5-748
(Modified from Schmid, 1963)

Altitude: 2495 ft above msl

Date drilled: August 1962

Sentinel Butte Formation:			
	Sandstone, brown, silt to fine, subround, predominantly quartz, oxidized, weakly consolidated-----	4	4
	Shale, moderate-olive-brown, silty, soft-----	6	10
	Sandstone, moderate-olive-brown, poorly sorted, clayey, weakly consolidated, oxidized-----	29	39
	Sandstone, greenish-gray, fine, calcareous cement, indurated-----	1.5	40.5
	Sandstone, rusty-brown, very fine, iron cement, indurated-----	.5	41
	Sandstone, moderate-yellowish-brown, silty, sub-angular, carbonaceous, ferruginous, weakly consolidated-----	16	57
	Sandstone, greenish-gray, fine, calcareous cement, indurated-----	12	69
	Sandstone, pale to grayish-olive, somewhat silty and clayey, slightly calcareous, ferruginous, weakly consolidated, partly oxidized-----	6	75
	Sandstone, medium-bluish-gray, somewhat silty and clayey, weakly consolidated-----	15	90
	Shale, dark-greenish-gray, silty, smooth, plastic-----	7	97
	Shale, very carbonaceous-----	3	100
	Lignite; with shale break-----	5	105
	Shale, dark-greenish-gray, silty-----	11	116
	Lignite-----	5	121
	Shale, very dark, carbonaceous-----	2	123
	Shale, light-greenish-gray, smooth, nonplastic-----	43	166
	Lignite-----	10	176
	Shale, light-greenish-gray, smooth-----	11	187
	Shale, olive-gray, silty in part, smooth-----	14	201

139-95-20BBB, Continued
NDSWC 5-748

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation, Continued:			
	Sandstone, greenish-gray, silt to fine, clayey; predominantly quartz; some mica and lignitic material; semiconsolidated-----	57	258
	Limestone (?), very hard (or calcareous, indurated siltstone)-----	2	260
	Sandstone, greenish-gray, fine, semiconsolidated-----	2	262
	Sandstone, greenish-gray, fine, calcareous cement, indurated-----	3	265
	Sandstone, greenish-gray, fine, somewhat clayey, weakly consolidated; water-saturated-----	53	318
	Shale, olive-gray, calcareous, smooth, plastic-----	4	322
	Limestone (?) (or calcareous, indurated siltstone)-----	3	325

139-95-21DDD1 and 21DDD2 (Composite)
NDSWC 3697 and 3697A

Altitude: 2443 ft above msl

Date drilled: May 1969

Quaternary deposits, undifferentiated (?):			
	Topsoil, black, sandy loam-----	1	1
	Sand, yellowish-gray, fine to medium, oxidized-----	9	10
Sentinel Butte Formation:			
	Sandstone, dusky-yellow to moderate-olive-brown, silt to very fine, clayey, soft; contains BB-size iron pellets-----	12	22
	Shale, brownish-black, carbonaceous, soft-----	11	33
	Shale, yellow and gray, silty and sandy; with iron pellets-----	7	40
	Siltstone, medium-gray, clayey to slightly sandy, soft, plastic; contains gypsum crystals-----	15	55
	Siltstone and very fine sandstone, indurated-----	4	59
	Siltstone, soft, as above-----	24	83
	Shale, silty, carbonaceous-----	8	91
	Lignite-----	2	93
	Shale, carbonaceous, silty-----	3	96
	Lignite-----	1	97
	Siltstone, light-gray with brown stains, sandy, carbonaceous, soft but not very plastic-----	6	103
	Shale, carbonaceous-----	6	109
	Lignite-----	5	114
	Siltstone, light-gray, light-greenish-gray and greenish-gray, sandy, soft, friable; carbonaceous near top-----	42	156
	Lignite; interbedded with soft siltstone-----	3	159
	Siltstone, light-gray, light-greenish-gray, and greenish-gray, soft-----	12	171
	Sandstone, light-olive-gray, very fine, well-sorted, subangular, calcareous, carbonaceous, weakly consolidated-----	9	180
	Cored: Recovered 1.5 ft: 1.2 ft of sandstone, greenish-gray, fine, subround to subangular, semiconsolidated; with abundant dark grains: 0.3 ft of sandstone, light-gray, as above; with laminae of carbonaceous, pyritic shale-----	10	190
	Sandstone, fine, semiconsolidated-----	2	192
	Shale, greenish-gray with very light gray and brownish-black layers, very silty, smooth, soft, plastic-----	5	197
	Clay, bentonitic-----	4	201
	Sandstone, dark-gray, very fine, indurated-----	2	203
	Siltstone, gray, sandy, calcareous, soft-----	8	211

139-95-21DDD1 and 21DDD2 (Composite), Continued
NDSWC 3697 and 3697A

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation. Continued:			
	Siltstone, soft; interbedded with light- to medium-gray, sandy, calcareous, soft shale-----	11	222
	Lignite, black, hard, brittle-----	8	230
	Shale, variegated gray, green, and brownish-black, silty, carbonaceous, soft and sticky to slightly brittle; with soft siltstone interbeds-----	11	241
	Siltstone, greenish-gray, clayey to sandy, soft, slightly plastic-----	3	244
	Lignite-----	1	245
	Siltstone as above-----	10	255
	Lignite; with shale break-----	3	258
	Shale, medium-gray, silty to sandy-----	13	271
	Siltstone, very light gray to light-greenish-gray, clayey, smooth, slightly brittle-----	12	283
	Shale, carbonaceous-----	5	288
	Lignite, black, hard, brittle; with shale break-----	3	291
	Shale, light-greenish-gray, silty, carbonaceous, slightly fissile-----	2	293
	Lignite; with shale break-----	2	295
	Shale, variegated gray and greenish-gray, silty, brittle-----	8	303
	Lignite-----	1	304
	Shale as above-----	8	312
	Siltstone, clayey, soft-----	5	317
	Clay, bentonitic-----	9	326
Tongue River Formation (?):			
	Lignite-----	1	327
	Shale, variegated gray and green, sandy, soft-----	1	328
	Siltstone, clayey, soft, slightly plastic-----	3	331
	Shale as above-----	3	334
	Sandstone, dark-gray, very fine, indurated-----	1	335
	Shale as above-----	1	336
	Lignite-----	1	337
	Shale as above-----	2	339
	Lignite-----	2	341
	Shale as above-----	2	343
	Siltstone, variegated gray and green, clayey, soft; with interbeds of variegated sandy, soft shale-----	9	352
	Sandstone, silt to fine, clayey, soft-----	12	364
	Shale, carbonaceous; with thin lignite laminae-----	10	374
	Siltstone, clayey, moderately consolidated-----	6	380
	Shale, medium-gray and light-greenish-gray, silty, bentonitic, moderately brittle-----	20	400

139-96-1BDB

Enco

Interpretive log based on driller's log from Mann Drilling Co., electric log, and gamma-ray log

Altitude: 2420 ft above msl

Date drilled: June 1968

Sentinel Butte Formation:			
	Sandstone, brown, semiconsolidated-----	32	32
	Shale, gray-----	20	52
	Shale, carbonaceous-----	9	61
	Lignite-----	4	65
	Shale, gray-----	121	186
	Lignite (?)-----	8	194
	Sandstone, brown, fine, semiconsolidated; tested		
	8 gpm of water-----	12	206

139-96-1BDB, Continued
Enco

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel	Butte Formation, Continued:		
	Shale, gray, sandy-----	15	221
	Sandstone, indurated-----	3	224
	Sandstone, clayey, semiconsolidated-----	4	228
	Lignite-----	4	232
	Sandstone, clayey, semiconsolidated-----	3	235
	Shale, gray, silty-----	11	246
	Siltstone, clayey, soft-----	8	254
	Shale, carbonaceous-----	2	256
	Lignite-----	1	257
	Shale, silty-----	1	258
	Siltstone, soft-----	5	263
	Shale-----	4	267
	Sandstone, semiconsolidated-----	10	277
	Shale-----	5	282
	Siltstone, clayey, soft-----	4	286
	Lignite-----	1	287
	Shale-----	4	291
	Lignite-----	2	293
	Shale, gray-----	7	300
	Lignite-----	2	302
	Shale, gray-----	6	308
	Sandstone, indurated-----	3	311
	Shale, gray, silty-----	9	320
	Siltstone, clayey, soft-----	6	326
	Shale, carbonaceous-----	14	340
	Shale, carbonaceous; interbedded with clayey siltstone-----	6	346
	Clay, bentonitic-----	3	349
Tongue River	Formation:		
	Lignite-----	3	352
	Shale-----	4	356
	Lignite-----	3	359
	Shale-----	8	367
	Siltstone, clayey, soft; with thin shale interbeds-----	28	395
	Lignite-----	7	402
	Shale-----	4	406
	Sandstone, clayey, soft; with thin shale and possibly lignite interbeds-----	25	431
	Shale, gray, silty to sandy; with thin interbeds of siltstone and sandstone, partly indurated, and possibly thin lignite layers-----	35	466
	Lignite-----	6	472
	Shale; with interbeds as above-----	20	492
	Lignite-----	6	498
	Shale-----	6	504
	Siltstone or sandstone, indurated-----	3	507
	Shale, silty; with thin interbeds of sandstone and siltstone, and possibly lignite-----	27	534
	Shale, carbonaceous-----	9	543
	Shale, silty-----	3	546
	Lignite-----	2	548
	Shale, silty; with thin interbeds of partly indurated sandstone, and possibly thin lignites-----	25	573
	Siltstone, clayey, semiconsolidated; with thin shale interbeds; becomes sandy downward-----	9	582
	Sandstone, clayey, semiconsolidated-----	11	593
	Sandstone, clean, weakly consolidated-----	7	600
	Lignite (?)-----	6	606
	Sandstone as above-----	8	614
	Shale, gray-----	8	622
	Sandstone, semiconsolidated-----	8	630
	Siltstone; with shale interbeds-----	4	634
	Shale-----	7	641

139-96-1BDB, Continued
Enco

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Basal Tongue River sandstone:			
	Sandstone, semiconsolidated-----	11	652
	Shale, sandy-----	10	662
	Sandstone, clayey, semiconsolidated; with thin shale interbeds-----	25	687

139-96-1BDD
Meyers Construction
(Log from Mann Drilling Co.)

Altitude: 2420 ft above msl

Date drilled: April 1966

Sentinel Butte Formation:			
	Clay, brown-----	24	24
	Clay, gray-----	72	96
	Lignite-----	2	98
	Clay, gray-----	12	110
	Sandstone-----	3	113
	Clay, gray, sandy-----	16	129
	Lignite-----	1	130
	Clay, gray-----	18	148
	Lignite-----	4	152
	Clay, gray-----	37	189
	Lignite-----	11	200
	Clay, gray-----	80	280
	Lignite-----	2	282
	Clay, sandy-----	28	310
	Sand, fine-----	10	320
	Clay, gray-----	20	340
Tongue River Formation (?):			
	Clay, gray-----	25	365
	Sandstone-----	2	367
	Clay, gray-----	17	384
	Lignite-----	10	394
	Clay, gray-----	41	435
	Clay, gray, sandy-----	25	460
	Clay, gray-----	27	487
	Sandstone-----	3	490
	Clay, gray-----	35	525
	Sandstone-----	10	535
	Sand, fine-----	10	545
	Clay, gray-----	25	570
	Sandstone-----	3	573
	Sand-----	27	600
	Lignite-----	20	620
	Clay, white-----	20	640
Basal Tongue River sandstone:			
	Sand-----	30	670
Ludlow Formation (?):			
	Clay, gray-----	15	685

139-96-2DAA
NDSWC 16-748
(Modified from Schmid, 1963)

Altitude: 2440 ft above msl

Date drilled: August 1962

Quaternary deposits, undifferentiated:			
	Topsoil, sandy; with fragments of concretions-----	3	3

139-96-2DAA, Continued
NDSWC 16-748

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Shale, light-olive-gray, silty, oxidized-----	9	12
	Sandstone, dusky-yellow, fine, silty, subrounded, semiconsolidated, oxidized-----	14	26
	Shale, light-olive-gray to olive-gray-----	18	44
	Lignite-----	4	48
	Shale, greenish-gray-----	10	58
	Shale, olive-gray to dark-greenish-gray, silty-----	45	103
	Sandstone, light-greenish-gray, fine, calcareous cement, indurated-----	2	105
	Sandstone, dark-greenish-gray, fine to medium, semi-consolidated-----	3	108
	Sandstone, light-greenish-gray, fine, calcareous cement, indurated-----	2	110
	Sandstone, dark-greenish-gray, fine to medium, semi-consolidated-----	18	128
	Shale, light-olive-gray-----	11	139
	Lignite-----	2	141
	Shale, light-olive-gray; with lignitic material-----	14	155
	Sandstone, dark-greenish-gray, fine to medium, clayey, semiconsolidated-----	25	180
	Limestone (?) (or calcareous, indurated sandstone)----	.5	180.5
	Lignite-----	.5	181
	Shale, olive-gray, silty-----	8	189
	Limestone (?) (or calcareous, indurated sandstone)----	1	190
	Sandstone, dark-greenish-gray, fine to medium, clayey, semiconsolidated; predominantly quartz-----	5	195
	Lignite-----	6	201
	Shale, light-olive-gray; lignitic material in lower 5 ft-----	18	219
	Lignite-----	2	221
	Shale, light-olive-gray; lignitic material in upper 5 ft-----	10	231

139-96-3BBA
NDSWC 2-748
(Modified from Schmid, 1963)

Altitude: 2430 ft above msl

Date drilled: August 1962

Quaternary deposits, undifferentiated:

Clay, dusky-yellow, silty, calcareous, oxidized-----	10	10
Sand, yellowish-olive, very fine, slightly calcareous, oxidized-----	4	14

Sentinel Butte Formation:

Shale, yellowish-olive, silty, oxidized; lignitic material-----	4	18
Siltstone, yellowish-olive-gray, semiconsolidated, partially oxidized-----	11	29
Shale, bluish-greenish-gray, silty, sandy; and lignitic material-----	11	40
Shale, variegated blue, green, brown, and gray; with lignitic material-----	12	52
Sandstone, dark-greenish-gray, very fine, clayey, semiconsolidated-----	16	68
Sandstone, light-gray, very fine to fine, calcareous cement, indurated; predominantly rounded frosted quartz-----	3	71
Sandstone, dark-greenish-gray, very fine, clayey, semiconsolidated-----	42	113

139-96-3BBA, Continued
NDSWC 2-748

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation, Continued:			
	Shale, dark-greenish-gray, calcareous-----	6	119
	Limestone (?), light-olive-gray (or calcareous, indurated sandstone)-----	1	120
	Sandstone, greenish-gray, fine, clayey, lignitic, semiconsolidated-----	40	160
	Shale, light-olive-gray, silty, lignitic-----	19	179
	Sandstone, greenish-gray, fine, very clayey, semi-consolidated-----	15	194
	Lignite-----	2	196
	Shale, light-olive-gray to brownish-gray, lignitic-----	4	200
	Sandstone, greenish-gray, fine, clayey, semiconsolidated-----	12	212
	Lignite-----	7	219
	Siltstone, light-olive-gray, lignitic, semiconsolidated-----	28	247
	Shale, brownish-gray; abundant lignitic material-----	5	252

139-96-3BDD
J. Ott
(Log from Mann Drilling Co.)

Altitude: 2440 ft above msl

Date drilled: April 1966

Sentinel Butte Formation:			
	Sand, brown, fine-----	53	53
	Sand, blue-----	5	58
	Sandstone, broken-----	3	61
	Lignite-----	6	67
	Clay, gray-----	35	102
	Lignite-----	3	105
	Clay, sandy-----	10	115
	Sand; water-----	75	190

139-96-3CCC
Northern Pacific Railway
(Modified from Simpson, 1929)

Altitude: 2414 ft above msl

Date drilled: 1897

Quaternary deposits, undifferentiated:			
	Soil, clay, and debris-----	17	17
Sentinel Butte Formation:			
	Clay and debris-----	14.6	31.6
	Shale, clay-----	2	33.6
	Lignite-----	.4	34
	Shale, clay-----	8	42
	Sandstone-----	.4	42.4
	Shale, clay-----	6.6	49
	Lignite-----	4	53
	Shale, blue clay-----	8	61
	Lignite-----	.5	61.5
	Shale, blue clay-----	11.5	73
	Quicksand-----	.7	73.7
	Shale, blue clay-----	15.3	89
	Sandstone, hard-----	4.5	93.5
	Clay and shale bands-----	19.5	113
	Sandstone, very hard-----	6	119
	Sand-----	4	123

139-96-3000, Continued
Northern Pacific Railway

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation, Continued:			
	Sand and clay bands-----	27.5	150.5
	Lignite-----	2.7	153.2
	Shale, soft clay-----	17	170.2
	Sandstone-----	6	176.2
	Coal-----	2	178.2
	Shale, clay-----	10	188.2
	Sandstone-----	2	190.2
	Shale, clay, hard-----	14	204.2
	Coal-----	2	206.2
	Shale, clay-----	45	251.2
	Shale, sand-----	24	275.2
	Sandstone, soft-----	19	294.2
	Shale, clay-----	.5	294.7
	Coal-----	.1	294.8
	Shale, sand-----	1.4	296.2
	Coal-----	7	303.2
	Shale, sand-----	.7	303.9
	Coal-----	1	304.9
	Shale, sand-----	12.3	317.2
	Sandstone, soft-----	17	334.2
Tongue River Formation (?):			
	Shale, sand-----	22	356.2
	Shale, clay-----	1.5	357.7
	Shale, sand-----	5.5	363.2
	Shale, clay-----	12	375.2
	Coal-----	1.5	376.7
	Sandstone, hard-----	7.5	384.2
	Shale, clay-----	33.5	417.7
	Coal-----	.5	418.2
	Shale, clay-----	7	425.2
	Coal-----	3.2	428.4
	Shale, clay-----	2.6	431
	Clay and sand (mixed)-----	11	442
	Shale, sand-----	11	453
	Shale, clay-----	4	457
	Shale, sand-----	10	467
	Shale-----	8	475
	Coal-----	1.5	476.5
	Sandstone-----	1.5	478
	Sand, fine-----	14	492
	Sandstone-----	6	498
	Shale, clay-----	2	500
	Coal-----	3	503
	Shale, sand-----	9	512
	Coal-----	3	515
	Sandstone-----	4	519
	Clay and sand shale-----	5	524
	Sandstone, hard-----	3	527
	Shale, sand-----	18	545
	Sandstone-----	11	556
	Shale, clay-----	9	565
	Sandstone-----	7	572
	Sandstone, soft-----	16	588
	Shale, clay-----	4	592
	Coal-----	.5	592.5
	Shale, clay-----	2.5	595
	Coal-----	1.5	596.5
	Shale, clay-----	8.5	605
	Sand, soft; and shale-----	20	625
	Shale, clay-----	29	654
	Coal-----	1	655
	Shale, clay-----	33	688
	Slate-----	2	690
	Shale, clay-----	10	700

139-96-3CCC, Continued
Northern Pacific Railway

Geologic source	Material	Thickness (feet)	Depth (feet)
Basal Tongue River sandstone:			
	Sandstone-----	40	740
Ludlow Formation (Upper) (?):			
	Coal-----	5	745
	Shale, clay-----	50	795
	Quicksand-----	10	805
	Slate, hard-----	2	807
	Coal-----	4	811
	Shale, clay-----	5	816
	Sandstone, soft-----	7	823
	Slate, hard-----	3	826
	Slate, very hard-----	4	830
	Coal-----	.2	830.2
	Slate-----	8.8	839
	Coal-----	3	842
	Shale, clay-----	2	844
	Coal-----	1	845
	Shale-----	5	850
	Sandstone, soft-----	10	860
	Sand-----	10	870
	Shale, clay-----	10	880
	Sandstone-----	5	885
	Coal-----	9	894
	Sandstone-----	16	910
	Shale, sand-----	3	913
	Sandstone-----	7	920
	Shale, clay-----	2	922
	Coal-----	1	923
Cannonball Formation:			
	Shale, clay-----	44	967
	Sandstone-----	5	972
	Slate-----	14	986
	Shale, clay-----	22	1008
	Slate-----	5	1013
	Shale, clay-----	10	1023
Ludlow Formation (Lower):			
	Coal-----	1	1024
	Shale, clay-----	8	1032
	Slate-----	10	1042
	Coal-----	1	1043
	Sandstone, soft-----	22	1065
	Slate, hard-----	8	1073
	Shale, clay-----	9	1082
	Sandstone-----	2	1084
	Shale, clay-----	6	1090
	Sandstone and pyrite-----	4	1094
	Sand-----	26	1120
	Shale, clay-----	3	1123
	Lignite-----	4	1127
Hell Creek Formation:			
	Gumbo or soapstone-----	29	1156
	Sandstone, fine, hard-----	5	1161
	Sandstone and soapstone-----	82	1243
	Soapstone-----	40	1283
	Sandstone, soft-----	5	1288
	Soapstone, soft-----	80	1368
	Sandstone, soft-----	5	1373
	Soapstone-----	50	1423
	Soapstone, soft; and sandstone-----	12	1435
	Coal, lignite-----	3	1438
	Soapstone-----	33	1471

139-96-3CCC, Continued
Northern Pacific Railway

Geologic source	Material	Thickness (feet)	Depth (feet)
Hell Creek Formation, Continued:			
	Coal, lignite-----	2	1473
	Soapstone-----	18	1491
	Lignite-----	2	1493
	Soapstone and sand-----	15	1508
	Sand, fine; and soapstone-----	35	1543
	Soapstone-----	25	1568
Fox Hills Formation:			
	Sandstone, soft-----	15	1583
	Sandstone, hard-----	5	1588
	Sandstone, soft-----	50	1638
	Soapstone, stiff-----	50	1688
	Soapstone and sandstone-----	45	1733
	Sandstone, hard-----	5	1738
	Sandstone, soft; and soapstone-----	52	1790
	Rock, hard-----	3	1793

139-96-3CDA
Cloverdale Creamery
(Log from Mann Drilling Co.)

Altitude: 2420 ft above msl

Date drilled: June 1965

Sentinel Butte Formation:			
	Clay, brown, sandy-----	35	35
	Clay, gray, sandy-----	17	52
	Sand, gray, fine-----	8	60
	Sand, medium-----	35	95
	Sand, fine, very loose; with lignite pieces-----	15	110
	Clay, gray-----	32	142
	Sandstone-----	2	144
	Clay, sandy-----	56	200

139-96-5DCB
NDSWC 10-748
(Modified from Schmid, 1963)

Altitude: 2460 ft above msl

Date drilled: August 1962

Sentinel Butte Formation:			
	Sandstone, light-olive-gray, well-sorted, subround to round, predominantly quartz, weakly consolidated---	35	35
	Sandstone as above; with limonite stains-----	5	40
	Shale, light-olive-gray, silty, plastic-----	18	58
	Lignite-----	4	62
	Shale, light-olive-gray, silty-----	23	85
	Shale, light-olive-gray; with lignite seams-----	20	105
	Lignite-----	4	109
	Shale, light-olive-gray, silty-----	30	139
	Shale, as above; but harder, tight-----	8	147

139-96-6AAA
 NDSWC 1-748
 (Modified from Schmid, 1963)

Altitude: 2455 ft above msl

Date drilled: August 1962

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Sandstone, light-gray, upper part yellow-stained, fine, clayey, weakly consolidated, oxidized-----	5	5
	Sandstone, moderate-olive-brown, fine, well-sorted, subround to round, predominantly quartz, weakly consolidated, oxidized-----	11	16
	Sandstone as above; with many calcareous grains-----	8	24
	Sandstone, medium-bluish-gray to dark-greenish-gray, fine, well-sorted, subround, calcareous, weakly consolidated-----	34	58
	Shale, light-olive-gray, silty, slightly sandy, calcareous-----	2	60
	Sandstone, bluish-greenish-gray, fine, semiconsolidated; with thin shale interbeds-----	3	63
	Sandstone, bluish-greenish-gray, fine, well-sorted, subround, predominantly quartz, semiconsolidated-----	11	74
	Shale, light-olive-gray, silty, slightly calcareous, soft, plastic-----	6	80
	Lignite-----	2	82
	Shale, olive-gray, micaceous, noncalcareous, soft, plastic-----	12	94
	Sandstone, light-olive-gray, fine, slightly calcareous, semiconsolidated-----	6	100
	Sandstone as above; but indurated-----	4	104
	Shale, olive-gray to greenish-gray, slightly silty and sandy; lignitic material-----	11	115
	Sandstone, light-olive-gray, fine, indurated-----	2	117
	Shale, olive-gray, silty, carbonaceous-----	18	135
	Lignite, fissile-----	4	139
	Shale, olive-gray, silty, carbonaceous-----	10	149
	Limestone (?), olive-gray (or calcareous, indurated siltstone)-----	3	152
	Shale, light-olive-gray-----	16	168

139-96-8ACB
 NDSWC 9-748
 (Modified from Schmid, 1963)

Altitude: 2420 ft above msl

Date drilled: August 1962

Quaternary deposits, undifferentiated:			
	Topsoil, sandy-----	1	1
	Sand, moderate-yellowish-brown, poorly sorted, subangular to rounded, composition varied, calcareous, oxidized-----	4	5
Sentinel Butte Formation:			
	Sandstone, yellowish-brown, fine, well-sorted, subround, clayey, semiconsolidated, oxidized-----	5	10
	Sandstone as above; but moderate-olive-brown, clean-----	25	35
	Sandstone, greenish-gray, fine, clayey, semiconsolidated-----	13	48
	Sandstone, greenish- to brownish-gray, semiconsolidated to indurated; with thin interbeds of shale and lignite-----	14	62
	Shale, olive-gray-----	18	80
	Lignite-----	4	84

139-96-8BCB
USBR Drill Hole 6

Altitude: 2419 ft above msl

Date drilled: November 1945

Geologic source	Material	Thickness (feet)	Depth (feet)
Quaternary deposits, undifferentiated:			
	Loam, sandy-----	6	6
	Gravel and sand-----	4	10
Sentinel Butte Formation:			
	Sandstone, light-yellow, soft-----	10	20
	Sandstone, soft; and clay shale-----	8	28
	Sandstone, light-yellow, soft-----	3.5	31.5

139-96-8BCD
USBR Drill Hole 2

Altitude: 2392 ft above msl

Date drilled: November 1945

Geologic source	Material	Thickness (feet)	Depth (feet)
Quaternary deposits, undifferentiated:			
	Sand and muck-----	5	5
Sentinel Butte Formation:			
	Sand, gray, soft, water-----	5	10
	Sand, gray, compact, water-----	5	15
	Sand, blue, medium, compact-----	10	25
	Sand, gray-blue, some silt, compact-----	9	34
	Silt, gray, compact-----	6.1	40.1
	Sand, blue-----	4.9	45
	Sand, soft; and silt, slightly compact-----	5	50
	Sand, blue-----	5	55
	Sand, blue, medium, soft-----	2.8	57.8
	Silt, gray, compact-----	3.7	61.5

139-96-8CAB
USBR Drill Hole 13

Altitude: 2389 ft above msl

Date drilled: January 1946

Geologic source	Material	Thickness (feet)	Depth (feet)
Quaternary deposits, undifferentiated:			
	Ice (frozen saturated silt)-----	1.6	1.6
	Silt (muck)-----	3.4	5
	Sand, blue-----	7	12
	Sand, blue; and gravel-----	5	17
Sentinel Butte Formation:			
	Sand, blue-----	34.5	51.5

139-96-8CBA
USBR Drill Hole 1

Altitude: 2400 ft above msl

Date drilled: December 1945

Geologic source	Material	Thickness (feet)	Depth (feet)
Quaternary deposits, undifferentiated:			
	Loam, sandy-----	5	5
	Sand and silt-----	7	12
Sentinel Butte Formation (?):			
	Sand, trace clay-----	1.5	13.5
	Sand, water-----	8.5	22
	Sand, gray, soft-----	1.5	23.5
	Sand, gray and blue-----	3.5	27

139-96-8CBA, Continued
 USBR Drill Hole 1

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation (?), Continued:			
	Sand, blue-----	16.5	43.5
	Sand, blue, trace silt, compact-----	3.5	47
	Silt, gray, compact; and clay-----	1.5	48.5
	Sand, blue, water-----	13.5	62
	Sand, blue, water; and gravel-----	5	67
	Sand, blue, water-----	1.5	68.5

139-96-8DBB2
 D. Halstad
 (Log from Mann Drilling Co.)

Altitude: 2400 ft above msl Date drilled: March 1965

Quaternary deposits, undifferentiated (?):			
	Sand, brown-----	22	22
Sentinel Butte Formation:			
	Clay, gray-----	16	38
	Sandstone-----	4	42
	Sand, blue-----	25	67
	Clay, gray-----	.4	67.4

139-96-8DBD
 E. Wolfe
 (Log from Mann Drilling Co.)

Altitude: 2400 ft above msl Date drilled: June 1965

Quaternary deposits, undifferentiated (?):			
	Sand, brown-----	17	17
Sentinel Butte Formation:			
	Clay, sandy-----	19	36
	Clay-----	13	49
	Sand, blue-----	66	115

139-96-8DDC
 NDSWC 8-748
 (Modified from Schmid, 1963)

Altitude: 2395 ft above msl Date drilled: August 1962

Quaternary deposits, undifferentiated:			
	Sand, brownish-gray, fine, moderately sorted, oxidized	4	4
	Sand as above; but clayey-----	7	11
	Sand, brownish-gray, fine to medium, well sorted, slightly calcareous, oxidized-----	2	13
	Gravel, brownish-gray, very poorly sorted, angular to subround, oxidized-----	5	18
Sentinel Butte Formation:			
	Shale, olive-gray, silty, noncalcareous, nonplastic---	22	40
	Sandstone, greenish-gray, fine, very clayey, semi-consolidated-----	7	47
	Lignite-----	3	50
	Shale, olive-gray, silty, smooth-----	14	64

139-96-8DDC, Continued
NDSWC 8-748

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation, Continued:			
	Sandstone, greenish-gray, fine, subround, clayey, semiconsolidated-----	7	71
	Lignite; with interbedded brownish-gray clay-----	9	80
	Lignite-----	3	83
	Shale, light-olive-gray, silty-----	7	90
	Sandstone, dark-greenish-gray, fine, semiconsolidated-----	6	96
	Sandstone as above; but clayey, greenish-black, carbonaceous-----	10	106
	Sandstone, brownish-gray, fine, clayey, weakly consolidated-----	10	116
	Sandstone, greenish-gray, fine, subround; some clay; mostly semiconsolidated with thin calcareous, indurated layers-----	23	139
	Shale, olive-gray, silty, relatively hard-----	8	147
	Lignite-----	2	149
	Shale as above-----	9	158
	Lignite-----	1	159
	Shale, olive-gray, silty, smooth-----	21	180
	Lignite; with shale break-----	4	184
	Shale, olive-gray, silty to sandy-----	4	188
	Lignite-----	1	189
	Shale as above-----	4	193
	Clay, light-greenish-gray, shardlike silica particles-----	13	206
	Sandstone, brownish-olive-gray, fine, well-sorted, subround, highly calcareous, predominantly quartz, semiconsolidated-----	21	227
	Limestone (?), brownish-gray (or calcareous, indurated siltstone)-----	3	230
	Siltstone, olive-gray, clayey to sandy, moderately consolidated-----	12	242
	Shale, brownish-black to brownish-gray, silty to sandy; abundant lignitic material-----	4	246
	Lignite-----	14	260
	Shale, brownish-gray, silty; abundant lignitic material-----	4	264
	Shale, olive-gray, silty-----	20	284
	Sandstone, greenish-gray, fine, clayey, predominantly quartz, semiconsolidated; locally lignitic-----	37	321
Tongue River Formation (?):			
	Siltstone, greenish-gray, clayey, moderately consolidated-----	24	345
	Sandstone, greenish-gray, fine, clayey, semiconsolidated; abundant lignitic material-----	12	357

139-96-9BBB
NDSWC 7-748
(Modified from Schmid, 1963)

Altitude: 2428 ft above msl

Date drilled: August 1962

Quaternary deposits, undifferentiated:			
	Topsoil-----	1	1
	Gravel, fine to very coarse, poorly sorted, calcareous, oxidized-----	3	4
	Sand, moderate-olive-brown, fine, well-sorted, oxidized; with interbeds of clayey and gravelly sand--	25	29

139-96-9BBB, Continued
NDSWC 7-748

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation:			
	Shale, greenish-gray, sandy, slightly calcareous; some lignitic material-----	3	32
	Siltstone, light-olive-gray, clayey, soft-----	12	44
	Sandstone, greenish-gray, fine, clayey, calcareous, soft-----	15	59
	Shale, bluish-olive-gray-----	6	65
	Lignite-----	2	67
	Shale, light-olive-gray, silty-----	18	85
	Lignite-----	1	86
	Shale, light-olive-gray; silty in part-----	21	107
	Lignite; with shale break-----	5	112
	Shale, very light olive gray; silty in part-----	15	127
	Shale, olive-gray; lignitic material-----	12	139
	Siltstone, light-greenish-gray, clayey, soft-----	16	155
	Lignite-----	21	176
	Shale, olive-gray, compact-----	13	189

139-96-9BBB

L. Osborne

Interpretive log based on driller's log from Mann Drilling Co. and electric log

Altitude: 2410 ft above msl

Date drilled: June 1965

Quaternary deposits, undifferentiated:			
	Sand-----	19	19
Sentinel Butte Formation:			
	Shale-----	10	29
	Lignite-----	2	31
	Shale, sandy-----	19	50
	Shale-----	16	66
	Shale, sandy-----	10	76
	Shale-----	8	84
	Sandstone, clayey, soft-----	8	92
	Shale-----	8	100
	Sandstone, clayey, mostly soft; possibly indurated 104-107 ft-----	17	117
	Shale-----	5	122
	Sandstone, semiconsolidated-----	6	128
	Lignite-----	14	142
	Shale-----	14	156
	Sandstone, semiconsolidated-----	4	160
	Shale-----	2	162
	Sandstone, mostly semiconsolidated; indurated 164-168 and 189-190 ft-----	28	190
	Shale-----	5	195
	Lignite (?)-----	3	198
	Shale-----	6	204
	Shale, silty-----	13	217
	Shale, sandy-----	10	227
	Shale-----	4	231
	Sandstone, clayey, mostly semiconsolidated; with thin interbeds of indurated sandstone and possibly lignite-----	16	247
	Shale, sandy-----	10	257
	Sandstone, semiconsolidated-----	6	263
	Shale, sandy-----	11	274
	Sandstone, semiconsolidated-----	13	287
	Lignite (?) (possibly sandstone)-----	5	292
	Sandstone, semiconsolidated-----	9	301

139-96-9BED, Continued
L. Osborne

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation, Continued:			
	Shale, sandy-----	3	304
	Sandstone, semiconsolidated-----	13	317
	Shale, sandy-----	4	321
	Shale, bentonitic-----	5	326
Tongue River Formation:			
	Shale; interbedded with clayey sandstone and siltstone	34	360
	Shale-----	16	376
	Lignite-----	8	384
	Shale; interbedded with clayey sandstone and siltstone, probably some thin lignites-----	84	468
	Sandstone, clayey, semiconsolidated-----	8	476
	Shale-----	4	480
	Sandstone, clayey, semiconsolidated-----	13	493
	Shale, sandy; with thin interbeds of sandstone and probably lignite-----	27	520
	Sandstone, clayey, semiconsolidated-----	18	538
	Shale-----	4	542
	Sandstone, clayey, semiconsolidated-----	9	551
	Shale-----	11	562
	Lignite-----	7	569
	Sandstone, semiconsolidated-----	4	573
	Shale-----	2	575
	Sandstone, semiconsolidated-----	26	601
	Shale, sandy-----	5	606
	Sandstone, semiconsolidated-----	6	612
	Shale-----	8	620
	Sandstone, semiconsolidated-----	10	630

139-96-10BAC
F. Badinger
(Log from Mann Drilling Co.)

Altitude: 2380 ft above msl	Date drilled: July 1965
Fill-----	6 6
Quaternary deposits, undifferentiated:	
Sand, brown-----	16 22
Gravel-----	4 26
Sentinel Butte Formation:	
Clay, sandy-----	8 34
Sand, blue-----	23 57
Clay-----	.4 57.4

139-96-16DDD2
NDSWC 3695

Altitude: 2485 ft above msl	Date drilled: May 1969
Quaternary deposits, undifferentiated:	
Topsoil, yellowish-brown, gravelly, sandy loam-----	.5 .5
Sand, reddish- and yellowish-brown, medium-well-sorted, subangular; with interbeds of yellowish-gray clay and iron-stained fine to medium gravel-----	15.5 16

139-96-16DDD2, Continued
NDSWC 3695

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation:			
	Shale, greenish-gray, very silty to sandy, soft, slightly plastic-----	4	20
	Shale as above; interbedded with pink and green silty shale-----	13	33
	Lignite-----	1	34
	Shale as above; carbonaceous-----	10	44
	Shale, light-greenish-gray, silty, moderately soft, chunky-----	14	58
	Sandstone, greenish-gray, very fine, clayey, soft; with interbeds of sandy shale-----	42	100
	Sandstone as above; with interbeds of dark-greenish-gray, fine, weakly cemented sandstone, greenish-gray, indurated sandstone, and white, calcareous sandy clay-----	32	132
	Shale, medium-gray, silty, smooth, moderately soft-----	9	141
	Sandstone, dark-greenish-gray, very fine, clayey, soft-----	18	159
	Shale, light-gray and green, silty, bentonitic-----	4	163
	Lignite-----	4	167
	Shale as above; carbonaceous-----	16	183
	Sandstone, dark-greenish-gray, very fine to fine, slightly clayey, moderately consolidated-----	15	198
	Shale, sandy-----	3	201
	Sandstone as above; but more clayey; with shale interbeds-----	9	210
	Shale, sandy, carbonaceous; with thin lignite laminae-----	21	231
	Sandstone, light-olive-gray, silt to very fine, soft-----	12	243
	Lignite-----	1	244
	Sandstone as above; shale interbeds-----	29	273
	Lignite, black, moderately hard, brittle-----	12	285
	Shale, carbonaceous-----	9	294
	Shale, variegated gray and green, silty-----	23	317
	Siltstone, very light gray, very clayey, smooth, moderately consolidated-----	18	335
	Shale, light-gray, silty-----	4	339
	Lignite-----	1	340
	Shale as above; lignitic-----	30	370
	Lignite-----	3	373
	Shale, light-gray, silty, carbonaceous; possibly bentonitic at base-----	12	385
Tongue River Formation (?):			
	Lignite-----	7	392
	Shale, greenish-gray, silty, smooth, tight-----	8	400

139-96-19ADA
USBR Auger Hole 65

Altitude: 2478 ft above msl

Date drilled: March 1957

Golden Valley Formation:			
	Topsoil, brown, sand-----	1	1
	Sand, dark-brown, fine, uniform, silty, trace of clay; contains organic matter; dry-----	3	4
	Silt, brown, very fine, sandy; trace of clay; micaceous; slight HCl reaction; moist-----	7	11
	Clay (shale), gray with brown oxide staining, silty, trace of very fine sand, moderately plastic to plastic, firm; moist-----	5	16

Water table reported not reached.

139-96-20ADB
USBR Drill Hole 135 (PR)

Altitude: 2490 ft above msl

Date drilled: August 1957

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Clay, tan, sandy-----	7.8	7.8
	Silt, tan, fine, sandy-----	15	22.8
	Silt, tan, fine, sandy; with clay seams-----	2.2	25

Water table reported not reached.

139-96-21BCB
USBR Drill Hole 38 (PR)

Altitude: 2516 ft above msl

Date drilled: March 1957

Golden Valley Formation:			
	Topsail, sandy-----	.5	.5
	Shale, fractured-----	2	2.5
	Sandstone, light-gray, tuffaceous, clayey, friable----	22	24.5

Water table reported not reached.

139-96-22ECC1
USBR Drill Hole 39 (PR)

Altitude: 2452 ft above msl

Date drilled: March 1957

Sentinel Butte Formation:			
	Topsail-----	1	1
	Clay, light-gray, silty-----	5	6
	Shale, brown and gray, weathered-----	6	12
	Lignite-----	1	13
	Shale, green-----	2.2	15.2
	Lignite-----	.5	15.7
	Shale, gray, hard-----	9.1	24.8

Water table reported not reached.

139-96-23BCC
NDSWC 3696

Altitude: 2485 ft above msl

Date drilled: June 1969

Golden Valley Formation:			
	Topsail, brownish-black, sandy loam-----	1	1
	Sandstone, reddish-brown, medium to coarse, sub-angular; predominantly quartz with lignite grains; semiconsolidated; oxidized-----	24	25
	Shale, yellowish-gray, very silty, soft-----	4	29
Sentinel Butte Formation:			
	Sandstone, gray with dark specks, fine to medium-----	7	36
	Shale-----	2	38
	Lignite, black, fissile, fractured-----	2	40
	Siltstone, light-greenish-gray, clayey to slightly sandy, soft; thin shale interbeds-----	21	61
	Lignite, black, moderately hard, fractured; takes drilling fluid-----	4	65
	Shale, light-greenish-gray to greenish-gray, silty----	7	72
	Shale, brownish-black, carbonaceous-----	5	77

139-96-23BCC, Continued
NDSWC 3696

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation, Continued:			
	Siltstone, medium-gray, clayey, soft-----	4	81
	Shale, dark-greenish-gray, silty-----	2	83
	Sandstone, olive-greenish-gray, fine, well-sorted, subangular, slightly silty; predominantly quartz with some greenstone and lignite grains; semiconsolidated--	18	101
	Sandstone, dark-greenish-gray, fine to medium, subangular and subround, weakly consolidated; takes drilling fluid-----	32	133
	Shale, medium-gray and brownish-black, silty, carbonaceous, soft-----	8	141
	Sandstone as above-----	15	156
	Sandstone as above; but less well sorted, siltier, clayey; with interbeds of carbonaceous shale-----	18	174
	Sandstone, dark-greenish-gray, fine and medium, clean, semiconsolidated-----	14	188
	Sandstone as above; with interbeds of lignite-----	7	195
	Sandstone, dark-greenish-gray, fine and medium, clean, semiconsolidated-----	9	204
	Shale, light-olive-gray to very light yellowish gray, silty, smooth, tight-----	4	208
	Shale, black, carbonaceous, soft-----	4	212
	Lignite, black, hard, brittle-----	2	214
	Shale, greenish-gray, silty, smooth, tight-----	6	220

139-96-26DAA2
N. Schmidt
(Log from Mann Drilling Co.)

Altitude: 2518 ft above msl

Date drilled: September 1963

Sentinel Butte Formation:			
	Sand, brown-----	60	60
	Sand, blue-----	11	71
	Coal-----	8	79
	Clay-----	5	84
	Sand-----	6	90
	Clay-----	11	101
	Coal-----	3	104
	Sand-----	2	106
	Coal-----	4	110
	Clay-----	25	135
	Sand, blue-----	47	182

139-96-28DDD
NDSWC 18-748
(Modified from Schmid, 1963)

Altitude: 2560 ft above msl

Date drilled: August 1962

Golden Valley Formation:			
	Shale, light-olive-gray, very silty to sandy; contains volcanic material-----	58	58
	Shale, yellowish-brown, very silty to sandy, oxidized-----	13	71
	Shale, light-olive-gray, very silty to sandy, partially oxidized-----	9	80

139-96-28DDD, Continued
NDSWC 18-748

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Siltstone, dark-greenish-gray, clayey, semiconsolidated; lignitic material, grading into:		
	Sandstone, dark-greenish-gray, fine to medium, subround, micaceous, noncalcareous, semiconsolidated-----	12	92
	Shale, dark-greenish-gray, silty, micaceous-----	10	102
	Lignite-----	2	104
	Shale, olive-gray, silty; lignitic material-----	6	110
	Siltstone, dark-greenish-gray, sandy, micaceous, semiconsolidated-----	6	116
	Shale, olive-gray, silty; lignitic material-----	8	124
	Lignite-----	10	134
	Shale, dark, silty, carbonaceous-----	3	137
	Sandstone, dark-greenish-gray, fine, semiconsolidated-----	10	147
	Sandstone, greenish-black, fine to medium, semiconsolidated; abundant lignitic material; with interbeds of silty shale-----	46	193
	Shale, light-olive-gray, silty-----	4	197
	Lignite-----	4	201
	Siltstone, dark-greenish-gray, clayey, moderately consolidated-----	9	210

139-97-1DDD
NDSWC 17-748
(Modified from Schmid, 1963)

Altitude: 2456 ft above msl

Date drilled: August 1962

Sentinel Butte Formation:			
	Sandstone, moderate-olive-brown, fine to medium, slightly calcareous, semiconsolidated, oxidized-----	7	7
	Sandstone, yellowish-gray, fine to medium, calcareous cement, indurated, oxidized-----	4	11
	Sandstone, moderate-olive-brown, fine to medium, slightly calcareous, semiconsolidated, partially oxidized-----	23	34
	Sandstone, dark-greenish-gray, fine to medium, slightly calcareous, semiconsolidated-----	9	43
	Lignite-----	1	44
	Shale, medium-gray; becomes sandy downward; plastic--	7	51
	Sandstone, dark-greenish-gray, fine, very clayey, semiconsolidated-----	22	73
	Lignite-----	2	75
	Shale, greenish-black, silty; abundant lignitic material-----	7	82
	Sandstone, greenish-gray, fine, clayey, calcareous---	26	108
	Lignite-----	4	112
	Shale, light-greenish-gray to greenish-gray; lignitic inclusions-----	8	120
	Sandstone, greenish-gray, fine, calcareous, semiconsolidated-----	17	137
	Shale, variegated green, white, blue, and black; abundant lignitic material-----	7	144
	Lignite-----	16	160
	Shale, olive-gray, silty-----	19	179
	Shale, greenish-gray, silty-----	3	182
	Shale, olive-gray-----	5	187
	Sandstone, dark-greenish-gray, fine to medium, predominantly quartz, micaceous, mostly semiconsolidated (197 to 199 ft indurated, calcareous cement)---	29	216
	Shale, olive-gray, silty, micaceous; some lignitic material-----	15	231

139-97-3BBA
Northern Pacific DX 360-8
(Log from Northern Pacific Railway Co.)

Altitude: 2545 ft above msl

Date drilled: July 1961

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation:			
	Clay, yellow-----	9	9
	Clay, gray-----	6	15
	Lignite, slack-----	2	17
	Clay, gray-----	3	20
Lost water in lignite slack.			

139-97-20DAD
NDSWC 3694

Altitude: 2504 ft above msl

Date drilled: May 1969

Quaternary deposits, undifferentiated:			
	Topsoil, black, silty loam-----	1.5	1.5
	Silt, sand, clay, and fine gravel, moderate-olive-brown to yellowish-red, interbedded, oxidized-----	18.5	20
Sentinel Butte Formation:			
	Sandstone, dark-greenish-gray, very fine to fine, clayey, soft-----	16	36
	Shale, medium-gray and brownish-black, silty, carbonaceous, lignitic-----	10	46
	Lignite-----	2	48
	Shale as above-----	2	50
	Sandstone, dark-greenish-gray, fine, carbonaceous, soft-----	9	59
	Shale, dark-greenish-gray to medium-gray, silty-----	3	62
	Sandstone, dark-greenish-gray to dark-gray, clayey, soft-----	6	68
	Siltstone, greenish-gray to dark-gray, clayey, bentonitic, semiconsolidated-----	13	81
	Shale, brownish-gray, sandy-----	2	83
	Lignite-----	3	86
	Shale, brownish-gray to dark-greenish-gray; interbedded with fine, soft sandstone-----	11	97
	Sandstone, light-greenish-gray, calcareous, indurated-----	2	99
	Shale, carbonaceous-----	3	102
	Shale, light- to medium-gray, thinly interbedded, silty and bentonitic-----	30	132
	Lignite-----	5	137
	Shale, carbonaceous-----	4	141
	Lignite-----	2	143
	Shale, silty to carbonaceous-----	9	152
	Lignite-----	3	155
	Shale, medium-gray, silty, bentonitic, soft-----	2	157
	Shale, interbedded light- and medium-gray, silty-----	15	172
	Lignite-----	3	175
	Shale, carbonaceous-----	4	179
	Sandstone, clayey, semiconsolidated-----	6	185
	Shale, sandy-----	6	191
	Sandstone, dark-greenish-gray to brownish-gray and black, very fine and fine, clayey, semiconsolidated; with interbeds of carbonaceous shale and fine, clean, weakly consolidated sandstone-----	31	222
	Shale, sandy-----	1	223
	Lignite-----	3	226
	Shale-----	1	227
	Lignite-----	10	237
	Shale, bentonitic-----	2	239

139-97-20DAD, Continued
NDSWC 3694

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation, Continued:			
	Lignite-----	1	240
	Shale, variegated gray, silty-----	1	241
	Lignite-----	2	243
	Shale as above-----	2	245
	Lignite-----	4	249
	Shale, variegated gray, bentonitic-----	7	256
	Sandstone, medium-gray, clayey, soft-----	4	260
	Shale, medium-gray, sandy, soft-----	4	264
	Sandstone, greenish-gray, very fine, calcareous, indurated-----	2	266
	Shale, medium-light-gray, silty, soft-----	7	273
	Shale, greenish-gray, blocky-----	4	277
Tongue River Formation (?):			
	Shale, light-gray, silty to slightly sandy, bentonitic, moderately soft-----	16	293
	Siltstone, light-gray, clayey, soft-----	7	300
	Shale, light- and medium-gray, slightly brittle; with interbeds of yellowish-gray, bentonitic clay and soft siltstone-----	26	326
	Lignite-----	5	331
	Shale, light- and medium-gray, silty, moderately soft, nonplastic-----	17	348
	Lignite-----	5	353
	Shale, silty, bentonitic-----	13	366
	Shale, silty, carbonaceous-----	14	380
	Lignite-----	4	384
	Shale, bentonitic-----	12	396
	Lignite (?)-----	4	400

139-97-21DDD
NDSWC 23-748
(Modified from Schmid, 1963)

Altitude: 2509 ft above msl .

Date drilled: August 1962

Sentinel Butte Formation:			
	Sandstone, grayish-yellow to dusky-yellow, very fine, clayey, weakly consolidated, oxidized-----	15	15
	Shale, dark-yellowish-orange, silty, carbonaceous, oxidized-----	6	21
	Claystone, concretionary-----	1	22
	Sandstone, dusky-blue-green, fine to medium, sub-round to well rounded, weakly consolidated-----	16	38
	Siltstone, greenish-gray, semiconsolidated-----	8	46
	Rock; no sample-----	1	47
	Shale, olive-gray, silty; lignitic material-----	9	56
	Siltstone, light-olive-gray, calcareous, semiconsolidated-----	8	64
	Shale, greenish-gray to dark-greenish-gray, sandy; lignitic material-----	11	75
	Lignite, black-----	.5	75.5
	Shale, greenish-gray, sandy, calcareous; lignitic material-----	8.5	84
	Shale, light-olive-gray, calcareous-----	3	87
	Lignite and lignitic shale-----	5	92
	Shale, olive-gray to greenish-black, silty; some lignitic material-----	13	105
	Shale, dark-greenish-gray, silty; with lignite interbeds-----	3	108

139-97-21DDD, Continued
 NDSWC 23-748

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation, Continued:			
	Shale, olive-gray, silty, calcareous; with lignite interbeds-----	3	111
	Shale as above; no lignite-----	8	119
	Sandstone, greenish-gray, very fine to fine, clayey, calcareous, semiconsolidated-----	7	126
	Siltstone, light-olive-gray, calcareous, moderately consolidated-----	4	130
	Sandstone, greenish-gray, very fine, clayey, calcareous, semiconsolidated-----	6	136
	Sandstone, very fine, calcareous, indurated-----	2	138
	Shale, dark-greenish-gray, calcareous-----	6	144
	Siltstone, olive-gray, calcareous, semiconsolidated---	3	147
	Sandstone, fine, calcareous, indurated-----	1	148
	Shale, olive-gray, calcareous-----	12	160
	Lignite; and lignitic shale, olive-black to blue-----	4	164
	Sandstone, dark-greenish-gray, very fine, clayey, slightly calcareous, semiconsolidated; lignitic material-----	6	170
	Siltstone, olive-gray, slightly calcareous, moderately consolidated-----	6	176
	Sandstone, greenish-gray, very fine to fine, slightly calcareous, semiconsolidated; lignitic material-----	6	182
	Sandstone, medium-bluish-gray, very fine to medium, clayey, slightly calcareous, mostly semiconsolidated; indurated 182-182.5 ft-----	10	192
	Shale, olive-gray, silty, slightly calcareous, locally lignitic-----	4	196
	Shale, olive-black to brownish-black; abundant lignite-----	7	203
	Siltstone, olive-gray, sandy, calcareous; interbedded with dark-greenish-gray, clayey, semiconsolidated siltstone-----	22	225
	Lignite; with lignitic shale interbed-----	5	230
	Sandstone, greenish-gray, very fine, clayey-----	4	234
	Shale, greenish-gray, bentonitic (?), soft-----	3	237
Tongue River Formation (?):			
	Siltstone, dark-greenish-gray to olive-gray, semiconsolidated-----	10	247
	Siltstone, dark-greenish-gray, sandy, slightly calcareous, moderately consolidated-----	5	252
	Sandstone, very fine, clayey, calcareous, moderately consolidated; abundant lignitic material-----	21	273
	Sandstone, indurated and lignite, interbedded-----	5	278
	Siltstone, olive-gray, lignitic, moderately consolidated-----	7	285
	Shale, brownish-black; with lignite interbeds-----	5	290
	Siltstone, greenish-gray to light-olive-gray; lignitic material; semiconsolidated-----	5	295
	Siltstone, light-olive-gray to yellowish-gray, soft---	3	298
	Sandstone, greenish-gray, very fine, clayey, lignitic, calcareous, moderately consolidated-----	17	315

139-97-22AAA2
 J. & E. Stransky
 (Log from Mann Drilling Co.)

Altitude: 2468 ft above msl

Date drilled: September 1963

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Clay, brown, sandy-----	10	10
	Clay, gray-----	7	17
	Lignite-----	4	21
	Sand, brown-----	26	47
	Sand, gray-----	51	98

139-97-24ADB
 USBR Drill Hole 128 (PR)

Altitude: 2423 ft above msl

Date drilled: August 1957

Quaternary deposits, undifferentiated:			
	Silt, brown-----	2.5	2.5
	Sand, gray, fine, silty-----	10.7	13.2
	Gravel, fine to medium-----	1.2	14.4
Sentinel Butte Formation:			
	Sand, blue-gray, medium, clayey, compact-----	4.2	18.6
	Shale, gray-----	5.4	24
	Lignite-----	.2	24.2

139-97-24BCB
 USBR Auger Hole 63

Altitude: 2449 ft above msl

Date drilled: March 1957

Sentinel Butte Formation:			
	Topsoil, brown, sandy clay-----	1	1
	Sand, dark-brown, fine, silty, uniform; trace of clay; contains organic matter; moderate HCl reaction; dry-----	4	5
	Clay, light-gray, very silty; trace very fine sand; slight HCl reaction; appears alkaline; clean; firm; moderately plastic; damp-----	4	9
	Sand, brown, fine; fairly clean to trace of silt; occasional small lignite fragments; uniform; dense; firm; damp-----	7	16

Water table reported not reached.

139-97-24CCC
 NDSNC 4-748
 (Modified from Schmid, 1963)

Altitude: 2475 ft above msl

Date drilled: August 1962

Golden Valley Formation:			
	Topsoil-----	4	4
	Siltstone, dusky-yellow, sandy, calcareous, weakly consolidated, oxidized-----	8	12
	Siltstone, pale-yellowish-brown, lignitic, moderately consolidated, oxidized-----	4	16
	Siltstone, grayish-orange to dusky-yellow, lignitic, moderately consolidated, oxidized-----	12	28

139-97-24CCC, Continued
 NDSWC 4-748

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation:			
	Siltstone, medium-dark-gray, sandy, semiconsolidated--	30	58
	Sandstone, dark-greenish-gray, very fine, clayey, predominantly quartz, semiconsolidated-----	4	62
	Siltstone, medium-dark-gray, semiconsolidated-----	3	65
	Sandstone, medium-bluish-gray, very fine to medium, rounded, predominantly quartz-----	21	86
	Claystone, light-olive-gray, slightly calcareous, indurated-----	6	92
	Sandstone as above-----	8	100
	Sandstone, medium-bluish-gray, very fine to medium, predominantly quartz, highly calcareous cement, indurated-----	2	102
	Sandstone, medium-bluish-gray, very fine to medium, calcareous, semiconsolidated-----	10	112
	Sandstone, medium-bluish-gray, very fine to medium, semiconsolidated; interbedded with lignite-----	6	118
	Shale, olive-gray, silty, lignitic-----	10	128
	Sandstone, light-bluish-gray to light-olive-gray, silt to fine, slightly calcareous, semiconsolidated---	7	135
	Shale as above; with thin lignite interbeds-----	7	142
	Sandstone, light-olive-gray, very fine, lignitic, moderately consolidated-----	16	158
	Siltstone, brownish-gray to brownish-black, lignitic, moderately consolidated-----	10	168
	Lignite; interbedded with siltstone as above-----	4	172
	Sandstone, clayey, semiconsolidated; with interbeds of greenish-gray, silty shale-----	8	180
	Shale, greenish-gray, lignitic, calcareous-----	15	195
	Siltstone, light-olive-gray, semiconsolidated-----	5	200
	Siltstone, medium-bluish-gray, clayey, lignitic, semiconsolidated-----	6	206
	Sandstone, greenish-gray, very fine to fine, clayey, semiconsolidated-----	8	214
	Shale, olive-gray, silty, calcareous-----	2	216
	Lignite-----	6	222
	Shale, dark-greenish-gray, silty, lignitic-----	12	234
	Siltstone, olive-black to brownish-black, clayey, lignitic, semiconsolidated-----	3	237
	Siltstone, light-greenish-gray, clayey, lignitic, semiconsolidated-----	4	241
	Siltstone, greenish-gray, clayey, semiconsolidated----	5	246
	Claystone, grayish-orange, slightly calcareous, well to slightly indurated-----	2	248
	Siltstone, light-greenish-gray to greenish-gray, sandy, semiconsolidated; grading into:		
	Sandstone, very fine to fine, silty, semiconsolidated-	57	305
	Lignite; interbedded with grayish-orange, indurated claystone-----	2	307
	Shale, grayish-orange, silty, calcareous-----	1	308
	Siltstone, light-olive-gray, sandy, noncalcareous, semiconsolidated-----	3	311
	Shale, greenish-gray, silty, slightly calcareous-----	5	316
	Siltstone, greenish-gray to olive-gray, sandy, lignitic, calcareous, semiconsolidated-----	20	336

139-97-33DDD
 NDSWC 22-748
 (Modified from Schmid, 1963)

Altitude: 2529 ft above msl

Date drilled: August 1962

Geologic source	Material	Thickness (feet)	Depth (feet)
Quaternary deposits, undifferentiated:			
	Sand, very fine to fine, clayey, slightly calcareous--	2	2
	Silt, brownish-gray, clayey to sandy, calcareous-----	12	14
	Gravel, fine, sandy; predominantly quartz, sandstone, and limestone; interbedded with pale-yellowish-brown silty clay-----	10	24
Golden Valley Formation:			
	Sandstone, very fine to coarse, clayey, predominantly quartz, slightly calcareous-----	8	32
Sentinel Butte Formation:			
	Siltstone, greenish-gray, sandy; with concretion zones; semiconsolidated-----	28	60
	Sandstone, semiconsolidated; poor samples-----	22	82
	Sandstone, greenish-gray to dark-greenish-gray, very fine to medium, clayey, semiconsolidated-----	12	94
	Siltstone, light-olive-gray with dark carbonaceous laminae, slightly calcareous, semiconsolidated-----	12	106
	Sandstone, greenish-gray, very fine, clayey-----	7	113
	Shale, interbedded olive-gray and olive-black, very silty, lignitic-----	24	137
	Siltstone, greenish-gray, lignitic, calcareous, semiconsolidated-----	8	145
	Sandstone, medium-light-blue-gray, fine, silty, calcareous, micaceous, semiconsolidated-----	16	161
	Shale, dark-greenish-gray, silty, partly carbonaceous--	13	174
	Shale, yellowish-gray to olive-gray, interbedded silty and calcareous-----	6	180
	Siltstone, dark-greenish-gray, slightly sandy, carbonaceous, semiconsolidated-----	33	213
	Sandstone, dark-greenish-gray to brownish-black, very fine to fine, clayey, carbonaceous, semiconsolidated--	36	249
	Shale, dusky-yellow-brown, lignitic-----	2	251
	Shale, dark-greenish-gray, sandy, carbonaceous-----	8	259
	Lignite-----	5	264
	Shale, dark-greenish-gray and olive-gray, silty-----	5	269
	Shale, black, carbonaceous, lignitic-----	3	272
	Shale, dark-greenish-gray, silty-----	9	281
	Sandstone, greenish-gray, very fine, clayey, micaceous, semiconsolidated-----	11	292
	Shale-----	2	294
	Lignite, black-----	5	299
	Shale-----	4	303
	Siltstone, grayish-blue-green to dark-greenish-gray, partly lignitic, noncalcareous, moderately consolidated to indurated-----	10	313
	Shale, olive-gray, silty, sandy, calcareous-----	6	319
	Siltstone as above-----	3	322
	Shale, varicolored brownish-gray, dark-greenish-gray, grayish-blue, green, grayish-olive-green, silty, non-calcareous, disseminated pyrite, hard; with thin lignite laminae-----	38	360

139-98-1AAA
Northern Pacific DX 360-10
(Log from Northern Pacific Railway Co.)

Altitude: 2540 ft above msl

Date drilled: July 1961

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation:			
	Clay, yellow-----	11	11
	Clay, gray-----	5	16
	Clay, yellow, sandy-----	20	36
	Lignite, slack; with some soft lignite at 42 ft-----	6	42
	Clay, blue-----	32	74
	Lignite-----	2	76
	Clay, gray-----	19	95
	Lignite-----	11	106
	Clay, gray-----	7	113
	Lignite, trace-----	1	114
	Clay, gray-----	13	127
	Lignite, trace-----	1	128
	Clay, gray-----	12	140

139-98-3DAA
Northern Pacific DX 360-27
(Log from Northern Pacific Railway Co.)

Altitude: 2545 ft above msl

Date drilled: 1962

Sentinel Butte Formation:			
	Clay, yellow-----	16	16
	Clay, blue-----	16	32
	Lignite, hard-----	9	41
	Clay, brown-----	1	42
	Lignite, trace-----	1	43
	Clay, gray-----	35	78
	Lignite, trace-----	1	79
	Clay, gray-----	23	102
	Lignite, hard-----	13	115
	Clay, brown to gray-----	5	120
	Clay, sandy-----	5	125

139-98-5AAA
Northern Pacific DX 360-28
(Log from Northern Pacific Railway Co.)

Altitude: 2585 ft above msl

Date drilled: 1962

Sentinel Butte Formation:			
	Clay, yellow-----	23	23
	Lignite, slack, to soft lignite-----	3	26
	Lignite, medium-hard-----	3	29
	Lignite, hard-----	2	31
	Clay, blue-----	1	32
	Lignite, hard, trace-----	1	33
	Clay, gray-----	25	58
	Rock, hard-----	1	59
	Clay, gray, sandy-----	24	83
	Lignite, hard-----	2	85
	Clay, gray-----	5	90
	Lignite, hard-----	1	91
	Clay, gray-----	16	107
	Lignite, hard-----	14	121
	Clay, brown-----	1	122
	Lignite, hard-----	4	126
	Clay, brown to gray-----	14	140

139-98-6CDA
G. Zarak
(Log from Mann Drilling Co.)

Altitude: 2515 ft above msl

Date drilled: June 1965

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Quaternary deposits, undifferentiated:			
	Clay, silty-----	32	32
	Gravel-----	1	33
Sentinel Butte Formation:			
	Coal-----	6	39
	Sand, blue-----	50	89

139-98-8ADC
W. Zarak
(Log from Mann Drilling Co.)

Altitude: 2520 ft above msl

Date drilled: October 1967

Sentinel Butte Formation:			
	Clay, brown, sandy-----	17	17
	Lignite, loose-----	11	28
	Lignite-----	9	37
	Clay, gray-----	51	88
	Sandstone-----	2	90
	Sand-----	20	110

139-98-12DCC1
Northern Pacific Railway
(Log from Northern Pacific Railway Co.)

Altitude: 2488 ft above msl

Date drilled: 1905

Sentinel Butte Formation:			
	Gumbo-----	42	42
	Coal-----	12	54
	Gumbo-----	15	69
	Coal-----	4	73
	Gumbo-----	37	110
Tongue River Formation (?):			
	Gumbo-----	63	173
	Coal-----	2	175
	Gumbo-----	28	203
	Sandrock, white, fine-----	15	218
	Shale-----	130	348
	Sandrock, hard-----	3	351
	Shale, white-----	15	366
	Sandrock-----	40	406
	Coal-----	1	407
	Shale-----	17	424

139-98-13DDD
NDSWC 3540

Altitude: 2517 ft above msl

Date drilled: September 1967

Sentinel Butte Formation:			
	Topsoil, dark-brown, fine, sandy loam-----	1	1
	Shale, dark-yellowish-brown, sandy, carbonaceous, soft-----	18	19

139-98-13DDD, Continued
 NDEWC 3540

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation, Continued:			
	Lignite; with yellow clay in fractures; takes drilling fluid-----	4	23
	Shale, brownish-black, carbonaceous-----	9	32
	Shale, light- to medium-gray, moderately soft-----	6	38
	Lignite-----	2	40
	Shale, carbonaceous-----	3	43
	Shale, light-greenish-gray, light-gray, and medium-gray, smooth, slightly brittle-----	11	54
	Shale, greenish-gray to dark-greenish-gray, sandy, carbonaceous-----	7	61
	Sandstone, indurated-----	2	63
	Shale as above-----	9	72
	Lignite, black, hard-----	11	83
	Shale, carbonaceous-----	5	88
	Sandstone, greenish-gray, very fine to fine, soft; some carbonaceous streaks-----	16	104
	Shale, light-gray, silty, smooth, slightly brittle----	22	126
	Sandstone, partly indurated-----	3	129
	Shale, medium-gray to greenish-gray, silty; with thin seams of white bentonitic clay-----	9	138
Tongue River Formation:			
	Shale, medium-gray, silty. Poor samples because of lost circulation 150-280 ft-----	34	172
	Shale, carbonaceous-----	7	179
	Shale, silty-----	9	188
	Lignite-----	5	193
	Shale-----	17	210
	Lignite-----	5	215
	Shale, gray-green-----	21	236
	Sandstone, gray-green, clayey, semiconsolidated-----	20	256
	Lignite-----	4	260
	Shale-----	2	262
	Sandstone, gray, clayey; mostly semiconsolidated, indurated at base-----	9	271
	Shale, medium-gray, silty-----	24	295
	Sandstone, dark-greenish-gray, indurated-----	5	300
	Sandstone, dark-greenish-gray, fine, well-sorted, semiconsolidated-----	22	322
	Sandstone, indurated-----	2	324
	Sandstone, dark-greenish-gray, fine, well-sorted, semiconsolidated-----	22	346
	Lignite-----	1	347
	Shale, carbonaceous-----	7	354
	Sandstone, dark-greenish-gray, fine to medium, semi-consolidated to moderately indurated-----	9	363
	Shale, medium-gray, silty-----	6	369
	Sandstone, medium-gray, silt to very fine, clayey, soft-----	13	382
	Lignite-----	4	386
	Shale, carbonaceous-----	6	392
	Siltstone, very light gray to grayish-buff, semi-consolidated; with calcareous and sandy layers-----	5	397
	Shale, silty, carbonaceous-----	3	400
	Sandstone, very light gray to light-greenish-gray, silt to very fine, locally clayey, calcareous, soft-----	45	445
	Shale, dark-gray, tight-----	14	459
	Sandstone as above; with thin layers of calcareous, indurated sandstone-----	20	479
	Siltstone, variegated gray; interbedded with very fine sandstone, silty shale, and carbonaceous shale-----	81	560
	Shale, variegated gray, green, and brown, silty-----	6	566
	Siltstone, clayey, soft-----	5	571
	Shale as above-----	4	575

139-98-13DDD, Continued
NDSWC 3540

Geologic source	Material	Thickness (feet)	Depth (feet)
Tongue River Formation, Continued:			
	Lignite-----	5	580
	Shale, brown, carbonaceous-----	14	594
Basal Tongue River sandstone:			
	Siltstone, light-gray, semiconsolidated-----	18	612
	Sandstone, light-gray and light-greenish-gray, silt to very fine, slightly clayey, soft-----	16	628
	Siltstone, light-gray and light-greenish-gray, slightly clayey, soft-----	4	632
	Sandstone, light-gray to dark-greenish-gray and brownish-black, fine and medium, carbonaceous, weakly consolidated-----	19	651
Cannonball Formation:			
	Shale, light- to medium-gray, silty to sandy, moderately soft, tight-----	49	700
	Shale, variegated gray, silty, bentonitic, smooth, tight-----	40	740
	Shale, gray, silty and sandy-----	8	748
	Siltstone, buff, indurated-----	2	750
	Shale as above-----	10	760
	Sandstone, greenish-gray with black specks, fine, soft; with occasional thin interbeds of calcareous, indurated sandstone-----	21	781
	Shale, white, sandy, clayey, soft; with interbeds of green and gray, clayey, soft sandstone-----	19	800
	Sandstone, green and gray, clayey, soft; with thin calcareous, indurated sandstone and carbonaceous shale interbeds-----	50	850
Ludlow Formation:			
	Lignite-----	2	852
	Shale, carbonaceous-----	7	859
	Shale, gray, sandy-----	6	865
	Sandstone, very fine, clayey, mostly semiconsolidated; indurated 667-878 ft-----	9	874
	Shale, gray, sandy, sticky-----	26	900

139-98-19CBB1
NDSWC 3692

Altitude: 2625 ft above msl

Date drilled: May 1969

Sentinel Butte Formation:			
	Topsoil, dark-brown, silty loam-----	1	1
	Shale, gray with iron stains, silty, slightly plastic; thinly interbedded with gray claystone containing plant fragments-----	16	17
	Lignite, black, medium-hard, brittle, fractured-----	6	23
	Shale, brownish-gray to light-greenish-gray, very silty, moderately soft-----	11	34
	Siltstone, light- to medium-gray, soft; dry-----	6	40
	Siltstone, moderate-olive-brown, soft, oxidized-----	8	48
	Sandstone, light-olive-gray, very fine and fine, subangular; contains fine lignite grains; weakly consolidated-----	14	62
	Sandstone, dark-greenish-gray, very fine to fine, predominantly fine, subangular, clean; takes drilling fluid-----	19	81
	Shale, very dark gray to black, carbonaceous, smooth, tight-----	5	86
	Lignite-----	2	88
	Shale, carbonaceous-----	6	94

139-98-19CBB1, Continued
NDSWC 3692

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation, Continued:			
	Siltstone, light-gray, clayey, soft, slightly plastic; with shale interbeds-----	10	104
	Shale, variegated gray, brownish-gray, and greenish-gray, very silty, soft, slightly plastic-----	11	115
	Sandstone, light- to dark-greenish-gray, very fine and fine, mostly clayey, soft; except indurated from 119 to 121 ft-----	12	127
	Lignite, black, moderately hard, brittle, fractured; takes drilling fluid-----	16	143
	Shale, carbonaceous-----	4	147
	Shale, light- and medium-gray, becoming light-greenish-gray downward, silty and sandy, moderately soft, brittle, tight-----	13	160
	Shale as above; predominantly medium-gray with some carbonaceous stains-----	9	169
	Lignite-----	1	170
	Shale as above-----	3	173
	Lignite-----	.5	173.5
	Shale, medium-gray; increasingly sandy downward-----	7.5	181
	Sandstone, light-greenish-gray to greenish-gray, very fine, clayey, weakly consolidated-----	7	188
	Shale, sandy; with clayey, soft sandstone interbeds---	10	198
	Sandstone, light-greenish-gray, very fine and fine, clayey, soft, weakly consolidated-----	26	224
	Sandstone as above; interbedded with dark-greenish-gray, medium, weakly consolidated sandstone-----	7	231
	Shale, medium-gray to black, carbonaceous-----	22	253
	Shale, bentonitic (?)-----	2	255
Tongue River Formation (?):			
	Lignite (?)-----	1	256
	Shale, medium-gray, silty, soft; with interbeds of greenish-gray, sandy, soft shale and white, bentonitic clay-----	38	294
	Lignite-----	10	304
	Shale, light-gray, very silty, soft-----	8	312
	Shale, light- and medium-gray, silty, smooth, moderately hard; with bentonitic, soft clay seams-----	8	320

139-98-19DDC
Northern Pacific DX 360-19
(Log from Northern Pacific Railway Co.)

Altitude: 2660 ft above msl

Date drilled: October 1962

Sentinel Butte Formation:			
	Clay, yellow-----	13	13
	Clay, brown to blue-----	8	21
	Lignite, medium-hard-----	4	25
	Clay, gray-----	10	35
	Clay, gray; with trace of lignite-----	2	37
	Clay, gray-----	23	60
	Lignite, hard-----	5	65
	Clay, gray-----	24	89
	Lignite, hard-----	1	90
	Clay, brown-----	14	104
	Sand, gray-----	12	116
	Sandrock, hard-----	3	119
	Clay, gray, sandy-----	3	122
	Clay, black-----	4	126
	Clay, gray, sandy, hard-----	15	141

139-98-19DDC, Continued
Northern Pacific DX 360-19

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation, Continued:			
	Rock, hard-----	5	146
	Clay, gray, sandy-----	11	157
	Lignite, hard-----	15	172
	Clay, brown-----	8	180

139-98-20EBA
Northern Pacific DX 360-16
(Log from Northern Pacific Railway Co.)

Altitude: 2620 ft above msl Date drilled: 1962

Sentinel Butte Formation:			
	Clay, soft-----	22	22
	Clay, yellow, sandy-----	4	26
	Clay, yellow to brown-----	3	29
	Lignite, trace-----	1	30
	Clay, white, sandy, hard-----	32	62
	Sandstone, soft-----	2	64
	Sand, coarse, and clay-----	2	66
	Clay, sandy-----	42	108
	Clay, blue-----	4	112
	Lignite, hard-----	16	128
	Clay, gray-----	27	155
	Sand, blue-----	23	178
	Sandstone, hard-----	4	182
	Sand, blue-----	2	184
	Rock, hard-----	3	187
	Sand, blue, hard-----	8	195
	Clay, gray, sandy-----	6	201
	Sandrock-----	.4	201.4

139-98-21AAD
USBR Drill Hole 35 (PR)

Altitude: 2540 ft above msl Date drilled: March 1957

Sentinel Butte Formation:			
	Sand, tan, silty-----	2.5	2.5
	Sand, tan, fine-----	15	17.5
	Sand, tan and brown, fine-----	6.9	24.4

Water table reported not reached.

139-98-21ADD
Northern Pacific DX 360-17
(Log from Northern Pacific Railway Co.)

Altitude: 2562 ft above msl Date drilled: 1962

Sentinel Butte Formation:			
	Topssoil-----	4	4
	Lignite, slack-----	3	7
	Clay, yellow to brown-----	25	32
	Clay, blue-----	24	56
	Sand, blue-----	10	66
	Lignite, hard-----	16	82
	Clay, gray-----	23	105
	Sand, blue-----	26	131
	Rock, hard-----	3	134
	Clay, gray, sandy-----	26	160

139-98-21CCD
 Northern Pacific DX 360-18
 (Log from Northern Pacific Railway Co.)

Altitude: 2585 ft above msl Date drilled: 1962

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Topsail-----	3	3
	Rock, brown, broken-----	2	5
	Clay, brown-----	2	7
	Clay, yellow to brown; with trace of lignite-----	1	8
	Clay, sorted-----	39	47
	Lignite, hard-----	15	62
	Clay; with trace of lignite-----	1	63
	Clay, gray-----	9	72
	Clay, gray, sandy-----	68	140

139-98-22AAD
 USBR Drill Hole 36 (PR)

Altitude: 2498 ft above msl Date drilled: March 1957

Sentinel Butte Formation:			
	Clay, black, fat-----	2.5	2.5
	Silt, tan, sandy-----	36.3	38.8
	Lignite, black, slack-----	.9	39.7
	Silt, tan, sandy-----	4.3	44
	Lignite, black, compact, hard-----	12	56

139-98-22DDA2
 J. Perdaems
 (Log from Mann Drilling Co.)

Altitude: 2504 ft above msl Date drilled: June 1965

Sentinel Butte Formation:			
	Clay-----	12	12
	Clay, sandy-----	7	19
	Sand, brown-----	23	42
	Coal-----	6	48

139-98-24BCB
 Northern Pacific DX 360-25
 (Log from Northern Pacific Railway Co.)

Altitude: 2570 ft above msl Date drilled: 1962

Sentinel Butte Formation:			
	Sand, yellow to blue-----	39	39
	Lignite, slack-----	1	40
	Sand, blue-----	5	45
	Clay, blue-----	7	52
	Clay, blue, sandy-----	5	57
	Lignite, hard-----	9	66
	Clay, gray-----	3	69
	Lignite, trace-----	1	70
	Clay, gray-----	13	83
	Lignite, hard-----	2	85
	Clay, gray-----	23	108
	Rock, hard-----	3	111
	Clay, gray-----	8	119

139-98-33AAD
Northern Pacific DX 360-21
(Log from Northern Pacific Railway Co.)

Altitude: 2640 ft above msl Date drilled: 1962

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Clay, yellow to brown-----	12	12
	Lignite, slack to soft lignite-----	3	15
	Clay, brown to gray-----	18	33
	Clay, blue-----	6	39
	Lignite, trace-----	1	40
	Clay, blue-----	5	45
	Lignite, trace-----	1	46
	Clay, blue-----	24	70
	Lignite, hard-----	2	72
	Clay, blue-----	17	89
	Lignite, hard-----	3	92
	Clay, gray-----	30	122
	Sand, blue-----	15	137
	Lignite, hard-----	14	151
	Clay, gray-----	21	172
	Clay, gray, sandy-----	43	215
	Clay, sandy, soft-----	10	225
	Sandrock, soft-----	1	226
	Clay, sandy-----	24	250

139-98-33CCB
Northern Pacific DX 360-26
(Log from Northern Pacific Railway Co.)

Altitude: 2610 ft above msl Date drilled: 1962

Sentinel Butte Formation:			
	Clay, yellow, sandy-----	34	34
	Lignite, trace-----	1	35
	Clay, gray-----	5	40
	Clay, brown-----	1	41
	Clay, gray-----	14	55
	Rock, hard-----	1	56
	Clay, gray-----	2	58
	Lignite-----	1	59
	Clay, gray-----	4	63
	Lignite, trace-----	1	64
	Clay, blue-----	10	74
	Lignite-----	1	75
	Clay, blue-----	12	87
	Lignite, hard-----	4	91
	Clay, brown to gray-----	37	128
	Rock, hard-----	2	130
	Clay, gray, sandy-----	24	154
	Lignite, hard-----	13	167
	Clay, brown and gray-----	3	170

139-98-35ABA
Northern Pacific DX 360-24
(Log from Northern Pacific Railway Co.)

Altitude: 2580 ft above msl Date drilled: 1962

Sentinel Butte Formation:			
	Clay, brown to yellow-----	32	32
	Clay, blue-----	17	49
	Rock, hard-----	2	51

139-98-35ABA, Continued
Northern Pacific DX 360-24

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation, Continued:			
	Clay, gray-----	8	59
	Rock, blue, hard-----	2	61
	Clay, gray-----	7	68
	Lignite, hard-----	2	70
	Clay, blue-----	7	77
	Lignite, trace-----	1	78
	Clay, blue-----	8	86
	Lignite, hard-----	3	89
	Clay, blue-----	13	102
	Clay, blue, sandy-----	34	136
	Clay, brown-----	3	139
	Lignite, hard-----	16	155
	Clay, brown-----	5	160

139-99-5ABC
Belfield 1

Interpretive log based on drillers' logs from
Mann Drilling Co., city of Belfield, and
electric log

Altitude: 2575 ft above msl

Date drilled: December 1961

Sentinel Butte Formation:			
	Shale-----	45	45
	Lignite-----	10	55
	Shale, green-----	21	76
	Sandstone-----	.5	76.5
	Shale, light-green-----	21.5	98
	Lignite-----	2	100
	Shale, sandy; with thin beds of sandstone or siltstone; indurated in part-----	46	146
	Shale-----	24	170
Tongue River Formation (?):			
	Lignite-----	4	174
	Shale, gray, silty; becoming sandy downward-----	21	195
	Sandstone, clayey, soft; with interbeds of sandy shale-----	106	301
	Shale, gray-----	18	319
	Lignite-----	2	321
	Shale, carbonaceous-----	5	326
	Shale, gray-----	4	330
	Shale; with lignite interbeds-----	4	334
	Shale, light-gray-----	20	354
	Lignite-----	6	360
	Sandstone, clayey, soft-----	10	370
	Shale, light-gray-----	22	392
	Sandstone, indurated-----	8	400
	Shale, very light gray-----	10	410
	Sandstone, clayey, semiconsolidated; interbedded with very light gray shale-----	34	444
	Sandstone and shale as above; but mostly sandstone-----	79	523
	Lignite-----	3	526
	Shale, carbonaceous-----	12	538
	Lignite and shale, interbedded-----	18	556
	Shale, white; with clayey sandstone interbeds-----	31	587
Basal Tongue River sandstone:			
	Sandstone, clayey, semiconsolidated-----	28	615
	Sandstone, clean, semiconsolidated-----	28	643
	Sandstone, clayey, semiconsolidated; some shaly interbeds-----	25	668

139-99-5ABC, Continued
Belfield 1

Geologic source	Material	Thickness (feet)	Depth (feet)
Basal Tongue River sandstone, Continued:			
	Lignite-----	1	669
	Sandstone, clayey, semiconsolidated-----	31	700
Ludlow Formation:			
	Lignite-----	8	708
	Shale-----	12	720

139-99-5ADC
Belfield 2

Interpretive log based on driller's log from
Mann Drilling Co. and electric log

Altitude: 2575 ft above msl

Date drilled: 1964

Sentinel Butte Formation:			
	Shale, brown, sandy-----	40	40
	Lignite-----	10	50
	Shale-----	23	73
	Sandstone, soft-----	.5	73.5
	Shale, sandy-----	28.5	102
	Shale, green-----	4	106
	Shale, gray-----	25	131
	Lignite-----	2	133
	Shale, gray-----	26	159
Tongue River Formation (?):			
	Lignite-----	4	163
	Shale, gray-----	10	173
	Sandstone, clayey, semiconsolidated-----	7	180
	Shale-----	7	187
	Sandstone, clayey, semiconsolidated; with shale interbeds-----	29	216
	Shale and sandstone, interbedded-----	52	268
	Sandstone, very clayey, semiconsolidated-----	32	300
	Shale, gray-----	10	310
	Lignite-----	2	312
	Shale, white, soft-----	18	330
	Shale, white, sandy, soft; with clayey, soft sandstone interbeds-----	24	354
	Sandstone, clayey, soft-----	17	371
	Shale, white, sandy; occasional interbeds of clayey, soft sandstone-----	35	406
	Sandstone, moderately consolidated (?)-----	5	411
	Shale, with sandstone interbeds as above-----	20	431
	Sandstone, clayey, soft-----	10	441
	Shale-----	5	446
	Sandstone, clayey, soft-----	11	457
	Sandstone, indurated (?)-----	6	463
	Shale-----	5	468
	Sandstone, clayey, soft-----	5	473
	Shale-----	4	477
	Sandstone, clayey, soft-----	4	481
	Shale-----	7	488
	Sandstone, semiconsolidated-----	18	506
	Shale, sandy-----	10	516
	Shale-----	4	520
	Shale, sandy-----	6	526
	Sandstone, semiconsolidated-----	5	531
	Lignite-----	5	536
	Shale, sandy-----	14	550
	Shale-----	6	556
	Lignite (?)-----	3	559

139-99-5ADC, Continued
Belfield 2

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Tongue River Formation (?), Continued:			
	Shale, sandy-----	6	565
	Shale-----	5	570
Basal Tongue River sandstone:			
	Sandstone, semiconsolidated-----	77	647
Ludlow Formation:			
	Shale-----	17	664
	Lignite-----	5	669
	Shale-----	6	675
	Sandstone (?), semiconsolidated-----	3	678
	Shale, interbedded with lignite-----	17	695

139-99-12BBA
J. Ridl
(Log from Mann Drilling Co.)

Altitude: 2543 ft above msl Date drilled: June 1965

Quaternary deposits, undifferentiated (?):			
	Sand, surface-----	3	3
Sentinel Butte Formation:			
	Coal-----	1	4
	Clay, sandy-----	13	17
	Clay-----	19	36
	Clay, sandy-----	7	43
	Clay-----	21	64
	Coal-----	14	78

139-99-20CBC
USBR Drill Hole 32 (PR)

Altitude: 2611 ft above msl Date drilled: March 1957

Sentinel Butte Formation:			
	Clay (shale), brown and gray, weathered-----	5.5	5.5
	Clay (shale), gray-----	17.5	23
	Lignite, black-----	1.2	24.2

Water table reported not reached.

139-99-20DAC
USBR Drill Hole 126 (PR)

Altitude: 2604 ft above msl Date drilled: August 1957

Sentinel Butte Formation:			
	Shale, reddish-brown, sandy; scorched by underlying burned-out lignite bed-----	13.2	13.2
	Shale, red (baked); derived from underlying burned- out lignite bed (locally called scoria)-----	10.6	23.8
	Shale, gray, silty-----	6.2	30

Water table reported not reached.

139-99-21CCEC
 USER Drill Hole 33 (PR)

Altitude: 2611 ft above msl

Date drilled: March 1957

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Clay (shale), brown and gray, sandy, weathered-----	18	18
	Shale, black, lignitic-----	5	23
	Lignite, black-----	1.2	24.2

139-99-21CCC
 NDSWC 3539

Altitude: 2620 ft above msl

Date drilled: December 1967

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Topsoil, dark-yellowish-gray, very fine sandy loam----	1	1
	Shale, yellowish-gray to dusky-yellow with iron stains, to brownish-gray, silty, soft, oxidized-----	19	20
	Lignite-----	6	26
	Shale, light- to medium-gray and brownish-black, silty, carbonaceous, smooth, tight-----	14	40
	Shale, light-gray to light-greenish-gray with brown stains, silty-----	10	50
	Shale, moderate-dark-greenish-gray, sandy-----	9	59
	Sandstone, dark-greenish-gray and brownish-black, fine, clayey, carbonaceous in part, soft-----	9	68
	Sandstone, dark-greenish-gray, fine and medium, fairly clean, weakly consolidated; contains lignite flakes-----	11	79
	Sandstone, greenish-gray, indurated-----	2	81
	Sandstone, dark-greenish-gray, fine and medium, weakly consolidated-----	7	88
	Shale, white, sandy, clayey, soft-----	2	90
	Sandstone as above; takes drilling fluid-----	8	98
	Shale-----	2	100
	Lignite, black and brown, soft to hard; takes drilling fluid-----	15	115
	Shale, light-greenish-gray, silty, smooth, moderately hard-----	5	120
	Shale, greenish-gray to dark-gray, silty; with thin layers of white, bentonitic clay-----	20	140
	Shale, greenish-gray, silty, smooth, tight-----	10	150
	Shale as above; but medium-gray-----	10	160
	Shale, variegated gray and green; with carbonaceous streaks-----	18	178
	Siltstone (?), yellowish-gray, highly calcareous, indurated-----	1	179
	Shale, medium-gray, bentonitic-----	9	188
	Lignite-----	1	189
	Shale as above-----	11	200
	Shale, interbedded medium-gray, silty, dark-greenish-gray, sandy, and white, soft clay-----	14	214
	Sandstone, greenish-gray, partly indurated-----	3	217
	Shale, greenish-gray and medium-gray, silty-----	9	226
	Shale, greenish-gray and medium-gray, bentonitic-----	10	236
Tongue River Formation (?):			
	Lignite-----	9	245
	Shale, medium-gray, tight; with thin interbeds of yellowish-buff, slightly calcareous siltstone or indurated bentonite-----	12	257
	Shale, carbonaceous-----	4	261
	Shale, medium-gray, silty-----	10	271
	Shale, brownish-black, carbonaceous-----	5	276
	Lignite-----	3	279

139-99-21CCC, Continued
NDSWC 3539

Geologic source	Material	Thickness (feet)	Depth (feet)
Tongue River Formation (?), Continued:			
	Shale, light-gray, very silty-----	4	283
	Sandstone, light-gray, very fine, lignitic, semi-consolidated-----	18	301
	Sandstone, very fine, highly calcareous, indurated----	3	304
	Sandstone, very light gray, very fine, semiconsolidated	33	337
	Shale, sandy-----	4	341
	Sandstone as above; but somewhat clayey-----	24	365
	Sandstone, light-olive-gray, very fine to fine; cleaner than above; semiconsolidated-----	24	389
	Shale, sandy-----	13	402
	Sandstone, light-olive-gray, very fine to fine, clayey, semiconsolidated-----	6	408
	Shale, sandy-----	3	411
	Sandstone, light-greenish-gray, silt to very fine, clayey, tight-----	8	419
	Shale, sandy-----	3	422
	Sandstone as above-----	3	425
	Shale, sandy-----	3	428
	Siltstone, light-gray, sandy, semiconsolidated-----	6	434
	Shale, light-gray, silty-----	3	437
	Lignite-----	3	440
	Shale, light-gray, silty, bentonitic-----	5	445
	Siltstone, light-gray, clayey-----	4	449
	Shale, silty-----	2	451
	Siltstone as above-----	6	457
	Lignite-----	2	459
	Shale, light-olive-gray, sandy; with clayey, soft sandstone interbeds-----	10	469
	Sandstone, light-olive-gray, silt to fine, semiconsolidated-----	9	478
	Shale, light-gray, silty, tight-----	7	485
Basal Tongue River sandstone:			
	Siltstone, light-gray, sandy, clayey, soft-----	8	493
	Sandstone, light-olive-gray, silt to fine, weakly consolidated-----	22	515
	Siltstone, light-gray, very sandy, clayey, soft-----	7	522
	Sandstone as above; lignitic-----	8	530
	Shale, sandy-----	3	533
	Siltstone, light-olive-gray, very sandy, soft-----	15	548
Ludlow Formation:			
	Shale, silty to sandy-----	6	554
	Lignite-----	2	556
	Shale, silty to sandy-----	3	559
	Siltstone, light-greenish-gray and light-gray, sandy, soft; with interbeds of silty and locally carbonaceous shale-----	19	578
	Siltstone and shale as above; with thin lignite interbeds-----	42	620
	Core: Recovered 10 ft of dark-gray, silty, lignitic shale-----	10	630
	Siltstone and shale, interbedded as above-----	12	642
	Shale, light- to medium-gray, silty, smooth, tight; with occasional hard drilling-----	12	654
	Sandstone, light-gray, brownish-gray, and greenish-gray, silt to very fine, clayey, soft-----	10	664
	Shale-----	3	667
	Lignite-----	3	670
	Shale, carbonaceous-----	4	674
	Shale, silty and sandy-----	4	678
	Siltstone, greenish-gray, sandy, mostly soft; with thin indurated layers-----	7	685
	Shale, silty and sandy-----	13	698
	Siltstone as above; interbedded with very fine, soft sandstone and sandy shale-----	20	718

139-99-21GCC, Continued
NDSWC 3539

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Ludlow Formation, Continued:			
	Lignite-----	3	721
	Siltstone, light-gray, clayey, soft; interbedded with very fine, clayey, soft sandstone and occasional shale beds-----	19	740
	Shale, carbonaceous-----	5	745
	Lignite-----	9	754
	Shale, carbonaceous-----	8	762
	Siltstone, clayey, soft; poor samples-----	5	767
	Shale-----	5	772
	Sandstone, silt to very fine, weakly consolidated----	23	795
	Lignite-----	2	797
	Sandstone as above-----	12	809
	Sandstone, indurated-----	1	810
	Sandstone, silt to very fine, weakly consolidated; increasingly clayey downward-----	20	830
	Sandstone, indurated-----	1	831
	Shale, silty to sandy-----	15	846
	Siltstone, brownish-black, sandy, lignitic, soft----	5	851
	Lignite-----	3	854
	Siltstone as above-----	2	856
	Shale, dark-gray, silty to sandy, carbonaceous-----	11	867
	Siltstone, iron-cemented-----	9	876
	Shale, dark-gray, sandy; poor sample return-----	15	891
	Sandstone, clayey, indurated in part-----	8	899
	Shale, medium- to dark-gray and greenish-gray, silty and sandy-----	14	913
	Lignite-----	1	914
	Shale, sandy-----	7	921
	Shale, gray and greenish-gray, very tight; with a few thin lignite interbeds-----	16	937
	Shale, gray and greenish-gray, tight-----	13	950

139-99-21DAD
USBR Auger Hole 55

Altitude: 2702 ft above msl Date drilled: March 1957

Golden Valley Formation:			
	Topsoil, brown sand-----	1	1
	Sand, tan, fine, silty, clayey, uniform, firm; moist--	12	13
Sentinel Butte Formation:			
	Clay, gray, fat, occasional gypsum crystals, firm, plastic; moist-----	3	16
Water table reported not reached.			

139-99-23DAD
USBR Drill Hole 34 (PR)

Altitude: 2647 ft above msl Date drilled: March 1957

Golden Valley Formation (?):			
	Topsoil, sand, aeolian-----	5.5	5.5
Sentinel Butte Formation:			
	Clay (shale), gray-----	8.5	14
	Clay (shale), gray; with lignite seams-----	11	25

140-91-2DDA
USGS Auger Test 11

Altitude: 2143 ft above msl

Date drilled: August 1968

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Quaternary deposits, undifferentiated:	Silt, moderate-yellowish-brown, sandy-----	20	20
Sentinel Butte Formation (?):	Shale (?), olive-gray to yellowish-brown, silty, sandy-----	10	30

140-91-3BAA
NDSWC 3551

Altitude: 2031 ft above msl

Date drilled: October 1967

Quaternary deposits, undifferentiated:	Loam, brownish-black-----	2	2
	Clay, dusky-yellow, iron-stained, soft-----	7	9
	Sand, dark-greenish-gray, fine to medium, moderately well sorted, subangular, quartzose and lignitic-----	15	24
	Clay, dark-gray, very soft, sticky-----	9	33
	Silt, sandy; with interbedded sand and clay (from electric log and poor samples)-----	39	72
	Sand, silty; with interbedded silt, clay, and gravel (from electric log and poor samples)-----	48	120
	Silt, clayey and sandy (from electric log)-----	32	152
Tongue River Formation:	Shale, light-greenish-gray, silty (poor samples)-----	18	170
	Shale, green-----	10	180
	Lignite-----	7	187
	Sandstone, semiconsolidated; with interbedded thin lignite seams-----	19	206
	Shale-----	4	210

140-91-4BAB
USGS Auger Test 9

Altitude: 2103 ft above msl

Date drilled: August 1968

Quaternary deposits, undifferentiated:	Soil, brown, very fine sand-----	.5	.5
	Clay, dark-brown with white calcareous streaks, very fine, sandy-----	1.5	2
	Sand, medium-brown, very fine to fine, subangular, clayey, calcareous-----	7	9
	Clay, medium-brown, silty to very fine sandy, slightly calcareous to noncalcareous, slightly plastic-----	8	17
	Clay, medium-brown, silty, slightly calcareous; more plastic than above-----	3	20
	Clay, reddish-brown, silt to medium, sandy, very calcareous with some limestone grains, slightly plastic-----	20	40
	Clay, medium-brown, silt to very fine; sandier than above; some limestone grains, but less calcareous than above; slightly more plastic than above-----	15	55
	Clay, medium-brown, silt to very fine; sandier than above; some limestone, quartz, and mica grains; more calcareous, less plastic than above-----	5	60
	Clay as above; but moister, more plastic-----	5	65

140-91-15ADD
NDSWC 3702

Altitude: 2097 ft above msl

Date drilled: June 1969

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Quaternary deposits, undifferentiated:			
	Loam, black, silty-----	1	1
	Silt, yellowish-gray, clayey and sandy-----	4	5
	Sand, dark-brown, medium to very coarse, heavily iron-stained; interbedded with thin, fine gravel and silt lenses-----	11	16
	Gravel, dark-brown, sandy, generally subangular; pebbles are principally iron oxide concretions, sandstone, and chert-----	8	24
	Clay, dusky-yellow, silty to sandy, oxidized-----	21	45
	Silt, moderate-olive-brown and light-olive-gray; contains detrital lignite and lignite sand-----	25	70
	Clay, moderate-olive-brown, silty-----	15	85
	Silt, olive-gray; interbedded with clay and lignitic sand beds-----	15	100
Tongue River Formation:			
	Shale (?), medium-gray, silty, lignitic and carbonaceous-----	20	120
	Siltstone, very light gray and light-greenish-gray, clayey, calcareous, semiconsolidated-----	30	150
	Shale, medium-light-gray and light-olive-gray, silty, brittle-----	12	162
	Sandstone, light-olive-gray, very fine, clayey, semiconsolidated-----	8	170
	Shale, variegated grays and greens, silty and sandy, interbedded-----	18	188
	Sandstone or siltstone, semiconsolidated (from electric log, poor samples)-----	12	200

140-91-24DAD
USGS Auger Test 14

Altitude: 2029 ft above msl

Date drilled: August 1968

Quaternary deposits, undifferentiated:			
	Silt, moderate-yellowish-brown, loose-----	5	5
	Sand, moderate-yellowish-brown, very fine to fine-----	5	10
	Silt, clayey, sandy; with a few small pebbles-----	5	15
	Clay, silty, sandy, calcareous; with a few small pebbles-----	15	30
	Clay, moderate-yellowish-brown, sandy, calcareous-----	10	40
	Clay, sandy-----	10	50

140-91-30CDB
J. Dick
Interpretive log based on driller's log from
Opp Drilling Co., electric, and gamma-ray logs

Altitude: 2398 ft above msl

Date drilled: August 1968

Sentinel Butte Formation:			
	Soil, dark-----	1	1
	Shale, dark-gray-----	7	8
	Lignite, slack-----	3	11
	Shale, blue-----	4	15
	Shale, gray, sandy-----	11	26
	Sandstone, yellow, coarse (?), semiconsolidated-----	6	32
	Shale, blue-----	43	75

140-91-30CDB, Continued
J. Dick

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation, Continued:			
	Sandstone, blue, semiconsolidated; dry-----	7	82
	Shale, blue-----	3	85
	Shale, black-----	1	86
	Lignite, hard; dry-----	1.5	87.5
	Shale, brown, silty-----	9.5	97
	Sandstone (electric log), semiconsolidated; 1 gpm-----	11	108
	Shale, brown, silty-----	3	111
	Sandstone, gray, silty, semiconsolidated-----	4	115
	Shale, gray-----	6	121
	Shale, blue; with soft sandstone strips-----	13	134
	Rock, very hard-----	1.5	135.5
	Shale, blue, sandy-----	6.5	142
	Shale, blue-----	3	145
	Lignite, hard; dry-----	3	148
	Shale, dark-brown-----	1	149
	Lignite, brown, hard; dry-----	1	150
	Shale, blue-----	6	156
	Sandstone, blue, semiconsolidated; dry-----	6	162
	Siltstone, semiconsolidated, or shale, silty (electric log)-----	8	170
	Sandstone, gray, silty, semiconsolidated-----	12	182
	Shale, black-----	4	186
	Sandstone, gray, fine-----	1	187
	Shale, brown-----	4	191
	Sandstone, blue, semiconsolidated-----	3	194
	Shale, blue-----	6	200
	Shale, brown-----	2	202
	Shale, blue-----	2	204
	Sandstone, blue, fine, semiconsolidated-----	8	212
	Shale, blue-----	4	216
	Sandstone, blue, fine, semiconsolidated-----	3	219
	Shale, blue-----	7	226
	Sandstone, blue, fine, semiconsolidated-----	8	234
	Shale, black-----	4.5	238.5
	Shale, blue-----	5.5	244
	Shale, green-----	6	250
	Shale, blue-----	12	262
	Sandstone, blue, semiconsolidated-----	8	270
	Sandstone, blue "spongy"-----	10	280
	Sandstone, blue, semiconsolidated-----	16	296
	Shale, dark-brown, sandy-----	5	301
	Lignite, brown, hard; tested water at the rate of 1 gpm-----	3	304
	Shale, blue-----	6	310
	Shale, green-----	4	314
	Shale, blue-----	2	316
	Sandstone, clayey, semiconsolidated; tested water at the rate of 2 gpm-----	11	327
	Shale, dark-----	2	329
	Shale, blue-----	3	332
	Shale, blue, sandy-----	8	340
	Siltstone, semiconsolidated-----	5	345
	Shale, bentonitic-----	3	348
Tongue River Formation:			
	Shale, blue; with a few soft sandstone layers-----	10	358
	Sandstone, blue, semiconsolidated-----	4	362
	Shale, green-----	3	365
	Sandstone, blue, fine, semiconsolidated-----	75	440

140-92-1BAA
NDSWC 3550

Altitude: 2035 ft above msl

Date drilled: October 1967

Geologic source	Material	Thickness (feet)	Depth (feet)
Quaternary deposits, undifferentiated:			
	Loam, dark-brown, sandy-----	2	2
	Sand, dark-yellowish-gray, fine and medium, sub-angular-----	14	16
	Clay, dusky-yellow and yellowish-gray, locally silty and sandy-----	17	33
	Clay, olive-gray, soft to stiff-----	10	43
	Sand, fine to coarse; with brown, fine, angular gravel and silty clay lenses-----	22	65
	Silt, light-olive to olive-gray, clayey and sandy-----	17	82
	Sand, generally medium, with some coarse to very coarse, highly lignitic, fairly well sorted in lenses, subangular-----	42	124
Tongue River Formation:			
	Sandstone, dark-gray, fine, calcareous, indurated----	1	125
	Shale, white, sandy, calcareous, soft-----	4	129
	Shale, medium-gray, silty, brittle-----	6	135
	Shale, greenish-gray, silty, brittle-----	14	149
	Shale, medium-gray, silty, brittle-----	8	157
	Shale, dark-gray, silty-----	3	160

140-92-3AAA
USGS Auger Test 6

Altitude: 2074 ft above msl

Date drilled: August 1968

Quaternary deposits, undifferentiated:			
	Silt, brown, calcareous-----	5	5
Sentinel Butte Formation (?):			
	Siltstone (?), grayish-green, clayey and sandy, soft (weathered bedrock ?)-----	5	10
	Shale, grayish-green, silty; with scattered sand grains; weathered-----	15	25
	Shale, dusky-red, silty-----	10	35
	Shale, dusky-brown, silty-----	10	45
	Shale, olive-gray to brownish-gray, silty-----	10	55
	Shale, olive-gray to dark-bluish-gray, silty, calcareous-----	5	60

140-92-4AAA
USGS Auger Test 5

Altitude: 2053 ft above msl

Date drilled: August 1968

Quaternary deposits, undifferentiated:			
	Soil-----	1	1
	Clay, moderate-yellowish-brown, silty, calcareous-----	21	22

140-92-4BAA
USGS Auger Test 4

Altitude: 2073 ft above msl

Date drilled: August 1968

Quaternary deposits, undifferentiated:			
	Silt, brown, calcareous (alluvium)-----	5	5
	Clay (till), dusky-yellowish-brown, silty and sandy; with a few pebbles-----	15	20

140-92-4BBB
USGS Auger Test 2

Altitude: 2066 ft above msl

Date drilled: August 1968

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Quaternary deposits, undifferentiated:			
	Clay, dark-yellowish-brown, silty, calcareous (alluvium)-----	20	20
	Clay, dark-greenish-gray, calcareous, plastic; with oxidized streaks (lacustrine)-----	10	30
	Sand (from drilling); no samples-----	10	40
	Silt and very fine sand, yellowish-brown; came out of hole as slush-----	51	91
	Drilling change at 91 ft, bit sample at 107 ft; tough, silty, sandy clay with scattered pebbles and numerous lignite fragments-----	16	107

140-92-5AAA
USGS Auger Test 3

Altitude: 2070 ft above msl

Date drilled: August 1968

Quaternary deposits, undifferentiated:			
	Sand, yellowish-brown, silty, clayey, very fine; with limonite pellets; also a thin carbonaceous zone at 3 ft-----	5	5
	Sand, light-olive-gray, silty, clayey; with scattered small pebbles-----	10	15
	Clay (till), moderate-yellowish-brown, silty, sandy, calcareous-----	5	20

140-92-5BBA
USGS Auger Test 1

Altitude: 2127 ft above msl

Date drilled: August 1968

Quaternary deposits, undifferentiated:			
	Sand, light-greenish-gray, fine to very fine, silty, clayey, slightly calcareous-----	10	10
	Sand, greenish-gray, fine to very fine, silty, clayey; with lignite fragments and a few oxidized particles---	10	20
Sentinel Butte Formation:			
	Shale, yellowish-brown, silty, soft-----	3	23
	Shale, yellowish-brown, very silty, moderately hard--	1.5	24.5
	Siltstone, white to light-brown, very calcareous, semiconsolidated-----	2.5	27

140-92-6ADA
USGS Auger Test 20

Altitude: 2148 ft above msl

Date drilled: August 1968

Quaternary deposits, undifferentiated:			
	Silt, light-olive-gray to pale-yellowish-brown, calcareous; with limonitic spots and white very calcareous streaks-----	5	5
	Silt, moderate-brown, calcareous; with a few small pebbles-----	5	10
	Silt, dark-yellowish-brown, clayey, sandy, calcareous; with scattered pebbles-----	5	15

140-92-6ADA, Continued
USGS Auger Test 20

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Quaternary deposits, undifferentiated, Continued:			
	Clay, dark-yellowish-brown, sandy, calcareous; with abundant rounded to subangular limestone and clinker pebbles-----	10	25
	Clay, dusky-yellowish-brown, silty, calcareous; with scattered sand grains-----	30	55
	Clay, olive-gray, silty, calcareous; with fine sand grains and small pebbles-----	25	80
	No samples-----	29	109
	Clay, black to gray, calcareous; with a few pebbles---	1	110

140-92-6DAA
NDSWC 3549

Altitude: 2095 ft above msl

Date drilled: October 1967

Quaternary deposits, undifferentiated:			
	Loam, dark-brown, sandy-----	2	2
	Sand, dusky-yellow to yellowish-gray to olive-brown (with depth), very fine to fine; with interbedded silt and sticky clay-----	32	34
	Silt, olive-gray, clayey, slightly cohesive; with some very fine sand-----	10	44
	Sand, gray to greenish-gray, fine to medium, sub-angular, lignitic; thinly interbedded with light-gray silt and olive-gray clay-----	28	72
	Sand, very fine to fine, subangular, silty, lignitic, calcareous, loose to slightly cohesive-----	32	104
	Sand, fine and medium with some coarse sand and gravel stringers, highly lignitic (detrital), loose; sand is predominantly quartz with some greenstone, some limestone, and occasional feldspar and clinker---	62	166
	Gravel, brown, fine, subangular and angular; predominantly locally derived indurated bedrock-----	3	169
	Sand, predominant medium-grained; predominantly quartz with abundant lignite and some shell fragments-	109	278
Tongue River Formation:			
	Shale, olive-gray, clayey, smooth, stiff-----	5	283
	Shale, dark-greenish-gray, sandy, carbonaceous and lignitic, soft-----	6	289
	Shale, medium-gray, silty, smooth, brittle-----	16	305
	Sandstone, light-olive-gray, very fine, clayey, crumbly, soft-----	3	308
	Shale, light-gray, silty, slightly hard and brittle---	6	314
	Sandstone, dark-greenish-gray, very fine to fine, silty, carbonaceous stains, slightly cohesive, soft---	6	320
	Shale, dark-gray-----	4	324
	Lignite, black, hard, fissile-----	4	328
	Shale, light-greenish-gray, silty, brittle-----	5	333
	Lignite, black, fissile; with black, crumbly, oily carbonaceous clay and sandy clay-----	7	340
	Shale, medium-gray-----	6	346
	Lignite, black; and carbonaceous, clayey, fine, brownish-black sandstone-----	6	352
	Shale, light-gray-----	8	360

140-92-6DAD
USGS Auger Test 21

Altitude: 2122 ft above msl

Date drilled: August 1968

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Quaternary deposits, undifferentiated:			
	Silt, dark-yellowish-brown, clayey, sandy, calcareous; with streaks of black, carbonaceous clay and scattered small pebbles-----	10	10
	Clay (till), dark-yellowish-brown, silty, sandy, calcareous-----	5	15
	Sand, dark-yellowish-brown, clayey, calcareous-----	30	45
	Sand, olive-gray, clayey, calcareous-----	20	65
Sentinel Butte Formation:			
	Shale, medium-dark-gray to medium-bluish-gray, tough, plastic; and black, carbonaceous clay (drill stem sample)-----	5	70

140-92-7DDD
NDSWC 3544

Altitude: 2195 ft above msl

Date drilled: October 1967

Sentinel Butte Formation:			
	Shale, yellowish-gray, silty and sandy; with limonite staining common-----	6	6
	Lignite, slack (leonardite ?)-----	1	7
	Shale, yellowish-gray to light-olive-gray (with depth), silty, sandy-----	14	21
	Sandstone, very fine, indurated-----	3	24
	Shale, moderate-olive-brown to light-olive-gray, sandy-----	14	38
	Shale, medium-gray, silty-----	12	50
	Sandstone (?); no sample-----	1	51
	Shale, gray, silty, carbonaceous-----	11	62
	Lignite, black, moderately hard, fissile-----	4	66
	Shale, brownish-gray to medium-gray, silty, slightly hard, brittle; contains a lens of gray, very fine, clayey, soft sandstone-----	14	80
	Shale, brownish-gray, silty, carbonaceous and greenish-gray, silty clay, interbedded-----	18	98
	Lignite, black, hard-----	2	100
	Shale, medium-gray, silty; contains thin stringers of limestone or siltstone-----	10	110
	Bentonite, pale-yellow-----	1	111
	Shale, dark-greenish-gray, silty-----	3	114
	Sandstone, fine, clayey, semiconsolidated-----	7	121
	Lignite, black, hard-----	7	128
	Shale, medium-gray, silty, brittle-----	8	136
	Sandstone, light-greenish-gray, very fine to fine, clayey, semiconsolidated; contains indurated sandstone from 146 to 149 ft-----	30	166
	Shale, light- to medium-gray-----	4	170
	Lignite, black, hard-----	3	173
	Shale, medium-gray, lignitic, brittle-----	7	180
	Shale, medium-gray, bentonitic (?)-----	8	188
Tongue River Formation:			
	Shale, greenish-gray, sandy-----	12	200

140-92-14ACC2
 Emil Hoff
 (Log from Midwest Well and Pipe Co.)

Altitude: 2109 ft above msl Date drilled: 1950

Geologic source	Material	Thickness (feet)	Depth (feet)
Tongue River Formation (?):			
	Soil, surface-----	1	1
	Clay and sandy streaks-----	63	64
	Clay, blue-----	30	94
	Gravel, very little water-----	1	95
	Clay, brown-----	59	154
	Clay, carbonaceous-----	2	156
	Coal-----	4	160
	Clay, blue, sandy, fairly tight-----	34	194
	Clay, blue-----	40	234
	Coal-----	2	236
	Clay, blue-----	28	264
	Coal-----	4	268
	Clay, blue-----	76	344
	Limestone, blue; a little sandy, hard-----	30	374
Basal Tongue River sandstone:			
	Sand, water; lots of good water-----	50	424

140-93-9BEC
 NDSWC 3684

Altitude: 2274 ft above msl Date drilled: November 1968

Sentinel Butte Formation:			
	Loam, blackish-brown, silty-----	1	1
	Shale, shades of white, yellow, light-green, and light-gray, silty and sandy-----	18	19
	Shale, medium-dark-gray, silty, plastic; with bentonitic clay layers-----	5	24
	Shale, black, silty, carbonaceous-----	4	28
	Lignite-----	2	30
	Shale, green, silty to sandy; with yellow bentonitic clay seams-----	6	36
	Shale, medium-gray, silty; with bentonitic clay seams-----	3	39
	Sandstone, greenish-gray, very fine, clayey, semiconsolidated; shell fragments-----	6	45
	Shale, medium-gray, silty-----	15	60
	Lignite, black, brittle-----	4	64
	Shale, variegated grays and greens, silty and sandy; with interbedded bentonitic clay-----	18	82
	Sandstone, gray, very fine, calcareous, indurated-----	4	86
	Shale, variegated grays, silty, bentonitic; interbedded with fine, clayey, semiconsolidated sandstone-----	24	110
	Clay, bentonitic-----	2	112
Tongue River Formation:			
	Siltstone, light-gray to light-greenish-gray, semiconsolidated; interbedded with light-gray, very fine, semiconsolidated sandstone and a few thin shaly and carbonaceous layers. Samples appear generally lighter colored below 110-115 ft-----	28	140
	Lignite-----	2	142
	Siltstone as above-----	6	148
	Shale, shades of gray, silty, sandy, bentonitic, lignitic, interbedded-----	25	173
	Sandstone, light-gray, indurated-----	2	175
	Claystone, white, chalky, soft, and gray, silty, bentonitic shale-----	15	190
	Sandstone, light-gray, fine, clayey, semiconsolidated; with thin interbedded gray shale-----	18	208

140-93-9BCC, Continued
NDEWC 3684

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Tongue River Formation, Continued:			
	Shale, black, carbonaceous-----	3	211
	Lignite-----	1	212
	Shale, carbonaceous-----	1	213
	Lignite-----	1	214
	Shale, gray to black, interbedded silty, sandy, and carbonaceous-----	19	233
	Shale, yellowish-gray, bentonitic-----	4	237
	Shale, gray, silty, sandy-----	3	240
	Lignite-----	3	243
	Sandstone, light-greenish-gray, very fine, clayey, soft-----	8	251
	Shale, light-medium-gray and greenish-gray, silty to sandy; with interbedded carbonaceous shale, bentonitic shale, and thin indurated siltstone beds-----	39	290
	Shale, variegated grays, silty, bentonitic-----	24	314
	Shale, lignitic-----	2	316
	Lignite-----	2	318
	Shale, lignitic; with thin lignite laminae-----	12	330
	Shale, light- to medium-gray, silty; with a few thin greenish-gray, fine, semiconsolidated sandstone beds--	27	357
	Shale, light-gray and light-greenish-gray, silty; interbedded with greenish-gray sandstone and white, chalky, sandy clay-----	11	368
	Lignite-----	6	374
	Shale, light-green and light-gray, silty and sandy, interbedded-----	6	380
	Silt, light-gray; light-gray, clayey, very fine sandstone; variegated gray, silty shale; and black carbonaceous shale interbedded-----	68	448
Basal Tongue River sandstone:			
	Sandstone, light-olive-gray, fine, well-sorted, sub-rounded, semiconsolidated; with a few thin indurated zones and numerous shell fragments from 520 to 540 ft-----	91	539
Ludlow Formation (Upper):			
	Shale, carbonaceous-----	2	541
	Lignite-----	1	542
	Shale, medium-gray, silty, bentonitic-----	16	558
	Lignite-----	1	559
	Sandstone, dark-greenish-gray, fine, clayey, semi-consolidated-----	5	564
	Lignite-----	4	568
	Sandstone, dark-greenish-gray, fine, clayey, semi-consolidated-----	6	574
	Sandstone, greenish-gray, very fine, indurated-----	5	579
	Shale, medium-gray, dark-gray, and dark-greenish-gray, silty, interbedded; also interbedded with brownish-black, carbonaceous shale and greenish-gray, fine, semiconsolidated sandstone-----	36	615
	Lignite-----	2	617
	Shale; interbedded as above-----	3	620
	Shale, medium-gray, silty-----	25	645
	Sand, clayey, and medium-gray, silty shale, interbedded-----	7	652
	Lignite-----	2	654
	Shale, carbonaceous-----	6	660
	Shale, dark-gray, silty (sandy near 700 ft)-----	40	700

Altitude: 2498 ft above msl

Date drilled: October 1967

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation:			
	Loam, yellowish-brown, sandy-----	3	3
	Clay, yellowish-gray, silty to sandy; heavy iron oxide stains-----	11	14
	Shale, yellowish-gray, light-olive-gray, and medium-gray, silty, fractured; with thin light-yellowish-brown bentonite and limestone stringers-----	36	50
	Lignite and very fine, silty, soft sandstone-----	5	55
	Shale, medium-gray and light-greenish-gray, silty-----	8	63
	Sandstone, medium-gray to greenish-gray, silty, clayey, semiconsolidated-----	17	80
	Shale, light-gray, brownish-gray, and brownish-black, carbonaceous-----	4	84
	Lignite, black, fissile-----	2	86
	Shale, greenish-gray, brittle-----	10	96
	Sandstone or lignite (from electric log)-----	2	98
	Shale, medium-gray-----	5	103
	Lignite-----	2	105
	Shale, medium-gray to greenish-gray, lignitic and bentonitic-----	31	136
	Sandstone, greenish-gray, very fine to fine, silty, semiconsolidated-----	11	147
	Lignite, black-----	4	151
	Shale, light- to medium-gray, silty, lignitic-----	11	162
	Siltstone, light-olive-gray; with interbedded greenish-gray shale-----	18	180
	Sandstone, light-olive-gray, silty, semiconsolidated-----	26	206
	Lignite-----	3	209
	Siltstone, light-olive-gray, lignitic, bentonitic-----	15	224
	Shale, light-greenish-gray and medium-gray; with interbedded silty, lignitic, bentonitic shale and thin limestone beds-----	34	258
	Sandstone, greenish-gray, very fine, clayey to silty, semiconsolidated-----	9	267
	Lignite, black, fissile-----	5	272
	Shale, light-gray and brownish-gray, sandy, carbonaceous-----	13	285
	Shale, medium-gray, bentonitic-----	9	294
Tongue River Formation:			
	Siltstone, light-olive-gray, soft-----	9	303
	Sandstone, greenish-gray, indurated-----	5	308
	Siltstone, greenish-gray, soft; very fine, semiconsolidated sandstone; and greenish-gray, carbonaceous, dark-gray, silty shale-----	35	343
	Lignite-----	2	345
	Shale, light-olive-gray to greenish-gray and brownish-gray, silty, bentonitic-----	43	388
	Shale, lignitic-----	4	392
	Shale, medium-gray, lignitic, bentonitic-----	13	405
	Lignite, black, hard-----	3	408
	Shale, medium-gray, lignitic, bentonitic-----	17	425
	Lignite, black, hard-----	2	427
	Shale, medium-gray, bentonitic-----	11	438
	Shale, medium-gray, sandy-----	10	448
	Shale, medium-gray, bentonitic, lignitic; with thin streaks of limestone or siltstone-----	30	478
	Lignite, black, hard, fissile-----	10	488
	Sandstone, light-olive-gray, fine to medium, weakly consolidated-----	2	490
	Shale, variegated grays, greens, and brown, silty, bentonitic-----	26	516

140-93-32ADA, Continued
NDSWC 3548

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Tongue River Formation, Continued:			
	Siltstone, variegated shades of gray, locally carbonaceous; semiconsolidated; interbedded with greenish-gray, very fine, semiconsolidated sandstone-----	18	534
	Lignite, black-----	6	540
	Siltstone as above-----	20	560
	Shale, light-greenish-gray to light-olive-gray, bentonitic; interbedded with dark-gray to brownish-black, carbonaceous shale-----	19	579
	Siltstone, light-gray to light-olive-gray, calcareous; interbedded with light-gray, very fine, semiconsolidated sandstone; and light-gray, silty shale; lignitic and fossiliferous 620 to 640 ft-----	89	668
	Shale, medium-gray and greenish-gray, silty; interbedded with brownish-gray to black, carbonaceous shale; and a few thin indurated ledges-----	18	686
	Basal Tongue River sandstone:		
	Sandstone, indurated, calcareous-----	5	691
	Sandstone, semiconsolidated; interbedded with greenish-gray and dark-gray lignitic, sandy, silty shale; and thin indurated sandstone stringers-----	29	720
Ludlow Formation (Upper):			
	Siltstone, light-gray to light-greenish-gray, silty, calcareous, carbonaceous; rock from 736 to 738 ft-----	30	750
	Shale, greenish-gray, silty; interbedded with light-olive-gray siltstone and very fine, semiconsolidated sandstone. Poor samples-----	76	826
	Lignite, pyritiferous-----	12	838
	Siltstone, light- to brownish-gray, shaly-----	6	844
	Shale, probably greenish-gray. Very poor samples-----	24	868
	Sandstone, light-olive-gray, very fine, clayey (?). Poor samples-----	14	882
	Shale, sandy-----	23	905
	Lignite-----	1	906
Cannonball Formation:			
	Siltstone and shale, interbedded (from electric log)--	22	928
	Sandstone, indurated-----	2	930
	Sandstone, dark-greenish-gray, very fine to fine, clayey, fossiliferous, semiconsolidated. Electric log also indicates interbedded siltstone or shale-----	16	946
	Cored: Recovered 1.7 feet of very fine to fine, indurated sandstone-----	10	956
	Sandstone, with interbedded siltstone or shale as above-----	24	980
	Siltstone, light- to medium-gray, moderately soft-----	20	1000
	Shale, medium-gray, silty, moderately soft-----	40	1040

140-93-33BDA2
Northern Pacific Railway
(Log from Northern Pacific Railway Co.)

Altitude: 2491 ft above msl

Date drilled: 1955

Sentinel Butte Formation:			
	Topsoil-----	2	2
	Clay, yellow-----	10	12
	Shale, gray, hard-----	41	53
	Rock, hard-----	8	61
	Shale, gray, hard-----	104	165
	Coal, water bearing-----	4	169
	Shale, gray, hard-----	1.1	170.1

140-94-3DDD1
NDSWC 3701

Altitude: 2232 ft above msl

Date drilled: June 1969

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation:			
	Loam, black, silty-----	1	1
	Shale, dusky-yellow to moderate-olive-brown, weathered, soft, crumbly-----	17	18
	Shale, yellow, bentonitic-----	7	25
	Lignite, black, hard, brittle-----	4	29
	Shale, light- to medium-gray, bentonitic-----	14	43
	Shale, light- to medium-gray and green, bentonitic; with thin interbedded soft siltstone-----	15	58
	Siltstone, light-gray; with interbedded very fine, clayey, semiconsolidated sandstone-----	10	68
	Shale, medium-gray, silty, lignitic-----	12	80
	Lignite, black, hard, brittle-----	5	85
	Shale, dark-green, moderately soft, crumbly-----	18	103
	Sandstone, light-olive-gray, very fine and fine, silty and clayey, semiconsolidated, thinly interbedded	27	130
	Sandstone, light-olive-gray, fine to medium, well-sorted, subangular to subround, semiconsolidated-----	34	164
	Sandstone as above; with interbedded light-gray, silty shale-----	12	176
	Shale, light-greenish-gray, silty-----	10	186
	Lignite, black, hard, brittle-----	5	191
	Shale, brownish-black, carbonaceous-----	2	193
	Shale, medium-gray, silty, carbonaceous; with thin lignite laminae-----	4	197
	Sandstone, brownish-gray, very fine, silty, clayey----	16	213
	Shale, light- to medium-gray, bentonitic-----	15	228
	Clay, gray, bentonitic-----	8	236
Tongue River Formation:			
	Siltstone, light-greenish-gray, clayey; interbedded with very fine, semiconsolidated sandstone, silty shale, and thin lignite seams-----	20	256
	Shale, light-gray, silty, bentonitic-----	9	265
	Lignite, black, hard, brittle; and brownish-black, carbonaceous shale-----	9	274
	Siltstone, light-greenish-gray, clayey, moderately soft-----	4	278
	Sandstone, greenish-gray, very fine, indurated-----	2	280
	Sandstone, dark-greenish-gray, very fine, silty, semiconsolidated-----	8	288
	Lignite, black-----	4	292
	Shale, dark-green, waxy, crumbly-----	8	300

140-94-29AD

Sinclair Oil and Gas Co., Joe Muecke No. 1

Altitude: 2427 ft above msl, K.B.
2417 ft above msl, G.L.

Date drilled: July-October 1958

Total depth: 11,080 ft. See North Dakota Geological Survey well-summary, Circ. 223, 1959.

140-94-32BBC
P. Tormaschy
(Log from Moe's Well Drilling)

Altitude: 2454 ft above msl

Date drilled: August 1966

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Sand, brown, surface-----	5.5	5.5
	Sand, yellow-----	5.5	11
	Sand, red-----	5	16
	Lignite-----	2	18
	Clay, brown-----	4	22
	Sand, gray-----	6	28
	Clay, gray-----	4	32

140-95-8AAA
NDSWC 3681

Altitude: 2419 ft above msl

Date drilled: November 1968

Golden Valley Formation:			
	Sandstone, reddish-brown, very fine, silty, clayey, soft; with interbedded sandy clay-----	5	5
	Sandstone, reddish-brown, fine to medium, subround, calcareous; with some interbedded clayey sandstone----	10	15
	Sandstone, reddish-brown, very fine to fine, silty to clayey, semiconsolidated-----	10	25
Sentinel Butte Formation:			
	Sandstone, light-gray, very fine to fine, calcareous; contains abundant dark grains; and interbedded sandy shale-----	20	45
	Sandstone as above; with streaks of gray, calcareous, hard sandstone-----	12	57
	Sandstone, brownish-gray, very fine to fine, silty to clayey, micaceous-----	6	63
	Sandstone, gray (salt and pepper), fine, subangular, slightly calcareous; disaggregated in cuttings-----	32	95
	Sandstone as above; and dark-brown, carbonaceous shale	15	110
	Sandstone, gray (salt and pepper), very fine to fine; interbedded with gray shale-----	15	125
	Sandstone, gray (salt and pepper), very fine, silty; with interbedded gray, sandy shale-----	31	156
	Shale, gray, sandy-----	4	160

140-95-9BBB
NDSWC 3680

Altitude: 2416 ft above msl

Date drilled: November 1968

Quaternary deposits, undifferentiated:			
	Loam, black, sandy-----	1	1
	Clay, yellowish-gray and moderate-olive-brown, silty, sandy, oxidized (alluvium)-----	9	10
	Sand, medium and coarse, subangular, iron-stained----	3	13
	Gravel, fine and medium, sandy, angular; principally sandstone, limestone and iron-cemented concretions; saturated-----	3	16
	Sand, moderate-olive-brown, fine and medium, clayey, oxidized-----	13	29

140-95-9888, Continued
NDSWC 3680

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation:			
	Sandstone, brown, medium, moderately well sorted, subangular, semiconsolidated; interbedded with thin silty and fine indurated sandstone layers-----	20	49
	Sandstone, light-greenish-gray, fine, calcareous, indurated-----	1	50
	Sandstone, dark-gray to dark-greenish-gray, fine, moderately well sorted, predominantly subangular, semiconsolidated; contains some clayey zones and an indurated zone from 108 to 112 ft-----	95	145
	Shale, medium- and dark-gray interbedded, silty, slightly hard, brittle-----	39	184
	Lignite, black; and very dark gray to brownish-black, fine, shaly, carbonaceous sandstone-----	8	192
	Shale, medium- and dark-gray, silty and sandy, interbedded, brittle-----	14	206
	Shale as above; with thin beds of black lignite (individual beds generally less than 4 ft thick)-----	22	228
	Lignite, black-----	12	240
	Shale, medium-gray, silty-----	10	250
	Lignite, black; with interbedded medium-gray, silty shale-----	12	262
	Shale, light-greenish-gray, silty; interbedded with reddish-brown and brownish-black, carbonaceous shale--	18	280
	Sandstone, dark-greenish-gray, fine, well-sorted, subangular, slightly calcareous, fairly well consolidated-----	60	340
	Shale, black, hard, brittle-----	6	346
	Shale, very dark gray, hard, brittle; interbedded with dark-gray, brittle, sandy shale-----	14	360

140-95-26CDC
NDSWC 3541

Altitude: 2341 ft above msl

Date drilled: September 1967

Quaternary deposits, undifferentiated:

Gravel, gray and brownish-red, fine to medium-----	8	8
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Sentinel Butte Formation:

Shale, gray, slightly plastic-----	8	16
Lignite, black-----	1	17
Shale, gray, slightly plastic-----	7	24
Lignite-----	4	28
Shale, gray-----	7	35
Shale, light-greenish-gray, plastic-----	10	45
Shale, light-greenish-gray, silty; contains sandy layers-----	25	70
Shale, brownish-gray-----	6	76
Sandstone, brown, very fine, semiconsolidated-----	2.5	78.5
Lignite-----	1.5	80
Sandstone, brownish-gray, silty, very fine and fine; contains lignite specks; semiconsolidated-----	14	94
Shale, gray, silty to sandy-----	36	130
Lignite-----	13	143
Shale, gray, silty to sandy; contains scattered lignite specks-----	47	190
Shale, very light gray, bentonitic-----	22	212
Shale, dark-brown, carbonaceous, plastic, tough-----	5	217
Shale, medium-brown, plastic-----	3	220

140-96-1DBB2
L. Ridl
(Log from Mann Drilling Co.)

Altitude: 2433 ft above msl Date drilled: September 1965

Geologic source	Material	Thickness (feet)	Depth (feet)
Quaternary deposits, undifferentiated:			
	Sand and gravel-----	11	11
Sentinel Butte Formation:			
	Sand-----	11	22
	Clay-----	13	35
	Coal-----	7	42
	Clay-----	34	76
	Coal-----	29	105

140-96-3BCE
USGS Auger Test 35

Altitude: 2467 ft above msl Date drilled: September 1968

Sentinel Butte Formation:			
	Shale, olive-gray, silty, sandy, noncalcareous-----	5	5
	Siltstone, pale-yellowish-brown to light-olive-gray, calcareous, semiconsolidated-----	2	7
	Sandstone, light-olive-brown, clayey, noncalcareous, semiconsolidated-----	3	10
	Shale, light-olive-gray, sandy, soft, noncalcareous--	8	18
	Concretion (?), pale-yellowish-orange, iron-stained, highly calcareous-----	.3	18.3

140-96-3BCC1
USGS Auger Test 34

Altitude: 2462 ft above msl Date drilled: September 1968

Quaternary deposits, undifferentiated:			
	Clay, light-olive-brown to moderate-yellowish-brown; numerous small pebbles-----	5	5
Sentinel Butte Formation:			
	Shale, light-olive-gray, silty, calcareous, plastic---	5	10
	Shale, light-olive-gray to dark-yellowish-brown, silty, calcareous, plastic-----	5	15
	Shale as above; but moderate-olive-brown with light-olive-gray and light-brown spots-----	5	20
	Shale, olive-gray with medium-gray spots, silty, calcareous-----	5	25
	Shale, medium-gray, silty, slightly sandy, slightly calcareous-----	5	30
	Shale, olive-gray, silty, calcareous-----	5	35
	Shale, medium-dark-gray, silty, calcareous to non-calcareous; scattered lignite fragments-----	4	39
	Shale (?), pale-orange, limy, or limestone; hard drilling-----	1	40

140-96-3BCC2
 NDGWC 14-748
 (Modified from Schmid, 1963)

Altitude: 2470 ft above msl

Date drilled: August 1962

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation:			
	Sandstone, light-olive-gray, fine, clayey, calcareous, weakly consolidated, oxidized-----	3	3
	Shale, light-olive-brown, silty, calcareous, plastic--	29	32
	Shale, dark-greenish-gray, silty, plastic-----	1	33
	Sandstone, dark-greenish-gray, fine, clayey, calcareous, semiconsolidated-----	7	40
	Sandstone, greenish-gray, fine, calcareous cement----	3	43
	Sandstone, dark-greenish-gray, fine to medium, clayey, moderately consolidated-----	22	65
	Lignite-----	5	70
	Shale, greenish-gray, silty, plastic-----	16	86
	Lignite-----	24	110
	Shale, brownish-black to olive-gray, silty-----	10	120
	Shale, greenish-gray, silty-----	9	129
	Sandstone, dark-greenish-gray, fine to medium, clayey, moderately consolidated-----	71	200
	Sandstone, greenish-gray, fine, calcareous, indurated--	1	201
	Sandstone, olive-gray to dark-greenish-gray, fine to medium, clayey, calcareous, semiconsolidated-----	21	222
Tongue River Formation:			
	Siltstone, light-olive-gray, clayey, calcareous, semiconsolidated-----	9	231

140-96-3CCB
 USGS Auger Test 33A

Altitude: 2448 ft above msl

Date drilled: September 1968

Quaternary deposits, undifferentiated:			
	Silt, moderate-brown, gravelly, calcareous; grading downward to:-----	4	4
	Till, moderate-brown; predominantly silty, sandy, gravelly, calcareous clay-----	6	10
	Clay, pale-yellowish-brown to dark-yellowish-brown, silty, calcareous-----	5	15
	Sand, pale-yellowish-brown to medium-bluish-gray, clayey; with calcareous clay bands-----	5	20
	Clay, olive-gray, silty, sandy, calcareous-----	10	30
	Sand, medium-gray, silt to fine, clayey-----	5	35
	Sand as above; but medium-dark-gray with calcareous clay bands-----	10	45
Sentinel Butte Formation (?):			
	No sample; hard drilling-----	2	47
	No sample; drills like tough, medium-gray, slightly calcareous clay-----	8	55
	Lignite (?)-----	.4	55.4

140-96-4CCC
NDSWC 3683

Altitude: 2434 ft above msl

Date drilled: November 1968

Geologic source	Material	Thickness (feet)	Depth (feet)
Quaternary deposits, undifferentiated:			
	Topsoil, black, sandy loam-----	1	1
	Clay, moderate-olive-brown, silty to sandy, oxidized--	13	14
	Gravel, iron-stained, fine and medium, poorly sorted, angular-----	2	16
Sentinel Butte Formation:			
	Shale, light-gray, silty, soft, moderately plastic----	4	20

140-96-5DDA
NDSWC 3682

Altitude: 2438 ft above msl

Date drilled: November 1968

Quaternary deposits, undifferentiated:			
	Topsoil, black, sandy loam-----	1	1
	Sand, moderate-olive-brown, fine and medium, sub-angular, oxidized-----	17	18
	Clay, dark-gray to black, sandy, soft; mixed with dirty angular gravel consisting mostly of shale, sandstone, and lignite pebbles-----	2	20
	Gravel, "dirty" angular; consists mostly of shale, sandstone, and lignite pebbles-----	1	21
Sentinel Butte Formation:			
	Shale, medium-gray, very silty, soft, plastic; with interbedded bentonitic clay-----	15	36
	Lignite-----	26	62
	Shale, gray-----	8	70

140-96-10BCB
USGS Auger Test 32

Altitude: 2423 ft above msl

Date drilled: September 1968

Quaternary deposits, undifferentiated:			
	Silt, dark-yellowish-brown, calcareous-----	5	5
	Clay, grayish-brown, silty, sandy, calcareous-----	5	10
	Sand, dark-yellowish-brown, very fine to fine, clayey--	5	15
	Sand as above; but silty and with calcareous clay matrix-----	5	20
Sentinel Butte Formation:			
	Shale, medium-dark-gray to brownish-gray, silty, sandy, noncalcareous-----	5	25
	Shale as above; but moderate-dark-gray-----	5	30
	Shale, medium-dark-gray to dark-gray, silty, noncalcareous-----	5	35
	No samples; assumed to be soft shale-----	38	73
	Lignite-----	2	75

140-96-10CEC
USGS Auger Test 31

Altitude: 2450 ft above msl

Date drilled: September 1968

Geologic source	Material	Thickness (feet)	Depth (feet)
Quaternary deposits, undifferentiated:			
	Clay, light-blue-gray, silty, calcareous, plastic-----	5	5
	Clay as above; but light-olive-gray to light-olive-brown-----	5	10
	Clay, moderate-yellowish-brown, silty, calcareous, plastic-----	10	20
Sentinel Butte Formation (?):			
	Shale (clay), light-olive-brown to medium-dark-brown, silty, slightly calcareous, plastic-----	5	25
	Siltstone (?), pale-yellowish-brown, clayey, sandy, weakly consolidated; water saturated (slush)-----	10	35
	Shale (clay), moderate-dark-gray, silty, sandy, non-calcareous; with some lignite fragments-----	5	40
	Shale as above; but medium-dark-gray-----	10	50
	Shale, medium-dark-gray, silty, noncalcareous-----	5	55
	No cuttings; auger brought up water-----	5	60
	No sample; rough drilling from 62 to 65 ft-----	5	65
	No sample; drilled like clay-----	5	70
	No sample-----	22	92
	Lignite and clinker, black and dark-reddish-brown; hard drilling; appears dry-----	8	100

140-96-19CCC
NDSWC 13-748
(Modified from Schmid, 1963)

Altitude: 2568 ft above msl

Date drilled: August 1962

Quaternary deposits, undifferentiated:			
	Topsoil-----	2	2
	Gravel-----	4	6
Golden Valley Formation:			
	Sandstone, moderate-olive-brown, fine to medium, sub-round, slightly calcareous, weakly consolidated; with a few interbeds of yellowish-brown, calcareous, soft clay. Sandstone grains are quartz, feldspar, mica, lignite, and greenstone grains-----	8	14
	Sandstone as above; but rusty-brown, some coarse grains; took drilling fluid from 45 to 61 ft-----	47	61
	Shale, bluish-olive-gray, smooth, slightly plastic---	9	70
Sentinel Butte Formation:			
	Lignite-----	3	73
	Sandstone, olive-gray, very clayey, silty, carbonaceous, semiconsolidated-----	4	77
	Shale, light-olive-gray, silty to sandy, smooth, tight-----	23	100
	Shale, light-olive-gray to light-bluish-gray, silty---	7	107
	Lignite-----	3	110
	Shale-----	1	111
	Sandstone, dark-greenish-gray, fine to medium, sub-round, clayey, slightly calcareous, weakly consolidated; grains are mostly quartz, plus lignite, mica, and greenstone-----	12	123
	Lignite; with shale interbeds-----	7	130
	Shale, light-olive-gray, silty-----	10	140
	Limestone, yellowish-gray-----	2	142
	Shale, light-olive-gray to light-greenish-gray, silty, smooth-----	26	168

140-96-20DDD
 NDSWC 20A-748
 (Modified from Schmid, 1963)

Altitude: 2512 ft above msl

Date drilled: August 1962

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Shale, dusky-yellow, silty, oxidized-----	2	2
	Shale, light-olive-gray, silty and sandy, oxidized----	16	18
	Sandstone, yellowish-olive-gray, fine, silty, clayey, oxidized-----	39	57
	Sandstone, greenish-gray to dark-greenish-gray, fine to medium, subround, clayey, weakly consolidated-----	101	158
	Sandstone as above; but with thin lignite seams-----	54	212
	Shale, light-olive-gray, silty; abundant lignitic material-----	9	221
	Sandstone, dark-greenish-gray, fine to medium, silty, moderately consolidated-----	24	245
	Lignite-----	7	252
	Shale, olive-gray to greenish-gray, silty, calcareous; abundant lignitic material-----	25	277
	Shale as above; but soft, plastic-----	5	282
	Lignite-----	22	304
	Shale, olive-gray, very silty, noncalcareous-----	11	315

140-96-21CCC2
 A. Wock
 (Log from Mann Drilling Co.)

Altitude: 2512 ft above msl

Date drilled: March 1965

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Sand, surface-----	16	16
	Clay-----	11	27
	Clay, sandy-----	35	62
	Sand-----	30	92

140-96-21DDA
 NDSWC 15A-748
 (Modified from Schmid, 1963)

Altitude: 2525 ft above msl

Date drilled: August 1962

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Shale, light-olive-gray, silty, soft, plastic, oxidized-----	4	4
	Sandstone, dusky-yellow to moderate-olive-brown, fine, clayey, slightly calcareous, soft, oxidized-----	4	8
	Sandstone, pale-olive, fine, calcareous cement, indurated, oxidized-----	1	9
	Shale, light-olive-gray, silty, oxidized-----	11	20
	Sandstone, dusky-yellow to light-olive-green, fine, clayey, slightly calcareous, soft, partially oxidized-----	14	34
	Shale, greenish-gray, silty-----	18	52
	Siltstone, light-olive-gray to olive-gray, clayey, sandy, moderately consolidated-----	7	59
	Sandstone, dark-greenish-gray, fine, clayey; predominantly quartz, some greenstone grains; moderately consolidated-----	4	63
	Sandstone, light-greenish-gray, fine, well-sorted, subround, calcareous cement, indurated-----	2	65
	Sandstone, dark-greenish-gray, fine to medium, clayey; predominantly quartz; mostly semiconsolidated, indurated from 103 to 107 ft-----	64	129

140-96-21DDA, Continued
NDSWC 15A-748

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation, Continued:			
	Shale, greenish-gray-----	20	149
	Lignite-----	3	152
	Shale as above-----	8	160
	Sandstone, greenish-gray, fine to medium, clayey-----	17	177
	Shale, greenish-gray to olive-gray, silty; with light-olive-gray, noncalcareous, hard mudstone from 182 to 183 ft-----	9	186
	Sandstone, dark-greenish-gray, fine to medium, clayey-----	21	207
	Lignite-----	5	212
	Shale, light-gray, silty-----	19	231

140-96-27DDD
NDSWC 6-748
(Modified from Schmid, 1963)

Altitude: 2466 ft above msl

Date drilled: August 1962

Sentinel Butte Formation:			
	Shale, yellowish-gray, silty, soft, oxidized; dry----	4	4
	Shale, yellowish-gray, iron-stained, silty, slightly sandy, soft, plastic, oxidized-----	4	8
	Lignite-----	1	9
	Shale as above-----	2	11
	Sandstone, rusty-brown, fine, moderately well sorted, subround, weakly consolidated, oxidized; grains consist of quartz, feldspar, lignite, mica, and igneous and metamorphic rock fragments-----	5	16
	Shale, olive-gray, silty, slightly calcareous, plastic, unoxidized-----	4	20
	Shale, olive-gray to greenish-gray, very silty, sandy, soft-----	13	33
	Sandstone, light-greenish-gray, fine, indurated-----	1	34
	Sandstone, greenish-gray, fine, subangular, somewhat clayey and silty, slightly calcareous, semiconsolidated-----	20	54
	Lignite-----	3	57
	Shale, purplish, clayey, smooth-----	2	59
	Shale, greenish-gray, silty-----	3	62
	Shale, greenish-gray, very sandy, lignitic-----	28	90
	Shale, brownish-black, very sandy, lignitic-----	31.5	121.5
	Sandstone, tan, argillaceous, indurated-----	.5	122
	Shale, light-olive-gray, smooth, slightly plastic-----	11	133
	Lignite-----	1	134
	Sandstone, dark-greenish-gray, fine, clayey, semi-consolidated-----	14	148
	Sandstone, light-greenish-gray, calcareous cement, indurated-----	3	151
	Sandstone, greenish-gray, clayey, slightly calcareous, semiconsolidated-----	6	157
	Shale, olive-gray, smooth-----	5	162
	Lignite-----	1	163
	Shale as above-----	16	179
	Lignite-----	3	182
	Shale, light-greenish-gray, lignitic, smooth-----	19	201
	Shale, greenish-gray, silty to sandy, smooth-----	20	221
	Shale, brownish-black, silty, carbonaceous, lignitic-----	29	250
	Lignite-----	13	263
	Shale, olive-gray, carbonaceous, smooth-----	31	294
	Siltstone, dark-greenish-gray to olive-gray, sandy, lignitic, moderately consolidated-----	25	319

140-96-27DDD, Continued
NDSWC 6-748

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation, Continued:			
	Sandstone, greenish-gray to olive-gray, silt to fine, clayey, lignitic, very slightly calcareous, semi-consolidated; grains consist primarily of quartz, plus lignite and greenstone grains-----	39	358
Tongue River Formation (?):			
	Shale, olive-gray, silty, slightly calcareous-----	10	368
	Limestone, light-greenish-gray-----	2	370
	Shale, light-greenish-gray, silty, highly calcareous--	8	378

140-96-29DCD
NDSWC 12-748
(Modified from Schmid, 1963)

Altitude: 2500 ft above msl

Date drilled: August 1962

Sentinel Butte Formation:			
	Topsail-----	2	2
	Shale, moderate-olive-brown, silty, soft, oxidized---	8	10
	Shale, moderate-olive-brown to olive-gray, iron-stained, silty, lignitic inclusions, smooth-----	16	26
	Lignite, brownish-black-----	2	28
	Shale, olive-gray, silty, smooth, tight-----	15	43
	Siltstone, greenish-gray, clayey, sandy, soft-----	10	53
	Shale, olive-gray to brownish-black, silty; lignitic inclusions increase downward-----	3	56
	Lignite-----	3	59
	Shale, brownish-black, carbonaceous-----	1	60
	Lignite-----	8	68
	Shale, brownish-black, carbonaceous; interbedded with clayey, carbonaceous, soft siltstone and sandstone---	15	83
	Sandstone, greenish-gray, subround, clayey, semi-consolidated-----	39	122
	Shale, light-greenish-gray, smooth-----	19	141
	Sandstone as above-----	25	166
	Shale, olive-gray, locally carbonaceous, smooth-----	27	193
	Lignite-----	7	200
	Shale, light-olive to light-greenish-gray, silty, tight-----	10	210

140-96-30ADD
NDSWC 24-748
(Modified from Schmid, 1963)

Altitude: 2503 ft above msl

Date drilled: August 1962

Sentinel Butte Formation:			
	Shale, yellowish-brown, sandy, soft, oxidized-----	5	5
	Shale, light-olive-gray, sandy, oxidized-----	5	10
	Sandstone, yellowish-gray, fine to medium, semi-consolidated, oxidized; predominantly quartz-----	15	25
	Sandstone, moderate-olive-brown, fine to medium, mostly fine, subround, semiconsolidated, oxidized; predominantly quartz-----	15	40
	Sandstone, greenish-gray, fine to medium, calcareous cement, indurated-----	2	42
	Sandstone, bluish-gray, fine to medium, subround, calcareous, semiconsolidated; predominantly quartz, plus mica, lignite, feldspar, and greenstone-----	27	69

140-96-30ADD, Continued
NDSWC 24-748

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel	Butte Formation, Continued:		
	Sandstone, greenish-gray, fine to medium, calcareous cement, indurated-----	2	71
	Sandstone, dark-greenish-gray, fine to medium, somewhat clayey and silty, weakly consolidated; predominantly quartz-----	15	86
	Sandstone, greenish-gray, fine to medium, calcareous cement, indurated-----	2	88
	Sandstone, dark-greenish-gray, fine to medium, somewhat clayey and silty, weakly consolidated-----	10	98
	Shale, light-olive-gray, silty-----	3	101
	Sandstone, dark-greenish-gray, fine to medium; predominantly quartz; somewhat clayey and silty; semiconsolidated-----	35	136
	Lignite-----	4	140
	Shale, light-olive-gray, silty-----	8	148
	Sandstone, dark-greenish-gray, fine to medium, moderately consolidated-----	5	153
	Sandstone, dark-greenish-gray to greenish-black, fine to medium, clayey; lignitic inclusion-----	14	167
	Sandstone as above; but less lignitic-----	10	177
	Siltstone, olive-gray, clayey, sandy, micaceous-----	16	193
	Lignite-----	4	197
	Shale, light-olive-gray, silty, smooth-----	13	210

140-96-31DDB
NDSWC 11-748
(Modified from Schmid, 1963)

Altitude: 2478 ft above msl

Date drilled: August 1962

Sentinel	Butte Formation:		
	Topsoil-----	2	2
	Shale, yellowish-gray, silty, oxidized-----	9	11
	Sandstone, light-olive-gray, silt to medium, clayey, weakly consolidated, partly oxidized; predominantly quartz, with lignite, scoria, and limestone grains----	26	37
	Sandstone as above; except dark-greenish-gray, unoxidized-----	48	85
	Shale, olive-gray to olive-black, silty; with some thin lignite seams-----	7	92
	Shale as above; with some thin lignite seams, also yellowish-gray limestone stringers-----	24	116
	Shale, light-olive-gray to greenish-gray, smooth, plastic-----	4	120
	Shale, olive-gray, silty-----	12	132
	Shale, greenish-gray, silty to sandy-----	15	147
	Shale as above; locally carbonaceous-----	5	152
	Shale, light-olive-gray, silty, smooth, plastic-----	2	154
	Lignite-----	2	156
	Shale as above-----	12	168

140-96-32BC
Felmont-Atlantic-North American, No. 1 Kalanek

Altitude: 2516 ft above msl K.B.
2502 ft above msl C.L.

Date drilled: September 1957

Total depth: 9,100 ft. See North Dakota Geological Survey well-summary, Circ. 189, 1958.

140-96-33AAA
 NDEWC 25-748
 (Modified from Schmid, 1963)

Altitude: 2510 ft above msl

Date drilled: August 1962

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Shale, yellowish-brown, silty, oxidized-----	3	3
	Siltstone, yellowish-gray with iron stains, very clayey, moderately consolidated, oxidized-----	14	17
	Siltstone as above; with thin lignite seams-----	4	21
	Siltstone, olive-gray, clayey, micaceous, calcareous, semiconsolidated-----	9	30
	Sandstone, dark-greenish-gray, fine to medium, sub-round, micaceous, calcareous, semiconsolidated; predominantly quartz-----	5	35
	Lignite-----	1	36
	Siltstone, olive-gray, clayey, micaceous, highly calcareous, semiconsolidated-----	17	53
	Lignite-----	6	59
	Shale, greenish-gray, silty-----	15	74
	Shale, olive-gray, silty, micaceous-----	16	90
	Sandstone, dark-greenish-gray to brownish-gray, fine to medium, moderately consolidated; predominantly quartz; abundant lignitic material-----	11	101
	Sandstone, greenish-gray, fine, weakly consolidated---	19	120
	Shale-----	2	122
	Sandstone, greenish-gray, fine, calcareous cement, indurated-----	3	125
	Sandstone, dark-greenish-gray, fine to medium, slightly calcareous, moderately consolidated-----	5	130
	Shale, olive-gray, silty-----	17	147
	Lignite-----	3	150
	Shale as above-----	12	162
	Sandstone, dark-greenish-gray, fine, silty to clayey, semiconsolidated-----	14	176
	Lignite-----	1	177
	Shale, brownish-olive-gray, silty, soft; abundant lignitic material-----	5	182
	Sandstone, dark-greenish-gray, fine to medium; becomes very silty near base; semiconsolidated-----	22	204
	Lignite-----	4	208
	Siltstone, light-olive-gray, clayey, micaceous, moderately consolidated-----	23	231

140-97-3ADD
 Northern Pacific DX 360-3
 (Log from Northern Pacific Railway Co.)

Altitude: 2529 ft above msl

Date drilled: 1961

Sentinel Butte Formation:			
	Clay, yellow, sandy-----	19	19
	Sand and rock-----	2	21
	Clay, gray, sandy-----	9	30
	Lignite-----	2	32
	Clay, gray-----	24.5	56.5
	Lignite-----	3	59.5
	Clay, brown and gray-----	38.5	98
	Lignite-----	9	107
	Clay, gray-----	1	108
	Lignite-----	3	111
	Clay, gray-----	18	129
	Lignite-----	1	130
	Clay, gray-----	38	168
	Rock (sandstone ?)-----	1.5	169.5

140-97-3ADD, Continued
Northern Pacific DX 360-3

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation, Continued:			
	Clay, gray-----	1.5	171
	Lignite-----	6	177
	Clay-----	1	178
	Lignite-----	3	181
	Clay, gray-----	9	190

140-97-5ABA
Northern Pacific DX 360-29
(Log from Northern Pacific Railway Co.)

Altitude: 2544 ft above msl Date drilled: 1961

Sentinel Butte Formation:			
	Topsail-----	5	5
	Clay, yellow, sandy-----	6	11
	Clay, black, sandy-----	4	15
	Clay, blue-----	18	33
	Lignite, hard-----	3	36
	Clay, brown to gray-----	19	55
	Clay, gray, sandy-----	36	91
	Clay, brown-----	6	97
	Lignite, hard-----	9	106
	Clay, brown-----	2	108
	Clay, blue-----	30	138
	Lignite, trace-----	1	139
	Sand and soft lignite, mixed; water-----	4	143
	Sand, blue (mostly)-----	4	147
	Rock, hard-----	2	149
	Clay, gray, sandy-----	23	172
	Rock, blue, hard-----	3	175
	Clay, blue-----	7	182
	Lignite, hard-----	5	187
	Clay, gray-----	5	192
	Lignite, hard-----	9	201
	Clay, gray-----	1	202
	Lignite, trace-----	1	203
	Clay, gray-----	7	210

140-97-7DDD
Northern Pacific DX 360-2
(Log from Northern Pacific Railway Co.)

Altitude: 2595 ft above msl Date drilled: 1961

Sentinel Butte Formation:			
	Clay, white, sandy-----	28	28
	Sandstone, soft-----	5	33
	Clay, gray, sandy-----	3	36
	Clay, blue-----	19	55
	Lignite-----	1	56
	Clay, gray-----	19.6	75.6
	Lignite-----	5.4	81
	Clay, gray-----	16	97
	Lignite-----	3	100
	Clay, gray-----	21	121
	Rock; probably sandstone-----	2	123
	Clay, gray, sandy-----	13	136
	Lignite, trace, and clay-----	2	138
	Clay, gray, sandy-----	18	156
	Lignite-----	9	165
	Clay, brown and gray-----	15	180

140-97-9AAA
 Northern Pacific DX 360-12
 (Log from Northern Pacific Railway Co.)

Altitude: 2565 ft above msl

Date drilled: 1961

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Clay, yellow, sandy-----	15	15
	Clay, gray-----	18	33
	Lignite, trace-----	1	34
	Clay, gray-----	3	37
	Lignite, trace-----	1	38
	Clay, gray-----	11	49
	Lignite, trace-----	1	50
	Clay, gray-----	16	66
	Lignite-----	7	73
	Clay, white, sandy-----	41	114
	Lignite, trace-----	1	115
	Clay, gray, sandy-----	58	173
	Lignite, trace-----	1	174
	Sandstone, soft-----	14	188
	Lignite, hard-----	10	198
	Clay, brown-----	2	200

140-97-13BBA
 Northern Pacific DX 360-14
 (Log from Northern Pacific Railway Co.)

Altitude: 2543 ft above msl

Date drilled: 1961

Sentinel Butte Formation:			
	Clay, yellow-----	10	10
	Sandstone-----	1	11
	Clay, yellow, sandy-----	7	18
	Clay, gray-----	9	27
	Lignite-----	1	28
	Clay, gray-----	21.5	49.5
	Lignite-----	3	52.5
	Clay, gray-----	32.5	85
	Clay, gray, sandy-----	4.5	89.5
	Lignite, hard-----	14.5	104
	Clay, brown, lignitic-----	2.5	106.5
	Lignite-----	1	107.5
	Clay, gray-----	3.5	111
	Lignite, trace-----	1	112
	Clay, gray-----	11	123
	Lignite, trace-----	1	124
	Clay, gray-----	2	126
	Clay, gray, sandy-----	59	185
	Clay as above; trace of lignite-----	2	187
	Silt, bluish, and clay-----	6	193
	Lignite, trace-----	1	194
	Clay, bluish-----	3	197
	Lignite, trace-----	1	198
	Clay, sandy-----	8	206
	Lignite-----	2	208
	Clay, gray, silty-----	11	219

140-97-19BBA
Northern Pacific DX 360-11
(Log from Northern Pacific Railway Co.)

Altitude: 2574 ft above msl Date drilled: 1961

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Clay, yellow and gray, slightly sandy-----	37	37
	Lignite, trace-----	1	38
	Clay, blue, sandy-----	12	50
	Lignite, hard-----	10	60
	Clay, gray-----	35	95
	Lignite-----	2.5	97.5
	Clay, gray-----	5	102.5
	Lignite-----	7.5	110
	Clay, gray, sandy-----	38	148
	Sandstone, hard-----	6	154
	Clay, gray, sandy-----	14	168
	Rock-----	2	170
	Clay, gray, sandy-----	15	185
Tongue River Formation (?):			
	Sandstone-----	5	190

140-97-20CCD
A. Ridl
(Log from Mann Drilling Co.)

Altitude: 2554 ft above msl Date drilled: November 1964

Sentinel Butte Formation:			
	Clay-----	32	32
	Clay, sandy-----	9	41
	Clay-----	19	60
	Coal-----	11	71

140-97-21AAD
Northern Pacific DX 360-7
(Log from Northern Pacific Railway Co.)

Altitude: 2610 ft above msl Date drilled: 1961

Golden Valley Formation (?):			
	Clay, yellow-----	28	28
Sentinel Butte Formation:			
	Clay, gray-----	10	38
	Lignite, trace-----	1	39
	Clay, gray-----	25	64
	Lignite, trace-----	1	65
	Clay, gray-----	25	90
	Lignite-----	8.5	98.5
	Clay, gray-----	32.5	131
	Lignite, trace-----	1	132
	Clay, gray-----	4	136
	Lignite, trace-----	1	137
	Clay, gray-----	14.5	151.5
	Lignite, partings-----	2.5	154
	Clay, gray-----	7	161
	Lignite, trace-----	1	162
	Clay, gray-----	25	187
	Lignite-----	8	195
	Clay, gray, sandy-----	35	230
	Sandstone, soft-----	3	233

140-97-25DAA
 NDSWC 19-748
 (Modified from Schmid, 1963)

Altitude: 2540 ft above msl

Date drilled: August 1962

Geologic source	Material	Thickness (feet)	Depth (feet)
Golden Valley Formation:			
	Sandstone, dark-yellowish-brown, fine to medium, subround, weakly consolidated, porous, oxidized; predominantly quartz with grains of feldspar, mica, dark igneous rock, and lignite-----	5	5
	Sandstone, moderate-yellowish-brown to moderate-olive-brown, fine to coarse, mostly medium, subround, weakly consolidated, very porous, oxidized-----	12	17
	Shale, moderate-olive-brown to light-olive-gray, silty, with iron-stained granules, noncalcareous, oxidized---	8	25
	Shale, light-olive-gray, noncalcareous, smooth, plastic-----	8	33
Sentinel Butte Formation:			
	Lignite-----	2	35
	Shale, dark-greenish-gray, silty-----	19	54
	Sandstone, greenish-gray, fine, clayey, calcareous cement, indurated-----	4	58
	Sandstone, dark-greenish-gray, fine, predominantly quartz, micaceous, calcareous, semiconsolidated-----	7	65
	Shale, dark-greenish-gray, silty, micaceous, lignitic-----	4	69
	Lignite-----	1	70
	Shale, dark-greenish-gray, silty to sandy, lignitic---	15	85
	Shale, olive-gray, somewhat silty, smooth, plastic---	6	91
	Lignite-----	4	95
	Shale, greenish-gray, silty, slightly calcareous; some lignite inclusions-----	14	109
	Limestone, medium-bluish-gray-----	3	112
	Shale, olive-gray to dark-greenish-gray, silty-----	20	132
	Sandstone, olive-gray, fine, predominantly quartz, locally silty and clayey, micaceous, calcareous, moderately consolidated-----	17	149
	Shale, light-olive-gray to olive-gray, smooth, plastic-----	4	153
	Lignite-----	18	171
	Shale, olive-black to olive-gray, silty-----	15	186
	Sandstone, greenish-gray, fine, moderately consolidated-----	7	193
	Shale, olive-gray to greenish-gray, silty, smooth, tight-----	17	210

140-97-29BCC
 Northern Pacific DX 360-5
 (Log from Northern Pacific Railway Co.)

Altitude: 2577 ft above msl

Date drilled: July 1961

Sentinel Butte Formation:			
	Clay, yellow-----	12	12
	Lignite, slack-----	1	13
	Clay, gray-----	22	35
	Lignite, hard-----	2	37
	Clay-----	1	38
	Clay, gray-----	29	67
	Lignite, woody; water on top of coal-----	.5	67.5
	Clay, greenish-gray; with traces of lignite-----	6.5	74
	Clay, gray-----	19	93
	Rock, hard-----	2	95
	Clay, gray-----	13	108

140-97-29BCC, Continued
Northern Pacific DX 260-5

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel	Butte Formation, Continued:		
	Rock-----	1	109
	Clay-----	4	113
	Lignite, woody; with small clay stringers and pyritic streaks-----	9.5	122.5
	Clay and lignite, mixed; mostly clay-----	8.5	131
	Clay, gray-----	32	163
	Lignite, woody; pyritic at top-----	1	164
	Clay, lignitic-----	1	165
	Clay-----	5	170
	Lignite-----	.5	170.5
	Clay-----	5.5	176
	Clay-----	2.4	178.4
	Lignite; not as woody as lignite above-----	8.6	187
	Lignite; with a few clay streaks-----	1.4	188.4
	Lignite, massive; very little clay-----	.6	189
	Lignite; with thin clay partings-----	1	190
	Clay, brown to gray-----	1	191
	Lignite, nearly massive; very little clay-----	1	192
	Clay, slightly lignitic-----	2.4	194.4
	Lignite; with thin clay parting-----	.6	195

140-97-33BBB
Northern Pacific DX 360-15
(Log from Northern Pacific Railway Co.)

Altitude: 2542 ft above msl

Date drilled: July 1961

Sentinel	Butte Formation:		
	Clay, yellow, sandy-----	24	24
	Clay, gray-----	32	56
	Clay, brown, lignitic-----	3	59
	Clay, gray-----	5	64
	Lignite, trace-----	1	65
	Clay, gray-----	4	69
	Lignite-----	11	80
	Clay, gray-----	3	83
	Lignite-----	2	85
	Clay, gray-----	14	99
	Sandstone, hard-----	1	100
	Clay, gray-----	6	106
	Lignite, trace-----	1	107
	Clay, gray-----	2	109
	Sand, hard; and clay-----	1	110
	Clay, gray-----	38.4	148.4
	Lignite, soft; much of cuttings apparently leonardite-----	9	157.4
	Clay, brown and gray-----	2.6	160
	Lignite, trace-----	1	161
	Clay, sandy to silty sand-----	9	170

140-97-33DCD
Northern Pacific DX 360-9
(Log from Northern Pacific Railway Co.)

Altitude: 2585 ft above msl

Date drilled: July 1961

Sentinel	Butte Formation:		
	Clay, yellow, sandy-----	15	15
	Lignite, slack-----	1	16
	Sand, yellow-----	11	27

140-97-33DCD, Continued
Northern Pacific DX 360-9

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation, Continued:			
	Sandstone, hard-----	1.4	28.4
	Clay, gray-----	18.6	47
	Clay, brown, lignitic-----	2	49
	Clay, gray-----	21	70
	Lignite-----	1	71
	Clay, parting-----	1	72
	Lignite; with very thin parting at 73 ft-----	10	82
	Clay, gray-----	26	108
	Sand; sandy cuttings, very little clay-----	39	147
	Clay (mostly), some fine sand-----	12	159
	Lignite, trace-----	1	160
	Clay, soft, sandy-----	40	200

140-97-34BCA2
N. Zander
(Log from Mann Drilling Co.)

Altitude: 2494 ft above msl Date drilled: July 1966

Sentinel Butte Formation:			
	Sand, brown, fine-----	44	44
	Sand, silty-----	22	66
	Clay, soft, sandy-----	31	97
	Lignite-----	4	101
	Clay, gray-----	81	182
	Sand; water-----	38	220

140-97-35BAB
Northern Pacific DX 360-6
(Log from Northern Pacific Railway Co.)

Altitude: 2573 ft above msl Date drilled: July 1961

Sentinel Butte Formation (?):			
	Sand-----	20	20
	Clay, gray-----	23	43
	Lignite-----	12	55
	Clay, gray-----	20	75
	Clay, gray, very sandy-----	74	149
	Rock, hard-----	1	150
	Clay, gray-----	5	155
	Lignite, trace-----	1	156
	Clay, gray-----	3	159
	Lignite, trace-----	1	160
	Clay, gray-----	10	170

140-97-35CBB
Northern Pacific DX 360-1
(Log from Northern Pacific Railway Co.)

Altitude: 2494 ft above msl Date drilled: July 1961

Sentinel Butte Formation:			
	Clay, yellow, sandy-----	37	37
	Clay, sandy; traces of lignite-----	12	49
	Clay, sandy; with 0.5 ft lignite lens-----	3	52

140-97-35CBB, Continued
Northern Pacific DX 360-1

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation, Continued:			
	Clay, sandy-----	6	58
	Clay, blue-----	13	71
	Lignite, trace-----	1	72
	Clay, brown-----	5	77
	Lignite, broken-----	4	81
	Clay, brown to gray-----	5	86
	Lignite-----	2	88
	Clay, brown-----	58	146
	Rock, hard; traces of bentonite in the mud-----	4	150

"...apparently set up on old valley fill, at least to 50 ft in depth."

140-97-36CDD
NDSWC 3-748
(Modified from Schmid, 1963)

Altitude: 2510 ft above msl

Date drilled: August 1962

Sentinel Butte Formation:

Sandstone, moderate-yellowish-brown, very fine to medium, clayey, calcareous, weakly consolidated, oxidized; with noncalcareous concretions-----	4	4
Sandstone, dusky-yellow, very fine to medium, sub-round to round, predominantly quartz, clayey, weakly consolidated, oxidized-----	5	9
Sandstone as above; but grayish-olive-----	13	22
Shale, grayish-yellow to olive-gray, silty, noncalcareous-----	8	30
Lignite (?)-----	1	31
Shale, dark-greenish-gray, silty-----	12	43
Sandstone, greenish-gray to dark-greenish-gray, very fine to fine, clayey, noncalcareous, semiconsolidated-----	10	53
Lignite-----	1	54
Shale, dark-greenish-gray, silty; with thin lignite seams-----	10	64
Sandstone, dark-greenish-gray, clayey, semiconsolidated; with thin lignite interbeds-----	9	73
Sandstone, greenish-gray, very fine to fine, clayey, noncalcareous, semiconsolidated; predominantly quartz with abundant green and black grains-----	9	82
Siltstone, olive-gray, lignitic, semiconsolidated-----	6	88
Lignite, black; with thin brownish-black clay seams-----	4	92
Shale, light-greenish-gray; with plant material-----	25	117
Siltstone, olive-gray, semiconsolidated; lignite inclusions-----	13	130
Lignite, black and brownish-black-----	15	145
Shale, dark-greenish-gray, very silty-----	6	151
Lignite-----	2	153
Shale as above-----	2	155
Lignite; with shale seams-----	4	159
Siltstone, greenish-gray, noncalcareous, indurated-----	21	180
Sandstone, greenish-gray, silt to fine, semiconsolidated; predominantly quartz with greenish and black grains-----	15	195
Sandstone, light-olive-gray, very fine, locally lignitic, indurated-----	16	211
Sandstone, greenish-gray, very fine to medium, clayey, semiconsolidated-----	16	227

140-97-36CDD, Continued
NDSWC 3-748

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation, Continued:			
	Sandstone, olive-gray, silt to very fine, noncalcareous, indurated-----	3	230
	Sandstone, greenish-gray, silt to medium, locally clayey, weakly consolidated to semiconsolidated; predominantly quartz with abundant lignite and greenish grains-----	67	297
Tongue River Formation (?):			
	Lignite, black; with blackish-brown clay seams-----	10	307
	Shale, greenish-gray, silty; lignitic inclusions-----	5	312

140-98-1AAA1
Northern Pacific DX 360-13
(Log from Northern Pacific Railway Co.)

Altitude: 2569 ft above msl Date drilled: July 1961

Sentinel Butte Formation:			
	Clay, yellow-----	7	7
	Lignite, slack-----	1	8
	Clay, gray-----	22	30
	Lignite, soft-----	1	31
	Clay, gray-----	9	40
	Lignite-----	2	42
	Clay, brown-----	1	43
	Clay, gray-----	36	79
	Lignite-----	11	90
	Clay, gray-----	18	108
	Clay, gray, sandy; becoming very sandy bottom 20 ft---	92	200

140-98-1DCC3
H. Oukrop
(Log from Mann Drilling Co.)

Altitude: 2649 ft above msl Date drilled: September 1964

Sentinel Butte Formation:			
	Sand, brown-----	19	19
	Sand, gray-----	13	32
	Clay, gray-----	9	41
	Coal-----	2	43
	Clay, gray-----	7	50
	Coal-----	2	52
	Clay, gray-----	15	67
	Coal-----	4	71
	Clay, gray-----	27	98
	Coal-----	2	100
	Clay, gray, sandy-----	40	140
	Coal-----	10	150
	Clay, gray, sandy-----	30	180
	Sand; water-----	30	210

140-98-2BBB
 Northern Pacific DX 360-35
 (Log from Northern Pacific Railway Co.)

Altitude: 2620 ft above msl

Date drilled: October 1962

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Clay, sorted-----	35	35
	Lignite, soft, trace-----	1	36
	Clay, blue-----	9	45
	Lignite, hard-----	2	47
	Clay, blue-----	22	69
	Rock, hard-----	4	73
	Clay, gray, sandy-----	12	85
	Sandstone, soft-----	4	89
	Sand, gray, fine (mostly)-----	13	102
	Lignite, hard-----	8	110
	Clay, blue-----	42	152
	Lignite, hard-----	1	153
	Clay, brown to gray-----	16	169
	Sand, gray-----	26	195
	Lignite, hard-----	2	197
	Clay, brown-----	1	198
	Lignite-----	1	199
	Sand, blue-----	9	208
	Lignite, hard-----	8	216
	Clay, gray-----	10	226
	Lignite-----	2	228
	Clay, blue-----	2	230

140-98-6AAC2
 J. Kassian
 (Log from Mann Drilling Co.)

Altitude: 2636 ft above msl

Date drilled: October 1964

Sentinel Butte Formation:			
	Sand, surface-----	21	21
	Clay-----	1	22
	Coal-----	3	25
	Clay-----	12	37
	Sandstone-----	1	38
	Clay-----	18	56
	Coal-----	2	58
	Clay, sandy-----	5	63
	Coal-----	10	73
	Clay-----	13	86
	Clay, sand-----	15	101
	Sand-----	44	145
	Clay-----	4	149
	Rock-----	1	150

140-98-19AAB3
 W. Tomchuk
 (Log from Mann Drilling Co.)

Altitude: 2555 ft above msl

Date drilled: April 1966

Sentinel Butte Formation:			
	Clay, gray-----	32	32
	Lignite-----	4	36
	Clay, gray-----	42	78
	Lignite-----	4	82
	Clay, sandy-----	23	105
	Sand; water-----	45	150

140-98-23ABB
Northern Pacific DX 360-4
(Log from Northern Pacific Railway Co.)

Altitude: 2602 ft above msl

Date drilled: July 1961

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Clay, yellow-----	20	20
	Lignite-----	4	24
	Clay, gray-----	22	46
	Lignite, trace-----	1	47
	Clay, gray; with trace of lignite at 49 ft-----	3	50
	Rock, hard; very slow cut-----	3	53
	Clay, gray-----	23.5	76.5
	Lignite-----	.5	77
	Clay, gray-----	52	129
	Lignite-----	2.5	131.5
	Lignite, woody, massive-----	7	138.5
	Clay, gray-----	2.5	141
	Clay, gray, very slightly sandy-----	10	151
	Clay, gray-----	27	178
	Lignite-----	2	180
	Lignite-----	1	181
	Lignite-----	12	193
	Clay, gray-----	2	195
	Lignite-----	1	196
	Clay, gray-----	14	210

140-98-32000
E. Jablousky
(Log from Mann Drilling Co.)

Altitude: 2580 ft above msl

Date drilled: October 1967

Sentinel Butte Formation:			
	Clay, brown-buff-----	14	14
	Lignite-----	4	18
	Clay, gray-----	30	48
	Lignite-----	3	51
	Clay, gray-----	30	81
	Lignite-----	18	99
	Clay, gray-----	18	117
	Sand-----	43	160

140-99-3ADE
M. Gymbaluk
(Log from Kruger Drilling Co.)

Altitude: 2640 ft above msl

Date drilled: July 1959

Sentinel Butte Formation:			
	Clay and coal slack-----	20	20
	Clay, gray, sandy-----	10	30
	Clay, green; coal at 36 ft-----	10	40
	Clay, coarse, sandy-----	10	50
	Clay, gray-----	20	70
	Clay, gray, sandy-----	10	80
	Clay, gray-----	20	100
	Clay, brown-----	20	120
	Clay, brown; and coal slack-----	10	130
	Sand, blue, coarse-----	10	140
	Sand, more black in color, coarse-----	20	160
	No record-----	19	179

140-99-17DDD
NDEWC 3689

Altitude: 2670 ft above msl

Date drilled: December 1968

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Shale, yellowish-green, silty, soft, oxidized-----	8	8
	Shale, light-olive-gray, smooth, soft, plastic-----	7	15
	Shale, light-gray, silty, carbonaceous, soft-----	3	18
	Lignite-----	2	20
	Shale, light-gray, silty, locally carbonaceous, soft, plastic-----	10	30
	Lignite-----	1	31
	Shale as above-----	5	36
	Shale, dark-gray and brownish-black, carbonaceous, moderately soft, tight-----	6	42
	Shale, medium-gray, silty, moderately soft-----	18	60
	Shale, dark-greenish-gray and brownish-gray, sandy, carbonaceous, soft-----	10	70
	Lignite, black, hard-----	7	77
	Lignite; with shale breaks-----	3	80
	Shale, medium-gray and light-gray interbedded, silty, smooth, soft, moderately plastic-----	18	98
	Lignite-----	3	101
	Shale as above-----	6	107
	Lignite-----	1	108
	Shale as above-----	17	125
	Lignite-----	1	126
	Shale as above-----	14	140
	Lignite-----	3	143
	Shale, variegated gray and green, silty, moderately soft-----	17	160
	Shale, interbedded medium-gray, brownish-gray, and greenish-gray, silty and sandy, moderately soft-----	7	167
	Lignite-----	2	169
	Shale as above-----	5	174
	Lignite-----	1	175
	Shale, medium-dark-gray, carbonaceous, smooth, slightly brittle-----	9	184
	Shale, medium-gray, silty, smooth, slightly plastic--	8	192
	Shale, greenish-gray, blocky, waxy-----	8	200
	Shale, variegated gray and green; with interbedded yellowish-gray, bentonitic clay-----	31	231
	Clay, yellowish-gray, bentonitic-----	4	235
Tongue River Formation (?):			
	Shale, variegated gray and green and brownish-black, very silty and sandy, moderately soft and brittle----	10	245
	Shale as above; less silty and sandy-----	12	257
	Shale, medium-dark-gray, silty, smooth, tight-----	9	268
	Shale, brownish-gray, very fine, sandy-----	8	276
	Shale, light-gray, very silty, moderately soft-----	9	285
	Shale, medium- to dark-gray, carbonaceous, waxy, very tight-----	9	294
	Lignite, black, hard, fissile-----	2	296
	Shale, medium- to dark-gray, carbonaceous, waxy, tight	4	300

140-99-31CB
Amerada, R. E. Newton No. 1

Altitude: 2693 ft above msl K.B.
2686 ft above msl G.L.

Date drilled: October 1954

Total depth: 9,577 ft. See North Dakota Geological Survey well-summary, Circ. 251, 1961.

140-99-3308C
Standard Oil
(log from Krueger Drilling Co.)

Altitude: 2670 ft above sea

Date drilled: June 1967

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Sand, yellow	6	6
	Sandrock, broken	4	10
	Clay	40	50
	Coal	20	70
	Clay	10	80
	Coal, hard	6	86
	Clay	34	120
	Clay, sandy	1	121
	Rock	1	122
	Clay, sandy	3	125
	Coal	15	140
	Clay, sandy; drilled fair	7	147
	Rock	1	148
	Clay, sandy	12	160
	Clay, white	20	180
	Clay	3	183
	Coal	17	200
	Clay, gray	20	220

Tongue River Formation:

	Coal and clay streaks	25	245
	Clay	48	293
	Coal	12	305
	Clay, sandy	30	335
	Rock	2	337
	Clay, real fine, sandy	8	345
	Clay	10	355
	Coal	5	360
	Clay, greenish-gray	5	365
	Clay	10	375
	Rock, white, broken, soft	4	379
	Clay, gray, fine, sandy	6	385
	Clay, light-gray	20	405
	Clay	10	415
	Coal	7	422
	Sand	3	425
	Sand, medium, sticky; with many hard spots	27	452
	Sand as above; clayey. Tested 6 GPM of water, with a lot of fine gray sand at 455 ft	3	455
	Rock, sandy	10	465
	Coal	15	480
	Rock, hard	2	482
	Rock, yellowish-gray, soft	3	485
	Clay	20	505
	Clay, white, soft	20	525
	Sand, white, fine, chalky; had hard spots in it	20	545
	Sand, white, fine, chalky; bottom is slower drilling	20	565
	Sand, white; appears too sticky to produce	20	585
	Sand; drilled good; had hard spot	15	605
	Coal, soft	5	620
	Coal	10	625
	Clay, white and gray	10	635
	Clay with coal streaks	10	645
	Clay, drilled slow	20	665
	Clay, with hard spots; drilled faster	10	675
	Clay, dark-gray	33	685
	Coal	17	718
	Clay	25	735
	Clay	25	760

140-99-33CBC, Continued
Standard Oil

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Basal Tongue River sandstone (?):			
	Sand, appears fine-----	25	785
	Sand, fine and sticky-----	5	790
Ludlow Formation:			
	Coal, hard-----	15	805

141-90-19CCC
(Mercer County)
USGS Auger Test 10

Altitude: 2075 ft above msl

Date drilled: August 1968

Quaternary deposits, undifferentiated:			
	Sand, brown, fine, silty, subangular to subround-----	13	13
	Clay (till), brown, silty to sandy, very calcareous, crumbly to slightly plastic-----	27	40
	Sand, brown, very fine to fine, very clayey, subangular to subround, calcareous; contains scattered pebbles-----	10.5	50.5
	Clay (till), sandy, calcareous-----	9.5	60
	Sand, gray, very fine, very clayey, calcareous; contains specks of lignite and mica-----	6	66

141-90-19CCD
(Mercer County)
NDSWC 3433

Altitude: 2080 ft above msl

Date drilled: June 1967

Quaternary deposits, undifferentiated:			
	Sand, fine to medium, silty-----	36	36
Sentinel Butte Formation:			
	Sandstone, light-olive-gray, fine, semiconsolidated---	21	57
	Lignite-----	3	60
	Sandstone, light-olive-gray, fine-----	8	68
Tongue River Formation:			
	Shale, light-olive-gray, silty, sandy-----	41	109
	Lignite-----	1	110
	Shale, light-olive-gray, silty, sandy-----	44	154
	Lignite and light-olive-gray clay-----	3	157
	Shale, light-olive-gray, silty, slightly calcareous---	6	163
	Lignite; water bearing-----	1	164
	Core: Recovered 2.1 ft. 0.2 ft lignite; 1 ft light-gray, very fine sandstone; 0.9 ft light-olive-gray shale-----	3	167
	Shale, light-olive-gray; with interbedded lignite seams-----	21	188
	Sandstone, light-gray, very fine, calcareous, hard----	4	192
	Shale, light-olive-gray, silty, slightly calcareous---	3	195
	Sandstone, light-gray, very fine to fine, clayey, slightly calcareous, semiconsolidated; trace of lignite-----	40	235
	Lignite; with some shale-----	5	240
	Shale, light-olive-gray, silty; grades to siltstone---	15	255
	Sandstone, light-olive-gray, very fine, silty and clayey, soft-----	15	270
	Siltstone, light-gray, calcareous, semiconsolidated---	10	280

141-90-19CCD, Continued
(Mercer County)
NDSWC 3433

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Tongue River Formation, Continued:			
	Sandstone, light-gray, very fine, clayey, carbonaceous, soft-----	9	289
	Lignite-----	1	290
	Shale, light-gray, soft; with shell fragments from 305 to 310 ft and a thin lignite bed near 312 ft-----	25	315
	Siltstone, light-yellowish-gray, calcareous, semi-consolidated; also some shell fragments-----	10	325
	Sandstone, very fine, silty, clayey, semiconsolidated-----	5	330
	Lignite-----	3	333
	Shale, pale-yellowish-brown, calcareous; contains shell fragments and thin lignite seams-----	16	349
	Lignite-----	4	353
	Shale, light-gray; and interbedded light-gray, soft siltstone and sandstone-----	16	369
	Lignite; interbedded with light-gray shale-----	5	374
	Shale, grayish-olive, sandy; grading to soft siltstone-----	16	390
	Siltstone, grayish-olive, sandy; with interbedded lignite seams-----	15	405
	Core: Recovered 3 ft. 0.8 ft shaly lignite; 2.2 ft light-gray, silty, calcareous shale-----	4	409
	Lignite-----	8	417
	Shale, grayish-brown and grayish-olive, silty and plastic-----	23	440
	Lignite-----	5	445
	Shale, grayish-olive; and light-gray, cemented siltstone-----	9	454
	Lignite-----	6	460
	Shale, light-olive-gray; with some thin interbedded lignite-----	7	467
	Lignite-----	3	470
	Lignite; and interbedded light-gray shale-----	5	475
Basal Tongue River sandstone:			
	Sandstone, very fine, silty, clayey, semiconsolidated; with some thin interbedded shale-----	25	500
	Sandstone, fine, silty, slightly consolidated-----	13	513
Ludlow Formation (Upper):			
	Lignite-----	4	517
	Shale, light-olive-gray, slightly silty; contains a few thin siltstone, very fine sandstone, and lignite beds-----	88	605
Cannonball Formation:			
	Shale as above; with shell fragments-----	5	610
	Sandstone, silty, clayey, very fine, mostly semi-consolidated, locally indurated-----	30	640
	Core: Recovered 7.2 ft. 2 ft medium-light-gray, very fine, calcareous sandstone; 5.2 ft medium-gray, clayey, calcareous siltstone-----	9	649
	Core: Recovered 7.4 ft. 4.5 ft medium-light-gray, very fine, calcareous, semiconsolidated sandstone; grading downward into 2.9 ft olive-gray, silty to sandy, calcareous shale-----	7.5	656.5
	Core: Recovered 3 ft light- to medium-gray shale interlaminated with light- to medium-gray, very fine, silty sandstone-----	3.5	660
	Siltstone, moderate- to light-gray, calcareous, hard; and light-gray, bentonitic clay-----	7	667

141-90-19CCD, Continued
(Mercer County)
NDEWC 3433

Geologic source	Material	Thickness (feet)	Depth (feet)
Ludlow Formation (Lower):			
	Shale, light-gray, silty, bentonitic; contains a few thin beds of siltstone, very fine sandstone, and shaly, hard lignite-----	86	753
	Sandstone, very light gray silt to very fine; and sandy shale-----	8	761
	Sandstone, dark-greenish-gray, very fine, clayey, subangular, weakly consolidated-----	6	767
	Core: Recovered 7 ft dark-gray to brownish-gray, very fine to fine, somewhat clayey and silty, slightly calcareous, friable sandstone; contains lignite grains	8	775
	Sandstone, dark-gray, very fine to medium, silty-----	26	801
	Sandstone, light-gray, very fine to fine, hard-----	1	802
	Shale, light-gray, bentonitic-----	8	810
	Shale as above; with gray, clayey siltstone and sandstone-----	68	878
	Lignite, hard; siliceous at top-----	2	880
	Core: Recovered 6.6 ft. 0.8 ft broken and mashed clay and lignite cavings; 0.8 ft lignite; and 0.8 ft lignitic shale:		
Hell Creek Formation:			
	4.2 ft dark-greenish-gray, very fine, subangular sandstone-----	8	888
	Shale, light- to medium-gray and greenish-gray, bentonitic; interbedded with slightly calcareous siltstone and very fine to fine sandstone-----	94	982
	Shale, brown, silty, carbonaceous-----	26	1008
	Sandstone, moderately consolidated-----	14	1022
	Siltstone, light-gray, calcareous, hard-----	4	1026
	Core: Recovered 7.5 ft. 1 ft very light gray, fine, clayey, calcareous, hard sandstone; grades downward into 0.5 ft medium-gray, fine, slightly clayey, friable sandstone; 4 ft brownish-gray, very fine to fine, clayey sandstone, containing some lignite pebbles; 2 ft light-gray, very fine, calcareous sandstone, interlaminated (from 0.005 to 0.01 ft thick) with gray, bentonitic shale-----	8	1034
	Sandstone, light-gray, very fine; interbedded with bentonitic clay, medium-gray shale, and lignitic shale-----	21	1055
	Shale, light-gray, bentonitic; with some very fine to fine sandstone-----	11	1066
	Lignite; with some pyrite cement sandstone-----	4	1070
	Shale, light-gray, bentonitic; with interbedded sandstone stringers, and sandy shale beds-----	36	1106
	Sandstone, gray and brownish-gray, very fine to fine, slightly clayey, subangular-----	36	1142
	Shale-----	5	1147
	Sandstone as above-----	33	1180
	Core: Recovered 4 ft medium-dark-gray, very fine to medium (principally medium), subangular sandstone cemented with white clay; contains a few thin seams of lignite-----	9.5	1189.5
	Core: Recovered 4 ft. 3.2 ft of sandstone as above; 0.8 ft marcon to gray, tough shale, with irregular silty inclusions-----	6.5	1196
	Siltstone, gray, clayey, slightly calcareous; with interbeds of shale-----	8	1204
	Siltstone, gray, clayey, lignitic; interbedded with very fine sandstone-----	16	1220
	Shale, gray, bentonitic; with siltstone interbeds-----	18	1238

141-90-19CCD, Continued
(Mercer County)
NDSWC 3433

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Fox Hills Formation:			
	Sandstone, gray, very fine; with siltstone interbeds--	19	1257
	Shale, dark-gray, silty, calcareous, lignitic; and some bentonitic clay beds-----	18	1275
	Sandstone as above-----	20	1295
	Shale as above-----	20	1315
	Sandstone, grayish-brown, very fine; with calcareous siltstone interbeds-----	13	1328
	Lignite-----	4	1332
	Sandstone as above; with thin siltstone and shale interbeds-----	13	1345
	Shale, light-gray, bentonitic; with interbedded very fine sandstone-----	24	1369
	Sandstone, brownish-gray, silt to medium (average size about 0.25 mm), subangular to subround; contains a few siltstone and bentonitic clay beds and streaks of lignitic clay and lignite-----	41	1410
	Shale, white to light-gray, bentonitic; with some medium-gray siltstone and lignite-----	22	1432
	Shale, light-gray to brown, silty, locally bentonitic; with interbedded very fine, clayey sandstone and sandy, clayey siltstone-----	44	1476
	Core: Recovered 2.8 ft medium-gray, very fine, shaly sandstone grading to siltstone; interlaminated with dark-gray shale and lignite; crossbedded-----	3.5	1479.5
	Shale, sandstone, and siltstone as above-----	32.5	1512
	Sandstone, brownish-gray, very fine to medium (principally very fine), clayey; with some interbedded shale and siltstone-----	52	1564
	Shale, gray and brown; with interbeds of very fine clayey sandstone-----	24	1588
	Core: Recovered 0.5 ft medium-dark-gray, fine, subangular sandstone-----	8	1596
	Core: Recovered 4 ft. 1 ft sandstone as above; 0.5 ft dark-gray, sandy, carbonaceous shale; 1.5 ft sandstone as above with carbonaceous streaks and imbedded shells-----	4	1600
	Sandstone, medium-gray, very fine, clayey, subangular; with interbedded shale and siltstone-----	96	1696
	Shale, medium-gray, silty to sandy; with some very fine sandstone-----	40	1736
	Sandstone as above; with interbedded shale-----	12	1748
Pierre Formation:			
	Shale, medium-gray to dark-gray; with some interbedded light-gray, bentonitic shale and very fine, sandy shale-----	34	1782

141-90-33CDC
(Mercer County)
NDSWC 3662

Altitude: 2251 ft above msl

Date drilled: November 1968

Sentinel Butte Formation:			
	Shale, yellowish-gray to yellowish-green, sandy; lignitic near 35 ft-----	56	56
	Sandstone, greenish-gray, fine, clayey, friable-----	16	72
	Shale, greenish-gray and light-gray bentonitic clay-----	10	82
	Lignite-----	4	86
	Shale, medium-gray, silty, carbonaceous; light-gray bentonitic clay; and very fine, silty, clayey sandstone. Thin lignite beds at about 110 ft-----	43	129

141-90-33CDG, Continued
(Marcer County)
NDSWC 3662

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Lignite or indurated sandstone-----	1	130
	Shale, dark-gray, green, medium-gray, and brownish-black, silty, sandy and (or) lignitic; interbedded---	58	188
	Shale, greenish-gray, silty; and very fine, silty, poorly consolidated sandstone-----	40	228
Tongue River Formation:			
	Shale, various shades of grays and greens, very silty, locally bentonitic or lignitic-----	140	368
	Siltstone, light-olive-gray; and very fine, poorly consolidated sandstone-----	25	393
	Limestone-----	2	395
	Sandstone, greenish-gray, very fine to fine, clayey, semiconsolidated, locally poorly consolidated; with some interbedded shale and bentonitic clay; apparently somewhat more clayey in bottom 10 ft-----	125	520

141-91-29DDD
USGS Auger Test 16, 16A, Composite log

Altitude: 2044 ft above msl Date drilled: August 1968

Quaternary deposits, undifferentiated:			
	Sand, dark-yellowish-brown, silt to fine; dry-----	6	6
	Sand, moderate-brown to dusky-brown, silt to very fine; increasingly dark and clayey with depth; moist--	4	10
	Sand, moderate-brown, silt to very fine; with scattered limestone grains; less clayey than sand above-----	6	16
	Boulder (dolomitic limestone), cream-colored, very fine, crystalline; could not penetrate, started new hole (16A)-----	.1(+)	16.1
	Clay, moderate-brown to moderate-olive-brown, very silty to sandy, calcareous-----	3.9	20
	Clay as above; but with subround limestone grains and small pebbles (till)-----	5	25
	Clay, olive-gray, silty to sandy, slightly micaceous, calcareous; with scattered small limestone grains and pebbles (till)-----	6	31

141-91-31ADD
USGS Auger Test 17A

Altitude: 2085 ft above msl Date drilled: August 1968

Quaternary deposits, undifferentiated:			
	Silt, greenish-gray, clayey, sandy, calcareous-----	5	5
	Clay, moderate-brown, silty, sandy, calcareous (till)-	5	10
	Clay, light-olive-gray, noncalcareous, laminated (?), plastic-----	3	13
	Clay, moderate-yellowish-brown, silty, calcareous----	4	17
Sentinel Butte Formation:			
	Shale, grayish-orange, highly calcareous, hard-----	.3	17.3

141-91-34AAD
USGS Auger Test 15

Altitude: 2191 ft above msl

Date drilled: August 1968

Geologic source	Material	Thickness (feet)	Depth (feet)
Quaternary deposits, undifferentiated:			
	Silt, light-olive-brown with gray and dark-yellowish-orange patches and black lignite specks, clayey, non-calcareous-----	7	7
Sentinel Butte Formation:			
	Lignite, dull black, soft-----	3	10
	Shale, grayish-olive-green, clayey, silty to sandy, noncalcareous, tough-----	5	15
	Shale, moderate-brown to dusky-brown, clayey, silty to sandy, tough-----	6	21

141-91-34CDC
USGS Auger Test 8

Altitude: 2126 ft above msl

Date drilled: August 1968

Quaternary deposits, undifferentiated:			
	Sand, moderate-yellowish-brown, silt to very fine, somewhat clayey, calcareous-----	5	5
	Silt, sandy, calcareous-----	5	10
	Sand, mostly silt to fine; with a few very coarse grains-----	5	15
	Sand as above; with some fine gravel-----	5	20
	Till, dark-yellowish-brown, clayey, silty, sandy, calcareous-----	15	35
	Till as above; but plastic due to increased moisture content-----	25	60
	No sample-----	5	65
	Clay, dark-yellowish-brown, silty, sandy, calcareous--	5	70
	No sample-----	5	75
	Clay as above-----	5	80
	No sample-----	5	85
	Sand, clayey, silty; with a few large pebbles, water-saturated, comes out as "slush"-----	15	100
	Till, olive-gray, clayey, silty, sandy, calcareous; with scattered very fine to medium lignite fragments and subangular to round limestone pebbles-----	8	108
	Till as above; but moderate-yellowish-brown, oxidized (?)-----	2	110

141-92-27ADD
USGS Auger Test 19

Altitude: 2056 ft above msl

Date drilled: August 1968

Sentinel Butte Formation (?):			
	Siltstone (?), yellowish-brown, clayey, calcareous, weakly consolidated-----	9	9
	Shale, light- to dark-olive-gray, laminated, non-calcareous-----	1	10
	Shale, black, carbonaceous, noncalcareous; contains gypsum crystals-----	5	15

Altitude: 2163 ft above msl

Date drilled: October 1967

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation:			
	Shale, yellowish-gray, iron-stained, silty, moderately soft-----	8	8
	Shale, black, carbonaceous-----	2	10
	Lignite, shaly-----	1	11
	Shale, light-gray to black; with yellow concretions---	5	16
	Lignite-----	1	17
	Shale, variegated gray and green, silty to sandy----	16	33
	Sandstone-----	2	35
	Shale, gray, bentonitic-----	4	39
	Shale, medium-gray, smooth, brittle, tight-----	11	50
	Lignite-----	2	52
	Sandstone, yellowish-green with iron stains, fine, clayey, soft-----	7	59
	Shale-----	3	62
	Sandstone, light-greenish-gray, very fine to fine, clayey, soft-----	18	80
	Sandstone as above; but darker green, coarser, weakly consolidated-----	20	100
	Sandstone, dark-greenish-gray with black specks, fine to medium, subround, weakly consolidated; takes drilling fluid-----	26	126
	Shale, greenish-gray, slightly silty; contains lignite inclusions; plastic-----	14	140
	Shale, greenish-gray, bentonitic (?), soft-----	4	144
Tongue River Formation:			
	Shale, grayish-green, silty, soft-----	30	174
	Sandstone, grayish-green, silt to very fine, clayey, soft-----	17	191
	Shale as above-----	15	206
	Siltstone, grayish-green, clayey, soft-----	29	235
	Shale as above-----	7	242
	Siltstone, gray, clayey, soft, plastic-----	20	262
	Shale, gray, silty, soft; interbedded with dark-brown, carbonaceous shale-----	10	272
	Lignite, siliceous, hard-----	3	275
	Shale, medium-dark-gray, silty-----	12	287
	Shale, gray, silty to sandy-----	10	297
	Shale, gray, silty; with lignite specks-----	14	311
	Sandstone, very fine, clayey, soft-----	19	330
	Lignite-----	2	332
	Sandstone as above-----	3	335
	Shale, gray, silty; interbedded with yellowish-tan, bentonitic clay-----	13	348
	Siltstone, gray, clayey, soft-----	10	358
	Shale as above-----	3	361
	Sandstone, light-gray, silt to very fine, clayey, soft-----	25	386
	Shale, light-gray, silty to sandy, plastic-----	10	396
	Lignite-----	2	398
	Shale, carbonaceous-----	2	400
	Lignite-----	1	401
	Shale, light-gray, bentonitic (?)-----	8	409
	Shale, light-gray, silty to sandy, locally carbonaceous, plastic-----	15	424
	Lignite-----	2	426
	Shale, light-gray, silty to sandy, plastic-----	6	432
	Lignite-----	2	434
	Shale as above-----	16	450
	Shale, light-gray; becoming increasingly silty and sandy with depth-----	24	474

141-92-270001, Continued
NDSWC 3545

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Tongue River Formation, Continued:			
	Shale, very light gray, clayey, soft-----	2	476
	Shale, light-gray, silty and sandy-----	12	488
	Shale, very light gray, clayey, soft-----	6	494
Basal Tongue River sandstone:			
	Sandstone, grayish-brown, silt to very fine, clayey, semiconsolidated-----	16	510
	Sandstone as above; but cleaner-----	24	534
Ludlow Formation:			
	Lignite-----	4	538
	Shale, gray-----	14	552
	Lignite-----	5	557
	Shale-----	6	563
	Lignite-----	2	565
	Shale-----	14	579
	Lignite, shaly, siliceous, hard-----	2	581
	Shale-----	7	588
	Lignite-----	3	591
	Shale, brownish-gray, sandy-----	6	597
	Sandstone, brownish-gray, silt to very fine, clayey, soft-----	12	609
	Shale, white to medium-gray, silty to sandy, moderately soft-----	13	622
	Shale, brownish-black, silty, carbonaceous, moderately soft-----	15	637
	Shale, light-gray, silty, smooth, soft-----	5	642
	Shale, light-greenish-gray and light-gray, silty, moderately soft, slightly plastic-----	7	649
	Siltstone, light-gray, brownish-gray, and reddish-brown, clayey, soft-----	3	652
	Lignite-----	1	653
	Siltstone as above-----	6	659
	Lignite-----	4	663
	Shale, dark-gray, carbonaceous, very tight-----	6	669
	Siltstone as above-----	3	672
	Shale as above-----	4	676
	Siltstone as above-----	5	681
Cannonball Formation:			
	Shale, bentonitic (?)-----	5	686
	Sandstone, light-olive-gray, silt to very fine, soft--	5	691
	Shale, silty to sandy-----	9	700
	Siltstone, light-gray and greenish-gray, sandy-----	8	708
	Shale, dark-green, very silty, tight-----	4	712
	Sandstone, light-olive-gray and greenish-gray, silt to very fine, clayey-----	22	734
	Lignite (?) (may be lens of Ludlow Formation)-----	2	736
	Sandstone as above-----	23	759
	Sandstone, indurated-----	2	761
	Shale, white to light-greenish-gray, clayey, soft----	8	769
	Sandstone, indurated-----	3	772
	Shale as above-----	14	786
	Sand, greenish-gray, very fine and fine, moderately clayey, soft-----	17	803
Ludlow Formation (Lower):			
	Shale, light- to medium-gray, bentonitic (?)-----	7	810
	Lignite-----	2	812
	Shale, light- to medium-gray and greenish-gray, sandy-	8	820
	Shale, variegated gray, silty, carbonaceous inclusions, moderately soft to slightly brittle, very tight-----	19	839
	Rock (driller)-----	2	841
	Shale as above-----	59	900

141-92-27CCC2
 NDSWC 3545A
 (Drillers log)

Altitude: 2165 ft above msl

Date drilled: October 1967

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation:			
	Sand, surface-----	8	8
	Clay, gray-----	1	9
	Coal, slack-----	5	14
	Clay, gray-----	9	23
	Clay, brown-----	14	37
	Coal-----	2	39
	Sand, yellow-----	69	108
	Sand, gray-green-----	3	111
	Core: Recovery not known. Sandstone, dark-greenish-gray with black specks, fine to medium, subround, weakly consolidated (from description 141-92-27CCC1)--	25	136
Water level just above bottom of hole.			

141-92-35DAA
 USGS Auger Test 18

Altitude: 2104 ft above msl

Date drilled: August 1968

Quaternary deposits, undifferentiated:			
	Silt, light-olive-gray to brown, clayey, calcareous---	7	7
Sentinel Butte Formation:			
	Shale, pale-yellowish-orange, highly calcareous, hard, oxidized-----	1	8

141-93-26BBB1 and 26BBB2
 NDSWC 3685 and 3685A, Composite log

Altitude: 2119 ft above msl

Date drilled: November 1968 and
 May 1969

Quaternary deposits, undifferentiated:			
	Topsoil, black, sandy loam-----	1	1
	Sand, moderate-olive-brown, fine and medium, subround, clean, oxidized-----	4	5
	Silt, yellowish-gray, dusky-yellow, and moderate-olive-brown, clayey and sandy; with lignite inclusions; oxidized-----	19	24
	Sand, gray, medium, subangular and subround; predominantly quartz and lignite grains plus limestone and granitic rock grains; takes drilling fluid-----	37	61
	Clay, gray, sandy; with abundant lignite fragments---	8	69
Sentinel Butte Formation:			
	Lignite-----	4	73
	Shale-----	2	75
	Lignite-----	2	77
	Shale-----	6	83
	Lignite-----	4	87
	Shale, olive-gray to brownish-gray, silty-----	8	95
	Shale, very light gray, very silty, moderately soft---	8	103
	Siltstone, very light gray to light-greenish-gray, soft, friable-----	6	109
	Shale, light-gray to greenish-gray, silty, smooth, slightly brittle-----	8	117

141-93-26BBB1 and 26BBB2, Continued
 NDSWC 3685 and 3685A

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation, Continued:			
	Siltstone, light-gray and light-greenish-gray with brownish-black carbonaceous stains, soft, friable-----	33	150
	Sandstone, interbedded medium-gray and dark-greenish-gray, silt to fine, clayey, carbonaceous, soft-----	34	184
	Shale, sandy, carbonaceous-----	3	187
	Lignite-----	2	189
	Shale, dark-gray, silty, slightly brittle, sticky, tight-----	11	200

TABLE 5.--Chemical analyses of selected water samples

LOCAL NO	WELL NO	DEPTH (FT.)	DATE	SILICA (MG/L)	TOTAL IRON (MG/L)	CALCIUM (MG/L)	MAGNESIUM (MG/L)	PO-TAS-SIUM (MG/L)	BICAR-BONATE (MG/L)	CAR-BONATE (MG/L)	SULFATE (MG/L)	CHLORIDE (MG/L)	FLUORIDE (MG/L)	NITRATE (MG/L)	BORON (MG/L)	DISS-SOLIDS (MG/L)	DISS-SOLIDS (MG/L)	HARDNESS (MG/L)	NON-CARBONATE HARDNESS (MG/L)	SODIUM ADSORPTION RATIO	PERCENT SODIUM	SPECIFIC CONDUCTANCE (MICRO-MHOS)	PH	TEMPERATURE (DEG C)			
HETTINGER COUNTY																											
132001114AAN	14	202	08-08-67	8.1	.33	10	2.4	344	3.8	541	7	319	4.3	4	0	.26	951	967	35	0	24	95	1460	8.3	9.0		
132001121GDU	14	1060	08-10-68	9.3	.30	4.3	1.6	556	2.6	1010	18	5.7	242	3.7	1.0	2.6	1110	1340	17	0	58	98	2240	8.4	9.0		
132001200AAK	14	228	08-11-67	10	.36	39	15	300	11	522	5	372	4.1	1.1	3.0	4.8	1010	1020	158	0	10	79	1520	8.3	9.0		
132001213-C	14	125	11-23-56	---	.42	---	---	---	---	353	---	153	1.0	---	---	.70	493	613	337	---	2.1	39	876	7.9	---		
132001221GDU7	14	70	06-13-69	13	.84	58	24	121	4.7	348	0	219	1.6	1.1	2.5	.15	647	616	245	0	3.4	51	924	7.9	7.5		
132001222AA1	14	174	05-08-69	6.3	.12	---	9.0	2.6	378	7.1	632	1.0	4.0	1.0	---	.52	1040	1060	35	0	28	95	1610	8.1	7.0		
132001222GDU1	14	174	05-08-69	---	1.0	---	---	---	---	376	20	1350	---	---	---	---	2380	2420	49	---	---	---	3700	---	---		
1320012314901	14	100	11-13-56	---	0	---	---	---	---	1830	---	2280	---	---	---	---	2710	3550	1330	---	---	---	---	7.5	---		
132001232AA87	14	85	08-04-67	7.7	.08	169	94	823	9.1	615	0	2040	10	4.5	12	.65	3520	3470	806	302	13	69	4330	8.1	10.0		
132001232GDU7	14	162	04-05-69	6.4	.40	5.6	1.5	344	2.0	530	0	351	1.3	1.5	4.0	.74	985	955	20	0	33	97	1490	8.2	---		
132001232GDU8	14	143	06-17-69	13	.72	36	16	74	5.6	370	0	24	1.0	4.0	2.5	.19	321	308	155	0	2.6	50	460	7.9	8.5		
132001234158877	14	40	06-16-69	12	5.0	57	22	21	3.7	244	0	49	1.5	4.4	11.0	0	700	298	219	19	6	17	480	7.7	6.5		
132001242GDU7	14	294	05-13-69	8.6	.20	4.8	3.4	390	2.4	608	13	270	1.0	1.1	7.5	.26	965	956	76	0	30	96	1490	8.5	10.5		
132001242GDU8	14	123	07-26-67	11	.18	20	6.5	83	5.8	294	0	30	1.1	4.4	1.0	.10	306	89	0	3.8	65	500	8.1	10.5			
132001242GDU9	14	124	03-25-47	---	.70	---	---	---	---	334	---	452	1.0	---	---	---	1110	1230	69	---	---	---	1900	---	---		
132001242GDU10	14	201	07-25-67	7.7	.08	5.0	1.8	505	2.9	588	0	402	4.7	4.9	1.0	.58	1320	1520	20	0	49	98	2110	8.2	10.5		
132001242GDU11	14	30	05-01-68	---	.40	---	---	---	---	332	---	32	---	---	---	---	1580	1880	135	---	---	---	2880	---	9.0		
132001242GDU12	14	316	08-24-67	8.6	.34	2.5	1.0	451	1.8	1090	24	17	27	3.4	1.0	1.2	1060	1080	10	---	62	99	1720	8.4	11.5		
132001242GDU13	14	306	08-02-54	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1260	15	---	---	48	98	1986	---	---	
132001242GDU14	14	243	06-03-69	8.5	.50	9.2	3.4	593	3.8	542	0	858	2.5	2.5	2.5	.67	1720	1790	37	0	42	97	2560	7.9	15.0		
132001242GDU15	14	60	07-23-59	---	9.7	93	46	46	0	258	0	211	9.8	---	---	---	---	630	430	---	---	0	1140	7.5	---		
132001242GDU16	14	402	07-26-67	7.0	.22	4.0	1.0	500	1.8	1220	37	2.1	24	5.9	4.0	1.3	1200	1190	14	0	98	99	1910	8.5	13.5		
132001242GDU17	14	146	01-21-60	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1260	14	---	---	48	98	1803	---	---	
132001242GDU18	14	25	08-02-66	---	.80	254	142	732	---	886	---	1930	51	---	4.0	---	3650	2960	1220	490	9.1	57	4560	7.5	---		
132001242GDU19	14	80	07-13-69	---	.33	---	---	269	---	528	0	350	8.0	---	4.0	---	885	884	220	0	7.9	73	1360	7.6	---		
132001242GDU20	14	207	08-29-67	---	.22	4.3	1.6	399	1.4	731	13	262	1.0	4.0	1.9	---	1040	1060	17	0	42	98	1630	8.4	10.0		
132001242GDU21	14	128	12-01-67	---	4.6	15	6.9	310	5.4	562	0	291	6.5	1.1	4.0	.88	947	903	64	0	17	90	1300	7.4	8.5		
132001242GDU22	14	169	08-24-67	---	.70	6.0	2.7	457	2.3	738	18	374	11	4.2	3.0	1.6	1280	1250	26	0	39	97	1920	8.4	12.0		
132001242GDU23	14	696	06-29-67	9.3	.13	3.2	1.5	550	1.9	1310	36	7.6	26	31.4	4.0	1.4	1290	1280	14	0	20	99	2000	8.5	12.0		
132001242GDU24	14	70	06-17-69	10	1.7	152	64	189	13	424	0	493	6.1	4.2	4.2	.44	1430	1340	643	294	3.2	38	1820	7.8	8.5		
132001242GDU25	14	192	03-11-69	7.3	2.8	16	3.4	568	4.7	937	0	520	8.0	1.1	1.0	.48	1570	1590	54	0	34	95	2360	8.2	9.5		
132001242GDU26	14	214	05-14-69	11	7.8	8.0	8.8	320	4.0	682	12	146	10	5.5	2.5	1.5	1210	866	56	0	18	92	1350	8.4	10.5		
132001242GDU27	14	161	03-11-69	8.4	.26	6.4	1.2	332	2.4	650	0	180	3.0	1.3	4.0	.56	869	861	21	0	32	97	1380	8.2	8.5		
132001242GDU28	14	212	11-12-67	---	1.4	---	---	534	---	971	0	590	2.9	---	1.0	---	1420	1410	40	---	37	97	2170	8.0	---		
132001242GDU29	14	141	08-17-67	7.5	.90	36	12	661	6.6	791	16	887	9.5	4.4	4.0	.88	1810	2030	139	0	24	91	2910	7.6	7.5		
132001242GDU30	14	71	03-11-69	15	0	262	96	178	13	548	0	783	49	3	172	20	1900	1840	1050	601	2.4	27	2310	8.3	8.5		
132001242GDU31	14	81	11-01-67	10	.90	17	5.5	201	4.2	476	0	108	4.6	5	1.0	.54	566	566	65	0	11	86	934	8.2	8.5		
132001242GDU32	14	221	12-03-67	10	1.6	8.8	5.4	246	3.0	384	0	134	6.4	6.6	1.0	.68	704	723	44	0	17	92	1140	8.2	7.0		
132001242GDU33	14	75	12-24-68	---	.45	---	---	235	---	---	---	---	---	---	---	---	---	730	40	---	---	---	---	910	---	---	
132001242GDU34	14	102	05-01-68	8.4	3.5	5.7	2.4	321	2.8	608	5	208	5.5	5	4.0	.88	885	864	24	0	28	96	1310	8.4	10.0		
132001242GDU35	14	135	03-31-69	---	.20	---	---	398	---	---	---	---	---	---	5.0	---	---	1870	300	---	---	---	---	2330	---	---	
132001242GDU36	14	60	08-08-69	---	.30	---	---	59	---	---	---	---	---	---	---	---	---	1240	803	---	---	---	---	1550	---	---	
132001242GDU37	14	95	08-18-67	19	4.0	190	68	283	9.0	371	0	1010	15	1	5.5	1.1	1840	1790	752	448	4.5	45	2310	7.9	10.0		
132001242GDU38	14	474	10-25-68	16	0	1.0	4	600	2.4	765	---	91	14	3.0	1.0	2.4	1500	1430	4	130	99	2420	8.7	8.5			
132001242GDU39	14	674	11-08-68	2.7	.07	2.3	1.6	538	2.2	1200	82	23	15	6.5	1.0	4.4	1300	1260	12	---	---	---	68	99	2040	8.4	7.5
132001242GDU40	14	474	08-08-67	9.5	.08	4.7	1.3	600	2.4	1470	28	48	4.3	1.8	4.0	1.4	1470	1470	22	0	62	98	2330	8.4	10.5		
132001242GDU41	14	478	12-04-67	11	.40	4.2	1.1	514	2.3	1240	22	13	4.0	3.2	3.0	2.1	1240	1240	15	0	58	98	1930	8.5	10.0		
132001242GDU42	14	112	05-09-69	9.7	2.0	3.3	13	82	4.2	332	0	42	1.0	3	3.0	0	562	353	138	0	3.0	73	572	7.8	9.0		
132001242GDU43	14	131	06-02-69	7.0	.40	6.7	2.1	457	2.7	696	0	457	3.6	4.0	1.0	.89	1260	1290	25	0	40	97	1950	7.8	10.0		
132001242GDU44	14	174	05-09-69	16	.72	97	71	169	10	580	0	408	1.0	3	3.0	.70	1060	1060	534	58	3.2	40	1520	7.7	8.5		
132001242GDU45	14																										

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LOCAL	DEPTH	DATE	SILICA	TOTAL IRON	CALCIUM	MAGNESIUM	SODIUM	POTASSIUM	BICARBONATE	CARBONATE	SULFATE	CHLORIDE	FLUORIDE	NITRATE	AMMONIA	DISSOLVED SOLIDS	DISSOLVED SOLIDS	HARDNESS	NON-CARBONATE HARDNESS	SODIUM ADSORPTION RATIO	SPECIFIC CONDUCTANCE	PH	TEMPERATURE			
(FT.)	(FT.)	(MM)	(MG/L)	(PPM)	(MG/L)	(MG/L)	(MG/L)	(MG/L)	(MG/L)	(MG/L)	(MG/L)	(MG/L)	(MG/L)	(MG/L)	(MG/L)	(MG/L)	(MG/L)	(MG/L)	(MG/L)	(%)	(MICROHMS)		(DEC. C)			
13900601000	21	00	08-01-67	---	---	---	---	---	94	---	---	18	---	---	---	---	---	---	---	---	2980	---	---			
13900601200	71	25	07-18-67	20	.05	115	120	245	10	505	---	1100	10	.6	1.3	---	---	1980	1030	616	3.3	34	2340	7.3	---	
13900601400	50	52	07-06-66	---	.30	82	---	---	---	878	---	1000	4.6	---	---	---	---	3500	406	---	---	---	4150	7.8	---	
13900601600	50	---	08-01-67	---	---	---	---	---	---	1140	---	---	6.0	---	---	---	---	---	---	---	---	---	---	2690	---	---
13900601800	50	---	08-01-67	---	---	---	---	---	---	898	---	---	6.0	---	---	---	---	---	---	---	---	---	---	2740	---	---
13900602000	50	---	08-01-67	---	---	---	---	---	---	364	---	---	12	---	---	---	---	---	---	---	---	---	---	2060	---	---
13900602200	50	30	05-01-67	---	---	---	---	---	---	742	---	---	13	---	---	---	---	---	---	---	---	---	---	3250	---	---
13900602400	50	---	08-01-67	---	---	---	---	---	---	188	---	---	9.0	---	---	---	---	---	---	---	---	---	---	1730	---	---
13900602600	50	104	05-28-69	9.5	0	7.5	2.8	418	2.2	725	90	336	1.5	2.1	1.0	.52	1160	1150	30	0	33	96	1780	8.3	10.5	
13900602800	50	130	06-17-67	---	1.2	---	---	---	---	988	---	333	0.0	---	---	---	---	1142	40	---	---	---	---	1760	8.0	---
13900603000	50	65	08-17-67	---	1.7	---	---	---	---	180	---	86	4.0	---	---	---	---	376	190	---	---	---	---	501	7.6	---
13900603200	50	70	07-18-67	14	.05	64	66	66	14	434	---	133	14	.7	12	---	---	566	349	10	---	28	890	7.1	---	
13900603400	50	52	09-04-62	---	.30	---	---	---	---	516	---	699	16	---	17	---	---	1660	720	---	---	---	---	2560	7.3	---
13900603600	50	40	07-18-67	13	.05	325	113	178	7.6	554	---	1140	12	.1	18	---	---	2000	1260	822	3.3	73	2320	7.1	---	
13900603800	50	38	07-18-67	16	.25	97	24	89	7.6	592	---	109	6.0	.4	.3	---	---	481	741	0	2.5	44	741	7.4	---	
13900604000	50	30	07-18-67	25	.05	313	97	134	11	413	---	970	95	.4	.0	---	---	1850	1180	841	1.7	20	2950	7.3	---	
13900604200	50	48	07-17-67	11	.10	18	7.1	229	6.1	469	0	192	4.4	.5	1.2	---	699	699	74	0	12	86	1070	7.9	---	
13900604400	50	15	08-17-67	---	.20	---	---	---	---	260	---	183	14	---	12	---	---	626	350	---	---	---	---	2840	7.9	10.0
13900604600	50	48	08-17-67	---	1.7	---	---	---	---	248	---	219	8.0	---	.0	---	---	629	170	---	---	---	---	970	7.6	---
13900604800	60	18	08-17-67	---	.20	---	---	---	---	352	---	241	26	---	.0	---	---	824	350	---	---	---	---	1270	7.6	12.5
13900605000	50	66	07-17-67	17	3.3	7.6	4.1	500	4.3	758	0	489	3.1	.4	.0	.71	1370	1400	36	0	36	96	2080	8.2	6.0	
13900605200	50	431	10-05-67	---	.02	3.9	1.1	393	1.2	790	12	154	7.6	.4	2.0	.88	949	988	14	0	46	98	1570	8.4	11.0	
13900605400	50	61	04-11-61	---	.40	---	---	---	---	647	0	1050	30	---	.0	---	---	1930	680	---	---	---	---	3200	---	---
13900605600	50	61	---	---	3.1	---	---	---	---	799	0	875	25	---	.0	---	---	1880	460	---	---	---	---	3140	---	---
13900605800	50	31	03-09-59	11	.90	74	53	624	5.4	---	---	---	---	---	---	---	2220	2110	402	0	10	77	3040	7.1	---	
13900606000	50	630	06-14-68	8.1	.07	2.2	1.6	426	1.4	836	16	189	8.3	.7	.0	1.1	1050	1080	12	0	53	99	1460	8.4	12.0	
13900606200	50	660	---	---	1.0	---	---	396	---	927	0	---	---	---	---	---	---	993	10	---	---	---	---	8.5	---	---
13900606400	50	681	10-03-67	---	.36	2.1	1.2	424	1.1	1030	34	12	6.4	.7	.0	1.1	1070	1050	10	0	58	99	1620	8.7	11.0	
13900606600	50	681	10-03-67	---	.36	2.1	1.2	424	1.1	1030	34	12	6.4	.7	.0	1.1	1070	1050	10	0	58	99	1620	8.7	11.0	
14000310000	50	700	05-20-66	---	.81	---	---	500	---	872	0	518	7.0	---	.0	---	1670	1480	168	0	17	87	2280	8.0	---	
14000310200	50	101	05-06-69	16	1.2	54	13	689	7.0	1030	0	820	4.0	1.6	.7	.11	2130	2110	189	0	22	88	2930	7.9	7.5	
14000310400	50	278	10-18-67	23	3.4	58	18	412	5.8	1000	0	687	2.5	1.4	.0	.34	2000	1910	220	0	18	85	2700	8.1	8.5	
14000310600	50	425	06-20-67	7.3	.36	1.6	1.5	500	2.1	1250	17	3.1	8.8	5.8	2.0	.59	1200	1170	10	0	69	99	1880	8.4	10.5	
14000310800	50	1160	06-20-67	9.5	1.0	4.0	1.2	724	2.4	1890	0	4.8	18	1.2	5.0	1.3	1710	1700	15	0	81	99	2670	8.2	13.5	
14000311000	50	4.35	06-20-67	7.1	.92	2.0	1.7	487	2.3	1250	0	5.7	8.6	7.7	.0	.59	1170	1140	12	0	61	99	1870	8.0	10.5	
14000311200	50	6.9	04-11-69	8.5	.50	25	7.2	573	6.9	1170	77	259	11	4.4	1.0	.52	1640	1550	92	0	26	93	2480	8.6	10.5	
14000311400	50	170	---	---	1.8	.80	5.3	1.7	299	---	---	---	---	---	---	---	---	939	21	0	29	97	1480	9.2	---	
14000311600	50	60	06-24-71	16	.80	429	415	---	---	594	0	2990	8.0	---	2.8	---	---	4980	2770	---	---	---	---	5500	---	9.0
14000311800	50	140	08-05-69	10	3.8	14	9.0	615	6.3	688	0	861	1.7	2.7	.7	.44	1830	1860	72	0	31	94	2720	8.1	9.5	
14000312000	50	34	07-19-67	20	4.4	764	127	74	9.5	172	0	445	199	.3	60.5	---	---	1980	1830	1180	1040	---	---	2410	7.1	8.5
14000312200	50	25	08-17-67	---	1.0	---	---	---	---	616	---	317	12	---	.0	---	---	1160	550	---	---	---	---	1760	7.2	---
14000312400	50	1611	11-21-68	22	0	78	16	33	4.0	288	0	82	3.0	.7	2.0	.08	378	382	259	23	.9	21	597	7.7	---	
14000312600	50	316	11-20-68	23	.46	76	17	35	4.1	289	0	86	2.6	.1	.0	.08	434	386	760	23	.9	22	599	8.0	---	
14000312800	50	90	08-17-67	---	.30	---	---	---	---	244	---	171	83	---	305	---	---	1240	670	---	---	---	---	1910	7.5	---
14000313000	50	22	05-17-67	---	.20	---	---	---	---	148	---	137	75	---	.0	---	---	567	320	---	---	---	---	865	7.6	---
14000313200	50	40	08-17-67	---	.30	---	---	---	---	380	---	344	68	---	183	---	---	1510	670	---	---	---	---	2310	7.6	---
14000313400	50	150	09-04-62	---	2.8	---	---	---	---	816	---	234	6.0	---	.0	---	---	1260	20	---	---	---	---	1940	7.8	---
14000313600	50	150	05-09-59	---	---	22	13	1020	---	557	---	1670	12	1.2	.0	---	---	3430	110	---	---	41	95	9770	7.7	---
14000313800	50	87	05-04-59	---	---	75	51	1330	---	68	---	970	17	---	.0	---	---	932	400	---	---	29	88	1430	5.7	---
14000314000	50	135	08-11-62	---	2.2	---	---	---	---	346	---	58	4.0	---	.0	---	---	635	290	---	---	---	---	1430	6.9	---
14000314200	50	75	12-05-67	---	1.1	---	---	---	---	436	---	258	.0	---	.0	---	---	855	564	---	---	---	---	1310	7.1	---
14000314400	50	---	12-09-67	---	3.6	---	---	---	---	368	---	1370	14	---	.0	---	---	2480	1170	---	---	---	---	3800	7.2	---
14000314600	50	180	02-28-61	---	1.6	196	19	180	---	376	---	950	3.0	---	4.4	---	---	1420	570	---	---	3.0	41	---	---	---
14000314800	50	180	02-28-61	16	2.5	122	67	167	11	441	0	584	2.8	.1	.0	.29	1160	1190	981	219	3.0	38	1590	7.5	10.0	
14000315000	50	140	07-18-69	---	5.2	60	56	178	---	142	---	650	3.0	---	6.4	---	---	1150	430	---	---	3.7	47	1780	---	---
14000315200	50	40	08-31-62	---	2.2	---	---	---	---	344	---	3200	42	---	122	---	---	4990	1170	---	---	---	---	7660	6.7	---
14000315400	50	165	08-04-62	---	1.0	---	---	---	---	784	---	407	4.0	---	.0	---	---	1500	24	---	---	---	---	2310	7.8	---
14000315600	50	100	12-05-62	---	1.0	---	---	---	---	368	---	828	6.0	---	.0	---	---	2070	610	---	---	---	---	3160	7.5	---
14000315800	50	69	05-04-62	---	7.9	---	---	---	---	380	---	726	6.0	---	.0	---	---	1510	810	---	---	---	---	2320	7.1	---
14000316000	50	69	05-04-62	---	7.9	---	---	---	---	380	---	726	6.0	---	.0	---	---	1510	810	---	---	---	---	2320	7.1	---
14000316200	50	40	12-09-62																							

LOCAL NUMBER	MAJOR AQUIFER	DEPTH OF WELL (FT.)	DATE OF SAMPLE	SILICA (SI02) (MG/L)	TOTAL IRON (FE) (MG/L)	CALCIUM (CA) (MG/L)	MAGNESIUM (MG/L)	SODIUM (NA) (MG/L)	POTASSIUM (K) (MG/L)	BICARBONATE (HCO3) (MG/L)	CARBONATE (CO3) (MG/L)	SULFATE (SO4) (MG/L)	CHLORIDE (CL) (MG/L)	FLUORIDE (F) (MG/L)	NITRATE (NO3) (MG/L)	BORON (B) (MG/L)	DISSOLVED SOLIDS (RESIST-DUE AT 180°C)	DISSOLVED SOLIDS (SUM OF CONSTITUENTS)	HARDNESS (CA+MG) (MG/L)	NON-HARDNESS (MG/L)	SODIUM ADSORPTION RATIO	PERCENT SODIUM	SPECIFIC CONDUCTANCE (MICROHMS)	PH	TEMPERATURE (DEG C)		
140N09M320001	SB	75	08-01-67	---	---	---	---	---	---	522	---	---	10	---	---	---	---	---	---	---	---	---	---	1280	---	---	
140N09M320002	SB	85	12-05-62	---	20	---	---	---	---	420	---	275	0.0	---	40	---	---	858	360	---	---	---	---	1320	7.3	---	
140N09M200004	---	75	08-31-62	---	30	---	---	---	---	440	---	622	20	---	73	---	---	1460	460	---	---	---	---	2250	7.2	---	
140N09M200005	SB	71	07-17-67	9.9	108	5.0	1.8	692	8.7	1110	0	588	8.9	3.2	1.0	.35	1900	1870	20	0	50	98	2650	8.2	8.5		
140N09M240007	CS	58	08-31-62	---	30	---	---	---	---	388	---	388	18	---	12	---	---	1020	618	---	---	---	---	1970	7.2	---	
140N09M240003	CS	40	12-05-62	---	10	---	---	---	---	220	---	152	8.0	---	24	---	---	382	264	---	---	---	---	590	7.6	---	
140N09M340001	SB	36	09-04-62	---	50	---	---	---	---	504	---	458	8.0	---	0	---	---	1176	470	---	---	---	---	1810	7.6	---	
140N09M010003	SB	210	07-17-67	12	50	3.2	1.7	582	11	984	36	617	4.7	4.0	4.0	.31	1570	1560	15	0	65	98	2320	8.6	17.0		
140N09M120003	SB	150	03-05-69	9.8	52	7.5	2.8	681	2.2	686	22	874	1.5	4	1.2	1.0	1890	1910	30	0	52	98	2790	8.6	---		
140N09M320005	SB	110	11-18-65	---	42	---	---	1060	---	686	0	2500	4.0	---	0	---	---	3680	3020	870	308	16	---	4650	7.7	---	
140N09M330006	TR	805	07-21-67	8.6	3.4	4.0	1.2	426	1.7	881	0	198	7.0	5.0	0	.58	1100	1090	15	0	48	98	1100	8.2	17.0		
141090M190001	HC	1192	06-15-67	12	5.4	3.2	1.0	578	2.3	1170	19	5.9	185	4.7	3.0	1.8	1570	1400	12	0	73	99	2310	8.4	---		
141090M190002	ME	1192	06-06-67	14	4.8	3.6	1.0	584	2.7	1140	22	1.6	198	4.7	3.0	2.0	1490	1400	13	0	80	99	2330	8.4	16.3		
141090M220001	22	35	06-02-69	10	1.6	43	24	68	3.8	383	0	41	.5	1.3	2.5	.22	361	383	206	0	2.1	41	683	7.9	---		
141090M220003	TR	530	05-07-69	8.1	2.2	4.7	1.8	598	3.2	1550	29	7.4	.0	3.6	3.0	.37	1500	1430	19	0	60	98	2270	8.4	9.5		
141090M300001	31	42	08-16-66	---	4.0	---	---	---	---	---	---	190	599	0	0	---	---	---	501	---	---	---	---	1130	---	---	
141090M320002	31	61	05-06-69	18	2.6	64	18	140	4.7	487	0	139	.0	.6	2.5	.26	638	630	233	0	4.0	56	970	7.7	7		
SPRINGS																											
136N09M230001	BB	0	06-06-68	---	4.6	---	---	---	---	---	---	5000	7.0	---	---	---	---	---	3200	---	---	---	---	5400	---	10.1	
139N09M040001	BB	0	11-24-50	---	2.3	58	74	82	---	275	0	376	8.0	---	0	---	---	873	445	---	---	---	---	1340	7.6	---	
139N09M040002	BB	0	06-15-67	10	6.2	135	65	296	11	474	0	825	14	.2	1	.35	1590	1600	695	217	5.2	51	2150	7.6	7.5		
140N09M260001	BB	0	10-12-68	9.0	0	8.8	5.4	152	2.7	354	0	75	.5	.4	0	.47	420	428	44	0	10	87	687	8.1	8.5		

TABLE 6.--Color values of water samples, with specific conductances

EXPLANATION					
Aquifer code					
Quaternary:		Tertiary, continued:			
22, Terrace deposits		TL, Tongue River and Ludlow Formations, undifferentiated			
31, Outwash		TC, Tongue River and Cannonball Formations, undifferentiated			
52, Buried-channel deposits		C, Cannonball Formation			
Tertiary:		L, Ludlow Formation			
GV, Golden Valley Formation		CL, Cannonball and Ludlow Formations, undifferentiated			
GS, Golden Valley and Sentinel Butte Formations, undifferentiated					
SB, Sentinel Butte Formation					
ST, Sentinel Butte and Tongue River Formations, undifferentiated		Cretaceous:			
TR, Tongue River Formation		HC, Hell Creek Formation			

Location number	Depth	Aquifer	Lithology	Color value	Specific conductance (micromhos at 25°C)
HETTINGER COUNTY					
132-91-24CDC1	60	ST	-	20	1690
132-92-21DDD2	70	TR	Sandstone	10	924
132-92-24AAA	174	TR	Sandstone	100	1610
132-92-24CDD	180	TR	Lignite	3600	1580
132-93-28BCE1	164	TR	Sandstone	180	1480
132-93-28BCE2	162	TR	Sandstone	250	1490
132-93-28CBC	183	TR	Sandstone	240	1550
132-93-34ADA	100	TR	Sandstone	100	1700
132-94-10DAA	85	TR	-	130	<500
132-94-15BBE2	40	SB	Sand	100	480
132-94-24DBE2	200	TR	-	200	1580
132-94-29CCC	204	TR	Sandstone	200	1490
133-91- 1BBD	121	TR	Sandstone	20	500
133-91- 4BCC2	18	SB	-	440	1400
133-91- 6ACD1	30	ST	Sandstone	140	1850
133-91- 6ACD2	90	TR	Clay	170	2200
133-91-19AAA	160	TR	-	150	2000
133-92- 7BEC2	175	TR	-	160	1950
133-92-12ADA3	20	-	Lignite	170	2800
133-92-20DDD	130	TR	Lignite	220	1650
133-92-24BBB	-	TC	-	100	1280
133-92-28DAA2	60	ST	Lignite	200	1140
133-93- 1BCB1	100	TR	-	360	1680
133-93- 2AAB	402	TR	-	120	1910
133-93- 2AAD1	145	TR	Sandstone	360	1700
133-93- 2ACB	140	TR	-	360	-
133-93- 3BCA	250	TR	Sandstone	230	1750
133-93- 5ACC	142	TR	Sandstone	1100	1600
133-93- 5CCD	207	TR	Sandstone	1100	1630
133-93- 9AAA	180	TR	-	330	1500
133-93-10AAB	120	TR	-	440	1490
133-93-10ABB1	200	TR	-	330	1650
133-93-10ABB2	187	TR	-	360	1740
133-93-11AAA	180	TR	Sandstone	440	1560
133-93-11DDC	82	TR	Sandstone	120	1500

Location number	Depth	Aquifer	Lithology	Color value	Specific conductance (micromhos at 25°C)
133-93-12ABB	160	TR	Lignite	440	1600
133-93-14BBB	180	TR	-	220	1580
133-93-15ADD	180	TR	-	440	1750
133-93-26AAA	128	TR	Sandstone	720	1390
133-94- 2ABB1	200	TR	-	840	1300
133-94- 4AAA2	90	TR	-	140	3800
133-94- 4DAA2	165	TR	Sandstone	720	1920
133-94- 6DAA1	36	ST	-	440	1380
133-94-20BBB3	140	TR	Sandstone	770	1300
133-94-23BBB	82	TR	Lignite	450	1150
133-94-32BBA	180	TR	-	440	1280
133-95- 2BBB	350	TR	Sandstone	360	1620
133-95- 8DCC1	130	TR	-	440	800
133-95-11DDD2	190	TR	Sandstone	25	2360
133-95-26AAD2	161	TR	Lignite	180	1380
133-95-29BCB	186	TR	-	440	1180
133-95-32CCC1	228	TR	-	560	1180
133-95-32CCC2	-	ST	-	600	1200
133-96- 4BCC	300	TR	-	4300	-
133-96-28DAA2	71	TR	Lignite	20	2310
133-96-30CAA2	22	TR	-	280	3100
133-96-33DDA	22	TR	Sandstone	440	1220
133-97- 9AAA2	181	TR	Sandstone	140	1140
133-97-11DDA2	102	TR	Sandstone	160	1310
133-97-34BBB	674	L	Sandstone	30	2420
134-91- 1CDC	196	TR	-	100	1630
134-91- 1DDC	311	TR	Sandstone	180	1630
134-91- 2BBB1	260	TR	Sandstone	980	1530
134-91- 6DDC2	474	TR	Sandstone	40	2330
134-91-24DAA	265	TR	Sandstone	1400	1390
134-91-32CCC	477	TR	Sandstone	160	1930
134-91-34DDD	112	TR	Sandstone	80	572
134-92-24BAA	250	TR	-	450	1480
134-92-26BAB	151	TR	Sandstone	100	880
134-92-32ADA	135	TR	-	360	1210
134-92-34DDC	173	TR	Sandstone	75	1520
134-93- 6ADC	385	TR	-	1400	1550
134-93- 8DBB	61	TR	Lignite	25	3170
134-93-12CCC2	60	TR	Lignite	90	2830
134-93-13BCB1	345	TR	Sandstone	1400	1430
134-93-17ABB	150	TR	-	1400	1450
134-93-19DCC	550	TC	-	60	1950
134-93-21CBB	125	TR	-	1800	1530
134-93-28ADA	345	TR	Lignite	1200	1580
134-93-31BAB1	175	TR	-	2700	1400
134-93-31EAB2	35	22	Sand	1800	1690
134-93-32AAB	142	TR	Sandstone	3800	1750
134-93-32CCB	150	TR	Sandstone	4400	1400
134-93-33ACD	200	TR	-	900	1630
134-93-35DBD	421	TR	Sandstone	100	1890
134-93-35DCD	378	TR	Sandstone	90	1920
134-94- 8DCC	220	TR	Sandstone	900	1380
134-94-12DDA1	300	TR	Sandstone	1500	1290
134-94-20AAD	170	TR	Lignite	840	1250
134-94-20CDC	150	TR	-	45	1480

Location number	Depth	Aquifer	Lithology	Color value	Specific conductance (micromhos at 25°C)
134-94-20BED	100	TR	Sandstone	190	1410
134-94-24CDC	141	TR	Sandstone	1800	1610
134-94-27BED	260	TR	Sandstone	1800	1500
134-94-27DAB	202	TR	Sandstone	1800	1610
134-94-28CAB	171	TR	Sandstone	1400	1600
134-94-32AAA1	390	TR	Sandstone	40	1810
134-94-32AAA2	200	TR	Sandstone	1300	1600
134-95-3CCD	118	TR	Sandstone	480	1670
134-95-4DCD	40	TR	Sandstone	180	3300
134-95-10CCB2	172	TR	Sandstone	90	960
134-95-13CDD1	123	TR	Sandstone	900	1310
134-95-14ABB	130	TR	Sandstone	400	1850
134-95-20AAA	160	TR	Sandstone	450	906
134-95-23AAA	80	TR	Sandstone	2400	1390
134-95-23AAC	142	TR	Sandstone	720	1400
134-95-26CBB	120	TR	Lignite	480	1400
134-95-26DAD	410	TR	Sandstone	540	1700
134-95-33CCD1	225	TR	-	500	1350
134-95-33CCD2	228	TR	-	360	1600
134-96-3BAB	200	TR	Lignite	810	1410
134-96-8CCB	300	TR	Sandstone	720	1810
134-96-10BBA	185	TR	Sandstone	190	1520
134-96-11CCC	117	TR	Lignite	360	1600
134-96-21ABB	300	TR	Sandstone	480	1600
134-96-29ADD	280	TR	-	460	1400
134-96-32ADD2	240	TR	Sandstone	540	1790
134-97-2DAA	100	TR	Lignite	200	1400
134-97-22BCC2	207	TR	Sandstone	240	1470
135-91-9DCD	298	TR	-	540	1900
135-91-18DAA	290	TR	Lignite	1400	1550
135-91-20ACB	420	TR	Sandstone	160	1980
135-91-28CCB2	100	TR	Sandstone	90	1200
135-91-28CCB3	120	TR	Lignite	35	2330
135-92-3CCD	80	SB	Lignite	10	790
135-92-8BED3	160	TR	-	90	1610
135-92-18ACA1	80	TR	Sandstone	60	1450
135-92-18ACA2	100	TR	Lignite	70	2050
135-92-19ACD	52	ST	Lignite	70	3200
135-92-19DAA	26	ST	Lignite	60	6200
135-92-22CDC1	220	TR	-	70	2050
135-93-1BCB2	252	TR	Sandstone	40	1440
135-93-8ABA	81	SB	Sandstone	25	1300
135-93-12CCC	201	TR	Sandstone	140	2160
135-93-22BBE2	249	TR	Lignite	1400	1280
135-93-26CDC	146	TR	-	120	1500
135-93-29ADA	325	TR	Sandstone	300	1390
135-93-29DAA	160	ST	-	90	2200
135-93-31ADB	385	TR	-	2200	1300
135-93-32CAB	400	TR	Clay	1100	1410
135-94-6BCD	200	SB	Sandstone	90	1300
135-94-20DAD1	250	ST	-	2500	1390
135-94-31CCC	81	SB	Sandstone	100	628
135-95-19DDC2	81	TR	Sandstone	10	1670
135-95-32BCA	175	TR	Lignite	7000	1300
135-96-5DDA	230	ST	Lignite	300	1500

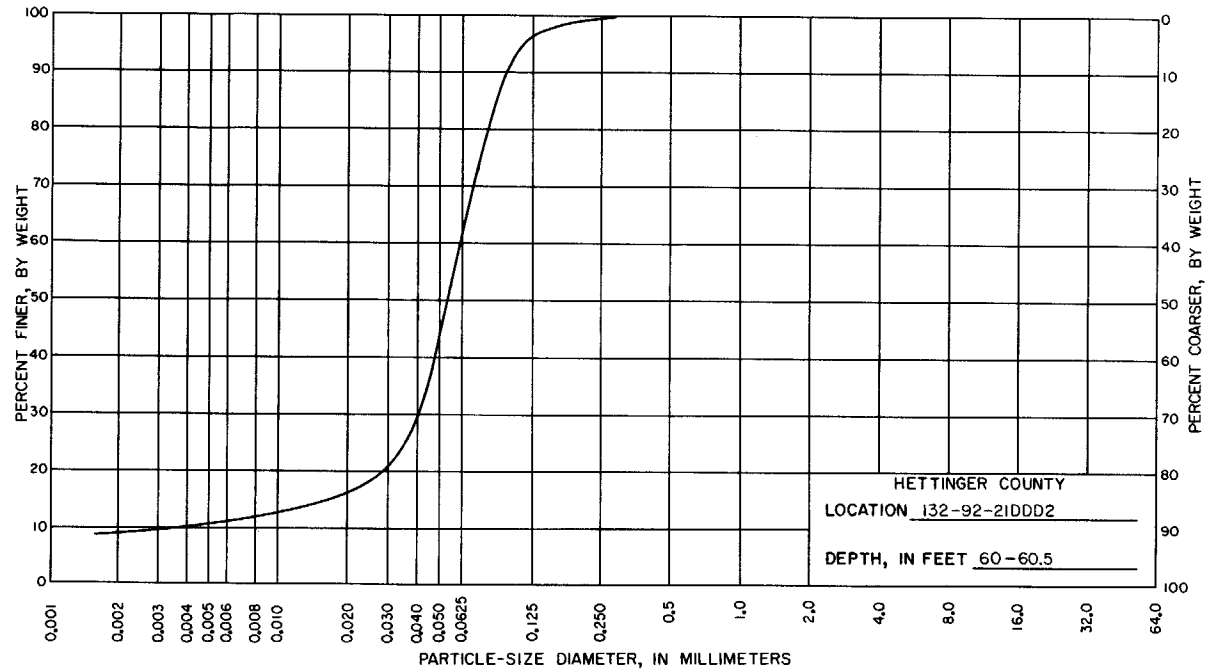
Location number	Depth	Aquifer	Lithology	Color value	Specific conductance (micromhos at 25°C)
135-96-10BAA	318	TR	Sandstone	400	1520
135-96-20BBB2	60	ST	Sandstone	35	2410
135-96-27ABD	90	TR	Sandstone	540	1410
135-96-28BDA	196	TR	Sandstone	360	1480
135-96-29DAA2	250	TR	Sandstone	810	1310
135-97- 4ADB2	128	SB	Sandstone	350	1350
135-97- 4DCA	1050	FH	Sandstone	320	1980
135-97- 4DCA	1360	FH	Sandstone	65	2200
136-91- 6DAB	180	TR	Lignite	240	2850
136-91- 8CAB	110	TR	-	300	710
136-91-21CDC	134	TR	Sandstone	10	1600
136-92- 2BCA	191	TR	Sandstone	25	2150
136-92-10BBC	23	ST	-	120	3100
136-92-26ADD2	273	TR	Lignite	1300	1640
136-92-32ACB	151	SB	Sandstone	120	1080
136-93-10BBA1	140	SB	-	40	1900
136-93-15BCD	230	SB	Sandstone	5	2130
136-93-17DCC2	185	ST	Sandstone	180	1450
136-93-18AAA2	290	SB	Sandstone	120	1300
136-93-20DAA	254	TR	-	180	1330
136-93-22AAA2	122	SB	Sandstone	10	4080
136-93-25BBB	201	TR	Sandstone	2800	2360
136-93-34ECB2	100	SB	Sandstone	15	888
136-94-10BDA2	141	SB	Sandstone	360	-
136-94-32CBA2	180	SB	Sandstone	110	1210
136-95-22AAB2	120	SB	Lignite	400	1400
136-97-12AAC	275	SB	Sandstone	500	1090
136-97-15DAD	201	SB	Sandstone	100	1520
136-97-32CBB	170	SB	Sandstone	640	1860
STARK COUNTY					
137-91- 4DAA1	152	TR	Sandstone	1300	1900
137-91-10ABB	600	TC	-	40	3000
137-91-10CBC1	38	TR	Sandstone	130	1700
137-91-10CBC2	38	TR	Sandstone	120	1500
137-91-13ACC1	61	TR	-	450	1380
137-91-13ACC2	640	L	Sandstone	20	2840
137-91-14CBA	78	TR	Lignite	180	1800
137-91-22DAC2	107	TR	Lignite	320	1900
137-91-27CBD	185	TR	-	60	2150
137-91-30DAB1	178	TR	-	30	2050
137-91-32ABA2	177	TR	-	450	2100
137-92- 4BCE	240	TR	Sandstone	270	1760
137-92- 4CDC1	35	SB	Lignite	120	1800
137-92- 4CDC2	66	ST	-	80	1450
137-92-27DDD3	60	TR	Sandstone	5	1800
137-92-34BBD	17	ST	-	120	2500
137-93- 4BBC2	200	TR	-	60	1650
137-93-21BBA1	80	SB	-	590	2050
137-93-21BBA2	110	ST	-	720	1790
137-93-25AAA3	202	SB	Sandstone	450	1860
137-93-30BCE2	28	SB	-	70	2400
137-93-36BBC	230	ST	Sandstone	270	1700
137-94- 4CBC	533	TR	Sandstone	500	1920
137-94- 5ADD	-	SB	Clay	120	900
137-94- 5BDD	195	ST	Lignite	25	2200

Location number	Depth	Aquifer	Lithology	Color value	Specific conductance (micromhos at 25°C)
137-94- 8BAA1	20	SB	Clay	360	2400
137-94-20CDD2	40	SB	Sandstone	10	1190
137-94-22BBC3	22	SB	Sandstone	5	2300
137-94-22DAC3	218	SB	Sandstone	10	2040
137-94-32BBB1	112	SB	Sandstone	20	625
137-95- 5DCD2	145	SB	Lignite	200	1340
137-95-14AAA2	72	SB	Lignite	270	1150
137-95-18BCC2	240	SB	-	800	1210
137-95-18DAD	200	SB	-	3200	1050
137-95-28BAA2	500	TR	Sandstone	50	1700
137-96-12BAA1	170	SB	-	240	1200
137-96-14BBB	71	SB	-	420	-
137-96-19CBC2	228	SB	Lignite	1500	1390
137-96-19CBC3	1100	LH	-	100	1880
137-97-18CCD	34	GV	-	240	3400
137-97-22DAD2	68	SB	Lignite	40	890
137-97-22DAD3	135	SB	Sandstone	90	2590
137-97-22DAD4	80	SB	-	120	1210
137-97-24BCE1	40	SB	Lignite	240	3750
137-97-25ADC1	58	SB	Sandstone	900	1600
137-97-25ADC2	82	SB	Lignite	400	1050
137-97-25ADC3	230	SB	Lignite	270	1600
137-97-28AAA	30	SB	Sandstone	330	500
137-97-29DEC2	190	SB	Sandstone	120	1480
137-97-29DEC3	68	SB	Sandstone	360	3650
137-97-30BBA	125	SB	Sandstone	150	2060
137-97-31BDD	255	SB	Sandstone	90	1340
137-97-34BDD	75	SB	Lignite	160	-
137-93- 2DDA2	165	SB	Shale	1000	1110
137-93- 4BAC	120	SB	Sandstone	5	890
137-93- 7CBA2	30	SB	-	270	3180
137-93-10BBB2	120	SB	Sandstone	120	2050
137-93-17CCC2	117	SB	Lignite	240	1710
137-93-21CBC1	78	SB	Lignite	210	1880
137-93-22AAA	70	SB	Lignite	490	1170
137-93-30DAA	52	SB	Clay	220	1020
137-93-31AAD	62	SB	Lignite	130	2780
137-93-32CCC	260	ST	Sandstone	320	1600
138-91-12BCC1	12	SB	Lignite	65	2800
138-91-12BCC4	50	SB	Lignite	70	2550
138-91-14DDA2	330	TR	Sandstone	60	1750
138-91-22BDA1	60	ST	-	120	3700
138-91-22BDA2	81	TR	Sandstone	140	1600
138-91-22CDC	268	TR	Lignite	40	2300
138-91-26AAA	310	TR	Sandstone	90	1790
138-91-30ABD3	540	C	Sandstone	5	2800
138-92- 4BBB3	370	TR	-	120	1300
138-93- 6ACD2	170	TR	Lignite	720	1900
138-93- 9CAC	640	TR	Sandstone	180	2010
138-93-17AAC1	435	TR	Sandstone	240	1690
138-93-17AAC2	580	TL	-	190	1890
138-93-28CAD	104	SB	Sandstone	360	1630
138-94- 7BBC1	70	SB	Lignite	180	1500
138-94-19ACB2	200	ST	-	120	1700
138-94-22ABA5	38	SB	Sandstone	120	< 500

Location number	Depth	Aquifer	Lithology	Color value	Specific conductance (micromhos at 25°C)
138-94-22DDA4	200	ST	Lignite	1600	1360
138-94-24CBB2	65	SB	Lignite	180	2100
138-94-28AAA5	425	TR	Sandstone	120	1710
138-94-32ADC2	60	SB	Sandstone	300	1800
138-94-34ADA3	73	SB	Lignite	90	3650
138-96- 5BBB2	215	SB	Sandstone	80	1300
138-96- 63CB2	19	GV	Sandstone	450	1990
138-96- 8CDD2	296	SB	Sandstone	120	1480
138-96-17AAA2	40	SB	-	360	3100
138-96-17AAA4	130	SB	-	150	1810
138-96-26AAC2	100	SB	Clay	35	1000
138-96-27CCD	60	SB	Lignite	120	1300
138-96-28AAA	191	SB	Sandstone	500	1410
138-96-35ACC1	60	SB	Lignite	140	1790
138-97- 2CCCC1	19	GV	-	40	1230
138-97- 2CCCC2	32	GS	-	400	800
138-97-10AAA	30	SB	Lignite	220	1720
138-97-20BDD2	100	SB	Sandstone	240	1100
138-97-24ACC2	34	GV	-	240	2900
138-97-32DCD	20	GV	-	120	5650
138-98- 1BBB2	300	SB	-	120	2100
138-99- 8DDA	80	SB	-	200	8010
138-99-24CCC	833	CL	Sandstone	270	984
139-91-18ADD3	600	TR	Sandstone	120	1850
139-91-35BDA	214	ST	-	200	1650
139-93-27AAA	687	TR	Sandstone	220	1760
139-94- 8DBC2	650	TR	Sandstone	70	1820
139-94-11CDA2	150	SB	Sandstone	35	3200
139-94-14ACC4	160	SB	-	65	4700
139-94-15CCC2	90	SB	-	55	1700
139-94-17ABA	800	TC	Sandstone	65	1800
139-94-23DCC	570	TR	Sand	3600	1810
139-94-31BAA2	100	SB	Lignite	770	1420
139-94-31BAA3	240	TR	Lignite	270	2100
139-94-32DBD5	60	SB	Lignite	630	1500
139-94-33BBA1	52	ST	Clay	150	800
139-94-34ABD1	76	ST	Lignite	180	1890
139-94-34ABD3	70	ST	Lignite	180	1700
139-95-11DCD	120	ST	-	140	-
139-95-26BAA2	197	SB	Lignite	240	1520
139-96- 8DBB2	67	SB	Sandstone	5	900
139-96- 8DBD	115	SB	Sandstone	30	1910
139-96- 9BBD	620	TR	Sandstone	80	1710
139-97- 5DDB2	120	SB	Lignite	210	1550
139-97- 6BCB	24	SB	Lignite	110	2200
139-97- 8BCD3	75	SB	Lignite	240	2300
139-97-17DAA1	260	SB	Lignite	330	1990
139-97-17DAA2	115	SB	Lignite	1200	2000
139-97-18BBB	65	SB	-	140	2400
139-97-20CDC1	104	SB	-	400	2100
139-97-30AAB1	35	SB	-	180	3750
139-97-30CAD	200	SB	-	320	1480
139-98-12DCC3	66	SB	Lignite	180	2080
139-98-13DDD	431	TR	Sandstone	600	1520
139-99- 4DBCL	81	SB	Lignite	1	3060

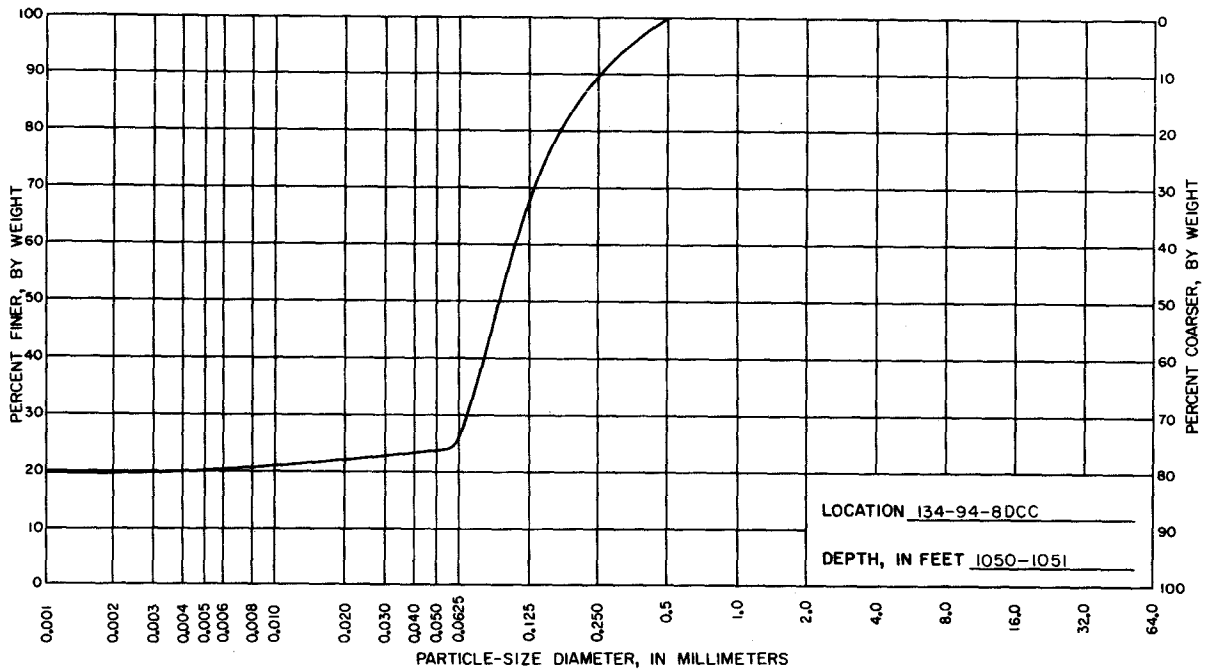
Location number	Depth	Aquifer	Lithology	Color value	Specific conductance (micromhos at 25°C)
139-99- 5ABC	680	TR	Sandstone	30	1660
139-99-21CCC	361	TR	Sand	1400	1620
140-91-16DDD2	30	SB	Lignite	70	2850
140-91-29CCD2	480	TR	Lignite	60	2100
140-92- 1BAA	101	52	Sand	220	2930
140-92- 6DAA	277	52	Sand	880	2700
140-93-33BDE2	32	SB	-	180	4000
140-94-32BBC	32	SB	Sandstone	360	2410
140-95- 2CCC	147	SB	Lignite	150	1810
140-95-11CBD2	40	SB	Sandstone	110	850
140-97- 8CBD2	160	SB	Sandstone	1800	2700
140-97-20CCD	71	SB	Lignite	750	2650
140-97-21DBD4	212	SB	Sandstone	250	2600
140-97-31BCE	-	SB	-	180	1180
140-97-32CCA2	30	SB	Sandstone	300	5100
140-97-34BCA2	220	SB	Sandstone	1000	1910
140-97-34BDE	36	SB	-	20	1440
140-98- 1DCC3	210	SB	Sandstone	540	2320
140-98-19AAB3	150	SB	Sandstone	90	2790
141-91-25AAA	35	22	Sand	10	683
141-92-27CCC3	530	TR	Sandstone	200	2270
141-93-26BBE2	61	31	Sand	80	970

TABLE 7.-- Particle-size distribution curves



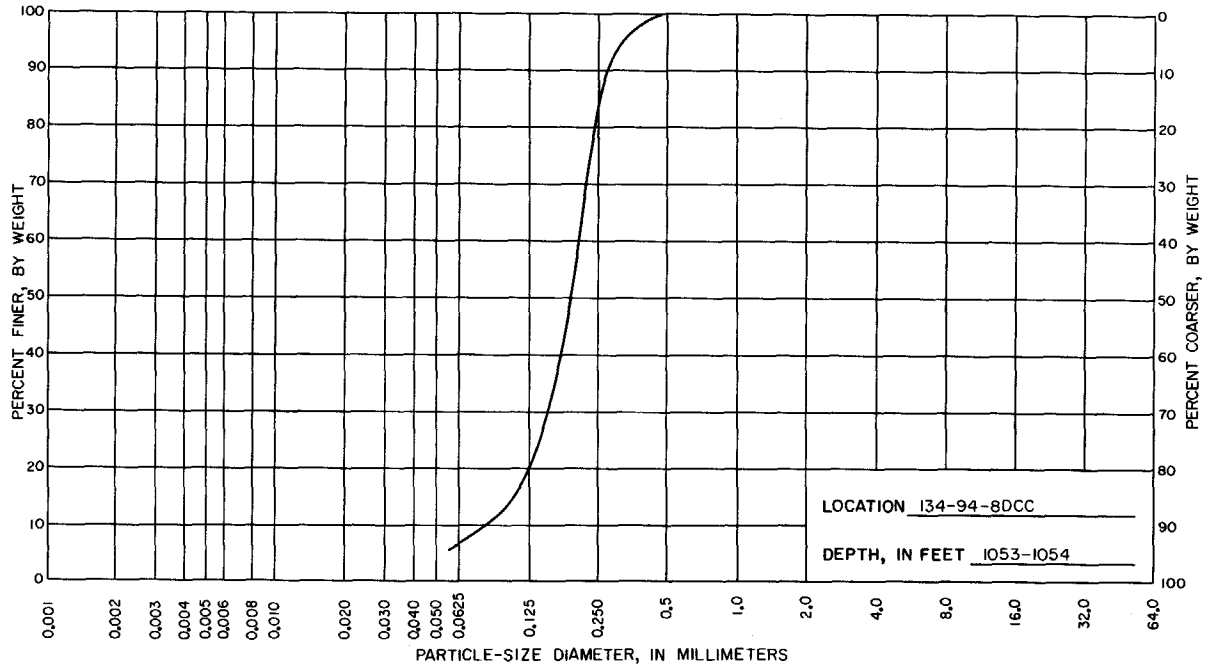
PERCENT OF SIZE	CLAY SIZES	SILT SIZES	SAND SIZES					GRAVEL SIZES				
	<0.004mm	0.004-0.0625mm	V. fine .0625-25	Fine .25-25	Medium .25-5	Coarse .5-1	V. coarse 1-2	V. fine 2-4	Fine 4-8	Medium 8-16	Coarse 16-32	V. coarse 32-64
	9.7	53.3	34.0	2.8	0.2							

429

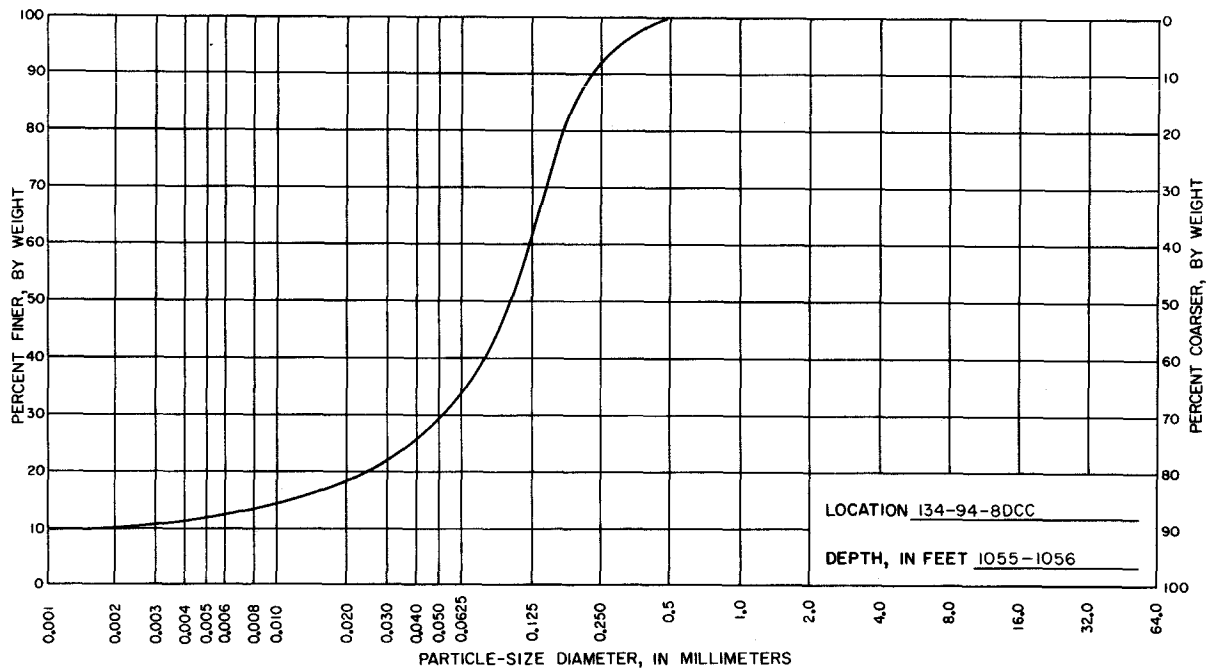


PERCENT OF SIZE	CLAY SIZES	SILT SIZES	SAND SIZES				GRAVEL SIZES				
	<0.004mm	0.004-0.0625mm	V. fine 0.0625-0.25	Fine 0.25-0.5	Medium 0.5-1	Coarse 1-2	V. fine 2-4	Fine 4-8	Medium 8-16	Coarse 16-32	V. coarse 32-64
	20.3	4.3	43.0	21.1	10.9	0.4					

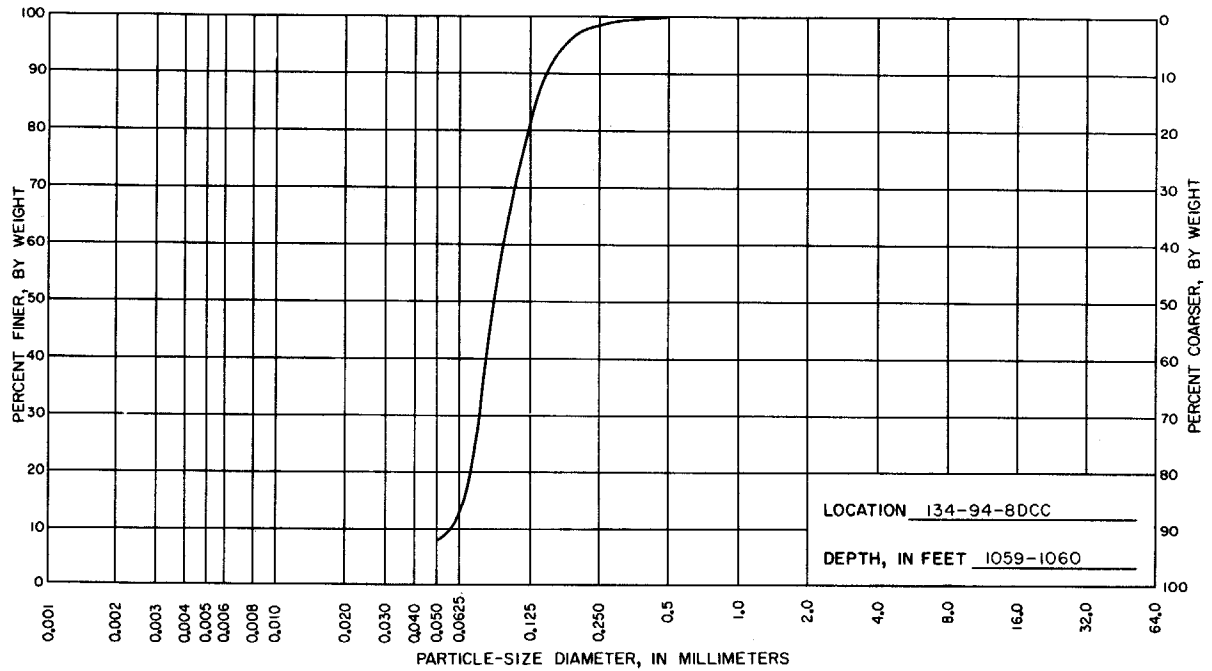
430



PERCENT OF SIZE	CLAY SIZES	SILT SIZES	SAND SIZES					GRAVEL SIZES				
	<0.004mm	0.004-0.0625mm	V. fine 0.625-1.25	Fine 1.25-2.5	Medium 2.5-5	Coarse 5-1	V. coarse 1-2	V. fine 2-4	Fine 4-8	Medium 8-16	Coarse 16-32	V. coarse 32-64
	6.1		12.0	62.0	19.9							

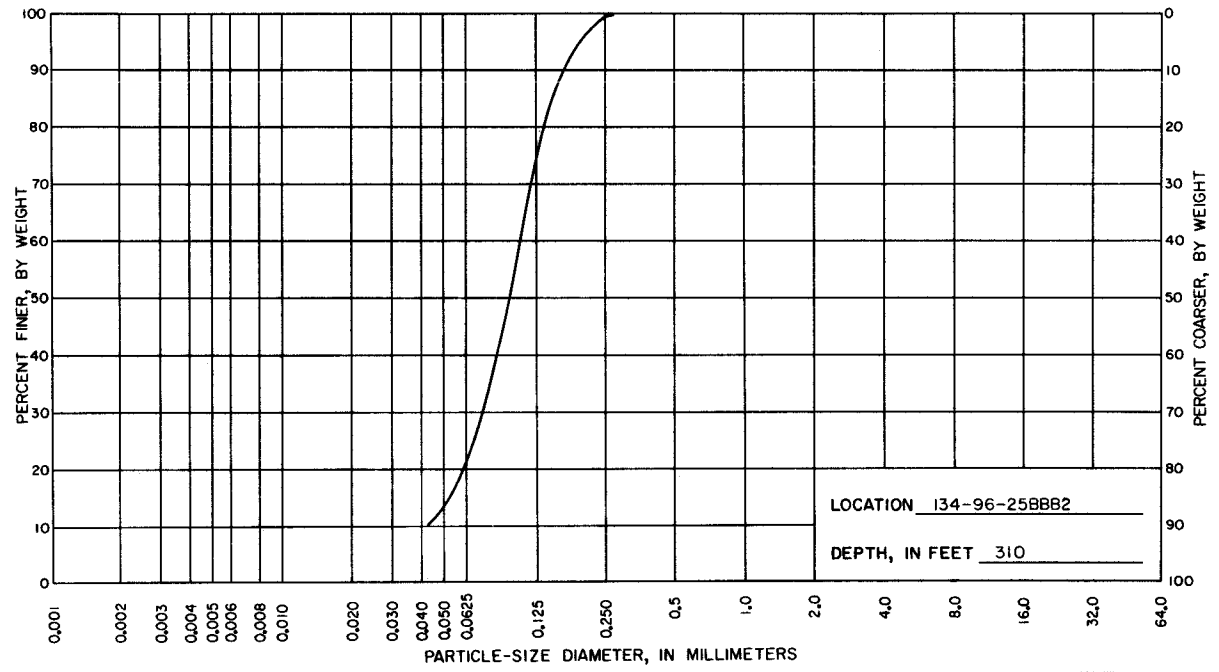


PERCENT OF SIZE	CLAY SIZES	SILT SIZES	SAND SIZES					GRAVEL SIZES				
	<0.004mm	0.004-0.0625mm	V fine .0625-25	Fine .25-25	Medium .25-5	Coarse .5-1	V coarse 1-2	V fine 2-4	Fine 4-8	Medium 8-16	Coarse 16-32	V coarse 32-64
	12.2	20.3	28.6	31.2	7.7							



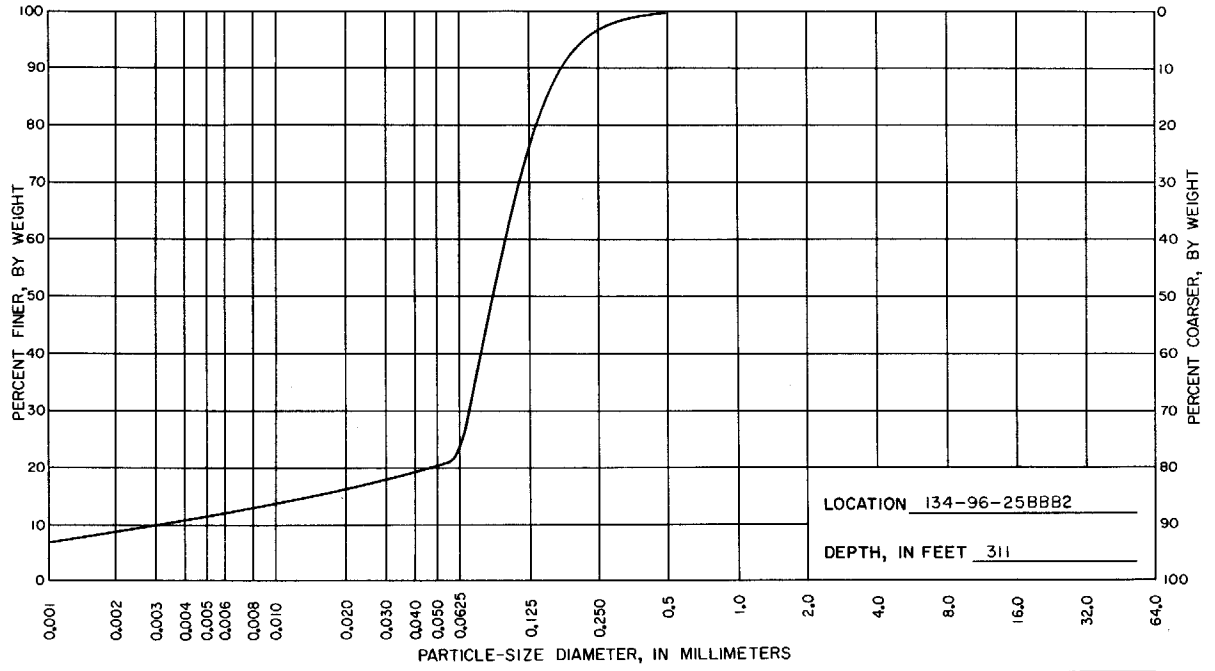
PERCENT OF SIZE	CLAY SIZES	SILT SIZES	SAND SIZES					GRAVEL SIZES				
	<0.004mm	0.004-0.0625mm	V. fine .0625-.25	Fine .25-.75	Medium .75-2.0	Coarse 2.0-4.75	V. coarse 4.75-20.0	V. fine 2-4	Fine 4-8	Medium 8-16	Coarse 16-32	V. coarse 32-64
	12.7		68.6	18.4	0.3							

433

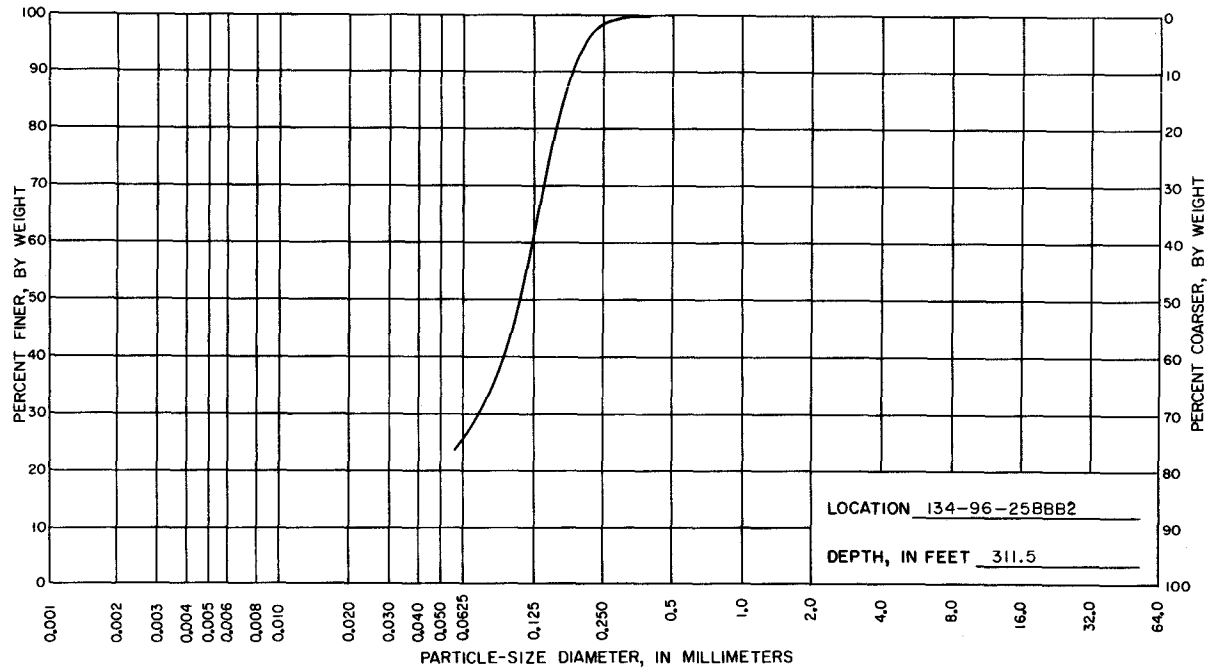


PERCENT OF SIZE	CLAY SIZES	SILT SIZES		SAND SIZES					GRAVEL SIZES				
	<0.004mm	0.004-0.0625mm		V fine .0625-25	Fine .25-25	Medium .25-5	Coarse .5-1	V coarse 1-2	V fine 2-4	Fine 4-8	Medium 8-16	Coarse 16-32	V coarse 32-64
	19.6			52.9	26.5	1.0							

434

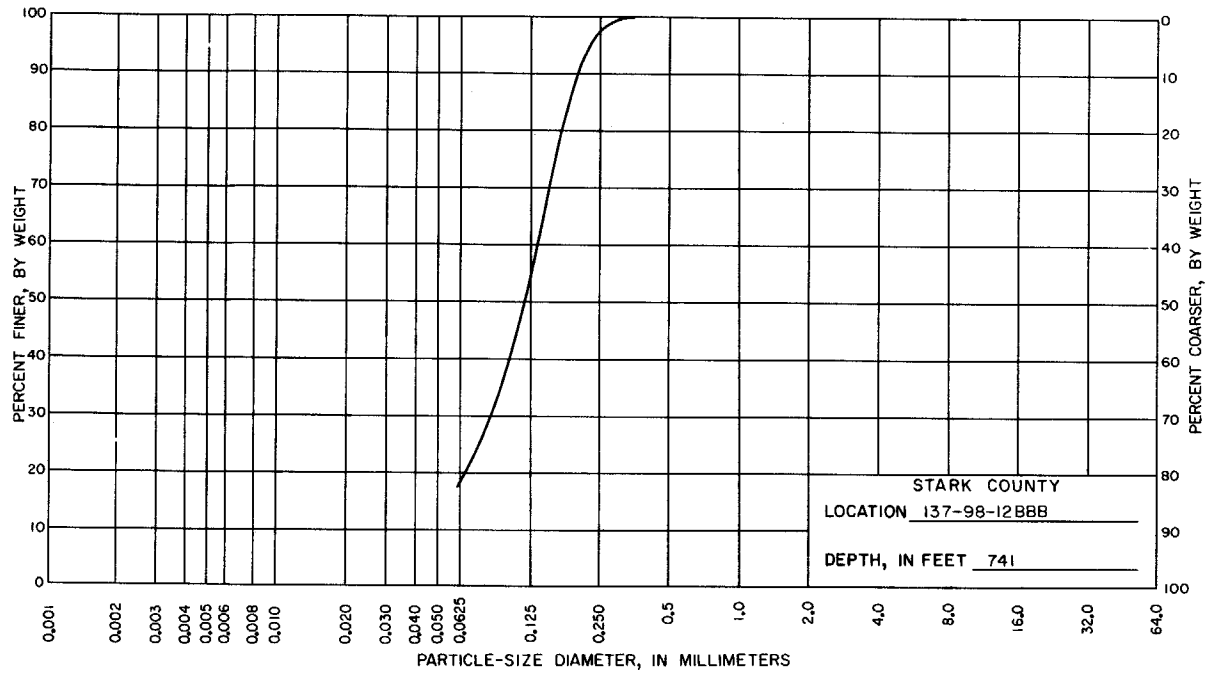


PERCENT OF SIZE	CLAY SIZES	SILT SIZES	SAND SIZES					GRAVEL SIZES				
	<0.004mm	0.004-0.0625mm	V fine .0625-25	Fine .125-25	Medium .25-5	Coarse .5-1	V coarse 1-2	V fine 2-4	Fine 4-8	Medium 8-16	Coarse 16-32	V coarse 32-64
	10.4	11.1	54.7	21.6	2.2							



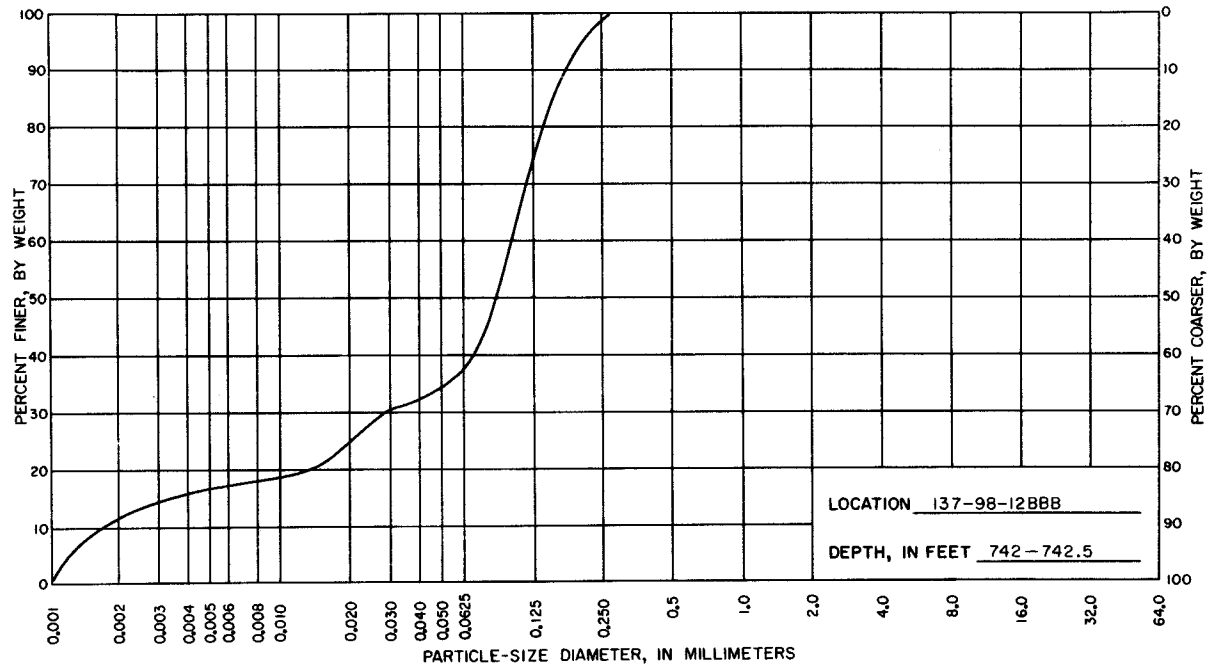
PERCENT OF SIZE	CLAY SIZES	SILT SIZES	SAND SIZES					GRAVEL SIZES				
	<0.004mm	0.004-0.0625mm	V fine 0.0625-0.25	Fine 0.25-0.5	Medium 0.5-1	Coarse 1-2	V coarse 2-4	Fine 4-8	Medium 8-16	Coarse 16-32	V coarse 32-64	
	24.6		36.4	30.0	9.0							

436



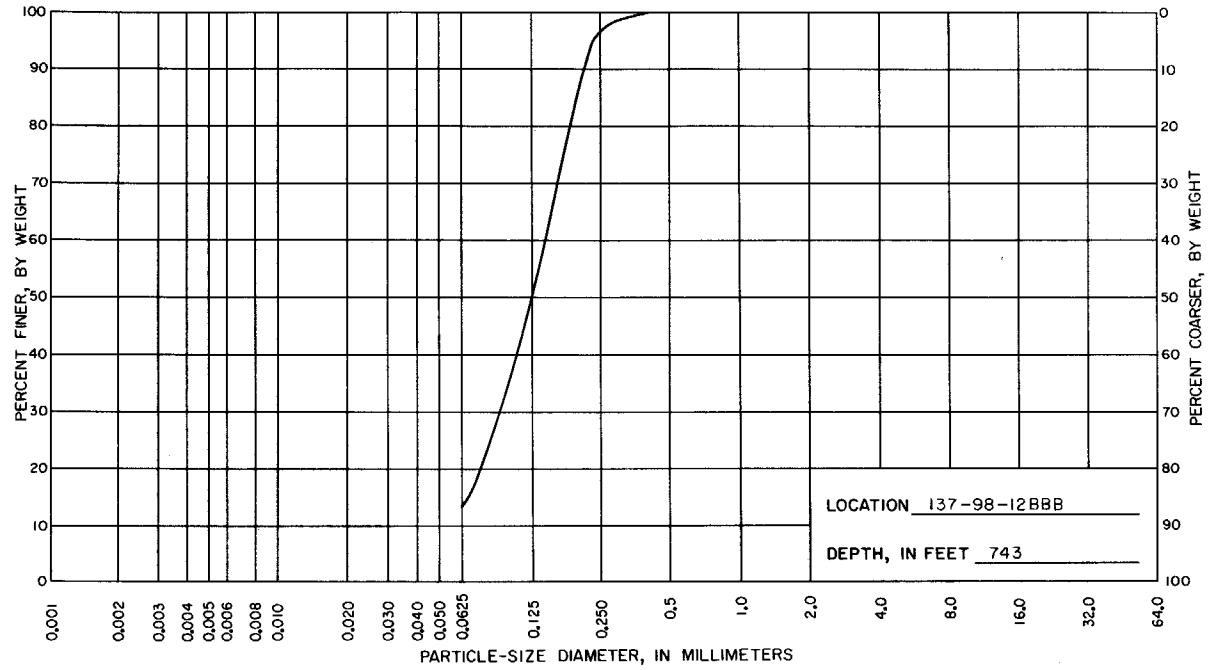
PERCENT OF SIZE	CLAY SIZES	SILT SIZES	SAND SIZES				GRAVEL SIZES				
	<0.004mm	0.004-0.0625mm	V fine 0.0625-0.25	Fine 0.25-0.5	Medium 0.5-1	Coarse 1-2	V fine 2-4	Fine 4-8	Medium 8-16	Coarse 16-32	V coarse 32-64
	17		37	44	2						

437

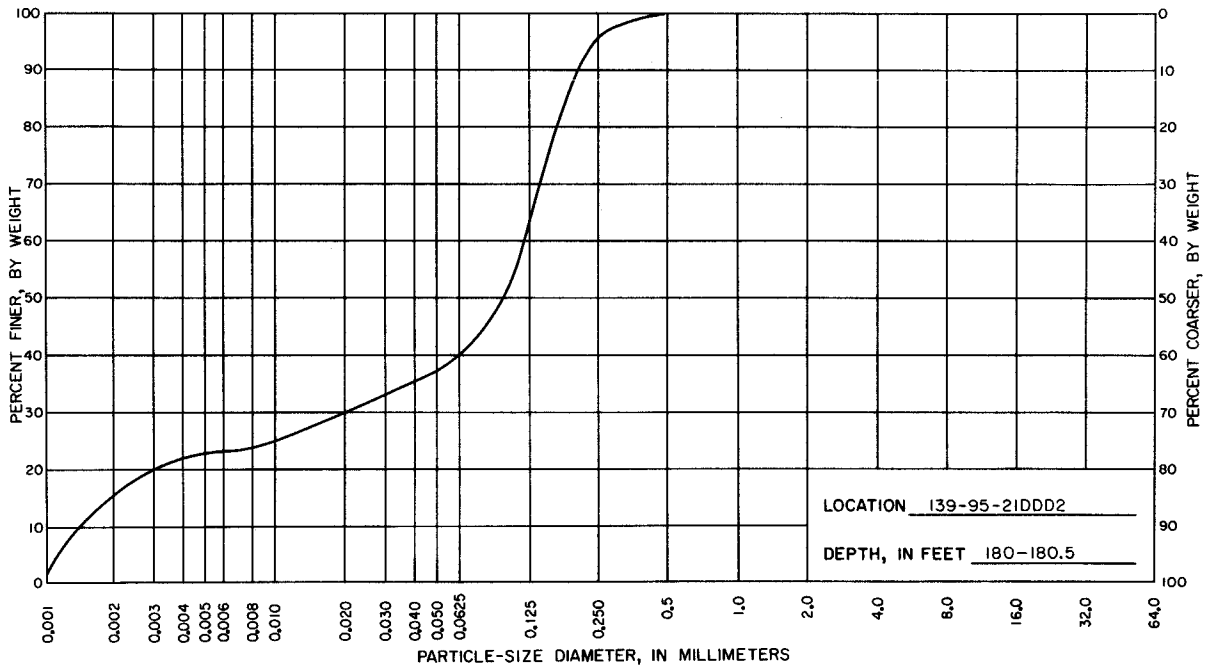


PERCENT OF SIZE	CLAY SIZES <0.004mm	SILT SIZES 0.004-0.0625mm	SAND SIZES					GRAVEL SIZES				
			V fine .0625-.25	Fine .25-.5	Medium .5-1	Coarse 1-2	V coarse 2-4	V fine 2-4	Fine 4-8	Medium 8-16	Coarse 16-32	V coarse 32-64
	14.2	20.2	38.6	26.8	0.2							

438

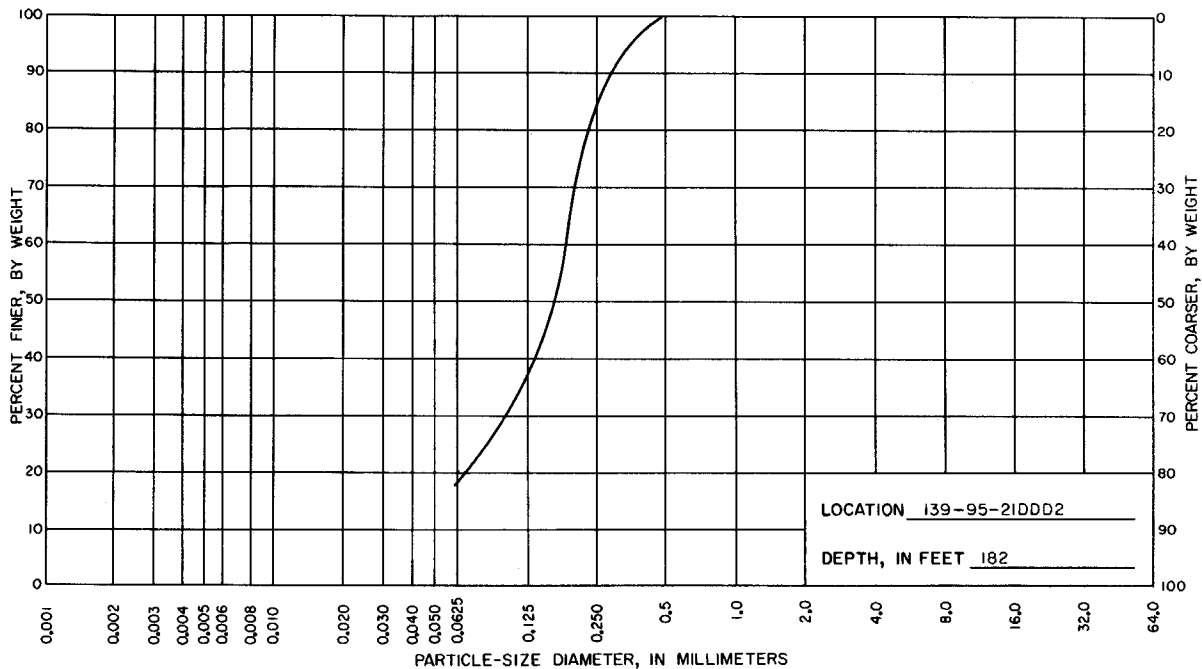


PERCENT OF SIZE	CLAY SIZES	SILT SIZES	SAND SIZES					GRAVEL SIZES				
	<0.004mm	0.004-0.0625mm	V fine 0.625-1.25	Fine 1.25-2.5	Medium 2.5-5	Coarse 5-1	V coarse 1-2	V fine 2-4	Fine 4-8	Medium 8-16	Coarse 16-32	V coarse 32-64
	14		37	46	3							



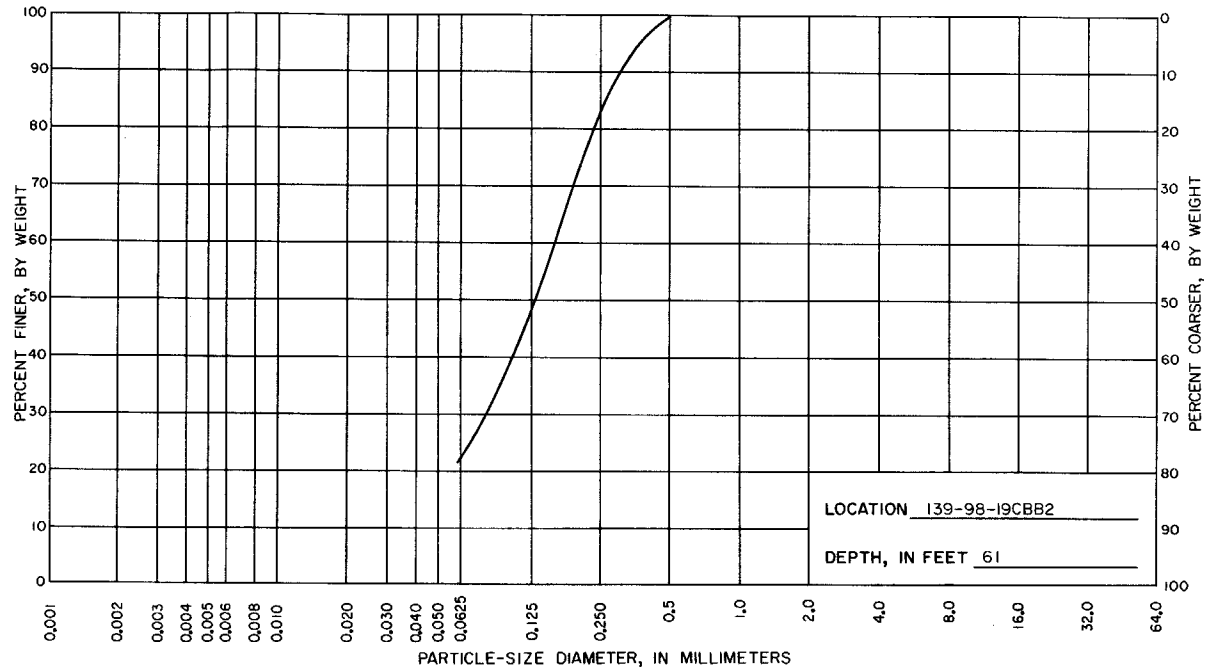
PERCENT OF SIZE	CLAY SIZES	SILT SIZES	SAND SIZES				GRAVEL SIZES					
	<0.004mm	0.004-0.0625mm	V fine .0625-.25	Fine .25-.25	Medium .25-.5	Coarse .5-1	V coarse 1-2	V fine 2-4	Fine 4-8	Medium 8-16	Coarse 16-32	V coarse 32-64
	20.8	17.2	22.8	34.3	4.7	0.2						

440

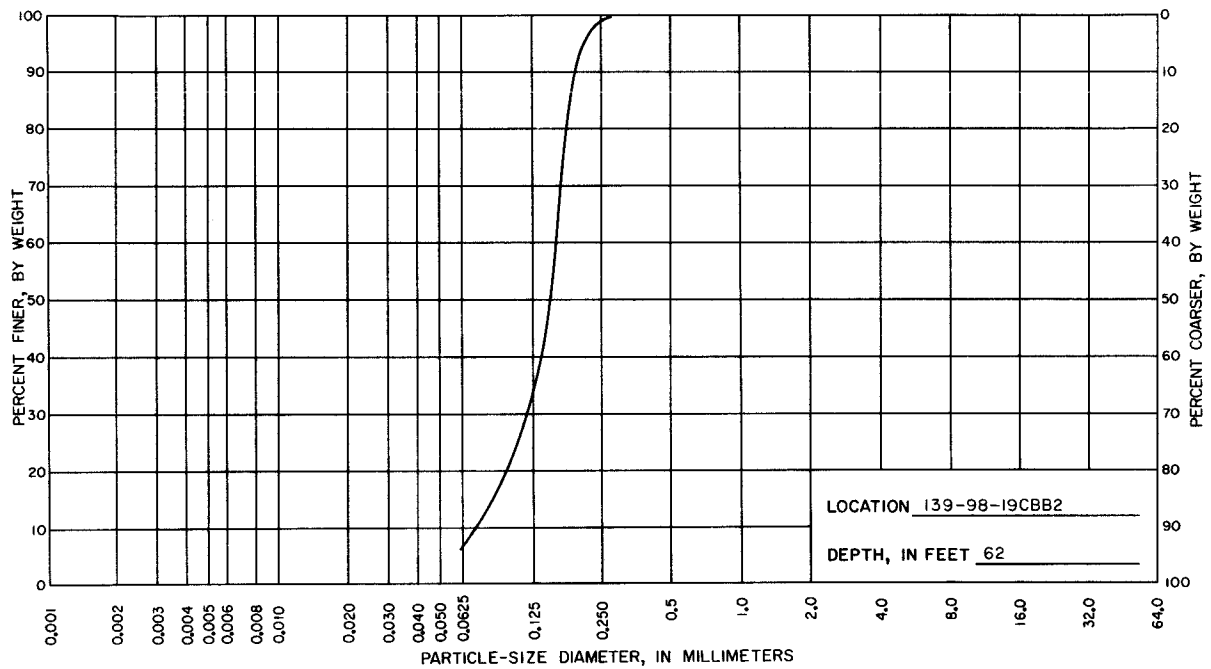


PERCENT OF SIZE	CLAY SIZES	SILT SIZES	SAND SIZES					GRAVEL SIZES				
	<0.004mm	0.004-0.0625mm	V fine 0.0625-0.25	Fine 0.25-0.5	Medium 0.5-1	Coarse 1-2	V coarse 1-2	V fine 2-4	Fine 4-8	Medium 8-16	Coarse 16-32	V coarse 32-64
	17		19	49	15							

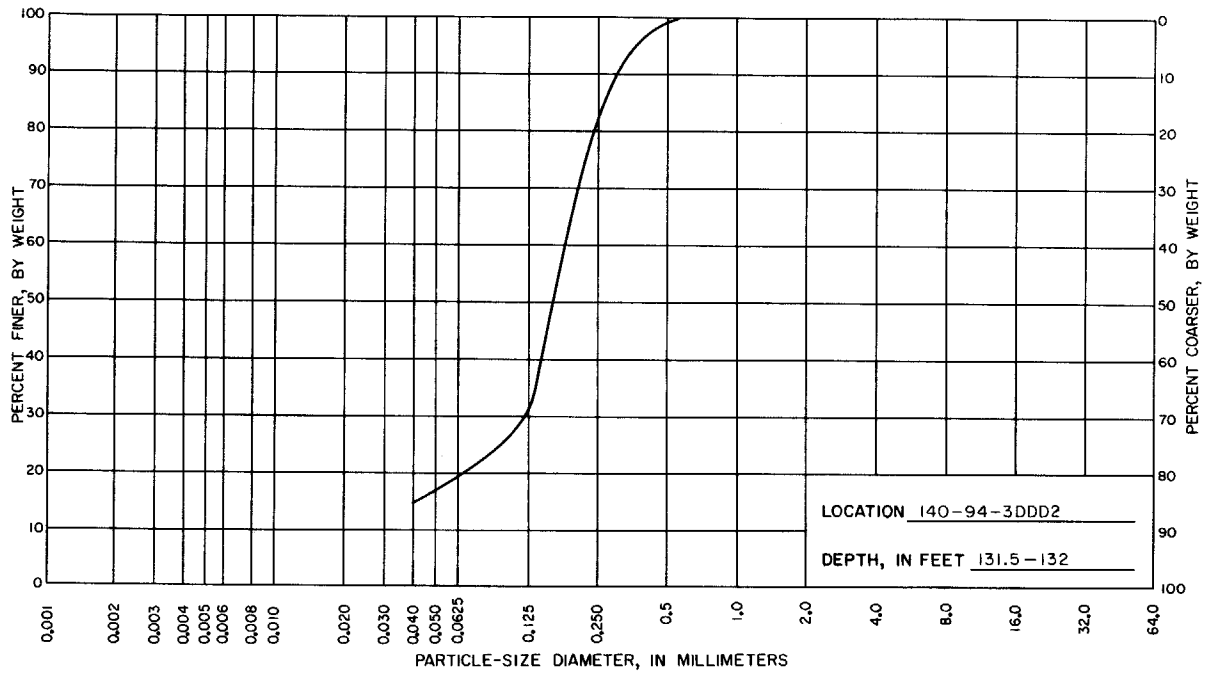
442



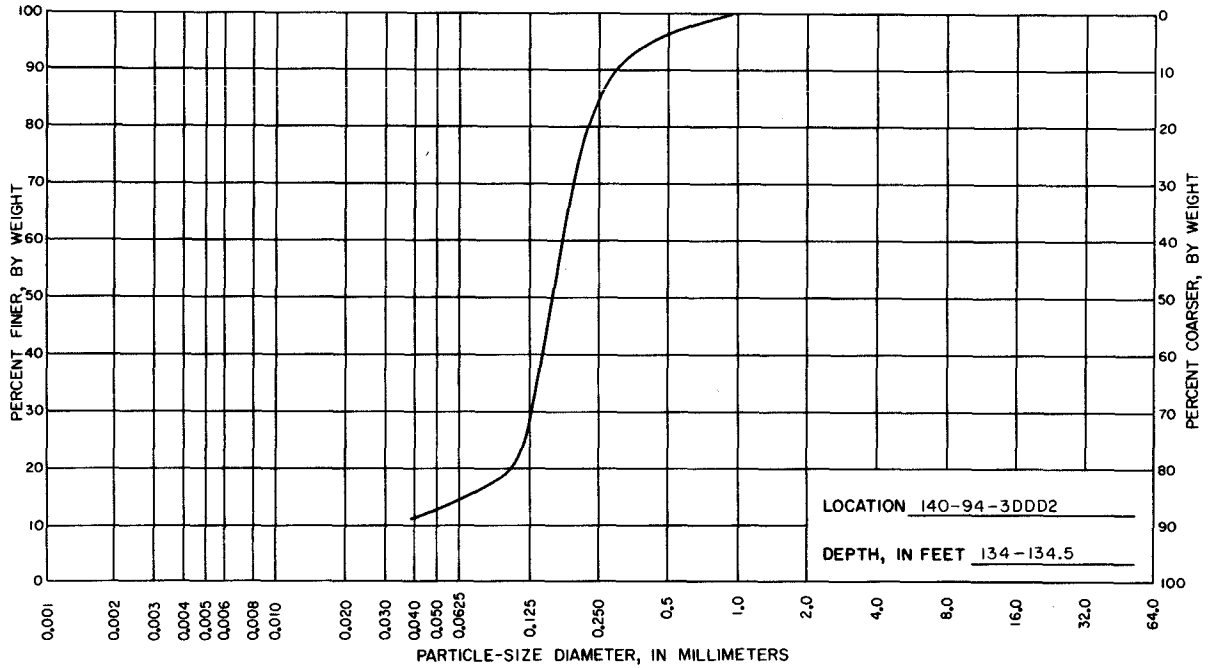
PERCENT OF SIZE	CLAY SIZES	SILT SIZES	SAND SIZES					GRAVEL SIZES				
	<0.004mm	0.004-0.0625mm	V. fine 0.625-1.25	Fine 1.25-2.5	Medium 2.5-5	Coarse 5-1	V. coarse 1-2	V. fine 2-4	Fine 4-8	Medium 8-16	Coarse 16-32	V. coarse 32-64
	22		25	36	17							



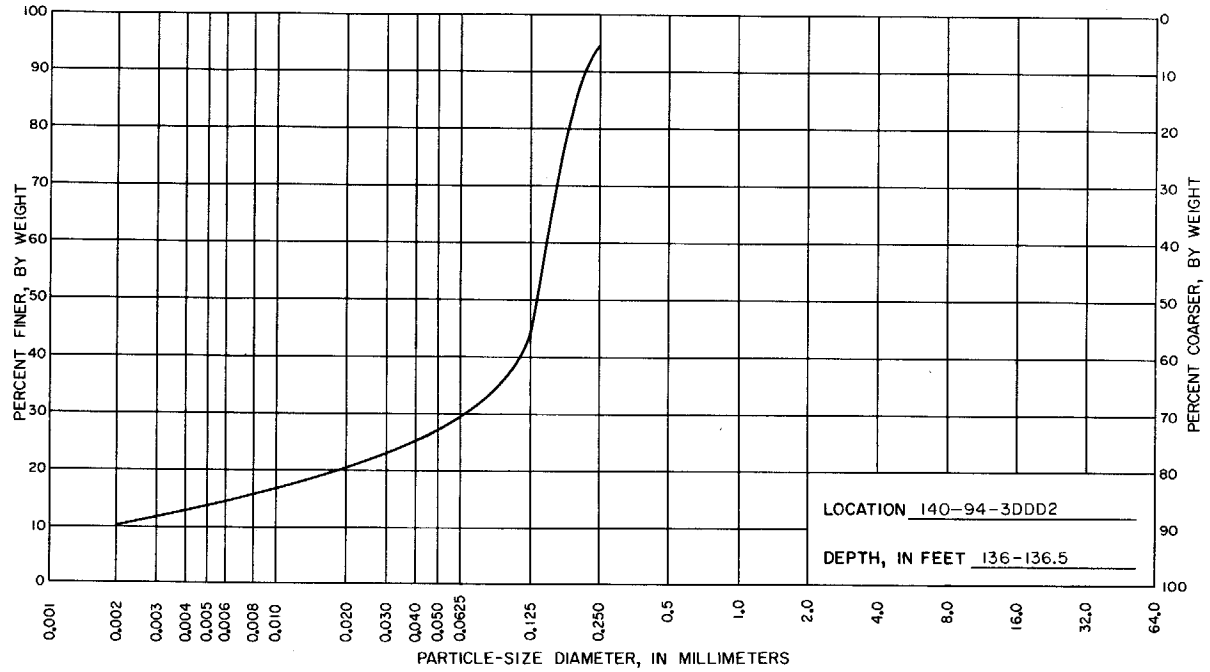
PERCENT OF SIZE	CLAY SIZES <0.004mm	SILT SIZES 0.004-0.0625mm	SAND SIZES					GRAVEL SIZES				
			V fine .0625-.25	Fine .25-.5	Medium .5-1	Coarse 1-2	V coarse 2-4	Fine 4-8	Medium 8-16	Coarse 16-32	V coarse 32-64	
6			27	66.9	0.01							



PERCENT OF SIZE	CLAY SIZES	SILT SIZES	SAND SIZES				GRAVEL SIZES				
	<0.004mm	0.004-0.0625mm	V fine 0.0625-0.25	Fine 0.25-0.5	Medium 0.5-1	Coarse 1-2	V fine 2-4	Fine 4-8	Medium 8-16	Coarse 16-32	V coarse 32-64
	19.2		12.6	51.2	16.6	0.4					

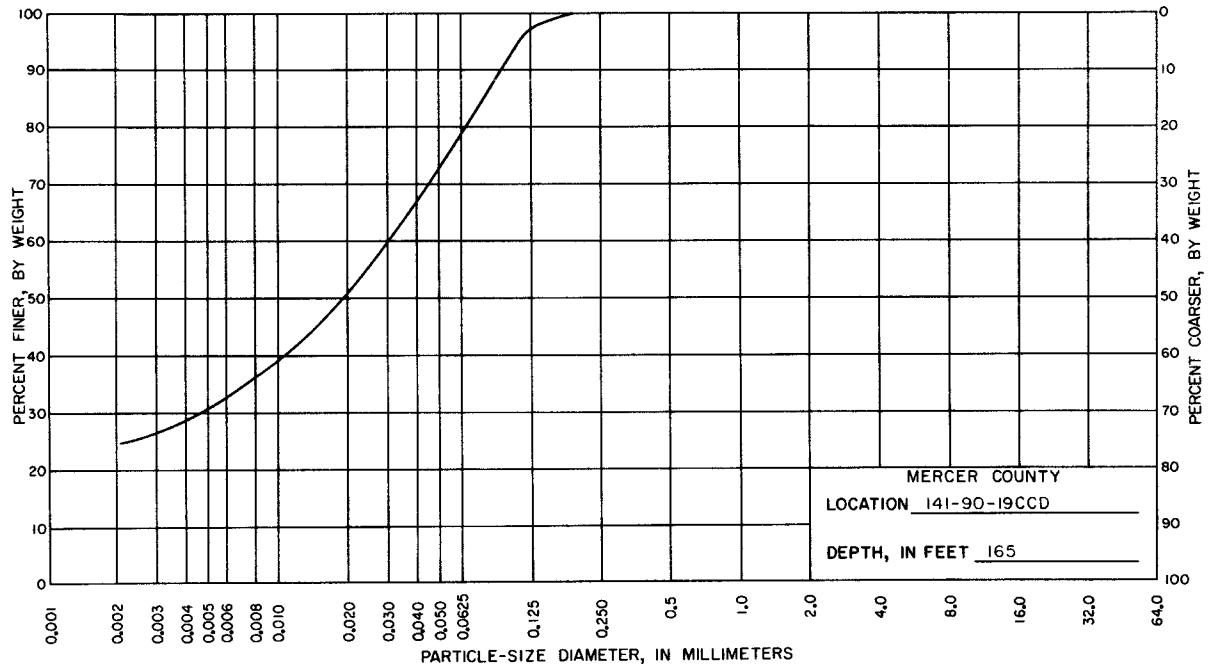


PERCENT OF SIZE	CLAY SIZES <0.004mm	SILT SIZES 0.004-0.0625mm	SAND SIZES				GRAVEL SIZES					
			V. fine .0625-1.25	Fine 1.25-2.5	Medium 2.5-5	Coarse 5-1	V. coarse 1-2	V. fine 2-4	Fine 4-8	Medium 8-16	Coarse 16-32	V. coarse 32-64
	14.0		10.8	58.6	13.6	3.0						

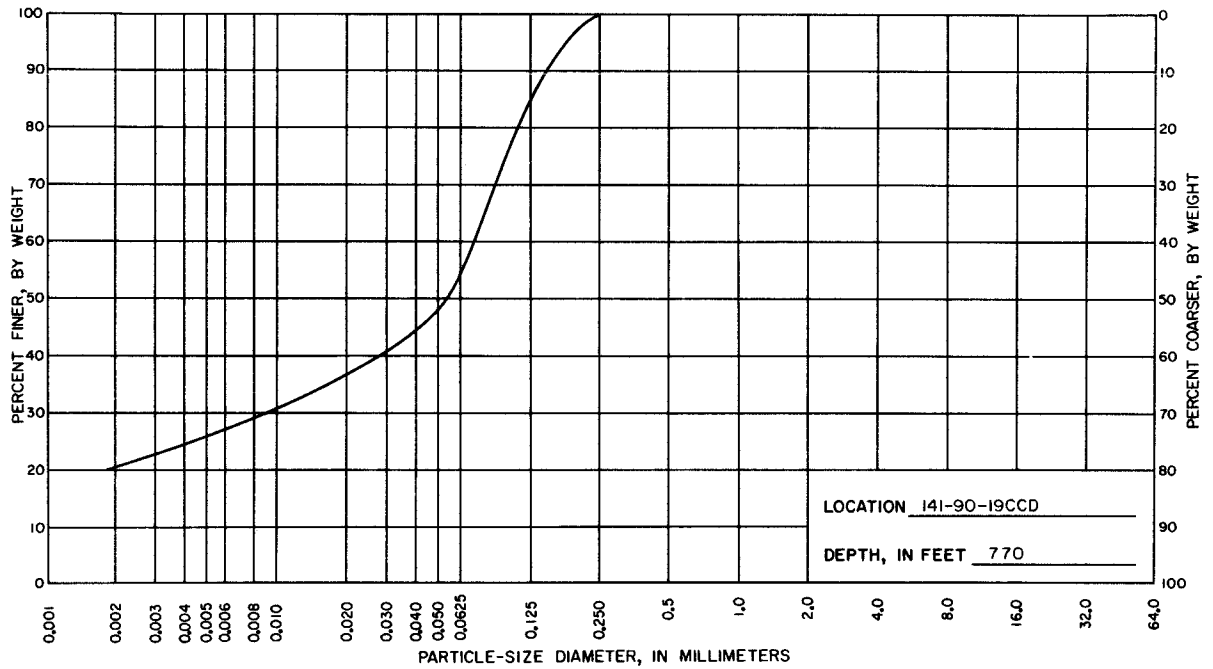


PERCENT OF SIZE	CLAY SIZES <0.004mm	SILT SIZES 0.004-0.0625mm	SAND SIZES					GRAVEL SIZES				
			V fine .0625-.25	Fine .25-.5	Medium .5-1	Coarse 1-2	V coarse 2-4	Fine 4-8	Medium 8-16	Coarse 16-32	V coarse 32-64	
	13.8	15.9	13.0	51.5	5.8							

447

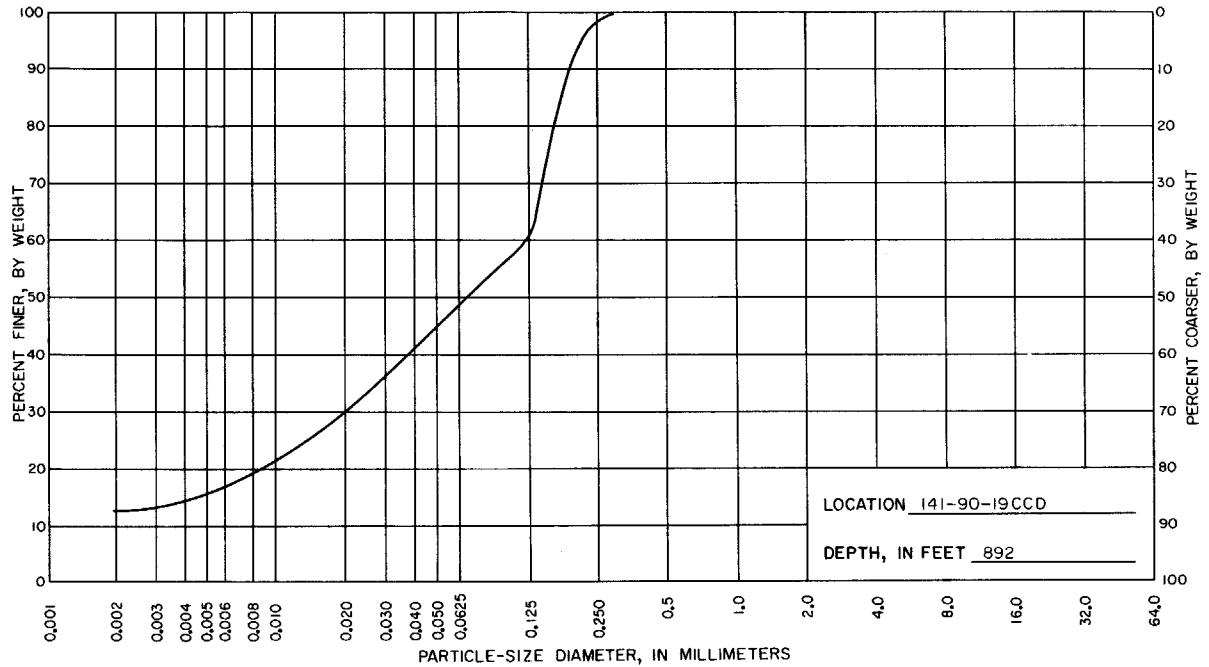


PERCENT OF SIZE	CLAY SIZES <0.004mm	SILT SIZES 0.004-0.0625mm	SAND SIZES					GRAVEL SIZES				
			V. fine .0625-125	Fine .125-250	Medium .25-5	Coarse .5-1	V. coarse 1-2	V. fine 2-4	Fine 4-8	Medium 8-16	Coarse 16-32	V. coarse 32-64
	28.8	49.2	18.4	3.4	0.2							

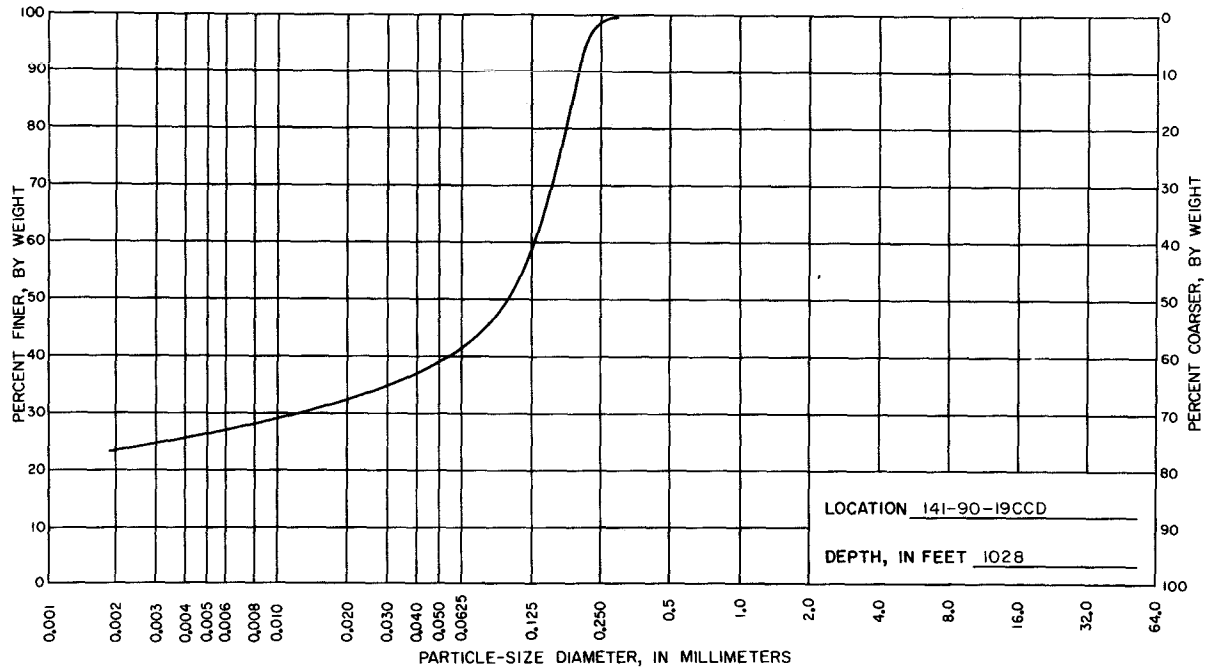


PERCENT OF SIZE	CLAY SIZES	SILT SIZES	SAND SIZES					GRAVEL SIZES				
	<0.004mm	0.004-0.0625mm	V. fine 0.0625-0.25	Fine 0.25-0.5	Medium 0.5-2	Coarse 2-5	V. coarse 5-16	V. fine 16-30	Fine 30-60	Medium 60-120	Coarse 120-240	V. coarse 240-480
	25.0	29.0	31.4	14.4	0.2							

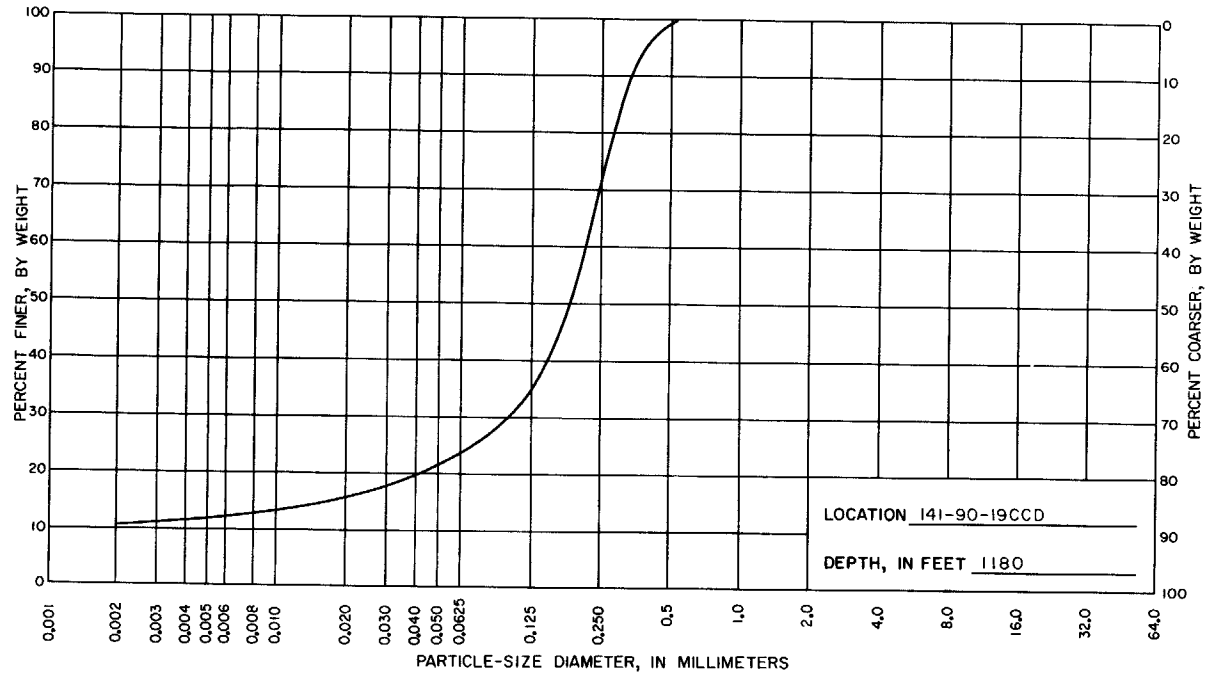
454



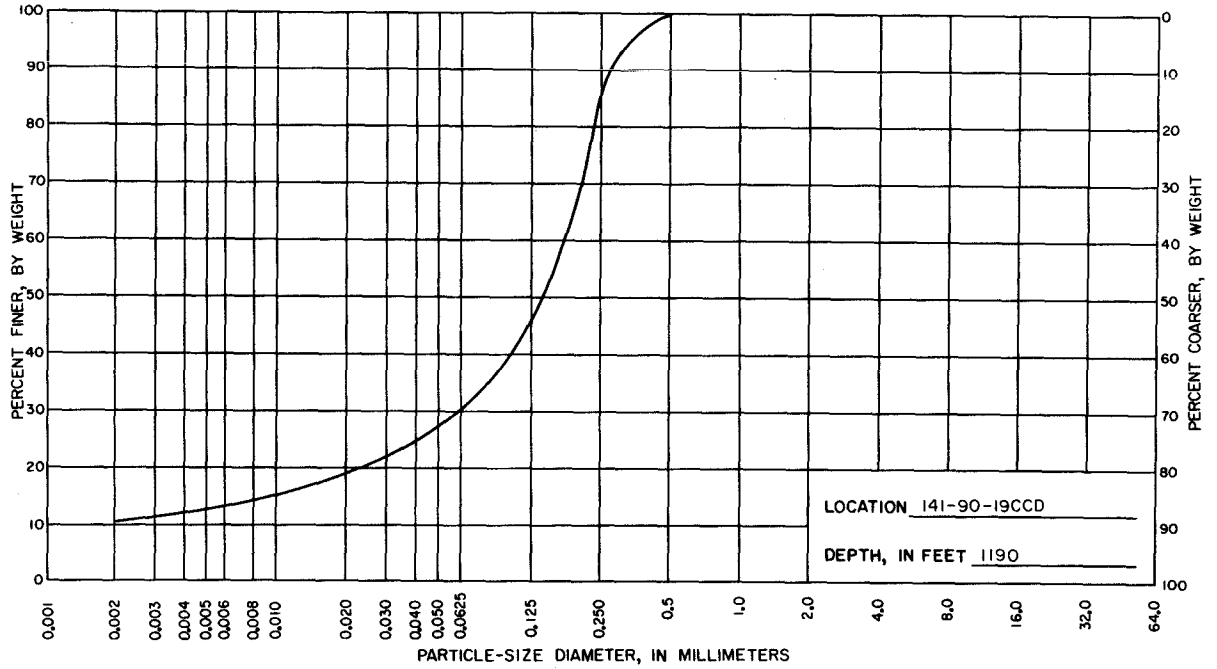
PERCENT OF SIZE	CLAY SIZES	SILT SIZES	SAND SIZES					GRAVEL SIZES				
	<0.004mm	0.004-0.0625mm	V fine .0625-125	Fine 125-250	Medium .25-5	Coarse .5-1	V coarse 1-2	V fine 2-4	Fine 4-8	Medium 8-16	Coarse 16-32	V coarse 32-64
	16.3	33.1	12.4	37.2	1.0							



PERCENT OF SIZE	CLAY SIZES	SILT SIZES	SAND SIZES				GRAVEL SIZES					
	<0.004mm	0.004-0.0625mm	V fine 0.0625-0.25	Fine 0.25-0.6	Medium 0.6-1.18	Coarse 1.18-2.0	V coarse 2.0-4.75	V fine 4.75-16	Fine 16-47.5	Medium 47.5-100	Coarse 100-200	V coarse 200-600
	26.0	16.4	16.2	40.4	1.0							

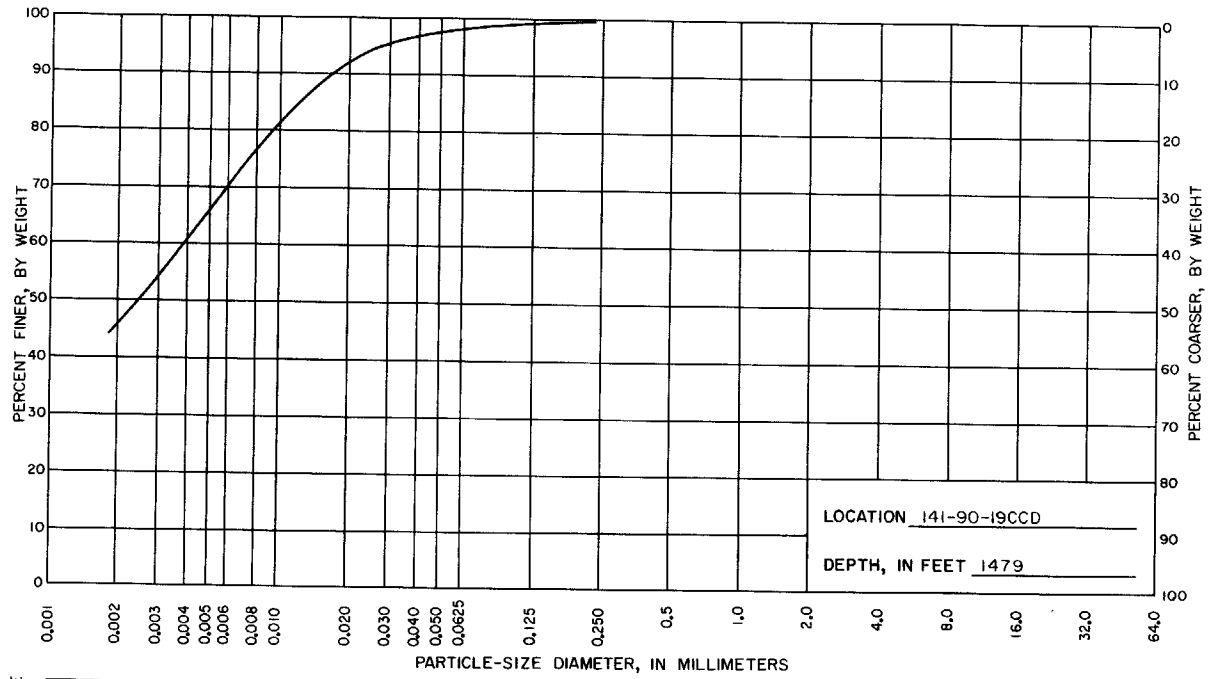


PERCENT OF SIZE	CLAY SIZES	SILT SIZES	SAND SIZES				GRAVEL SIZES					
	<0.004mm	0.004-0.0625mm	V fine .0625-.25	Fine .25-.475	Medium .475-.85	Coarse .85-1.75	V coarse 1.75-2.0	V fine 2-4	Fine 4-8	Medium 8-16	Coarse 16-32	V coarse 32-64
	12.3	12.3	10.0	38.8	25.6	1.0						



PERCENT OF SIZE	CLAY SIZES		SILT SIZES		SAND SIZES					GRAVEL SIZES				
	<0.004mm		0.004-0.0625mm		V fine	Fine	Medium	Coarse	V coarse	V fine	Fine	Medium	Coarse	V coarse
					.0625-25	.25-25	.25-5	.5-1	1-2	2-4	4-8	8-16	16-32	32-64
	12.4		18.6		14.4	39.8	14.8							

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PERCENT OF SIZE	CLAY SIZES	SILT SIZES	SAND SIZES					GRAVEL SIZES				
	<0.004mm	0.004-0.0625mm	V fine 0.0625-0.25	Fine 0.25-0.5	Medium 0.5-1	Coarse 1-2	V coarse 2-4	V fine 4-8	Fine 8-16	Coarse 16-32	V coarse 32-64	
	60.4	38.6	0.8	0.2								

