

GROUND-WATER BASIC DATA

for

DUNN COUNTY,

NORTH DAKOTA

by

Robert L. Klausing
U.S. Geological Survey

COUNTY GROUND-WATER STUDIES 25 — PART II

North Dakota State Water Commission

Vernon Fahy, *State Engineer*

BULLETIN 68 — PART II

North Dakota Geological Survey

Edwin A. Noble, *State Geologist*

Prepared by the U.S. Geological Survey
in cooperation with the North Dakota Geological Survey,
North Dakota State Water Commission,
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INTRODUCTION

The ground-water investigation in Dunn County (fig. 1) was made cooperatively by the U.S. Geological Survey, North Dakota State Water Commission, North Dakota Geological Survey, and the Dunn County Water Management District. The results of the investigation will be published in three separate parts. Part 1 is an interpretive report describing the geology of the study area; part 2 is a compilation of the ground-water basic data; and part 3 is an interpretive report describing the ground-water resources. Part 2 (this report) makes available the geologic and hydrologic data collected during the county investigation and functions as a reference for the other reports.

The stratigraphic nomenclature used in this report is that of the North Dakota Geological Survey and does not necessarily follow the usage of the U.S. Geological Survey.

The following table may be used to convert English units to the International System (SI) of metric units.

<u>Multiply English units</u>	<u>By</u>	<u>To obtain SI units</u>
Inches (in)	25.4	millimetres (mm)
	.0254	metres (m)
Feet (ft)	.3048	metres (m)
Feet per day (ft/d)	.3048	metres per day (m/d)
Miles (mi)	1.609	kilometres (km)
Square miles (mi ²)	2.590	square kilometres (km ²)
Acres	4,047	square metres (m ²)
	.4047	hectares (ha)
Gallons (gal)	3.785	litres
	3.785x10 ⁻³	cubic metres (m ³)
Gallons per minute (gal/min)	.06309	litres per second (l/s)
	6.309x10 ⁻⁵	cubic metres per second (m ³ /s)
Cubic feet (ft ³)	.02832	cubic metres (m ³)

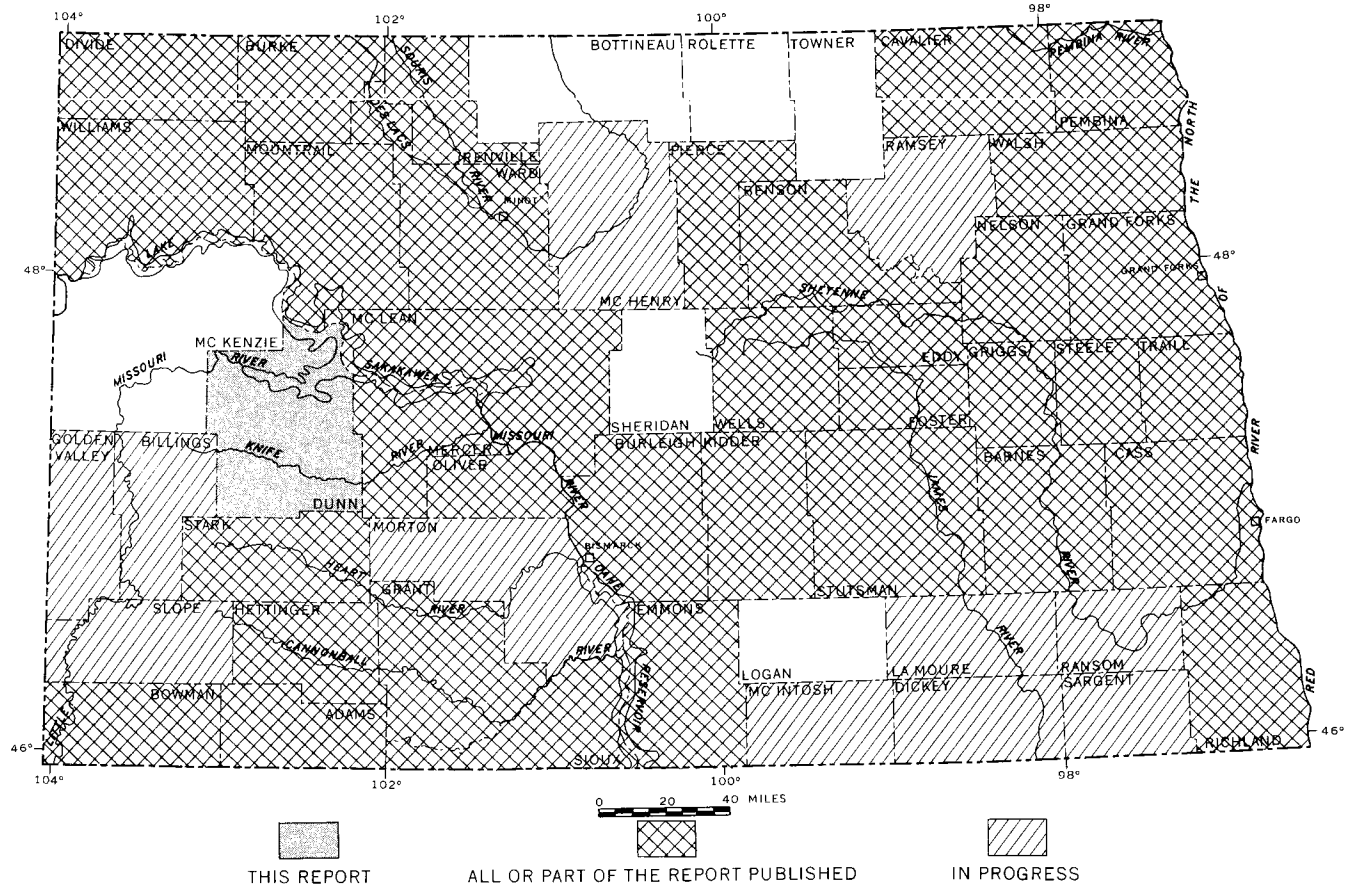


FIGURE 1.—County ground-water studies in North Dakota.

Purpose

The purpose of the investigation was to provide geologic and hydrologic information needed for the orderly development of water supplies for municipal, domestic, livestock, irrigation, industrial, and similar uses. Specifically, the objectives were to: (1) determine the location, extent, and nature of the major aquifers and confining beds; (2) evaluate the occurrence and movement of ground water, including the sources of recharge and discharge; (3) estimate the transmissivity of the aquifer and the potential yields of wells; (4) evaluate the quality of the ground water; and (5) estimate the water use.

Well- and Location-Numbering System

The wells and test holes in the tables are given a local well number according to a system of land survey in use by the U.S. Bureau of Land Management. The U.S. Bureau of Land Management 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 or 4-ha tract). For example, well 141-091-15DAA is in the NE $\frac{1}{4}$ NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 15, T. 141 N., R. 91 W. Consecutive terminal numerals are added if more than one well or test hole is recorded within a 10-acre (4-ha) tract. The location of each well and test hole in the tables is shown on plate 1 (in pocket).

The U.S. Geological Survey uses a station number that consists of 15 digits to identify wells nationally. The first seven digits denote the degrees, minutes, and seconds of north latitude. The next seven digits denote the degrees, minutes, and seconds of longitude. The final digit is a sequence number used to distinguish between wells within the same second of latitude and longitude. The U.S. Geological Survey station number is also used to describe the location of other data-collection sites such as sample collection points on lakes and streams. Appendix A lists the conversion from the local well number to the U.S. Geological Survey station number.

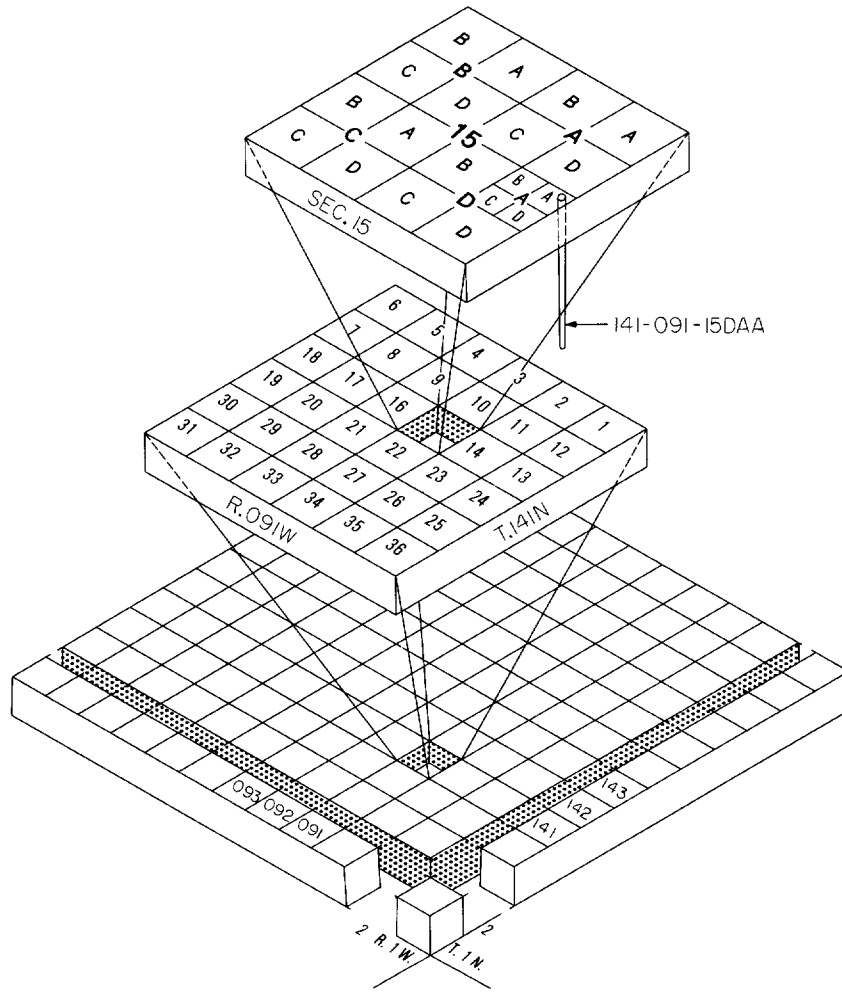


FIGURE 2.—System of numbering wells, test holes, and springs

Acknowledgments

The collection of data for this report was made possible by the cooperation of residents and officials of Dunn County, who furnished essential information on wells and permitted measurements to be made and samples to be taken. Particular recognition is due to the following personnel of the North Dakota State Water Commission: L. L. Froelich, C. E. Naplin, and Lewis Knutson for drilling and logging test holes and contributions to the understanding of the stratigraphy, G. O. Muri for chemical analyses of water samples, R. W. Schmid for hydrologic testing, and M. O. Lindvig for scheduling of drilling activities. Special recognition is given to C. G. Carlson of the North Dakota Geological Survey for his contributions in geologic mapping. Thanks are due Krueger Drilling Co., Mann Drilling Co., K. J. and Rodney Thompson, and Ralph Wald for furnishing drillers' logs and other information.

EXPLANATION OF TABLES AND METHODS OF DATA COLLECTION

The data in this report, collected chiefly between 1971 and 1974, are listed in tables 1-10. The points of collection are shown on plate 1. The data consist of the following: (1) Geologic and hydrologic records for 1,216 wells and test holes; (2) data on 134 springs; (3) water-level measurements in 140 observation wells; (4) lithologic and geophysical logs of 632 test holes and wells; (5) 351 chemical analyses of ground water from wells; (6) 36 chemical analyses of ground water from springs; (7) 15 chemical analyses of water from streams during low flow; (8) 6 chemical analyses of minor elements in water from wells; (9) 48 analyses of core samples for hydraulic parameters; and (10) 43 analyses for heavy mineral content. The data are useful for evaluating geologic and ground-water conditions in Dunn County. For example, a person considering the construction of a new well can locate the proposed site on plate 1. Depth, water quality, lithology, and water level of nearby wells and test holes tapping the different aquifers can be determined from the tables. However, use of the data as a guide to conditions at different sites should be made with caution because of the lenticular character of the water-bearing rocks and varying water quality in some aquifers.

Records of Wells, Test Holes, and Springs

Records of selected wells, test holes, and springs are given in tables 1 and 2. Well depth is the depth of casing for open-bottom wells or the base of the well screen. Most test holes were converted to observation wells for periodic water-level measurements and water-quality sampling. At some sites two or three observation wells were drilled in order to obtain water levels and water samples from several aquifers. The observation wells were constructed of 1½-inch (31-mm) plastic casing with 3- or 6-foot (1- or 2-m) screens or 2-inch (51-mm) steel casing with 6-, 12-, or 18-foot (2-, 4-, or 6-m) screens. The observation wells were developed by backwashing with the deflocculant trisodium phosphate and were pumped a minimum of 8 hours for development before collection of water samples for analysis.

Most of the springs recorded in table 2 were developed with 1½-inch (31-mm) discharge pipe.

Water Levels in Selected Wells

Table 3 gives monthly and intermittent water levels in selected wells, in feet below (or above) land surface, that tap the major aquifers in Dunn County. Water-level measurements were made beginning in the late fall of 1971 and extending through September 1974. Measurements will continue to be made in several wells as part of the statewide observation-well network to monitor changes in water levels as the ground-water resources of the area are developed.

Logs of Wells and Test Holes

Logs collected from water-well drillers and other sources and logs of test holes drilled as part of this project are included in table 4. Minor changes in word order have been made on some of the drillers' logs. Most test holes drilled during this project and some municipal, industrial, and private wells have geophysical logs in addition to a description of the materials penetrated. The geophysical logs are extremely useful for geologic correlation purposes. Grain-size determinations refer to the Wentworth (1922) size scale. The color descriptions were determined by comparing fresh samples with the Geological Society of America's rock color chart (1963).

Water Quality

The mineral constituents and physical properties of water are reported in the tables of analyses (tables 5-8). Water for samples was secured using the existing pumps from privately owned wells and with airlift from the NDSWC observation wells. Generally enough water to clear the well column and plumbing was pumped, then the sample was collected in a polyethylene bottle. For those metals considered unstable, a separate sample was filtered and acidified before transport to the laboratory. Most of the samples were analyzed by the North Dakota State Water Commission, Bismarck, N. Dak. The analyses of minor elements were made by the U.S. Geological Survey, Salt Lake City, Utah (table 8). Methods of analyses were generally those described by Brown and others (1970). The results are expressed in milligrams per litre (mg/l) or micrograms per litre ($\mu\text{g/l}$). A microgram per litre is one-thousandth of a milligram per litre.

Drinking standards were established for interstate carriers by the U.S. Public Health Service (1946). These standards were amended in 1956 and in 1962 the standards were again changed and published in the Federal Register, effective date April 5, 1962. These are generally accepted by the North Dakota State Department of Health as guidelines applicable to public water supplies. These standards are:

"Drinking water shall not contain impurities in concentrations which may be hazardous to the health of the consumers. It should not be excessively corrosive to the water supply system. Substances used in its treatment shall not remain in the water in concentrations greater than required by good practice. Substances which may have deleterious physiological effect, or for which physiological effects are not known, shall not be introduced into the system in a manner which would permit them to reach the consumer.

"The following chemical substances should not be present in a water supply in excess of the listed concentrations where, in the judgment of the Reporting Agency and the Certifying Authority, other more suitable supplies are or can be made available.

<u>Substance</u>	<u>Concentrations in mg/l</u>
Alkyl Benzene Sulfonate (ABS)-----	0.5
Arsenic (As)-----	0.01
Chloride (Cl)-----	250.
Copper (Cu)-----	1.
Carbon Chloroform Extract (CCE)-----	0.2
Cyanide (CN)-----	0.01
Fluoride (F)-----	(See 5.23)
Iron (Fe)-----	0.3
Manganese (Mn)-----	0.05
Nitrate ¹ (NO ₃)-----	45.
Phenols-----	0.001
Sulfate (SO ₄)-----	250.
Total Dissolved Solids-----	500.
Zinc (Zn)-----	5.

¹In areas in which the nitrate content of water is known to be in excess of the listed concentration, the public should be warned of the potential dangers of using the water for infant feeding.

"The presence of the following substances in excess of the concentrations listed shall constitute grounds for rejection of the supply:

<u>Substance</u>	<u>Concentrations in mg/l</u>
Arsenic (As)-----	0.05
Barium (Ba)-----	1.0
Cadmium (Cd)-----	0.01
Chromium (Hexavalent) (Cr ⁺⁶)-----	0.05
Cyanide (CN)-----	0.2
Fluoride (F)-----	(See 5.23)
Lead (Pb)-----	0.05
Selenium (Se)-----	0.01
Silver (Ag)-----	0.05

"5.23 Fluoride.--When fluoride is naturally present in drinking water, the concentration should not average more than the appropriate upper limit shown in the following table. Presence of fluoride in average concentrations greater than two times the optimum values listed shall constitute ground for rejection of the supply.

"Where fluoridation (supplementation of fluoride in drinking water) is practiced, the average fluoride concentration shall be kept within the upper and lower control limits listed below.

<u>Annual average of maximum daily air temperatures¹</u>	<u>Recommended control limits-- Fluoride concentrations in mg/l</u>		
	<u>Lower</u>	<u>Optimum</u>	<u>Upper</u>
50.0 - 53.7-----	0.9	1.2	1.7
53.8 - 58.3-----	0.8	1.1	1.5
58.4 - 63.8-----	0.8	1.0	1.8
63.9 - 70.6-----	0.7	0.9	1.2
70.7 - 79.2-----	0.7	0.8	1.0
79.3 - 90.5-----	0.6	0.7	0.8

¹Based on [Fahrenheit] temperature data obtained for a minimum of five years."

Mineral Constituents in Solution

Silica (SiO_2)

Weathering processes dissolve silica from practically all rocks. Silica affects the usefulness of water because it can contribute to the formation of scale in pipes, water heaters, and boilers in the presence of calcium and magnesium.

Iron (Fe)

Iron is a widespread constituent in rocks and is easily leached by ground water under reducing conditions or in acidic water. Water containing more than 30 $\mu\text{g}/\text{l}$ of iron, after exposure to air, may become discolored. Reddish-brown stains on porcelain or enamelware and fixtures and on fabrics washed in the water result from the iron-imparted turbidity.

Manganese (Mn)

Manganese in concentrations as low as 200 $\mu\text{g}/\text{l}$ may cause a dark-brown or black stain on fabrics and porcelain fixtures. Ground water that contains high concentrations of iron may also have considerable amounts of manganese.

Calcium and Magnesium (Ca and Mg)

Limestone and similar rocks are the principal source of calcium and magnesium in natural water. Calcium and magnesium cause water hardness and, with anions, can form scale on utensils and in water heaters, boilers, and pipes.

Sodium and Potassium (Na and K)

Sodium and potassium are present in many igneous and sedimentary rocks. Sodium dissolves readily and when brought into solution it tends to remain in solution. Potassium is dissolved with greater difficulty and exhibits a stronger tendency to be reincorporated into solid weathering products, especially clay minerals. In most natural water the concentration of potassium is much lower than the concentration of sodium. Water that contains a large proportion of sodium salts may be unsatisfactory for irrigation on certain types of poorly drained soils. The presence of several hundred milligrams per litre of sodium in water can make it unsuitable for use in sodium-restricted diets (North Dakota State Department of Health, 1962).

Bicarbonate and Carbonate (HCO_3 and CO_3)

Bicarbonate and carbonate ions are the major cause of alkalinity in most 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.

Alkalinity, expressed as milligrams per litre, can be calculated from the analyses by using the formula:

$$\text{Alkalinity (As CaCO}_3) = 0.82 (\text{HCO}_3) + 1.67 (\text{CO}_3)$$

Sulfate (SO_4)

Metallic sulfide minerals in both sedimentary and igneous rocks, upon weathering or with bacterial action, are converted to sulfates. Sulfate may also be dissolved from beds of gypsum and deposits of sodium sulfate.

Chloride (Cl)

Chloride is present in all natural waters, but the concentrations usually are low. Important sources of chloride are sedimentary rocks that were deposited under marine conditions.

Fluoride (F)

Fluoride in the ground water is probably derived from solutions of fluorite, apatite, and hornblende minerals.

Nitrate (NO_3) as Nitrogen (N)

The occurrence of high nitrate concentrations in shallow ground water has been attributed to leaching in feedlots or to fertilizer from irrigated fields where nitrogen compounds have been applied. High nitrate content is undesirable in drinking water because of its bitter taste and because it has been reported to cause methemoglobinemia in infants (Comly, 1945).

Boron (B)

Boron is a constituent of the mineral tourmaline and may be present in biotite and amphiboles. In small quantities boron is essential for plant growth. Excessive concentrations in soil and in irrigation water are harmful for some plants.

Dissolved solids

The concentration of dissolved solids is calculated from the weight of residue on evaporation at 180°C from a known quantity of water.

Properties and Characteristics of Water

Hardness

Calcium and magnesium are the principal cause of hardness. Hardness exhibits the characteristic of requiring greater quantities of soap to produce a lather as the hardness increases. Hard water also can contribute to the formation of scale in boilers, water heaters, radiators, and pipes, with a resultant decrease in the rate of water flow and(or) heat transfer.

The hardness that is equivalent to the alkalinity is called carbonate hardness, and any excess is called noncarbonate hardness. The carbonate hardness is the quantity that will contribute scale on heating and the noncarbonate hardness is the quantity of hardness that will remain after precipitation of the carbonate hardness. As a general reference, the U.S. Geological Survey many times uses the following classification of water hardness.

<u>Calcium and magnesium hardness, as CaCO₃ (milligrams per litre)</u>	<u>Hardness description</u>
0-60	Soft
61-120	Moderately hard
121-180	Hard
More than 181	Very hard

Percent sodium and sodium-adsorption ratio (SAR)

The percent sodium is the percentage of sodium to all cations, with the cations in milliequivalents per litre. The displacement of calcium and magnesium by sodium in soils is slight unless the percent sodium is considerably higher than 50.

The term sodium-adsorption ratio (SAR) was introduced by the U.S. Salinity Laboratory Staff, Department of Agriculture, (1954). Their experiments show that the SAR relates to the degree water enters into cation-exchange reactions with soil. SAR is expressed by the equation:

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

where the concentrations of the ions are expressed in milliequivalents per litre. The U.S. Salinity Laboratory Staff (1954) divided water into

sixteen classes, depending upon the SAR and specific conductance. The classifications indicate the usefulness of water for irrigation of different crops on different types of soil.

Specific conductance (micromhos per centimetre at 25°C)

Specific conductance is a measure of the ability of water to conduct an electric current. Approximately 0.65 to 0.70 of the specific conductance (in micromhos) is an estimate of the amount of dissolved solids (in milligrams per litre) in water; however, this relation is not constant and will vary with the chemical composition of the water (Hem, 1970).

Hydrogen-ion concentration (pH)

Hydrogen-ion concentration (activity) is expressed in terms of pH units. The values of pH often are used as one measure of the solvent power of water.

The hydrogen-ion concentrations affect the corrosiveness of water. A pH of 7.0 indicates that the water is neutral, neither acidic nor basic. Readings progressively lower than 7.0 denote increasing acidity, and those progressively higher than 7.0 denote increasing alkalinity.

Temperature

Temperature is an important factor in evaluating the usefulness of water. This is evident for such a direct use as an industrial coolant. Temperature is also important, but perhaps not so evident, for its influence upon concentrations of dissolved gases and mineral matter in water. Water temperatures given in the tables are expressed in degrees Celsius (Centigrade). Degrees Celsius and the equivalent temperature in degrees Fahrenheit are given in appendix B.

Hydrologic Parameters of Core Samples

Hydrologic parameters derived from laboratory analysis of 37 sidewall and 11 vertical cores are shown in table 9. These data may be useful for determining aquifer properties.

Heavy-Mineral Analyses of Core Samples

Heavy-mineral analyses of 43 cores from bedrock formations are shown in table 10. These analyses may be useful for correlation of geologic units throughout the Williston basin.

Particle-Size Distribution Graphs

Particle-size distribution graphs were determined by the sieve and hydrometer method for 47 core samples representing five geohydrologic units. The diagrams in figure 3 show the percentage of clay, silt, and sand in the cores.

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TABLE 1.--Records of wells and test holes

EXPLANATION	
<u>Owner</u>	<u>Water-bearing material</u>
NDSPS, North Dakota State Park Service	Modifiers
NDSWC 8261, North Dakota State Water Commission, test hole number 8261	1, very fine grained 2, fine grained 3, medium 4, coarse
NDSWC PW, North Dakota State Water Commission aquifer-test well, pumped well	6, clayey 8, sandy 9, gravelly y, shaly
NDSWC 72-1, North Dakota State Water Commission city-test wells	Major lithology
U.S.B.I.A., U.S. Bureau of Indian Affairs	B, sedimentary rock, unclassified F, shale G, gravel P, clay Q, silt R, sand and gravel S, sand T, till V, sandstone Y, clayey gravel l, lignite
<u>Water level (feet)</u>	<u>Specific conductance</u>
Water level, in feet below (+ above) land surface	Value shown is the field specific conductance measured at the well at the time of inventory, except where a chemical analysis is available.
F, well flows	
<u>Use of water</u>	
H, domestic K, domestic and stock P, public supply R, recreation S, stock U, unused Z, other	
<u>Major aquifer</u>	
111, Holocene 112, Pleistocene 124, Eocene 125, Paleocene 211, Upper Cretaceous	
ALVL, alluvium BGFV, buried glaciofluvial CBLD, Cannonball-Ludlow Formations, undifferentiated FXHL, Fox Hills Formation GLVD, Golden Valley Formation HLCK, Hell Creek Formation SNLB, Sentinel Butte Formation TGRV, Tongue River Formation TILL, till TRRC, terrace deposits	

LOCAL WELL NUMBER	OWNER	DRILLED DEPTH (FT)	WELL DEPTH (FT)	CASING DEPTH (FT)	CASING DIAMETER (IN)	DATE DRILLED (YEAR)	WATER LEVEL (FT)	DATE WATER LEVEL MEASURED	USE OF WATER	MAJOR AQUIFER	WATER BEARING MATERIAL	SPECIFIC CONDUCTANCE (µMHOS/CM @ 25°C)	TEMPERATURE (°C)	ALTI-TUDE OF L.S.D. (FT)
141-091-03CCC	NDSWC 8260	300	--	--	--	1971	--	--	U	--	--	--	--	1993
141-091-03DCC	NDSWC 8261	60	--	--	--	1971	--	--	U	--	--	--	--	2029
141-091-04BAA	L.SCHWARTZ		50	--	5	--	12	--	S	--	S	2600	--	--
141-091-04CCB	J.FREDRICK		15	--	36	--	11	--	K	--	G	--	--	--
141-091-04DAD	J.LINK		170	--	2	1968	80	--	S	--	S	3300	--	--
141-091-04DCD	NDSWC 8259	40	--	--	--	1971	--	--	U	--	--	--	--	1972
141-091-06CNC	D.HALICK		270	--	5	1966	170	--	K	--	S	2700	--	--
141-091-08ABR	W.HELSPER		160	--	4	1961	F	--	K	125SNLB	I	--	12.0	--
141-091-08DD	NW.DIL DRLG.CO.	8415	--	--	--	1955	--	--	U	--	--	--	--	2103
141-091-08DDO	NDSWC 4601	780	--	--	--	1973	--	--	U	--	--	--	--	2107
141-091-09DDO	NDSWC 4696	280	--	--	--	1974	--	--	U	--	--	--	--	1979
141-091-10DRC	SCHWENK BRNS.		230	--	2	--	--	--	K	125SNLB	S	2330	1.2	--
141-091-12DCC	SCHWENK BRNS.		240	220	2	1961	60	--	K	--	B	2000	--	--
141-091-14DCD	SCHROEDER RANCH		164	--	4	1960	40	--	K	125SNLB	J	3900	--	--
141-091-19DDO	NDSWC 8263	100	--	--	--	1971	--	--	U	--	--	--	--	2011
141-091-20CRC	W.BENNER		250	--	2	1927	+4	--	K	--	--	2400	--	--
141-091-22DDO	NDSWC 4695	340	116	113	1	1974	4	7-74	U	112BGFV	2S	1650	9.0	1994
141-091-23CRC	NDSWC 8262	240	104	98	1	1971	2	12-71	U	112BGFV	2S	--	--	1985
141-091-24RCB	NDSWC 4694	340	81	78	1	1974	13	7-74	U	112BGFV	2S	3130	8.0	2004
141-091-30DAD	NDSWC 4693	245	183	180	1	1974	0	7-74	U	112BGFV	2S	3570	9.0	2011
141-092-02ARB	R.SIGL		12	--	4	1961	6	--	K	--	P	1900	11.0	--
141-092-04CCA	F.GUTHMILLER	75	66	--	4	1956	35	--	K	125SNLB	I	1850	10.0	--
141-092-04CCC	NDSWC 8265	240	--	--	--	1971	--	--	U	--	--	--	--	2115
141-092-06DCC	F.BECKLER		79	77	18	1950	39	--	S	--	P	3400	--	--
141-092-07BRA	NDSWC 8266	120	84	78	1	1971	13	11-71	U	112BGFV	S	3040	7.0	2090
141-092-07CDD	W.STECKLER	160	142	--	4	1955	--	--	K	125SNLB	I	3000	--	--
141-092-08ARC	C.HAAG		152	140	4	1963	15	--	K	125SNLB	I	2800	11.0	--
141-092-09BRD1	F.GUTHMILLER		44	36	12	1920	F	9-71	S	125SNLB	I	2850	9.0	--
141-092-09BRD2	F.GUTHMILLER		72	--	24	1970	+1	9-71	S	125SNLB	I	--	--	--
141-092-10CBA	G.BENTZ		120	100	18	1945	100	--	S	125SNLB	I	4100	--	--
141-092-12DCC	B.SCHUBERT		77	42	6	1970	32	11-70	K	125SNLB	S	5890	10.0	--
141-092-13BRB	NDSWC 8264	260	--	--	--	1971	--	--	U	--	--	--	--	2055
141-092-18ARR	NDSWC 8267	160	--	--	--	1971	--	--	U	--	--	--	--	2155
141-092-20DRD1	E.ZIMMERMAN		38	--	4	1959	8	--	K	112BGFV	G	2330	9.0	--
141-092-20DRD2	E.ZIMMERMAN		54	--	4	1970	--	--	S	112BGFV	G	--	--	--
141-092-28AAA	NDSWC 4692	140	51	48	1	1974	3	7-74	U	112BGFV	2S	2840	9.0	2056
141-093-02ARR	J.FINDERLE	112	97	--	4	1967	40	--	K	125SNLB	I	3770	11.0	--

LOCAL WELL NUMBER	OWNER	DRILLED DEPTH (FT)	WELL DEPTH (FT)	CASING DEPTH (FT)	CASING DIAMETER (IN)	DATE DRILLED (YEAR)	WATER LEVEL (FT)	DATE WATER LEVEL MEASURED	USE OF WATER	MAJOR ANION	WATER BEARING MATERIAL	SPECIFIC CONDUCTANCE (UMHOS/CM @ 25°C)	TEMPERATURE (°C)	ALTITUDE (OF LSL) (FT)
141-093-02CCC	NDSWC 4615	260	125	119	1	1973	+9	--	U	112BGFV	3S	3580	7.5	2081
141-093-03AAA	NDSWC 8268	160	--	--	--	1971	--	--	U	--	--	--	--	2088
141-093-04AAD	NDSWC 4613	140	--	--	--	1973	--	--	U	--	--	--	--	--
141-093-04CRR1	NDSWC 4611	200	144	138	1	1973	23	12-73	U	112BGFV	3S	5900	8.5	2100
141-093-04CRR2	NDSWC 4612	140	--	--	--	1973	--	--	U	--	--	--	--	2110
141-093-05BAR	NDSWC 4617	60	--	--	--	1973	--	--	U	--	--	--	--	2080
141-093-06ARA	NDSWC 4618	140	79	73	1	1973	49	12-73	U	125SNLB	3V	4910	6.5	2092
141-093-06ACR	A.SICKLER	--	50	--	--	--	--	--	U	--	--	2250	--	--
141-093-09RD	ZOLLNER WILLOCAT	5370	--	--	--	1968	--	--	U	--	--	--	--	2264
141-093-10RND	G.MYRAN	--	80	--	16	1926	8	--	S	125SNLB	1	7000	--	--
141-093-11RCC	NDSWC 4614	200	65	59	1	1973	3	12-73	U	112BGFV	3S	3220	7.0	2087
141-093-14ABA	L.HALICK	--	360	280	4	1964	45	--	K	125SNLB	S	2590	12.0	--
141-093-16AAA1	NDSWC 4662	880	810	798	2	1974	44	7-74	U	125CBLD	1V	9740	--	2158
141-093-16AAA2	NDSWC 4662A	--	384	378	1	1974	63	7-74	U	125SNLB	1V	2140	12.0	2158
141-093-17ACA	N.MYRAN	--	50	--	18	1970	36	--	K	--	R	2900	--	--
141-093-17RRR	NDSWC 4664	100	50	47	1	1974	9	6-74	U	112BGFV	2S	--	--	2110
141-093-19DDD	NDSWC 4609	260	85	79	1	1973	3	12-73	U	112BGFV	3S	4040	7.0	2123
141-093-20RDD	H.BERNHARDT	--	55	--	16	1912	35	--	K	125SNLB	1	2690	10.0	--
141-093-20RCD	NDSWC 4610	100	55	49	1	1973	9	12-73	U	112BGFV	3S	5230	5.5	2132
141-093-220CD	NDSWC 4663	220	112	108	1	1974	14	6-74	U	112BGFV	2S	1030	9.5	2133
141-093-30ARA	NDSWC 4608	140	39	33	1	1973	6	12-73	U	112BGFV	3S	1340	6.5	2135
141-094-02BRA	A.SICKLER	--	75	45	4	1969	40	--	K	125SNLB	S	2320	11.0	--
141-094-04BAA	NDSWC 4668	220	161	158	1	1974	30	7-74	U	112BGFV	2S	3560	9.0	2175
141-094-06AD	SOCOMY OIL CO	6090	--	--	--	1954	--	--	U	--	--	--	--	2285
141-094-06DDD	NDSWC 4669	900	--	--	--	1974	--	--	U	--	--	--	--	2288
141-094-08CCC	NDSWC 4605	80	--	--	--	1973	--	--	U	--	--	--	--	--
141-094-12CAA	J.DSTER	--	70	--	18	1920	30	--	S	--	--	7000	10.0	--
141-094-14BCA	M.SICKLER	--	275	--	6	1969	--	--	K	--	S	2150	11.5	--
141-094-15ARR	NDSWC 4607	220	124	118	1	1973	2	--	U	112BGFV	3S	2860	8.5	2162
141-094-16AAA	NDSWC 4472	100	51	48	1	1972	7	10-72	U	112BGFV	S	908	8.5	2168
141-094-17BAB	NDSWC 4606	80	49	43	1	1973	9	2-74	U	112BGFV	3S	717	7.0	2230
141-094-17RRR	L.KADRMAS	--	42	--	18	1946	27	--	K	--	S	700	--	--
141-094-20CCR	J.WANNER	--	70	--	6	1949	20	--	K	112BGFV	S	1310	10.0	--
141-094-21CCD	W.TORMASCHY	--	185	--	4	1954	49	9-71	S	125SNLB	1	2590	10.0	--
141-094-32DRR	A.J.LEISS	--	46	--	18	--	16	--	U	--	--	--	--	--
141-094-34AAA	NDSWC 4665	200	154	148	1	1974	8	7-74	U	125SNLB	1V	5330	13.0	2167
141-094-34AAD	NDSWC 4666	200	140	138	1	1974	12	7-74	U	112BGFV	2S	3010	8.0	2170
141-094-34CAD	M.DJLLINGER	--	1380	1340	5	1971	80	--	K	211FXHL	S	2250	15.0	--
141-094-34DAD	NDSWC 4667	140	119	113	1	1974	14	7-74	U	125SNLB	1V	4530	10.0	2172
141-094-35BRC	NDSWC 8276	260	182	176	1	1971	12	12-71	U	112BGFV	S	3490	8.0	2167

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141-094-35DCD	V. ROHR		120	100	4	1960	30	--	K	--	S	2300	--	--
141-095-01BRC	M. JAPLOMSKY		42	30	18	1964	26	--	H	--	P	2900	--	--
141-095-02BRB	T. STICKLER		40	28	24	1965	30	--	K	125SNLB	1	3400	--	--
141-095-02COC	A. J. KUBIK		317	280	8	1966	--	--	S	125SNLB	1	2300	10.5	--
141-095-02DCR	G. KADRMAS		40	--	24	1960	20	--	H	--	--	4600	12.0	--
141-095-06CCD	D. SADOWSKY	300	285	--	4	1965	--	--	S	125SNLB	S	1970	11.0	--
141-095-08RCD	F. J. KUORNA		30	--	18	--	13	6-72	H	125SNLB	--	5910	11.5	--
141-095-10ABR	J. KUBIK		54	38	18	1963	16	--	S	--	P	1400	9.0	--
141-095-12ADC	M. SCHMIDT		37	--	18	1957	12	--	H	--	S	3400	--	--
141-095-17ACC	I. PAVLICEK		225	210	4	1969	180	--	H	--	S	788	10.0	--
141-095-20CCD	NDSWC 4670	40	--	--	--	1974	--	--	U	--	--	--	--	--
141-095-24CAC	V. BARTA		40	--	18	1964	20	--	S	--	P	1900	--	--
141-095-24CAD	J. J. KADRMAS		38	--	18	1962	34	--	S	--	S	2150	--	--
141-095-29BAC	F. KIDL		66	--	5	1968	20	--	K	125SNLB	1	668	9.0	--
141-095-32AAC	T. PAVLICEK		60	--	18	1966	40	--	S	125SNLB	1	2600	9.0	--
141-095-33RRB	NDSWC 8277	40	--	--	--	1971	--	--	U	--	--	--	--	--
141-095-34CCB	J. C. KADRMAS		18	8	18	1948	10	--	H	--	G	1750	--	--
141-095-35CAA	P. KUBIK		140	120	6	1964	--	--	K	--	S	1400	--	--
81 141-096-02ADD	A. SADOWSKY		45	--	24	1964	12	--	H	125SNLB	B	4200	11.0	--
141-096-04DCD	F. DVORAK		16	--	84	--	8	--	H	--	--	3300	11.0	--
141-096-06DCA	M. DVORAK		52	--	24	1940	12	--	H	--	S	1400	--	--
141-096-11DAD	F. SADOWSKY		150	--	4	1956	130	--	H	--	S	2450	--	--
141-096-13BCC	NDSWC 4672	40	--	--	--	1974	--	--	U	--	--	--	--	--
141-096-13CCC	NDSWC 4671	40	--	--	--	1974	--	--	U	--	--	--	--	--
141-096-13DRB	R. SADOWSKY		125	121	4	1964	40	--	K	125SNLB	S	1110	10.0	--
141-096-18RDB	A. BREIN		14	--	60	--	6	--	K	--	S	1900	--	--
141-096-20CCB	R. KOSTELICKY		61	56	24	1930	23	--	H	--	S	1900	--	--
141-096-22CCA	L. FICEK		225	220	4	1964	70	--	H	125SNLB	S	1260	12.0	--
141-096-24CRD	NEW BRADFC		10	--	60	1937	5	7-71	H	125TRGV	1	792	13.0	--
141-096-24BBA	NDSWC 8278	40	--	--	--	1971	--	--	U	--	--	--	--	--
141-096-29CCB	NDSWC 8279	80	41	38	1	1971	15	12-71	U	112TRRC	45	1220	7.5	2485
141-096-29CCC	NDSWC 4529	2100	1740	--	--	1973	229	8-73	U	211FXHL	V	2470	--	2483
141-096-32BCC	NDSWC 8280	40	--	--	--	1971	--	--	U	--	--	--	--	--
141-096-32CCB	NDSWC 8281	20	--	--	--	1971	--	--	U	--	--	--	--	--
141-096-34CCC	NDSWC 4673	40	--	--	--	1974	--	--	U	--	--	--	--	--
141-096-34CCD	S. FICEK		50	--	18	1961	45	--	H	125SNLB	1	1975	12.0	--
141-096-36ACD	F. KADRMAS		70	--	18	1952	30	--	K	--	P	--	12.0	--
141-097-01CCD	M. K. SADOWSKY		60	--	18	--	39	7-71	K	--	--	450	--	--
141-097-03AAA	DX. LIG. DRILLING	250	--	--	--	1962	--	--	U	--	--	--	--	2555
141-097-04BBB	C. HECKER		65	--	18	1940	55	--	H	--	--	1610	--	--

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141-097-06BAD	R. STEFFAN		33	--	36	--	8	--	H	125SNLB	S	1040	9.5	--
141-097-06DRD	G. STEFFAN		30	24	6	1960	16	--	S	125SNLB	1	1150	10.0	--
141-097-10CDA	G. HECKER		20	--	18	1950	4	--	K	--	S	561	11.0	--
141-097-11DD	DX. LIG. DRILLING	254	--	--	--	1962	--	--	U	--	--	--	--	2555
141-097-14ACA	C. PALLANYNE		10	--	24	--	4	--	K	--	S	1650	8.5	--
141-097-14DD	M. JIRGES		19	--	96	1912	2	--	H	--	S	3850	--	--
141-097-15RRR	DX. LIG. DRILLING	160	--	--	--	1962	--	--	U	--	--	--	--	2550
141-097-15DD	NDSWC 467A	40	--	--	--	1974	--	--	U	--	--	--	--	--
141-097-17P	DX. LIG. DRILLING	130	--	--	--	1962	--	--	U	--	--	--	--	2526
141-097-18AAC	L. KOSTFLECKY		65	--	5	--	20	--	K	--	--	1010	12.0	--
141-097-19BRC	DX. LIG. DRILLING	220	--	--	--	1962	--	--	U	--	--	--	--	2567
141-097-21BRC	NDSWC 8282	40	--	--	--	1971	--	--	U	--	--	--	--	--
141-097-23AAA	DX. LIG. DRILLING	160	--	--	--	1962	--	--	U	--	--	2220	--	2515
141-097-23ARD	M. JIRGES		90	--	6	1950	30	--	S	--	--	2220	10.0	--
141-097-25DAR	NDSWC 4674	30	22	19	1	1974	8	7-74	U	112TRRC	R	1020	9.5	2488
141-097-26ARR	NDSWC 4675	40	--	--	--	1974	--	--	U	--	--	--	--	--
141-097-26BCD	C. SANDOWSKY		54	--	18	1956	10	6-72	H	--	S	3450	--	--
141-097-26CAB	J. KHUSSY		30	26	24	1957	18	--	H	--	S	1450	--	--
141-097-28CAC	J. KYTYOR		20	--	12	--	6	6-72	U	--	--	1100	9.5	--
141-097-31DCD	DX. LIG. DRILLING	230	--	--	--	1962	--	--	U	--	--	--	--	2620
141-097-32AAR	P. ZELINSKY		60	55	13	1958	45	--	H	--	S	784	11.0	--
141-097-34ARR	J. GILKA		110	80	4	1956	60	--	K	--	S	1680	12.0	--
141-097-35CDD	DX. LIG. DRILLING	210	--	--	--	1962	--	--	U	--	--	--	--	2544
141-097-36AAA	C. BREJN		55	--	18	1961	40	--	K	--	--	1350	11.0	--
142-091-06CC	TEXACO INC.	5150	--	--	--	1969	--	--	U	--	--	--	--	1989
142-091-08CCR	M. RASEFLUG		57	--	6	1946	--	--	K	--	S	2000	10.0	--
142-091-08DDA	NDSWC 8256	40	31	28	1	1971	15	11-71	U	112BGFV	RG	1300	7.0	1979
142-091-10CCD	NDSWC 8255	40	--	--	--	1971	--	--	U	--	--	--	--	--
142-091-10DCC	L. GREENSHIELDS		91	76	2	1950	18	--	H	125SNLB	1	2400	--	--
142-091-12DD	J. CRONLEY		945	867	2	1963	+84	9-71	S	125CBLD	S	2650	13.0	1940
142-091-14ARR	NDSWC 4698	160	51	48	1	1974	15	7-74	U	112BGFV	3S	2500	8.0	1917
142-091-14BCB	NDSWC 4699	40	--	--	--	1974	--	--	U	--	--	--	--	1918
142-091-15AAD	NDSWC 4700	180	131	128	1	1974	14	7-74	U	112BGFV	G	2590	8.5	1908
142-091-15CCD	NDSWC 8258	200	143	136	1	1971	18	11-71	U	112BGFV	S	2490	7.5	1923
142-091-17AAD	NDSWC 8254	60	32	29	1	1971	12	11-71	U	112BGFV	R	852	7.5	1928
142-091-17ADA	NDSWC 8257	40	25	22	1	1971	16	11-71	U	112BGFV	R	1020	--	1930
142-091-22RCA	A. NEINHARDT	50	38	--	3	1950	8	--	K	125SNLB	1	4000	--	--
142-091-25DRR	A. SCHNAIDT	1300	1290	1230	2	1966	+22	9-71	S	211HLCK	V	2310	16.0	--
142-091-28ACD	A. BRILZ		164	124	2	1950	10	--	K	112BGFV	S	2500	--	--
142-091-33DCC	NDSWC 4697	240	81	78	1	1974	18	7-74	U	112BGFV	3S	2110	8.0	1945

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142-091-34ARB	C.SCHNAIDT		120	--	6	1950	80	--	S	125SNLB	1	2500	--	--
142-091-35DAA	R.MAFRSCHBECKER		70	--	4	1965	50	--	H	--	--	2000	--	--
142-092-08BBB	R.SCHNELL		97	--	8	1964	--	--	K	125SNLB	1	1440	13.0	--
142-092-09DAB	NDSWC 4467	1800	--	--	--	1972	F	8-72	U	211HLCK	V	--	--	1990
142-092-10AAD	HANSEN BROTHERS	55	46	34	3	1959	15	--	K	--	S	2400	--	--
142-092-10BRC	K.PERHUS		215	190	4	1971	F	4-72	U	125SNLB	S	2780	9.0	--
142-092-10BCC1	NDSWC 8253	140	--	--	--	1971	--	--	U	--	--	--	--	1982
142-092-10BCC2	NDSWC 8253A	40	28	25	1	1971	12	11-71	U	--	--	2710	7.5	1982
142-092-11BRC	K.PERHUS		150	97	3	1951	40	--	K	125SNLB	1	2700	--	--
142-092-12BCC1	N.DRESSLER	60	48	43	3	1953	2	--	K	125SNLB	S	2350	10.0	--
142-092-12BCC2	N.DRESSLER		250	--	3	1952	+5	--	S	125SNLB	--	2800	11.0	--
142-092-20DAD	K.HAIICK		125	85	4	1966	45	--	K	125SNLB	B	1800	--	--
142-092-26BCA	J.BERGER	150	106	--	4	1961	80	--	K	125SNLB	1	3500	--	--
142-092-27CBB	A.HAIICK	1160	1154	1134	2	1973	22	10-73	K	211HLCK	S	--	--	--
142-092-27CRC	A.HAIICK		50	44	24	1967	--	--	K	125SNLB	1	2850	12.0	--
142-092-29CCD	F.SITTER	45	30	--	4	1967	25	--	K	125SNLB	1	1225	--	--
142-092-33DAA	C.HUESKE		187	--	2	1966	160	--	S	125SNLB	1	1900	11.0	--
142-092-34BBB	A.HUESKE		305	232	4	1970	250	--	K	125SNLB	S	60	13.0	--
142-093-02DBA	J.STAUDINGER		120	--	6	--	0	--	K	125SNLB	1	1150	--	--
142-093-03DAB	E.PAULSON	81	72	--	4	1961	30	--	K	125SNLB	1	1300	11.0	--
142-093-04CNC	I.PAULSON		45	--	4	1969	25	--	K	125SNLB	1	1800	--	--
142-093-04DDD	NDSWC 8270	40	--	--	--	1971	--	--	U	--	--	--	--	--
142-093-05DAC	C.PERHUS	90	79	--	4	1951	12	--	K	125SNLB	1	2900	--	--
142-093-08AAB	NDSWC 8271	180	--	--	--	1971	--	--	U	--	--	--	--	2056
142-093-09BBA	NDSWC 4691	100	58	48	1	1974	12	7-74	U	125SNLB	1	3320	8.5	2024
142-093-12DAB	A.GUSTAFSON		110	--	4	1945	--	--	K	125SNLB	1	2300	--	--
142-093-18BBB	NDSWC 4690	120	86	83	1	1974	67	7-74	U	112BGFV	R	3760	8.0	2157
142-093-18DBA	L.HAIJEN		120	--	18	1905	40	--	S	125SNLB	1	--	--	--
142-093-18DBB	L.HAIJEN		55	--	18	1930	30	--	H	--	--	1400	--	--
142-093-20BBB	C.FICHTER		30	24	18	1950	10	--	H	112BGFV	G	1200	12.0	--
142-093-21DAC	G.VAAGEN		51	41	24	1970	34	--	H	125SNLB	1	3250	--	--
142-093-24CAC	J.JURGENS		78	73	18	1941	58	--	K	125SNLB	1	2000	--	--
142-093-26AAD	R.FRIDLIFY		60	--	16	--	30	--	K	--	--	1600	--	--
142-093-28BAA	NDSWC 8269	120	--	--	--	1971	--	--	U	--	--	--	--	2067
142-093-28BBA	NDSWC 4620	120	94	88	1	1973	15	12-73	U	112BGFV	3S	3860	7.5	2066
142-093-31BBB	NDSWC 4619	60	--	--	--	1973	--	--	U	--	--	--	--	2096
142-093-31DDD	NDSWC 8272	40	--	--	--	1971	--	--	U	--	--	--	--	--
142-093-32DCC	NDSWC 4616	80	70	64	1	1973	2	12-73	U	125SNLB	3V	2020	7.0	2088
142-093-34DCB	R.VAAGEN		35	30	30	1902	30	--	K	--	--	971	11.0	--
142-094-06DAA	D.GALYEN		160	--	6	1927	75	--	K	--	P	4400	11.0	--

LOCAL WELL NUMBER	OWNER	DRILLED DEPTH (FT)	WELL DEPTH (FT)	CASING DEPTH (FT)	CASING DIAMETER (IN)	DATE DRILLED (YEAR)	WATER LEVEL (FT)	DATE WATER LEVEL MEASURED	USE OF WATER	MAJOR AQUIFER	WATER BEARING MATERIAL	SPECIFIC CONDUCTANCE (UMHOS/CM @ 25°C)	TEMPERATURE (°C)	ALTITUDE OF LSD (FT)
142-094-0RAAA	A. HAAG		6	--	36	--	3	8-71	U	--	--	--	--	--
142-094-0RDDD	D. WERSTER		226	--	4	1966	56	--	H	125SNLB	1	4410	11.5	--
142-094-0RCDC	NDSWC 4689	200	94	88	1	1974	34	7-74	U	112BGFV	3S	3550	8.0	2157
142-094-09CDD	NDSWC 4688	220	163	157	1	1974	37	7-74	U	112BGFV	R	4260	10.0	2157
142-094-09DDD	NDSWC 4687	60	--	--	--	1974	--	--	U	--	--	--	--	2191
142-094-19ADC	G. SICKLER		60	--	18	1919	15	--	K	125SNLB	1	2600	10.5	--
142-094-19DDD	N. DAKOTA STATE		50	--	6	--	24	6-73	H	125SNLB	--	6190	11.0	--
142-094-20BAA	A. MILLER		75	70	18	1949	45	--	K	--	S	2500	11.0	--
142-094-22AA	LADD PET. CO.	5537	--	--	--	1969	--	--	U	--	--	--	--	2252
142-094-27DDC	NDSWC 4471	60	--	--	--	1972	--	--	U	--	--	--	--	--
142-094-2RCBB	J. HUTMACHER		106	91	6	1960	40	--	H	125SNLB	1	2900	--	--
142-094-2RDCD	NDSWC 4470	60	--	--	--	1972	--	--	U	--	--	--	--	--
142-094-30BBA	A. SICKLER		120	--	6	1965	100	--	S	--	P	2200	--	--
142-094-33BCC	NDSWC 4469	120	--	--	--	1972	--	--	U	--	--	--	--	--
142-094-34ABD	E. NEWTON		56	53	6	1923	40	--	K	--	--	3100	10.0	--
142-094-35BBB	NDSWC 8274	100	--	--	--	1971	--	--	U	--	--	--	--	--
142-094-35CBB	NDSWC 8275	80	--	--	--	1971	--	--	U	--	--	--	--	--
142-094-35CCC	NDSWC 8273	160	68	62	1	1971	6	11-71	U	112BGFV	S	3520	7.5	2127
142-095-02BCB	G. MILLER	85	84	--	4	1968	60	--	H	125SNLB	1	1980	11.0	--
142-095-04CCD	R. WANNEMACHER		40	37	18	1958	20	--	H	--	R	1540	10.0	--
142-095-06ACD	H. KOVASH		40	--	18	1950	18	--	K	--	G	4000	--	--
142-095-10ACC	J. MEDUNA		100	--	6	1968	--	--	K	--	S	2000	--	--
142-095-12CAB	H. HEISER		85	--	24	--	70	--	K	--	--	2800	--	--
142-095-14ACB	L. JABLONSKY		35	--	60	--	25	--	S	--	--	6800	--	--
142-095-17BDB	H. DUKART		39	--	18	1969	34	--	S	112BGFV	R	--	--	--
142-095-20BCB	C. FISHER		86	80	18	1946	20	--	K	--	S	1650	11.0	--
142-095-24DAC	A. SICKLER		60	54	24	1948	50	--	K	--	P	3100	12.0	--
142-095-27BCC	L. BAHLEY		56	--	18	1946	18	--	K	125SNLB	1	745	--	--
142-095-29CAD	R. BEZDICEK		60	--	18	1950	45	--	K	--	S	1500	--	--
142-095-32CAA	C. HURICH		68	--	18	1945	57	--	K	--	S	1600	9.0	--
142-095-33DCC	A. GODLEVSKY		64	--	24	--	--	--	K	125SNLB	S	5770	10.5	--
142-096-01DDB	R. W. SADOWSKY		125	112	4	1954	55	--	S	--	S	2600	9.0	--
142-096-01DDC1	R. W. SADOWSKY		150	132	4	1960	80	--	S	--	S	3100	10.5	--
142-096-01DDC2	R. W. SADOWSKY		50	46	18	1943	35	--	H	125SNLB	1	2700	12.0	--
142-096-04CDB1	L. HENDRICKS		33	--	36	--	30	--	H	--	P	2300	--	--
142-096-06DAB	J. SEMERAD	248	240	--	4	1960	60	--	K	125SNLB	S	3900	--	--
142-096-12DDA	J. KOVASH		20	--	72	1934	14	8-71	H	--	S	2800	--	--
142-096-18BBA	H. FROEHLICH		52	35	4	1965	12	--	S	125SNLB	1	3390	10.0	--

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142-096-26CDA	T.METZ		29	--	18	1958	10	--	H	--	P	2700	--	--	
142-096-30DAA	C.KADRMAS		75	55	24	1969	25	--	S	--	S	--	--	--	
142-096-32DCD	G.DVORAK		70	--	18	1961	40	R-71	H	--	--	4400	--	--	
142-096-34CAC	A.HEISER		20	--	60	--	10	--	H	125SNLB	1	2800	9.0	--	
142-096-36CCB	D.RIDL		22	--	60	--	3	--	K	--	S	4250	10.0	--	
142-097-04DAA	R.MEYER		32	--	24	1948	11	--	K	125SNLB	1	3800	--	--	
142-097-09AAB	M.GRIGGS		50	--	18	1956	35	--	H	125SNLB	--	4200	--	--	
142-097-20CAD	W.O.FISHER		63	40	5	1970	30	--	H	--	S	1100	--	--	
142-097-22DDD	H.HECKER		68	63	24	1970	30	--	H	--	S	3000	--	--	
142-097-24CCB	E.KUKLA		60	--	24	1968	15	--	S	--	G	4910	8.5	--	
142-097-24DCB	G.SCHMIDT		10	--	18	--	3	--	H	--	--	3400	9.5	--	
142-097-25CDB	C.KADRMAS		18	--	4	--	5	--	H	--	--	7800	13.0	--	
142-097-29CBB	R.STEFFAN		60	--	4	1965	30	--	H	--	S	1100	--	--	
142-097-32CAA	L.PAVLICEK		22	--	18	1900	13	R-71	K	--	S	1400	--	--	
142-097-34DCC	G.MARSH		22	--	18	1965	8	--	K	--	S	620	11.0	--	
143-091-03CCC	NDSWC 4702	40	--	--	--	1974	--	--	U	--	--	--	--	--	
143-091-04AAA1	J.ZARR		70	20	5	1970	30	--	K	--	S	2700	--	--	
143-091-04AAA2	J.ZARR		72	72	24	1972	30	R-73	S	125SNLB	1	2300	--	--	
143-091-06DAA	J.DUTTENHEFER		50	--	6	--	25	--	H	--	--	2900	--	--	
143-091-07CAA	P.FLECKENSTEIN		126	96	4	1969	--	--	S	125SNLB	1	1300	9.0	--	
143-091-07CBC	P.FLECKENSTEIN		250	--	2	--	60	--	K	--	--	1600	--	--	
143-091-08DCD	B.DUTTENHEFER		60	58	5	1968	55	--	K	--	P	883	11.0	--	
143-091-11CBA	W.STREIFEL	98	88	78	4	1966	40	--	S	125SNLB	1	996	8.0	--	
143-091-14CCC	G.BAUER		140	130	4	1966	40	--	S	--	S	2300	9.5	--	
143-091-17BCD	J.SCHWEITZER	148	106	--	4	1957	--	--	S	125SNLB	V	1800	10.0	--	
143-091-18BAD	J.SCHWEITZER		104	--	4	1957	60	--	S	112BGFV	G	795	8.5	--	
143-091-19AAA1	NDSWC 4602	900	670	652	2	1973	119	7-74	U	125TGRV	V	2830	10.5	2130	
143-091-19AAA2	NDSWC 4602A		80	66	63	1	1974	23	7-74	U	112BGFV	R	1680	8.0	2130
143-091-19AAA3	NDSWC 4602B	160	149	147	1	1974	23	7-74	U	125SNLB	2V	2530	9.0	2129	
143-091-19BDC	J.BOSCH		45	--	30	1952	42	--	H	125SNLB	S	3300	--	--	
143-091-21BBB	NDSWC 4701	100	--	--	--	1974	--	--	U	--	--	--	--	2135	
143-091-22BAA	J.EHLI		93	--	4	--	8	--	K	125SNLB	1	1100	--	--	
143-091-25AAC	E.BAUER		40	--	18	1958	16	--	K	125SNLB	1	1100	--	--	
143-092-03BAA1	A.SWENSON	108	96	--	2	1946	25	--	K	125SNLB	1	1080	9.5	--	
143-092-03BAA2	A.SWENSON		30	--	18	1919	23	--	K	--	S	1050	9.5	--	
143-092-04BCB1	M.SELLE		75	73	4	1949	20	--	H	125SNLB	1	800	--	--	
143-092-04BCB2	SELLE BROTHERS	60	53	--	4	1969	--	--	S	125SNLB	1	3900	10.0	--	
143-092-07DDD	NDSWC 8226	60	25	22	1	1971	4	11-71	U	112BGFV	S	480	7.0	2156	
143-092-08CCC1	P.PAULSON		55	--	4	--	--	--	K	--	--	1900	9.5	--	
143-092-08CCC2	P.PAULSON		50	--	4	1951	--	--	S	112BGFV	--	557	9.5	--	

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143-092-10ACD	J.ROKNES		156	144	4	1970	--	--	K	125SNLB	S	2200	--	--
143-092-11ACC	J.LEINTZ		110	90	3	1943	75	--	S	125SNLB	1	1100	9.0	--
143-092-11BDD	J.ROKNES		250	--	4	1967	--	--	S	--	S	2200	--	--
143-092-13CDD	NDSWC 8225	60	--	--	--	1971	--	--	U	--	--	--	--	--
143-092-14DAD	L.SCHUMACHER		98	14	4	1968	50	--	H	125SNLB	1	2500	--	--
143-092-16BBA	NDSWC 4716	80	51	48	1	1974	9	7-74	U	112BGFV	2S	1000	10.0	2180
143-092-17CCC	NDSWC 8227	60	--	--	--	1971	--	--	U	--	--	--	--	2182
143-092-17DDC	M.BIFFERT	135	122	--	4	1972	46	7-72	S	125SNLB	1	1020	8.0	--
143-092-18CCB	J.FISCHER		114	--	4	--	94	--	K	125SNLB	1	1350	--	--
143-092-20DBB	R.SMITH		132	--	4	1915	50	--	K	125SNLB	1	929	10.0	--
143-092-22AAD	F.SCHUMACHER		64	54	6	1955	50	--	H	125SNLB	1	751	11.0	--
143-092-26BCA	L.KUHN	60	42	--	4	1958	--	--	U	125SNLB	1	--	--	--
143-092-30BCA	A.SCHUMACHER		160	154	5	1969	80	--	K	--	G	2200	--	--
143-093-01CBA	P.KNAPP		20	--	18	--	--	--	K	125SNLB	1	1700	--	--
143-093-03CCB	C.NOODLAND		24	22	4	1951	12	--	H	--	S	1350	11.0	--
143-093-05DAC	GOODSTEIN DRG.	5222	--	--	--	1968	--	--	U	--	--	--	--	2178
143-093-06DAD	M.SYNNES	70	55	--	4	1949	56	--	K	125SNLB	1	4000	--	--
143-093-08DAA	NDSWC 8196	200	--	--	--	1971	--	--	U	--	--	--	--	--
143-093-09AAD	NDSWC 4719	200	152	149	1	1974	35	7-74	U	112BGFV	3S	2020	15.0	2161
143-093-098CB	NDSWC 4600	965	396	378	2	1973	93	2-74	U	125SNLB	V	3140	7.0	2133
143-093-09CBC	NDSWC 4718	140	41	38	1	1974	32	7-74	U	112BGFV	R	--	--	2128
143-093-10BCB	NDSWC 4720	140	91	88	1	1974	35	7-74	U	112BGFV	3S	--	--	2165
143-093-14AAD	NDSWC 8228	200	133	127	1	1971	15	11-71	U	112BGFV	S	1250	7.0	2143
143-093-14DAB	F.HEIDECKER		120	100	4	1970	30	--	K	125SNLB	1	1900	--	--
143-093-18ACB	S.STROMME		50	40	6	1964	15	--	H	--	S	987	10.0	--
143-093-20DDC	F.FORSTER		120	100	6	1958	78	--	K	125SNLB	1	2650	--	--
143-093-22CCA	T.SAMPSON		84	64	6	1968	66	--	H	125SNLB	1	4000	10.0	--
143-093-24ABB	F.KLEE		110	--	3	1946	30	--	K	125SNLB	1	1700	--	--
143-093-26CAA	M.EVINGER		90	--	18	1958	60	--	H	125SNLB	1	2000	--	--
143-093-31ACD	R.STEIN		150	--	4	1967	+4	8-71	K	125SNLB	S	3110	9.0	--
143-093-31CCC	R.E.STEIN	98	90	--	4	1972	14	11-72	S	125SNLB	1	--	--	--
143-093-33BBB	NDSWC 4717	120	--	--	--	1974	--	--	U	--	--	--	--	2078
143-093-33BCC	E.PAULSON	85	79	--	4	1961	--	--	S	125SNLB	1	5260	10.5	--
143-093-33DDD	NDSWC 4621	100	--	--	--	1973	--	--	U	--	--	--	--	2032
143-094-058BB	A.STECKLER		90	--	4	--	+4	8-71	S	125SNLB	1	1890	7.5	2127
143-094-058CB	L.STECKLER	70	61	61	4	1972	26	8-73	K	125SNLB	1	1150	--	--
143-094-08CCC1	L.STECKLER		80	--	12	--	--	--	S	--	--	1190	7.0	--
143-094-08CCC2	L.STECKLER		82	--	3	1944	27	--	H	112BGFV	S	2400	--	--
143-094-12D9A	E.HUESKE		14	12	18	1961	11	--	K	125SNLB	1	3300	--	--
143-094-178BA	NDSWC 8197	200	102	96	1	1971	8	10-71	U	112BGFV	S	2450	7.5	2110

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143-094-19CRC	NDSWC 4682	40	--	--	--	1974	--	--	U	--	--	--	--	--
143-094-19DCD1	L.DVORAK		33	--	18	--	19	9-71	U	--	S	--	--	--
143-094-19DCD2	NDSWC 8199	100	69	66	1	1971	17	10-71	U	112BGFV	R	2180	7.5	2115
143-094-20BCC	NDSWC 8198	60	--	--	--	1971	--	--	U	--	--	--	--	--
143-094-20DCC	NDSWC 4683	180	104	98	1	1974	17	7-74	U	112BGFV	R	3710	8.5	2090
143-094-21CCA1	H.KOLLER		89	81	4	1965	--	--	S	125SNLB	1	3530	7.5	--
143-094-21CCA2	H.KOLLER		18	--	4	1951	--	--	H	112BGFV	R	2870	8.5	--
143-094-23BAC	NDSWC 4685	40	--	--	--	1974	--	--	U	--	--	--	--	--
143-094-23BCD	NDSWC 4686	40	--	--	--	1974	--	--	U	--	--	--	--	--
143-094-25BCD	R.LEFOR		22	--	18	1947	12	9-71	H	112BGFV	S	1410	8.5	--
143-094-26CNC	O.ANDERSON		160	--	6	1963	40	--	K	125SNLB	1	3500	8.5	--
143-094-28AAB	H.KOLLER		86	--	4	1964	--	--	S	125SNLB	1	3500	7.5	--
143-094-28RRR	NDSWC 4684	60	26	23	1	1974	12	7-74	U	112BGFV	R	2340	8.0	2089
143-094-31ADA	NDSWC 8200	220	124	118	1	1971	12	10-71	U	112BGFV	S	2470	7.5	2111
143-094-32BRA	F.MCCOMMELL		65	--	4	1971	--	--	H	--	S	1200	--	--
143-094-32CCC	NDSWC 8201	220	144	138	1	1971	34	10-71	U	112BGFV	G	2970	8.0	2130
143-094-34BAD	M.JORDAN		40	--	18	1949	14	--	K	--	S	748	9.0	--
143-095-03CBB	D.TWIST	100	78	--	4	1960	40	--	K	125SNLB	1	2700	--	--
143-095-06BDD	NDSWC 4677	40	--	--	--	1974	--	--	U	--	--	--	--	--
143-095-06CAR	NDSWC 4678	400	--	--	--	1974	--	--	U	--	--	--	--	2218
143-095-07ABA	G.KUBIK		40	--	6	1952	20	--	K	125SNLB	1	2000	--	--
143-095-07CBB	T.HEINERT		32	32	24	1972	18	9-72	S	125SNLB	1	--	--	--
143-095-08AAA	T.WITTINGER		30	24	12	1952	17	--	H	--	G	4000	12.0	--
143-095-09CDA	M.ROCHE		17	--	24	1890	10	--	H	125SNLB	1	3800	--	--
143-095-15CAA	E.REBSOM		40	--	18	1948	24	--	K	--	S	1700	--	--
143-095-19CCD	M.HEISER		69	--	24	1924	34	--	K	125SNLB	1	1100	--	--
143-095-24ADD	F.NELSON		90	--	6	1961	25	--	K	125SNLB	1	2700	--	--
143-095-32ACB	E.KUDRNA		270	230	4	1970	90	--	H	125SNLB	S	2660	14.0	--
143-095-33AAD	NDSWC 4681		30	27	1	1974	8	7-74	U	111ALVL	R	4050	10.0	2163
143-095-34ACD	D.DVORAK		360	340	6	1966	150	--	K	125SNLB	S	2550	13.0	--
143-096-01AAD	C.COE		37	30	18	1952	18	--	H	--	B	1600	--	--
143-096-03ABA	NDSWC 4679	40	--	--	--	1974	--	--	U	--	--	--	--	--
143-096-03ACD	L.KARRMAS		28	--	24	1948	18	--	S	125SNLB	1	1200	7.5	--
143-096-10DCB	J.BHLLINGER		50	--	18	1948	40	--	K	125SNLB	1	767	10.0	--
143-096-12ADB	D.BREW	150	135	--	4	1971	50	--	K	125SNLB	1	2300	--	--
143-096-06ADD	J. STROH		74	68	16	--	28	--	K	125SNLB	1	--	--	--
143-096-12ADD	D.BREW	204	--	--	--	1973	--	--	U	--	--	--	--	--
143-096-16AAB	F.KUBIK		210	--	4	1963	180	--	S	--	S	1950	9.5	--
143-096-16CBA	F.KUBIK		240	--	4	1963	220	--	S	--	S	1700	10.5	--
143-096-18CDB	G.STROH		30	15	18	1958	7	--	S	125SNLB	1	6200	--	--
143-096-21BDD	F.KUBIK	167	150	--	4	1966	130	--	S	125SNLB	S	548	9.0	--
143-096-22BBC	F.KUBIK JR.	184	180	--	16	1947	85	--	K	125SNLB	S	--	--	--

LOCAL WELL NUMBER	OWNER	DRILLED DEPTH (FT)	WELL DEPTH (FT)	CASING DEPTH (FT)	CASING DIAMETER (IN)	DATE DRILLED (YEAR)	WATER LEVEL (FT)	DATE WATER LEVEL MEASURED	USE OF WATER	MAJOR AQUIFER	WATER BEARING MATERIAL	SPECIFIC CONDUCTANCE @ 25°C (UMHOS/CM)	TEMPERATURE (°C)	ALTITUDE OF LSD (FT)
143-096-25DCC	W. STROH	140	138	--	6	1970	20	--	K	125SNLB	I	1300	--	--
143-096-27DRR	R. SCHNEIDER		175	160	4	1966	60	--	S	125SNLB	S	3440	11.0	--
143-096-32DRA	R. TORMASCHY		90	--	4	1964	45	--	K	125SNLB	I	2100	--	--
143-096-33RCB	NDSWC 8202	60	--	--	--	1971	--	--	U	--	--	--	--	--
143-096-33CAR	NDSWC 8203	80	--	--	--	1971	--	--	U	--	--	--	--	--
143-097-01BBD	F. MAHLMANN		40	--	18	1957	--	--	K	125SNLB	I	2200	--	--
143-097-05DAC	T. SPLEVDY		102	82	4	1972	--	--	S	125SNLB	S	1780	8.0	--
143-097-05DRA	T. SPLEVDY		90	80	18	1960	70	--	K	--	S	1600	--	--
143-097-09CDD	M. STROH		70	60	4	1965	60	--	S	125SNLB	S	870	11.0	--
143-097-14CCC	C. SCHMITT		80	--	24	--	--	--	H	--	--	1400	--	--
143-097-20CDD	D. STEFFAN		20	--	18	1969	8	--	S	--	--	571	--	--
143-097-24DRR	A. STROH		70	58	6	--	60	--	K	125SNLB	S	779	10.0	--
143-097-34CDD	J. SCHMIDT		50	--	18	1958	30	--	H	125SNLB	S	2600	--	--
144-091-04RRC	E. GUSTAFSON		47	--	4	--	14	9-71	S	--	--	1225	7.0	--
144-091-04RCA	E. GUSTAFSON		65	--	6	1970	33	9-71	S	--	--	1400	8.0	--
144-091-04RCB	E. GUSTAFSON		28	28	24	1964	16	9-71	H	--	--	--	--	--
144-091-05ADA	NDSWC 8214	40	--	--	--	1971	--	--	U	--	--	--	--	--
144-091-08RRA1	F. SCHRÖDER		40	40	24	1960	19	--	H	125SNLB	I	1680	--	--
144-091-08RRA2	F. SCHRÖDER		40	40	12	--	19	--	S	125SNLB	I	1510	8.0	--
144-091-10ACD	D. VNEGELE		28	24	24	1972	23	8-73	H	112BGFV	S	--	--	--
144-091-10BDB	L. RASZLER		45	--	24	1972	32	8-73	H	125SNLB	I	1510	--	--
144-091-10CAA1	E. ZIMAN		48	--	24	--	36	8-71	H	112BGFV	--	2390	11.0	--
144-091-10CAA2	R. L. PEDERSON		33	--	24	1968	29	8-71	H	112BGFV	--	1100	9.5	--
144-091-10CAA3	N. PACIFIC RR.	68	61	--	8	1953	28	8-71	U	125SNLB	I	--	--	--
144-091-10CAR	NDSWC 4703	60	--	--	--	1974	--	--	U	--	--	--	--	--
144-091-10CCB	S. SITTER		58	54	24	1972	48	9-72	H	112BGFV	R	1360	--	--
144-091-11RBB	NDSWC 4705	100	--	--	--	1974	--	--	U	--	--	--	--	--
144-091-11BCA1	J. LORENZ		74	59	4	1964	35	--	K	112BGFV	R	2650	10.0	--
144-091-11BCA2	J. LORENZ		45	40	4	1952	35	--	U	112BGFV	S	--	--	--
144-091-11CCC	NDSWC 4706	80	--	--	--	1974	--	--	U	--	--	--	--	--
144-091-11DDD	NDSWC 4704	100	--	--	--	1974	--	--	U	--	--	--	--	--
144-091-12BRD	J. JOHNSON		70	--	5	1959	50	--	H	--	--	2100	--	--
144-091-12CRB	J. JOHNSON		97	--	5	--	68	10-71	U	--	--	--	--	--
144-091-13CRA1	E. STIHMILLER		32	--	24	1967	9	10-71	H	--	--	575	--	--
144-091-13CRA2	E. STIHMILLER		55	--	24	1929	8	10-71	H	--	--	4500	9.0	--
144-091-15CAD1	E. WOLFF	145	124	--	--	1956	--	--	H	125SNLB	I	1980	--	--
144-091-15CAD2	F. WOLFF		14	--	48	1935	8	--	S	--	--	2400	10.0	--
144-091-15DAC	TEXACO INC.	5255	--	--	--	1969	--	--	U	--	--	--	--	2087
144-091-17DDD	A. SINGER		116	--	5	1963	25	--	K	125SNLB	I	--	10.0	--
144-091-18BDA	F. MEURDH		225	--	--	1961	125	--	H	--	S	2250	--	--

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144-091-20C0A1	H. LEE		35	35	24	1956	14	--	H	125SNLB	--	850	--	--
144-091-20C0A2	H. LEE		36	--	24	1957	13	--	S	125SNLB	--	2300	7.0	--
144-091-22RC01	F. WOLFF		75	--	24	--	42	10-71	S	--	--	4800	8.0	--
144-091-22RC02	F. WOLFF		65	--	--	--	32	10-71	--	--	--	--	--	--
144-091-23DBB	E. STUHMILLER		1300	1232	2	1963	+15	5-72	S	211HLCK	V	2450	13.0	1963
144-091-30AAA1	NDSWC 4603	1140	774	756	1	1973	291	9-74	U	125TGRV	V	--	--	2222
144-091-30AAA2	NDSWC 4603A	520	516	504	2	1974	285	9-74	U	125TGRV	2V	2400	10.0	2223
144-091-30AB	TEXACO INC.	5360	--	--	--	1971	--	--	U	--	--	--	--	2229
144-091-30CBB	W. MIESSEL		31	--	18	1956	2	10-71	U	--	--	--	--	--
144-091-30CCA1	W. MIESSEL		42	42	24	1970	22	--	H	--	S	775	--	--
144-091-30CCA2	W. MIESSEL		42	--	6	1957	20	--	S	--	--	950	6.0	--
144-091-34BAA	J. FUNK		35	--	--	--	16	10-71	U	--	--	--	--	--
144-091-34DBB1	C. PLDTZKI		40	--	30	1963	15	--	K	--	S	1650	--	--
144-091-34DBB2	C. PLDTZKI		36	28	24	1972	18	8-73	H	125SNLB	S	1630	--	--
144-092-02DCD	D. HAUGEN		45	--	--	--	34	10-71	U	--	--	--	--	--
144-092-04ACB1	F. NORDAHL		95	--	4	1971	83	--	H	125SNLB	1	1680	--	--
144-092-04ACB2	F. NORDAHL		65	--	4R	1906	39	9-71	K	125SNLB	1	2800	7.0	--
144-092-04DBB	E. NORDAHL		100	80	5	1972	50	--	S	125SNLB	1	2520	8.0	--
144-092-05ARR	NDSWC R213	40	--	--	--	1971	--	--	U	--	--	--	--	--
144-092-07ADD	J. MCNAMARA	80	6R	--	4	--	--	--	S	125SNLB	1	1400	7.0	--
144-092-07DAA	J. MCNAMARA		255	--	4	1959	--	--	S	125SNLB	1	1700	8.0	--
144-092-07DDD	J. MCNAMARA		50	--	4	1957	30	--	S	--	--	2000	7.5	--
144-092-08CCC	J. MCNAMARA		50	--	4	1955	--	--	S	--	--	2180	8.0	--
144-092-08CDA1	J. MCNAMARA		50	50	18	1941	44	--	K	125SNLB	1	1650	--	--
144-092-08CDA2	J. MCNAMARA		81	46	4	1971	71	--	S	125SNLB	1	2020	7.5	--
144-092-09BCA	E. MCNAMARA		260	--	4	1955	180	--	S	--	V	2700	9.0	--
144-092-10ADC1	F. LOFFELBEIN		225	--	5	1966	50	--	H	--	--	2700	--	--
144-092-10ADC2	F. LOFFELBEIN		144	161	5	1956	50	--	S	125SNLB	1	2220	8.0	--
144-092-10ADD	F. LOFFELBEIN	150	142	--	6	1959	50	--	S	125SNLB	1	2400	--	--
144-092-11DCB	T. WILHELM	62	47	--	4	--	42	--	S	125SNLB	1	1700	9.5	--
144-092-14ADD1	G. FISHER		202	--	2	1946	90	--	K	125SNLB	1	2400	9.0	--
144-092-14ADD2	G. FISHER		30	--	18	1950	25	--	H	125SNLB	1	1700	8.5	--
144-092-14BDD	G. FISHER	40	32	--	5	1946	24	9-71	S	125SNLB	1	1980	7.0	--
144-092-14CAA	G. FISHER		45	--	18	1970	19	--	S	--	--	2150	7.0	--
144-092-14CDD	NDSWC R224	80	--	--	--	1971	--	--	U	--	--	--	--	--
144-092-17ADB	A. STRFFEN		195	--	3	--	160	--	K	--	--	2350	8.0	--
144-092-19AAA1	A. MCNAMARA		115	--	4	1952	80	--	K	--	--	1950	--	--
144-092-19AAA2	A. MCNAMARA		110	--	3	--	80	--	S	--	--	1600	7.0	--
144-092-22ADA	A. WILHELM		37	--	24	--	22	9-71	U	--	--	--	--	--
144-092-24CRC	M. MATHISEN		45	3R	4	1970	--	--	S	125SNLB	S	3900	9.0	--

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LOCAL WELL NUMBER	OWNER	DRILLED DEPTH (FT)	WELL DEPTH (FT)	CASING DEPTH (FT)	CASING DIAMETER (IN)	DATE DRILLED (YEAR)	WATER LEVEL (FT)	DATE WATER LEVEL MEASURED	USE OF WATER	MAJOR AQUIFER	WATER BEARING MATERIAL	SPECIFIC CONDUCTANCE (UMHOS/CM @ 25°C)	TEMPERATURE (°C)	ALTITUDE OF LSD (FT)
144-092-26ARD	M.FRAFFORD		19	--	22	--	4	9-71	S	--	--	2720	10.0	--
144-092-26CAD	M.FRAFFORD		270	247	2	1952	170	--	K	125SNLB	S	1550	--	--
144-092-27AAA	C.IRONS	100	82	64	4	1964	38	--	K	125SNLB	S	3000	--	--
144-092-2909A	M.KLFE		128	--	6	1947	60	--	K	125SNLB	I	1650	8.0	--
144-092-290DD	NDSWC 4714	60	--	--	--	1974	--	--	U	--	--	--	--	--
144-092-308DD	W.KLOSKE		80	--	6	1900	50	--	K	--	--	950	--	--
144-092-310CD	NDSWC 4623	240	216	204	1	1973	33	12-73	U	112BGFV	3G	1220	8.0	2163
144-092-310DC	NDSWC 4622	240	89	83	1	1973	4	12-73	U	112BGFV	9S	1460	7.0	2168
144-092-320AC	H.SELLE		30	--	18	--	13	9-71	U	--	--	--	--	--
144-092-320DD	NDSWC 4715	40	--	--	--	1974	--	--	U	--	--	--	--	--
144-092-348DD	C.IRONS	135	116	--	6	1961	--	--	S	125SNLB	I	--	--	--
144-093-08ARB	H.KLJNG	140	111	--	2	1954	110	--	H	125SNLB	I	2500	--	--
144-093-11ABC	S.POLLFESTAD	158	147	--	2	1944	100	--	K	125SNLB	I	1650	--	--
144-093-14BCC	A.RDHDE		140	--	5	1972	--	--	S	125SNLB	I	--	--	--
144-093-14CBB1	A.RDHDE		155	151	4	1959	--	--	U	125SNLB	S	--	--	--
144-093-14CBB2	A.RDHDE		300	--	4	1958	--	--	K	125SNLB	I	1600	--	--
144-093-15ADB	A.RENNE	105	96	91	4	1972	80	7-72	S	125SNLB	I	3650	8.0	--
144-093-15CBC	P.MADSON		75	--	18	1942	60	--	S	--	--	1050	8.0	--
144-093-16CBD	A.NORDSVEN	95	93	--	3	1948	65	--	U	112BGFV	R	--	--	--
144-093-16DAD	P.MADSON		75	70	4	1963	15	--	S	--	--	900	8.0	--
144-093-17ADA	NDSWC 4724	120	98	88	1	1974	56	7-74	U	125SNLB	I	2760	8.5	2223
144-093-17ADD	NDSWC 4723	150	121	118	1	1974	54	7-74	U	112BGFV	R	2480	8.5	2220
144-093-17DAA	NDSWC 8194	200	173	167	1	1971	50	10-71	U	112BGFV	G	2640	8.0	2198
144-093-17DDA	NDSWC 4722	100	--	--	--	1974	--	--	U	--	--	--	--	2195
144-093-18AAC1	A.WERMAGER		22	20	6	1951	10	--	H	125SNLB	I	2780	--	--
144-093-18AAC2	A.WERMAGER		32	--	6	--	10	--	S	--	--	1420	7.0	--
144-093-23ADA1	E.RDHDE		60	--	4	1951	30	--	S	--	--	1300	--	--
144-093-23ADA2	E.RDHDE		220	--	5	1960	--	--	H	--	I	1920	--	--
144-093-24CCC	C.RDHDE		87	--	24	1962	80	--	S	--	--	1250	--	--
144-093-25ADD	W.KLOSKE	101	91	91	4	1972	50	8-72	S	125SNLB	I	--	--	--
144-093-25CAD	I.BILLS		29	--	4	--	21	9-71	U	--	--	--	--	--
144-093-26BCC	NDSWC 4713	160	43	48	1	1974	10	7-74	U	112BGFV	3S	2130	18.0	2241
144-093-26CBC	NDSWC 4791	180	--	--	--	1974	--	--	U	--	--	--	--	2271
144-093-26DDA	NDSWC 8229	200	--	--	--	1971	--	--	U	--	--	--	--	--
144-093-27ACD1	H.PLSON		170	168	4	1957	150	--	H	125SNLB	I	2300	8.0	--
144-093-27ACD2	H.PLSON		103	--	6	1946	94	9-71	U	--	--	--	--	--
144-093-27CDA	H.PLSON		72	--	4	1967	52	--	S	--	--	1200	7.0	--
144-093-29ADC	A.NORDSVEN	100	94	--	4	1960	82	--	H	125SNLB	I	3000	8.0	--
144-093-29ADD	NDSWC 4721	260	180	174	1	1974	129	7-74	U	112BGFV	R	2050	9.5	2252
144-093-29DAA	NDSWC 8195	140	--	--	--	1971	--	--	U	--	--	--	--	2216

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144-093-32BCD	G.MARTY		27	27	18	--	12	--	S	125SNLB	1	825	9.0	--
144-094-01BCA	E.TRAMPE	175	163	--	4	1971	45	--	K	125SNLB	1	1825	--	--
144-094-01BCB	E.TRAMPE		94	83	4	1968	77	--	S	125SNLB	5	2900	10.0	--
144-094-01BCC	NDSWC 4726	180	--	--	--	1974	--	--	U	--	--	--	--	--
144-094-01CBC	NDSWC 4725	80	--	--	--	1974	--	--	U	--	--	--	--	--
144-094-01DDD	NDSWC 8193	60	--	--	--	1971	--	--	U	--	--	--	--	--
144-094-04ABB	NDSWC 4727	80	36	33	1	1974	13	7-74	U	112BGFV	R	1330	8.0	2191
144-094-06DAA	NDSWC 8191	140	74	68	1	1971	5	10-71	U	112BGFV	S	1130	8.0	2187
144-094-07DAA1	F.FRITZ	130	127	109	2	1945	79	--	U	125SNLB	S	2310	7.5	2270
144-094-07DAA2	NDSWC 4599	1200	984	966	1	1973	236	--	U	125CBLD	V	--	--	2273
144-094-10DAA	G.SCHMIDT	75	50	50	4	1972	--	--	S	125SNLB	1	--	--	--
144-094-10DDD	G.SCHMIDT	174	142	--	3	1954	70	--	K	125SNLB	1	2000	9.0	--
144-094-11BAA	F.TRAMPE		128	116	4	1968	70	--	S	125SNLB	1	2950	8.0	--
144-094-12DBB	J.HUESKE	30	24	--	4	1970	20	--	S	125SNLB	1	<500	7.0	--
144-094-13BCB	J.HUESKE		100	92	4	1955	52	--	H	125SNLB	1	3500	8.0	--
144-094-13CCC	NDSWC 4787	200	138	132	1	1974	115	12-74	U	125SNLB	1	--	--	2299
144-094-16DDD	NDSWC 8192	60	--	--	--	1971	--	--	U	--	--	--	--	--
144-094-17DDA1	FIEBIGER BRNS.		20	--	--	--	--	--	S	125SNLB	1	3610	7.5	--
144-094-17DDA2	FIEBIGER BRNS.		38	--	36	--	5	8-71	U	--	--	--	--	--
144-094-20ADD1	FIEBIGER BRNS.		53	--	24	--	--	--	H	125SNLB	1	1220	7.5	--
144-094-20ADD2	FIEBIGER BRNS.		40	--	36	--	--	--	S	125SNLB	1	1310	8.0	--
144-094-21BBB	NDSWC 4728	100	--	--	--	1974	--	--	U	--	--	--	--	--
144-094-22CCC	T.CARLSON		52	--	15	--	16	9-71	H	--	--	4000	7.0	--
144-094-24BBB	P.ROSCHILD	252	240	220	2	1955	--	--	K	125SNLB	S	2080	--	--
144-094-24BDD	P.ROSCHILD		27	--	36	--	22	9-71	S	--	--	<500	9.0	--
144-094-28DA	TFXACO INC.	5531	--	--	--	1969	--	--	U	--	--	--	--	2110
144-094-29AAA	NDSWC 4785	100	54	51	1	1974	28	12-74	U	125SNLB	1	--	--	2213
144-094-29BDC	E.MORRELL	82	62	--	4	1960	46	--	S	125SNLB	1	--	--	--
144-094-30CAC1	H.LARSEN	150	144	--	4	1945	50	--	S	125SNLB	1	2700	10.0	--
144-094-30CAC2	H.LARSEN	125	114	--	4	1970	90	--	H	125SNLB	1	4800	--	--
144-094-30CDB	W.LARSEN		44	--	30	1923	30	--	S	125SNLB	V	4200	8.0	--
144-094-31DDD	A.LARSEN	60	54	--	2	1961	F	--	S	125SNLB	1	2200	8.0	--
144-094-32CCC	E.LEE	60	53	--	2	1960	F	--	S	125SNLB	1	3900	9.0	--
144-094-34BAR1	B.TRAMPE		180	135	4	1948	70	--	K	--	--	1680	8.0	--
144-094-34BAR2	B.TRAMPE	105	97	97	4	1972	77	8-73	K	125SNLB	1	3030	--	--
144-095-018BD	J.SCHOLLMEYER		65	60	6	1945	--	--	K	125SNLB	1	1350	--	--
144-095-03AAD	NDSWC 8206	140	84	78	1	1971	4	10-71	U	112BGFV	R	1490	7.5	2203
144-095-03ADD	NDSWC 4730	60	--	--	--	1974	--	--	U	--	--	--	--	--
144-095-03DAA	NDSWC 4729	40	--	--	--	1974	--	--	U	--	--	--	--	--
144-095-05DCD	NDSWC 8205	120	78	72	1	1971	22	10-71	U	112BGFV	G	1390	7.0	2246

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144-095-06BAA1	P.SADOWSKY		27	--	24	1943	17	9-71	K	--	--	1780	--	--
144-095-06BAA2	P.SADOWSKY		24	24	24	1948	17	--	S	--	--	1120	7.0	--
144-095-07CAC	T.WIFERSON		220	220	4	1961	80	--	S	--	--	3650	9.0	--
144-095-10AAD	NDSWC 4474	80	--	--	--	1972	--	--	U	--	--	--	--	--
144-095-10BAA	M.GRANFOR		20	--	36	--	12	8-71	U	--	--	--	--	--
144-095-10BBB	NDSWC 4782	40	--	--	--	1974	--	--	U	--	--	--	--	--
144-095-10CBC	NDSWC 4783	200	52	49	1	1974	32	12-74	U	125SNLB	1	--	--	2243
144-095-14CCC1	R.MITTLSTAD		80	--	4	1961	60	--	S	--	S	2650	9.0	--
144-095-14CCC2	R.MITTLSTAD		80	--	--	1952	60	--	H	--	--	--	--	--
144-095-18DCA1	E.KNOVALOFF		75	--	18	1948	57	--	S	125SNLB	1	3700	7.0	--
144-095-18DCA2	E.KNOVALOFF		85	85	18	1951	45	--	H	125SNLB	1	3600	--	--
144-095-26AAA	NDSWC 8207	80	--	--	--	1971	--	--	U	--	--	--	--	--
144-095-26ABB1	J.DIRKACH		40	--	18	--	20	--	H	112BGFV	R	1700	--	--
144-095-26ABB2	J.DIRKACH		40	--	18	--	25	--	S	112BGFV	R	1550	7.0	--
144-095-26ABB3	J.DIRKACH	40	26	26	4	1956	30	--	S	125SNLB	1	2750	7.0	--
144-095-26ABB4	NDSWC 8208	120	--	--	--	1971	--	--	U	--	--	--	--	--
144-095-27DBC	G.DIRKACH		45	--	16	--	16	--	H	--	--	2100	--	--
144-095-30DCD	J.LEISS		21	--	18	1959	12	9-71	H	--	S	1650	--	--
144-095-32DCC	L.MEAL		55	--	36	1931	47	--	K	--	--	2420	--	--
144-095-34BAA	NDSWC 4784	180	--	--	--	1974	--	--	U	--	--	--	--	2336
144-095-35ACB1	L.KUBISCHTA		380	340	4	1970	--	--	S	125SNLB	S	3130	9.0	--
144-095-35ACB2	L.KUBISCHTA		50	--	--	--	--	--	H	--	--	2180	--	--
144-095-36AAA	NDSWC 4473	220	161	158	1	1972	8	10-72	U	112BGFV	3S	2140	9.0	2144
144-096-01DDC	NDSWC 4734	100	75	72	1	1974	38	7-74	U	112BGFV	3S	1820	8.0	2278
144-096-02CAD1	M.KULISH		37	20	6	--	32	9-71	H	--	S	2600	10.0	--
144-096-02CAD2	M.KULISH		50	--	4	--	30	9-71	S	125SNLB	1	2400	7.0	--
144-096-06ACD	I.KADRMAS		40	40	18	1961	12	--	K	125SNLB	1	2650	--	--
144-096-07AAA	E.SVETENKO	75	66	46	4	1969	58	--	S	125SNLB	S	2780	8.0	--
144-096-10ACC	S.SCHWINDT		60	60	18	1961	30	--	H	--	--	2620	--	--
144-096-10CAA	S.SCHWINDT		40	40	24	1963	17	--	S	--	--	2450	7.0	--
144-096-10BBB	S.SCHWINDT		40	40	18	1950	20	--	S	--	--	2700	8.0	--
144-096-12ACC	T.WIFERSON	152	147	128	3	1946	80	--	K	125SNLB	S	1200	8.0	--
144-096-14CAA1	F.SCHMALZ		60	60	2	1960	30	--	K	125SNLB	1	1620	--	--
144-096-14CAA2	F.SCHMALZ		58	58	10	1928	50	--	K	125SNLB	1	2450	8.0	--
144-096-15BBB	A.KNSTELFCZY		50	50	18	1960	28	--	K	125SNLB	1	1900	--	--
144-096-22CCC	P.STROH		30	30	24	1964	5	--	S	--	S	860	7.0	--
144-096-22CCD	P.STROH		70	70	18	1948	35	--	K	--	S	880	--	--
144-096-30ABC	R.KAREY		75	--	6	1954	30	--	K	125SNLB	1	2150	--	--
144-096-30DCA1	R.HARTMAN	85	72	--	6	1938	30	--	H	125SNLB	1	2300	--	--
144-096-30DCA2	R.HARTMAN		60	60	18	1965	35	--	S	125SNLB	1	2490	7.0	--

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144-096-300DC	NDSWC 4680	40	--	--	--	1974	--	--	U	--	--	--	--	--
144-096-35CCC	NDSWC 8204	40	--	--	--	1971	--	--	U	--	--	--	--	--
144-097-02C0C	R.SCHMINT	18	18	24	24	1947	6	--	K	--	--	1900	--	--
144-097-04AAA1	R.THOMAS	40	40	18	18	1946	27	--	H	125SNLB	1	875	9.0	--
144-097-04AAA2	R.THOMAS	10	8	48	48	1950	5	--	S	--	--	700	9.0	--
144-097-07AAC	F.SAROSKY	7	--	--	18	1963	0	9-71	K	125SNLB	1	<500	8.0	--
144-097-08DBD	F.KULISH	75	64	--	4	1970	--	--	H	125SNLB	1	911	9.5	--
144-097-12CCC1	E.SVETENKO	44	44	24	24	1957	20	--	H	--	S	1250	--	--
144-097-12CCC2	E.SVETENKO	160	152	--	2	1951	110	--	S	125SNLB	1	2180	9.0	--
144-097-12CCC3	E.SVETENKO	22	--	--	24	1961	19	--	S	--	S	4600	8.0	--
144-097-138BC	NDSWC 8236	40	--	--	--	1971	--	--	U	--	--	--	--	--
144-097-14AAB	V.KARY	65	4R	4R	4	1961	18	--	K	125SNLB	1	1850	9.5	--
144-097-14ARD1	V.KARY	93	35	--	3	1950	6	--	S	125SNLB	1	1700	--	--
144-097-14ARD2	V.KARY	50	45	--	4	1950	6	--	S	125SNLB	1	2590	7.0	--
144-097-14ARD3	V.KARY	30	--	--	6	1952	6	--	S	125SNLB	1	6100	9.0	--
144-097-20C0D	M.BIRIAN	59	--	--	24	--	26	9-71	H	--	--	925	8.0	--
144-097-24DAB	M.KARY	65	53	--	6	1959	28	--	S	125SNLB	1	1300	8.5	--
144-097-26C0D1	NDSWC 4598	1180	718	700	2	1973	197	5-74	U	125TGRV	V	2780	11.5	2265
144-097-26C0D2	NDSWC 4598A	405	399	2	2	1973	196	5-74	U	125SNLB	V	--	--	2265
144-097-26CCA	NDSWC 8237	40	14	11	1	1971	7	11-71	U	112TRRC	S	484	9.0	2261
144-097-27DAA1	T.JAEGER	47	47	18	18	1947	25	--	H	125SNLB	1	2900	--	--
144-097-27DAA2	T.JAEGER	67	67	18	18	1965	30	--	S	125SNLB	1	4300	8.0	--
144-097-31BRB1	J.LOH	60	50	--	4	1970	--	--	S	125SNLB	1	3300	--	--
144-097-31BRB2	J.LOH	60	--	--	4	--	--	--	S	125SNLB	1	2300	--	--
144-097-31BRB3	J.LOH	60	--	--	6	--	--	--	H	125SNLB	1	2400	--	--
144-097-32CBA	A.SKACHENKO	24	--	--	24	--	14	9-71	H	125SNLB	1	1700	8.0	--
145-091-01BBB	NDSWC 8219	120	--	--	--	1971	--	--	U	--	--	--	--	2038
145-091-01BCC	NDSWC 8220	300	--	--	--	1971	--	--	U	--	--	--	--	2049
145-091-01CBB	NDSWC 8221	140	--	--	--	1971	--	--	U	--	--	--	--	2052
145-091-050DD1	NDSWC 8223	60	--	--	--	1971	--	--	U	--	--	--	--	2195
145-091-050DD2	NDSWC 4604	880	585	567	2	1973	274	2-74	U	125SNLB	V	2960	10.0	2195
145-091-050DD3	NDSWC 4604A	180	170	164	1	1974	72	7-74	U	125SNLB	2V	565	8.0	2196
145-091-10C0D1	L.TSCHAEKDFSKJ	210	145	127	4	1957	100	--	H	--	S	1750	--	--
145-091-10C0D2	L.TSCHAEKDFSKJ	60	60	18	18	1940	42	--	S	125SNLB	1	1400	7.0	--
145-091-11C0D1	E.MORAST	180	180	2	2	1928	160	--	K	--	S	--	--	--
145-091-11C0D2	E.MORAST	186	185	165	4	1971	160	--	K	125SNLB	S	2490	9.0	--
145-091-12AAA1	E.ISAAK	50	--	--	24	1958	--	--	H	--	--	725	--	--
145-091-12AAA2	E.ISAAK	44	--	--	30	--	33	10-71	S	--	--	2010	7.0	--
145-091-16CCC	D.FLAGET	250	--	--	2	1960	--	--	U	125SNLB	S	2520	8.0	--
145-091-17BD	PAN AM.PET.CO.	5314	--	--	--	1967	--	--	U	--	--	--	--	2213

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145-091-17DCC	NDSWC 8215	80	--	--	--	1971	--	--	U	--	--	--	--	2184
145-091-18CAR	E. STERN		45	--	30	--	44	10-71	U	--	--	--	--	--
145-091-18ORR	E. STERN		70	--	24	--	52	10-71	U	--	--	--	--	--
145-091-19C8D	T. GELLER		51	--	24	--	45	10-71	U	--	--	--	--	--
145-091-19CCD	NDSWC 8209	40	--	--	--	1971	--	--	U	--	--	--	--	--
145-091-20AAA1	D. FLAGET		1450	1450	2	1968	159	6-73	K	211HLCK	S	2400	10.0	2207
145-091-20AAA2	D. FLAGET		125	125	5	1925	100	--	S	125SNLB	--	1630	8.0	--
145-091-22ACD	D. FLAGET		33	--	24	--	11	10-71	U	--	--	--	--	--
145-091-22CBD	A. GEIST		48	--	24	--	12	10-71	U	--	--	--	--	--
145-091-26ACD1	R. SWENSON		14	9	4	1961	8	--	H	125SNLB	1	1420	--	--
145-091-26ACD2	R. SWENSON		14	14	30	1946	11	--	S	--	--	1550	9.0	--
145-091-278BD	E. CARLSON	34	30	24	24	1972	24	11-72	S	125SNLB	1	3100	--	--
145-091-27BCC 2	E. CARLSON		27	20	18	1948	24	--	H	125SNLB	1	2200	--	--
145-091-308BD	NDSWC 72-3	40	31	28	1	1972	10	10-72	U	112BGFV	8G	2120	8.5	2050
145-091-308DD	NDSWC 8242	40	26	23	1	1971	11	11-71	U	112BGFV	G	2630	7.0	2041
145-091-30CAA	NDSWC 8243	60	36	33	1	1971	11	11-71	U	112BGFV	S	2030	7.0	2040
145-091-30CAD	NDSWC 8244	40	--	--	--	1971	--	--	U	--	--	--	--	2039
145-091-30DCC	NDSWC 8210	40	--	--	--	1971	--	--	U	--	--	--	--	2038
145-091-32ABC1	H. GUSTAFSON		18	18	36	1938	14	--	S	--	--	4100	9.0	--
145-091-32ABC2	H. GUSTAFSON		12	12	30	1950	10	--	H	--	--	1900	--	--
145-091-33ADD	NDSWC 8245	40	--	--	--	1971	--	--	U	--	--	--	--	--
145-091-34CBC	NDSWC 8246	40	--	--	--	1971	--	--	U	--	--	--	--	--
145-091-34CDA1	E. CARLSON	45	31	--	2	1951	12	--	H	125SNLB	1	1800	--	--
145-091-34CDA2	F. CARLSON	80	69	--	4	1969	10	--	H	125SNLB	1	2200	--	--
145-091-35888	D. ENTZEL	185	178	178	4	1972	130	8-72	S	125SNLB	1	2100	--	--
145-092-01DRA	G. KELLER		30	--	24	1968	1	--	H	--	--	<500	--	--
145-092-02CAD1	E. MANN		45	45	24	1968	15	10-71	K	--	S	<500	--	--
145-092-02CAD2	F. MANN		31	31	5	1950	15	--	S	--	S	<500	7.0	--
145-092-04CRC	P. TOLPINGRUD		19	--	18	--	7	10-71	U	--	--	--	--	--
145-092-04DCD	H. KOEHLER		43	--	30	--	32	10-71	U	--	--	--	--	--
145-092-06CCD	J. MCMAHON	59	58	45	4	1951	20	10-71	K	125SNLB	1	980	--	--
145-092-06DDD	NDSWC 4774	200	--	--	--	1974	--	--	U	--	--	--	--	2230
145-092-08ARA	NDSWC 4711	60	--	--	--	1974	--	--	U	--	--	--	--	--
145-092-12DCC1	C. FEREREE		--	--	4	1968	--	--	K	125SNLB	1	672	9.0	--
145-092-12DCC2	C. FEREREE		102	94	3	1948	--	--	S	--	1	--	--	--
145-092-14BAD1	G. FEREREE		12	12	36	--	3	10-71	H	125SNLB	1	690	--	--
145-092-15AAA	NDSWC 4773	240	--	--	--	1974	--	--	U	--	--	--	--	2155
145-092-17CDB	G. GOETZ	46	36	--	4	1969	--	--	K	125SNLB	1	1700	8.0	--
145-092-18CBA1	A. CHRISTENSEN		180	180	4	1952	100	--	H	--	S	2050	--	--
145-092-18CBA2	A. CHRISTENSEN		40	40	24	--	35	--	S	125SNLB	1	2820	7.5	--

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145-092-19CAC	WERNER	65	59	--	4	1958	--	--	U	125SNLB	1	--	--	--
145-092-19CDD	N.PACIFIC RR.		112	96	6	1948	+1	8-71	U	125SNLB	1	1920	8.0	2095
145-092-20ADC1	R.ERDMANN		20	--	24	--	13	10-71	H	125SNLB	1	1590	--	--
145-092-20ADC2	R.ERDMANN		35	--	4	1970	12	10-71	U	125SNLB	1	--	--	--
145-092-20BBB	NDSWC 4712	80	--	--	--	1974	--	--	U	--	--	--	--	--
145-092-22ACC	T.FEREBEE	100	83	--	2	1970	+5	7-72	S	125SNLB	1	1700	7.0	--
145-092-22ADD	T.FEREBEE	100	95	84	2	1948	F	--	H	125SNLB	1	1900	--	--
145-092-22AAA1	T.FEREBEE	160	83	--	2	1951	+1	7-72	S	125SNLB	1	1760	8.0	--
145-092-22AAA2	NDSWC 8211	40	--	--	--	1971	--	--	U	--	--	--	--	--
145-092-22AAA3	NDSWC 8247	40	--	--	--	1971	--	--	U	--	--	--	--	--
145-092-23BCC	NDSWC 8248	40	--	--	--	1971	--	--	U	--	--	--	--	--
145-092-23DAA	NDSWC 8241	40	--	--	--	1971	--	--	U	--	--	--	--	--
145-092-23DAD	NDSWC 8240	40	--	--	--	1971	--	--	U	--	--	--	--	--
145-092-24B8C	NDSWC 8222	700	--	--	--	1971	--	--	U	--	--	--	--	2115
145-092-24BCA2	HALLIDAY	135	105	--	6	1959	85	--	P	125SNLB	1	--	--	--
145-092-24CCB	NDSWC 8239	40	30	28	1	1971	8	11-71	U	112BGFV	G	1800	7.0	2045
145-092-24CCC	NDSWC 8238	40	16	13	1	1971	6	11-71	U	112BGFV	S	1760	7.0	2044
145-092-24CCD	NDSWC 8212	60	--	--	--	1971	--	--	U	--	--	--	--	2046
145-092-24CDD1	HALLIDAY	43	41	34	10	--	13	12-69	P	112BGFV	--	--	--	2046
145-092-24CDD2	NDSWC 8249	60	36	33	1	1971	10	11-71	U	112BGFV	S	2670	32.0	2046
145-092-25AAC	NDSWC 72-1	100	74	68	1	1972	8	10-72	U	125SNLB	V	5220	10.0	2056
145-092-25AAD	NDSWC 72-2	100	--	--	--	1972	--	--	U	--	--	--	--	--
145-092-25ABA	NDSWC 8252	40	--	--	--	1971	--	--	U	--	--	--	--	2047
145-092-25ABB	HALLIDAY	1560	1555	1510	8	1974	F	6-74	P	211FXHL	3V	2410	17.0	2046
145-092-25ABC	NDSWC 8250	40	--	--	--	1971	--	--	U	--	--	--	--	2044
145-092-25ADA	S.LESMEISTER		18	--	24	--	8	9-71	U	--	S	--	--	--
145-092-25ADC1	N.PACIFIC RR.	70	63	--	6	1953	+1	9-71	U	125SNLB	S	--	--	--
145-092-25ADC2	NDSWC 72-4	220	152	146	2	1972	41	10-72	U	125SNLB	V	3030	9.5	2086
145-092-25BAA1	A.BERGSTEDT		14	--	36	--	10	8-71	H	--	--	4710	11.0	2047
145-092-25BAA2	NDSWC 8251	60	36	33	1	1971	9	11-71	U	112BGFV	G	2950	7.0	2047
145-092-25DAA	E.REISGARD	98	92	87	3	1950	46	--	H	125SNLB	S	3100	--	--
145-092-25DAB	HALLIDAY		175	139	3	1951	50	--	P	125SNLB	S	--	--	--
145-092-26CCC1	E.SEIDEL	299	145	140	3	1968	65	10-71	U	125SNLB	1	--	--	--
145-092-26CCC2	E.SEIDEL	75	60	--	4	1955	--	--	K	125SNLB	1	1400	--	--
145-092-28AB	J.RYAN AND CO.	5290	5290	--	--	1968	--	--	U	--	--	--	--	2133
145-092-28DDB3	M.DAHLEN		155	--	5	1964	--	--	H	--	--	2250	--	--
145-092-29CAA	M.DAHLEN	55	49	--	3	1949	--	--	S	125SNLB	1	--	--	--
145-092-30ABB	C.COOK		100	--	--	--	+3	7-72	K	125SNLB	1	2500	11.0	--
145-092-30BBB1	M.GOFITZ		100	--	3	--	+6	7-72	U	125SNLB	1	2180	8.0	--
145-092-30BBB2	PFAVEY ELEVATOR		100	--	2	--	+4	7-72	S	125SNLB	1	2000	8.0	--

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145-092-310DD	NDSWC 4790	160	--	--	--	1974	--	--	U	--	--	--	--	2239
145-092-320DD	C. POLLESTAD	100	91	--	4	1968	80	--	K	125SNLB	1	3500	--	2242
145-092-360DD	E. NORDAHL		245	245	4	1964	130	--	S	125SNLB	1	2280	8.0	--
145-093-02CBB1	S. PELTON		46	--	4	1920	6	5-72	U	125SNLB	1	--	--	2190
145-093-02CBB2	S. PELTON		55	44	4	--	--	--	S	125SNLB	1	1290	7.5	2190
145-093-040CC	C. JOHNSON		36	--	30	--	22	10-71	U	--	--	--	--	--
145-093-040DD	NDSWC 4776	120	109	103	1	1974	64	12-74	U	125SNLB	1	1740	--	2217
145-093-07CCR	M. KNUDSVIG		113	--	4	1943	95	--	S	125SNLB	1	1600	8.0	--
145-093-07CCC	NDSWC 8188	80	--	--	--	1971	--	--	U	--	--	--	--	2242
145-093-09CCC	G. HANSEN		90	90	4	--	80	--	S	--	--	1000	7.0	--
145-093-10AAC1	A. HANSEN		91	76	3	1948	50	--	H	125SNLB	5	925	--	--
145-093-10AAC2	A. HANSEN		20	20	36	--	8	--	S	125SNLB	1	2500	7.0	--
145-093-10CDD1	G. HANSEN	150	136	126	4	1962	--	--	H	125SNLB	5	1100	--	--
145-093-10CDD2	G. HANSEN		24	--	30	--	21	10-71	U	--	--	--	--	--
145-093-10CCC	H. HANSEN	175	161	141	4	1964	--	--	S	125SNLB	5	1750	8.5	--
145-093-14ADA1	R. BORTH		40	40	36	1964	20	--	H	125SNLB	1	800	--	--
145-093-14ADA2	R. BORTH	140	121	--	3	1958	114	--	S	125SNLB	1	925	7.5	--
145-093-150DD	NDSWC 8230		60	--	--	1971	--	--	U	--	--	--	--	--
145-093-17CBB	H. HANSEN		120	--	--	1970	--	--	U	--	--	--	--	2226
145-093-17CCB	H. HANSEN		70	--	--	1970	--	--	U	--	--	--	--	2233
145-093-17DRC	G. HANSEN		125	125	4	1948	50	--	S	--	S	2000	8.0	--
145-093-18CCC	D. BUHFNER		128	108	4	1966	--	--	S	125SNLB	S	--	9.0	--
145-093-20CCC	W. RENZ	72	57	--	2	1949	55	--	S	125SNLB	1	1700	7.5	--
145-093-21CDD	G. LYNCH		120	112	2	1954	+11	7-72	S	125SNLB	1	1850	9.0	--
145-093-22DCA	P. HAUSSAUER		130	118	2	1951	+21	8-72	S	125SNLB	1	1830	9.0	--
145-093-24ADD	NDSWC 4775	140	--	--	--	1974	--	--	U	--	--	--	--	2123
145-093-25DC	LADD PET. CORP.	5497	--	--	--	1969	--	--	U	--	--	--	--	2176
145-093-26BAD	G. SCHMIDT	135	116	--	2	1971	F	--	S	125SNLB	1	1980	8.0	--
145-093-26CCB	H. DAVIS		230	222	3	1972	50	10-72	U	125SNLB	1	--	--	2185
145-093-27DBC	A. JOHNSON	138	134	123	2	1949	+7	8-72	K	125SNLB	1	1900	8.5	2135
145-093-28BBC	I. BERGAN		102	--	1	--	+12	--	U	125SNLB	1	1620	9.0	--
145-093-29BCA	G. LYNCH	75	60	--	2	1949	22	--	H	125SNLB	1	1720	--	--
145-093-29CDB1	M. KLING	168	161	--	2	1966	+7	8-72	S	125SNLB	1	2250	8.5	--
145-093-29CDB2	M. KLING		70	65	2	1949	30	--	H	125SNLB	1	1700	--	--
145-093-30CDD1	W. PELTON	130	127	117	2	1956	+4	7-72	K	125SNLB	1	2210	8.5	2142
145-093-30CDD2	W. PELTON	255	147	--	2	1946	8	10-71	U	125SNLB	1	--	--	2142
145-093-32ADD	E. TRAMPE	82	79	--	4	1962	--	--	S	125SNLB	1	1900	8.5	2190
145-093-32BBB1	W. RENZ		100	100	4	1950	80	--	H	125SNLB	1	2930	--	--
145-093-32BBB2	W. RENZ		55	55	4	1961	45	--	S	125SNLB	1	10000	8.0	--
145-093-32BBB3	W. RENZ		57	--	24	--	37	10-71	U	--	--	--	--	--

LOCAL WELL NUMBER	OWNER	DRILLED DEPTH (FT)	WELL DEPTH (FT)	CASING DEPTH (FT)	CASING DIAMETER (IN)	DATE DRILLED (YEAR)	WATER LEVEL (FT)	DATE WATER LEVEL MEASURED	USE OF WATER	MAJOR ADJUTER	WATER BEARING MATERIAL	SPECIFIC CONDUCTANCE (µMHOS/CM @ 25° C)	TEMPERATURE (°C)	ALTITUDE OF LSD (FT)
145-093-33BAA	NDSWC 4788	120	100	94	1	1974	82	12-74	U	125SNLB	1	--	--	2185
145-093-36BBB	NDSWC 4789	240	--	--	--	1974	--	--	U	--	--	--	--	2207
145-094-01DDC	O.BERGAN		112	--	4	--	100	--	K	--	2580	7.5	--	
145-094-02CBB	K.KNUTSON	135	128	--	3	1962	96	--	S	125SNLB	1	1900	9.0	--
145-094-06CCC1	NDSWC 4780	140	135	132	1	1974	70	12-74	U	125SNLB	1	698	--	2280
145-094-06CCC2	NDSWC 4780A		80	74	1	1974	54	12-74	U	125SNLB	1	--	--	2280
145-094-10AAA	NDSWC 4778	180	--	--	--	1974	--	--	U	--	--	--	--	2294
145-094-10ABB1	C.BROWN	300	275	--	2	1949	185	--	K	125SNLB	1	2270	--	--
145-094-10ABB2	C.BROWN		32	--	24	--	26	--	S	125SNLB	S	7630	7.0	--
145-094-10CCB	B.REISS	262	255	238	2	1943	200	--	K	125SNLB	1	2220	7.0	--
145-094-12BAA	NDSWC 4744	120	81	78	1	1974	57	7-74	U	112BGFV	3S	1580	8.0	2260
145-094-12DD1	M.KNUTSVIG	290	276	--	2	1964	142	--	H	125SNLB	1	2350	--	--
145-094-12DD2	M.KNUTSVIG		112	--	4	1913	95	--	S	125SNLB	1	1520	--	--
145-094-14AAA	NDSWC 8187	40	--	--	--	1971	--	--	U	--	--	--	--	--
145-094-14ACA	H.REISS	92	75	75	4	1972	68	10-72	S	125SNLB	1	2900	--	--
145-094-14CBC1	G.BROWN		290	180	4	1952	140	--	H	125SNLB	1	2380	--	--
145-094-14CBC2	G.BROWN		28	28	6	1948	10	--	S	125SNLB	S	2320	9.0	--
145-094-15DD1	NDSWC 4792	200	174	168	1	1974	76	12-74	U	125SNLB	1	2190	--	2239
145-094-15DD2	NDSWC 4792A	100	92	86	1	1974	61	12-74	U	125SNLB	1	--	--	2239
145-094-18BBA	B.SELLE	90	84	81	3	1943	40	--	K	125SNLB	1	1210	--	--
145-094-19CCC	NDSWC 4781	180	145	142	1	1974	52	12-74	U	125SNLB	1	933	--	2270
145-094-20DD1	J.SAFTZ		31	--	6	1962	16	--	H	125SNLB	1	2450	--	--
145-094-20DD2	J.SAFTZ		40	40	6	1946	12	--	S	125SNLB	1	5820	8.0	--
145-094-23DD1	NDSWC 4794E	80	70	64	1	1974	15	12-74	U	125SNLB	1	--	--	2177
145-094-24CDD	NDSWC 4749	140	84	78	1	1974	16	8-74	U	125SNLB	1	--	--	2177
145-094-25DDA	P.DICKENS	205	159	--	--	1969	--	--	S	125SNLB	1	--	--	2165
145-094-26AAA1	NDSWC 4794	80	70	64	1	1974	18	12-74	U	125SNLB	1	--	--	2180
145-094-26AAA2	NDSWC 4794A	80	70	62	1	1974	16	12-74	U	125SNLB	1	--	--	2179
145-094-26AAA3	NDSWC 4794B		68	--	6	1974	15	12-74	U	125SNLB	1	1780	--	2178
145-094-26AAA4	NDSWC 4794C		26	--	6	1974	10	12-74	U	125SNLB	1	2690	--	2177
145-094-26AAA5	NDSWC 4794D		24	21	1	1974	9	12-74	U	125SNLB	1	--	--	2176
145-094-26AAA6	NDSWC 4794F		18	18	1	--	12	12-74	U	125SNLB	1	--	--	2179
145-094-26AAA7	NDSWC 4794G		20	18	1	--	12	12-74	U	125SNLB	1	--	--	2180
145-094-26ABB	G.KNUTSON	100	81	--	3	1969	--	--	K	125SNLB	1	2400	--	2195
145-094-26BAA	NDSWC 8189	120	--	--	--	1971	--	--	U	--	--	--	--	2205
145-094-26BBB	C.SWORD	102	91	--	2	1954	--	--	H	125SNLB	1	1750	9.0	2200
145-094-26BDA	DUNN CENTER		31	--	6	--	9	8-71	P	125SNLB	1	--	--	--
145-094-26BDD	N.PACIFIC RR.		114	102	2	1945	13	8-71	U	125SNLB	1	2110	8.0	2173
145-094-26CAA	NDSWC 4793	30	--	--	--	1974	--	--	U	--	--	--	--	2168
145-094-27ABC	NDSWC 4732	40	30	27	1	1974	5	7-74	U	112BGFV	3S	1580	7.0	2178

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LOCAL WELL NUMBER	OWNER	DRILLED DEPTH (FT)	WELL DEPTH (FT)	CASING DEPTH (FT)	CASING DIAMETER (IN)	DATE DRILLED (YEAR)	WATER LEVEL (FT)	DATE WATER LEVEL MEASURED	USE OF WATER	MAJOR AQUIFER	WATER BEARING MATERIAL	SPECIFIC CONDUCTANCE @ 25°C (UMHOS/CM)	TEMPERATURE (°C)	ALTITUDE OF LSD (FT)
145-094-27ACC	T.RIDLE	270	151	145	4	1964	+4	7-72	S	125SNLB	1	2110	11.5	--
145-094-27CAA	NDSWC 4733	120	44	38	1	1974	0	8-74	U	125SNLB	1	2230	9.0	2176
145-094-28ACD	L.WAGGNER		80	--	4	1965	12	--	H	125SNLB	1	1400	--	2173
145-094-28ADB	O.KETTELSON	140	127	--	2	1950	--	--	H	125SNLB	1	1700	--	2208
145-094-28DDC	USBFW		160	--	4	1943	35	--	H	125SNLB	1	1700	10.0	--
145-094-29AAA	NDSWC 4731	100	--	--	--	1974	--	--	U	--	--	--	--	--
145-094-32DCC	C.MURPHY	38	22	--	4	1960	4	--	S	125SNLB	1	1650	8.5	--
145-094-34BAB	USBFW	152	142	--	2	1949	63	--	U	125SNLB	1	--	--	--
145-094-35BAA	NDSWC 8190	60	45	42	1	1971	12	10-71	U	112BGFV	G	3260	7.5	2168
145-095-04ABB	F.BICE	45	41	--	4	1968	24	--	K	125SNLB	1	1700	--	--
145-095-048DB1	F.BICE	45	38	--	4	1957	28	--	H	125SNLB	1	1550	--	2190
145-095-048DB2	F.BICE		40	--	5	1959	28	--	S	--	--	2900	7.0	--
145-095-048DB3	F.BICE		40	--	6	1956	25	--	S	--	--	3650	7.0	--
145-095-060DD1	R.DOLEZAL		45	45	18	1959	28	--	S	125SNLB	1	1100	--	--
145-095-060DD2	NDSWC 4739	60	--	--	--	1974	--	--	U	--	--	--	--	--
145-095-088BD	L.ROSHAU		54	50	6	1962	30	--	K	125SNLB	1	2410	--	--
145-095-08CCA	KIKLA BROS		37	--	24	--	19	10-71	U	--	--	--	--	--
145-095-09AAB	NDSWC 4479	180	64	58	1	1972	0	10-72	U	112BGFV	S	1250	8.0	2250
145-095-10DCB	D.WEYDAHL		80	--	6	--	+4	7-72	U	125SNLB	1	1260	7.5	--
145-095-12BCC	W.LIND		80	60	4	1973	44	1-73	S	125SNLB	S	1450	8.0	--
145-095-13CBB	NDSWC 4477	100	--	--	--	1972	F	--	U	125SNLB	1	--	--	--
145-095-14CDD	KILLDEER NO.4	76	69	34	8	1949	22	7-62	U	125SNLB	S	--	--	--
145-095-20BCC1	M.FRANCHUK		24	24	24	1959	7	--	H	--	S	1950	--	--
145-095-20BCC2	M.FRANCHUK		20	20	24	--	4	10-71	S	--	S	--	--	--
145-095-21CBB	NDSWC 8235	60	--	--	--	1971	--	--	U	--	--	--	--	2280
145-095-22BAA	F.QUKROP		167	131	3	1957	--	--	K	125SNLB	S	2700	10.5	--
145-095-22DAD1	NDSWC 4468		1950	--	--	1972	109	8-72	U	211FXHL	8F	870	13.0	2235
145-095-22DAD2	NDSWC 4468B		160	157	1	1972	4	9-72	U	112BGFV	3S	1530	8.0	2237
145-095-22DAD3	NDSWC 4468A		54	49	4	1972	5	9-72	U	112BGFV	3S	1400	8.0	2237
145-095-23AAD	C.WIERSON		60	39	4	1965	--	--	K	112BGFV	S	482	8.5	--
145-095-23ABB	KILLDEER NO.6	77	70	--	10	1964	10	12-65	P	112BGFV	R	1620	8.0	2241
145-095-23BAA1	KILLDEER NO.1		62	--	--	1935	--	--	U	125SNLB	1	--	--	--
145-095-23BAA2	KILLDEER NO.3		87	--	8	--	13	8-71	P	--	--	--	--	2245
145-095-23BAC	KILLDEER NO.2	58	45	--	8	1935	30	7-72	U	125SNLB	1	--	--	--
145-095-23BCA	D.KLATT	122	115	--	8	1959	--	--	H	125SNLB	1	--	--	--
145-095-23CA1	KILLDEER	122	--	--	--	1958	--	--	U	125SNLB	--	--	--	--
145-095-23CA2	KILLDEER	125	--	--	--	1958	--	--	U	--	--	--	--	--
145-095-26BAA	P.HUTCHINSON	74	70	49	4	1969	--	--	S	--	S	--	--	--
145-095-28CBA1	M.TRUCKAN		30	--	6	1957	18	--	H	--	--	900	--	2224
145-095-28CBA2	M.TRUCKAN		21	--	6	1958	--	--	S	--	--	1310	7.0	--

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LOCAL WELL NUMBER	OWNER	DRILLED DEPTH (FT)	WELL DEPTH (FT)	CASING DEPTH (FT)	CASING DIAMETER (IN)	DATE DRILLED (YEAR)	WATER LEVEL (FT)	DATE WATER LEVEL MEASURED	USE OF WATER	MAJOR AQUIFER	WATER BEARING MATERIAL	SPECIFIC CONDUCTANCE (μ MHOS/CM @ 25°C)	TEMPERATURE (°C)	ALTITUDE OF LSD (FT)
145-095-29AAA	NDSWC 8232	280	143	137	1	1971	19	11-71	U	112BGFV	S	1330	8.0	2275
145-095-29ADA1	NDSWC 4476	280	62	59	1	1972	12	10-72	U	112BGFV	3S	867	9.0	2268
145-095-29ADA2	NDSWC 8623	80	74	68	1	1973	13	5-73	U	112BGFV	S	760	--	2268
145-095-29ADA3	NDSWC 8624	260	234	228	1	1973	13	5-73	U	112BGFV	S	1450	--	2268
145-095-29ADA4	NDSWC 8264A	40	27	23	1	1973	12	5-73	U	112BGFV	S	766	--	2268
145-095-29ADD1	NDSWC 8619	120	74	68	1	1973	8	--	U	112BGFV	S	686	--	2263
145-095-29ADD2	NDSWC 8622	120	75	70	1	1973	9	5-73	U	112BGFV	S	689	--	2265
145-095-29ADD3	NDSWC PW		110	50	6	1973	10	5-73	U	112BGFV	S	676	7.5	2266
145-095-29DAA1	NDSWC 8233	240	113	107	1	1971	13	11-71	U	112BGFV	S	744	7.5	2268
145-095-29DAA2	NDSWC 8618	80	74	68	1	1973	7	5-73	U	112BGFV	S	1090	--	2262
145-095-29DAA3	NDSWC 8621	80	74	68	1	1973	13	5-73	U	112BGFV	S	776	7.0	2268
145-095-29DRB	NDSWC 8620	120	110	107	1	1973	35	5-73	U	112BGFV	S	--	--	2296
145-095-29DD	NDSWC 8234	120	41	38	1	1971	20	11-71	U	112BGFV	R	1160	7.0	2273
145-095-32DAB	W.PAVLENKO		58	--	18	--	43	11-71	K	--	P	780	--	--
145-095-34DAC1	C.ROGNE		90	90	4	1956	15	--	H	125SNLB	L	1700	--	--
145-095-34DAC2	C.ROGNE		16	16	24	1970	2	11-71	S	125SNLB	L	2450	9.0	--
145-095-34DCC	NDSWC 4475	280	161	158	1	1972	5	10-72	U	112BGFV	3S	1730	9.0	2241
145-096-01CRB	A.DOLEZAL		28	28	5	1960	18	--	H	--	S	610	--	--
145-096-08DRB	O.KELLING		88	70	4	1963	70	--	H	125SNLB	S	1100	9.5	--
145-096-09DRD	O.KELLING		125	100	3	1949	80	--	S	125SNLB	S	1560	10.0	--
145-096-11CDC	M.TACHENKO		50	--	18	1949	25	--	S	--	--	1000	7.0	--
145-096-11DRB	M.TACHENKO		130	--	5	1963	90	--	S	125SNLB	S	<500	7.0	--
145-096-12BAD	M.DARVIS		27	--	18	--	24	10-71	U	--	--	--	--	--
145-096-12DAA	M.KUKLA		30	30	18	1961	5	--	K	125SNLB	--	818	--	--
145-096-13DCB	M.ALEXENKO	41	36	18	4	1967	17	10-71	H	125SNLB	S	520	--	--
145-096-13DCD	M.ALEXENKO		70	49	2	1949	10	--	H	125SNLB	S	<500	--	--
145-096-14BRB	M.TACHENKO		27	27	36	1961	12	11-71	H	125SNLB	S	596	--	--
145-096-17ADB	E.KELLING		118	108	4	1946	--	--	S	125SNLB	S	--	--	--
145-096-18BCC	SLOAN BROS.		50	--	6	1914	35	--	K	--	S	575	--	--
145-096-18CCA1	SLOAN BROS.	315	96	60	4	1947	95	--	K	125SNLB	S	1010	--	--
145-096-18CCA2	SLOAN BROS		88	--	5	1954	73	--	S	--	P	1060	7.0	--
145-096-20BRA	K.OLSON		135	--	4	1960	127	11-71	U	--	S	--	--	--
145-096-20DD1	K.OLSON		120	99	3	1962	80	--	S	125SNLB	S	1340	--	--
145-096-20DD2	K.OLSON		120	100	4	1969	80	--	H	125SNLB	S	--	--	--
145-096-21DD	NDSWC 4736	100	79	73	1	1974	25	7-74	U	125SNLB	3V	2920	8.5	2396
145-096-22CCD	M.TACHENKO		60	41	4	--	--	--	H	--	S	1300	--	--
145-096-24DRB	NDSWC 4735	40	--	--	--	1974	--	--	U	--	--	--	--	--
145-096-32AAC	N.ELL		130	--	6	1963	100	--	K	--	S	2150	--	--
145-096-33ADC	A.ELL		72	--	18	1955	50	--	K	125SNLB	L	2100	--	--
145-096-35AAB1	E.DARWIN		80	80	6	1927	50	--	S	125SNLB	L	800	8.0	--

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145-096-35AAB2	E. DARWIN		85	85	18	1957	20	--	H	125SNLB	1	810	--	--
145-096-35BBC	E. DARWIN		140	--	5	1962	30	--	S	125SNLB	S	<500	7.0	--
145-097-01AAB	R. NUPEN		60	40	4	1956	40	--	H	125SNLB	S	1100	--	--
145-097-0200A1	M. HOVDEN		125	--	5	1959	103	--	H	125SNLB	S	740	--	--
145-097-0200B2	M. HOVDEN		125	--	6	1917	5	--	S	--	--	1250	8.0	--
145-097-07AAC	J. MITTLESTAD		59	--	18	--	36	11-71	U	--	--	--	--	--
145-097-08CBA	D. DOLEZAL		100	--	18	--	--	--	S	--	S	1400	7.0	--
145-097-08CBB	D. DOLEZAL		105	90	4	1972	90	6-72	H	125SNLB	S	1550	--	--
145-097-08CBC	D. DOLEZAL	300	--	--	--	1972	--	--	U	--	--	--	--	--
145-097-08CBD	D. DOLEZAL		130	--	18	1961	120	--	K	--	S	1750	--	--
145-097-08CCB	D. DOLEZAL	415	--	--	--	1972	--	--	U	--	--	--	--	--
145-097-11ACC	P. BRIGEWITZ		102	82	3	--	70	--	S	125SNLB	S	1490	7.5	--
145-097-12BCD1	E. HOVDEN		50	32	4	1971	28	--	H	125SNLB	S	550	--	--
145-097-12BCD2	E. HOVDEN		48	48	6	1932	28	--	S	125SNLB	S	700	7.0	--
145-097-12DAD	A. SLONAN		102	--	5	1942	--	--	S	125SNLB	S	1080	7.0	--
145-097-14DDA	D. ROKNES		110	90	3	1949	75	--	K	125SNLB	S	--	--	--
145-097-15CAD	E. HOVDEN	130	115	85	4	1961	75	--	S	125SNLB	S	341	8.5	--
145-097-22DCC	L. KLATT	50	34	--	4	1960	15	--	K	125SNLB	1	1050	9.0	--
145-097-30AAB	L. KOSTELNAK		75	--	6	1973	52	8-73	H	125SNLB	S	--	--	--
145-097-30ADD1	R. KOSTELNAK		58	58	18	--	18	--	H	--	--	950	--	--
145-097-30ADD2	R. KOSTELNAK		30	30	18	1962	5	--	S	125SNLB	--	2330	6.5	--
145-097-32CAC1	A. SARROSKY		15	--	36	--	6	--	H	125SNLB	1	640	--	--
145-097-32CAC2	A. SARROSKY		100	85	6	1950	--	--	S	125SNLB	1	3300	7.0	--
145-097-34CCC1	G. HOUGHTON	85	70	--	2	1946	40	--	S	125SNLB	1	--	--	--
145-097-34CCC2	G. HOUGHTON	67	42	--	2	1946	14	--	H	125SNLB	1	--	--	--
145-097-34CCD	G. HOUGHTON	50	43	--	4	1960	17	--	S	125SNLB	1	--	--	--
145-097-35DDD	R. GRANFOR	150	56	44	5	1960	--	--	H	125SNLB	S	500	--	--
146-091-01DDC	TRIBAL	123	120	--	--	1951	--	--	U	125SNLB	V	--	--	2163
146-091-05CBB	R. CROWSHEART	69	52	--	4	1969	50	--	H	125SNLB	1	1450	9.5	2120
146-091-08CAA	P. BEKN	190	170	--	6	--	88	9-51	S	125SNLB	8P	2860	7.5	2020
146-091-11CB	STANOLIND OIL	6061	--	--	--	1955	--	--	U	--	--	--	--	2278
146-091-13BCA1	H. WIEDNER		200	--	4	--	--	--	K	125SNLB	--	893	8.5	2250
146-091-13BCA2	H. WIEDNER		230	210	3	1972	193	--	S	125SNLB	V	--	--	--
146-091-14ADC	E. GOETZ		80	--	6	--	--	--	K	--	--	1720	9.0	2224
146-091-14DDB	R. GEGELMAN		210	170	2	1951	--	--	K	125SNLB	S	650	9.0	--
146-091-17CDC	NDSWC 4708	180	141	138	1	1974	33	8-74	U	112BGFV	3S	953	8.0	1930
146-091-20ACA	S. SCHAPER		50	--	4	1963	30	9-71	K	112BGFV	R	900	9.5	1962
146-091-20DDD	W. SCHAPER		43	--	4	1971	22	8-71	K	112BGFV	R	1230	15.0	1980
146-091-21CDD1	NDSWC 8216	220	192	186	1	1971	26	10-71	U	112BGFV	G	1170	7.0	1978
146-091-21CDD2	NDSWC 8216A	100	93	87	1	1971	18	10-71	U	112BGFV	S	811	6.0	1978

LOCAL WELL NUMBER	OWNER	DRILLED DEPTH (FT)	WELL DEPTH (FT)	CASING DEPTH (FT)	CASING DIAMETER (IN)	DATE DRILLED (YEAR)	WATER LEVEL (FT)	DATE WATER LEVEL MEASURED	USE OF WATER	MAJOR AQUIFER	WATER BEARING MATERIAL	SPECIFIC CONDUCTANCE (μ MHOS/CM @ 25°C)	TEMPERATURE (°C)	ALTITUDE OF LSD (FT)
146-091-21DCD	L.WEISZ	80	69	--	2	1950	12	6-50	H	125SNLB	1	4260	12.0	1994
146-091-22BBA2	G.GEGELMAN	240	235	--	4	1959	100	--	S	125SNLB	1	2200	10.0	--
146-091-22CBA	V.WEISZ		45	--	4	1961	11	9-71	K	--	--	1610	8.5	2035
146-091-24BDB	H.WIEDNER		130	--	4	--	--	--	S	--	--	1550	8.5	2200
146-091-25DC	SUN OIL CO.	5320	--	--	--	1968	--	--	U	--	--	--	--	2172
146-091-26AAB1	P.FREI		14	--	36	1946	--	--	S	--	--	1070	9.0	2090
146-091-26AAB2	P.FREI		8	--	36	--	--	--	S	--	--	800	11.0	2092
146-091-26AAB3	P.FREI		18	--	18	1948	--	--	K	--	--	990	12.0	2095
146-091-28ABA	NDSWC 8217	140	94	8R	1	1971	25	10-71	U	112BGFV	S	2640	7.0	1985
146-091-28BBB	NDSWC 8218	40	--	--	--	1971	--	--	U	--	--	--	--	1984
146-091-30BCD	F.STERN		80	--	6	1958	--	--	H	--	P	1580	9.0	2120
146-091-31BAD	H.MARTIN		110	--	6	--	70	--	K	--	--	460	9.5	2120
146-091-32CAA	A.LYNCH		80	--	18	--	60	--	K	125SNLB	1	2120	8.0	2185
146-091-34CBA	M.GDETZ		58	--	4	--	8	--	K	--	--	810	9.5	2045
146-091-35BBC	NDSWC 4707	320	221	218	1	1974	37	7-74	U	112BGFV	R	988	8.0	2020
146-091-36BCB	P.FREI		126	--	4	--	--	--	S	--	--	1150	8.0	--
146-092-14BB	TRIBAL	390	--	--	--	1950	--	--	U	--	--	--	--	2090
146-092-14CDD2	D.KISSE	75	65	--	2	1950	60	--	H	125SNLB	1	--	--	--
146-092-15DDD	D.KISSE	43	--	--	--	1970	--	--	U	--	--	--	--	2260
146-092-19DBC	T.COOK	153	150	--	4	1954	107	--	S	125SNLB	S	--	--	--
146-092-22ABB	M.VOIGT	40	--	--	--	1970	--	--	U	--	--	--	--	2270
146-092-27CBB	H.TRANSTROM		90	--	6	--	--	--	K	125SNLB	1	1025	8.5	2065
146-092-27DDD	NDSWC 4709	100	58	4R	1	1974	38	7-74	U	125SNLB	2V	407	10.0	2235
146-092-28CCC	NDSWC 4710	40	--	--	--	1974	--	--	U	--	--	--	--	--
146-092-29DDC1	J.SCHETTLER		75	--	6	1914	--	--	K	125SNLB	--	1100	8.0	2255
146-092-29DDC2	J.SCHETTLER		90	--	4	1942	--	--	K	--	--	540	11.0	2255
146-092-30DAA	J.SCHETTLER	70	64	44	4	1967	30	--	S	125SNLB	S	470	9.5	--
146-092-32CDD	C.CHRISTENSEN	30	78	59	3	1950	15	--	K	125SNLB	S	810	8.0	2228
146-092-34ABB	J.REISS		90	--	4	1967	--	--	K	--	--	1220	8.5	2265
146-092-35DAD1	D.KOEHLER		80	--	4	1946	20	--	S	--	--	1100	8.0	2245
146-092-35DAD2	D.KOEHLER		110	89	4	1966	20	--	H	125SNLB	S	900	10.0	2245
146-093-03CDD	A.VOIGHT	1525	--	--	--	--	--	--	S	211FXHL	--	2160	--	2060
146-093-15DDD	NDSWC 8231	65	--	--	--	1971	--	--	U	--	--	--	--	2320
146-093-17CBB	R.KNUTSON	155	145	145	3	1949	95	--	S	125SNLB	1	745	9.5	--
146-093-19BDD	R.KRIEGER		140	120	4	--	--	--	S	125SNLB	S	934	--	--
146-093-20ADD	C.CHRISTENSEN		27	--	6	1952	15	--	S	--	--	220	7.0	2265
146-093-20CBB	R.KNUTSON		120	--	6	1912	100	--	K	125SNLB	--	670	8.5	2350
146-093-20CCA	R.KNUTSON		140	120	4	1969	20	--	S	125SNLB	S	655	10.0	--
146-093-22ADD	G.BUEHNER		80	--	4	--	--	--	S	125SNLB	S	174	7.0	2300
146-093-22CCC	E.BUEHNER		84	--	4	1954	--	--	S	--	S	1430	8.0	2275

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146-093-24DCC1	T. COOK		115	--	5	1970	76	10-71	K	125SNLB	S	421	8.5	2305
146-093-24DCC2	T. COOK		115	90	3	1948	80	--	S	125SNLB	S	1350	7.0	2305
146-093-25ABB	T. COOK		115	--	4	1961	--	--	S	--	S	--	--	2302
146-093-26CBA	C. PELTON		55	40	4	1972	--	--	S	--	6S	--	--	--
146-093-26CBB	C. PELTON	66	60	40	4	1960	--	--	K	125SNLB	S	887	7.5	2261
146-093-27CCC	NDSWC 4746	120	76	68	1	1974	32	7-74	U	125SNLB	1	1030	9.0	2214
146-093-27CDD	NDSWC 4747	100	20	16	1	1974	19	7-74	U	125SNLB	1	--	--	2212
146-093-27DAA	C. PELTON	146	132	117	4	1964	--	--	S	125SNLB	S	--	--	2230
146-093-28AAA1	NDSWC 4777	140	118	112	1	1974	99	1-75	U	125SNLB	1	--	--	2234
146-093-28AAA2	NDSWC 4777A	80	76	70	1	1974	50	12-74	U	125SNLB	1	909	--	2234
146-093-28ADD	E. BUEHNER	100	86	--	5	1969	--	--	K	125SNLB	1	740	8.0	2246
146-093-28CCA	C. CHRISTENSEN		110	--	4	1960	90	--	K	125SNLB	1	600	9.0	--
146-093-28CCB	C. CHRISTENSEN		115	95	3	1964	90	--	K	125SNLB	1	588	8.0	2290
146-093-28DDB1	W. ECKELBERG	108	84	--	4	1954	--	--	H	125SNLB	1	733	9.0	2230
146-093-28DDB2	W. ECKELBERG		100	--	6	--	--	--	S	--	--	660	7.0	2230
146-093-28DDB3	W. ECKELBERG		100	--	6	--	--	--	S	125SNLB	--	650	7.0	2230
146-093-29CCC1	M. GUENTHER		55	41	4	1973	41	8-73	K	125SNLB	S	212	--	--
146-093-29CCC2	NDSWC 4745	120	--	--	--	1974	--	--	U	--	--	--	--	2282
146-093-32BBB1	M. GUENTHER		80	--	6	1954	--	--	H	--	--	420	11.0	2282
146-093-32BBB2	M. GUENTHER		125	105	3	1954	--	--	S	125SNLB	S	1050	8.0	2282
146-093-33BAA1	H. ECKELBERG	79	69	--	2	1946	54	--	H	125SNLB	1	980	8.5	2262
146-093-33BAA2	H. ECKELBERG	70	61	--	5	1950	68	--	S	125SNLB	1	760	8.0	2262
146-093-34CBA	E. PELTON		40	--	3	--	--	--	H	112BGFV	G	1020	10.0	2195
146-093-34CBB	E. PELTON		51	--	4	1972	--	--	S	125SNLB	1	880	--	--
146-093-34CCC	NDSWC 4748	140	37	32	1	1974	11	7-74	U	112BGFV	3S	433	6.0	2188
146-093-34DCD	G. QUILL		--	--	--	--	32	--	S	--	--	1250	8.0	2195
146-094-04BBC	R. HAMMEL		1600	1590	2	1969	F	--	S	211FXHL	V	--	24.5	1980
146-094-05CBB	R. HAMMEL	1415	1410	1340	1	1968	+32	5-72	S	211FXHL	S	2890	19.0	1905
146-094-05DCC	R. HAMMEL		1500	1415	2	1972	+78	5-73	S	211FXHL	V	--	20.0	1960
146-094-08DAC1	R. HAMMEL		25	--	--	--	--	--	H	125SNLB	--	4070	8.0	1920
146-094-08DAC2	R. HAMMEL		25	--	48	--	15	10-71	S	--	--	--	--	1920
146-094-08DAD	R. HAMMEL	1410	1404	1358	1	1969	+12	5-72	S	211FXHL	V	3590	14.0	1940
146-094-13CBB	R. BUEHNER	87	67	57	4	1962	--	--	S	125SNLB	1	400	7.5	2260
146-094-15ACC1	R. HAMMEL		146	126	2	--	--	--	U	125SNLB	S	--	--	2298
146-094-15ACC2	R. HAMMEL		150	138	3	1971	--	--	U	125SNLB	S	1780	10.0	2290
146-094-20DAC	A. KLAUS	85	81	--	4	1969	--	--	H	125SNLB	1	2000	9.0	--
146-094-22BDD	E. BENZ	140	130	118	--	1969	--	--	S	125SNLB	1	1800	9.0	2282
146-094-22CCA	T. FEDORA		30	--	72	--	24	--	K	--	--	1030	7.5	2265
146-094-22DBB	E. BENZ	142	136	--	2	1949	115	--	H	125SNLB	1	1100	9.0	2282
146-094-23AAD	H. BUEHNER		130	--	--	--	--	--	S	--	--	750	7.5	2265

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146-094-23CCC	NDSWC 4779	300	--	--	--	1974	--	--	U	--	--	--	--	2335
146-094-24BDD	D.O'NEIL		50	--	4	1941	7	--	S	125SNLB	1	400	7.5	2260
146-094-24CAA	O.O'NEIL	65	53	--	4	1968	--	--	S	125SNLB	1	575	8.0	2260
146-094-24CAB1	O.O'NEIL	56	41	--	4	1957	35	--	H	125SNLB	1	520	8.5	2255
146-094-24CAB2	O.O'NEIL		50	--	6	1932	--	--	S	--	--	520	7.5	2255
146-094-24DDD1	R.KRIEGER	140	134	--	2	1954	--	--	H	125SNLB	1	700	8.5	2262
146-094-24DDD2	R.KRIEGER	77	60	--	4	1960	--	--	S	125SNLB	1	442	9.0	2262
146-094-25AAA	NDSWC 4742	160	143	135	1	1974	77	8-74	U	125SNLB	1	950	13.0	2260
146-094-25ABA	NDSWC 4741	120	89	79	1	1974	40	7-74	U	125SNLB	1	706	8.0	2235
146-094-25BAA	NDSWC 4740	100	66	63	1	1974	44	7-74	U	112BGFV	3S	1070	7.5	2225
146-094-27DDA	R.RECKARD	170	155	140	4	1966	38	--	S	125SNLB	S	1400	8.0	2280
146-094-29CCC	NDSWC 8184	100	--	--	--	1971	--	--	U	--	--	--	--	2290
146-094-31DAD	G.CARLSON		63	--	4	1970	55	--	K	112BGFV	G	1550	10.0	--
146-094-33CCC	NDSWC 8185	60	--	--	--	1971	--	--	U	--	--	--	--	2290
146-094-33DDD	NDSWC 8186	45	--	--	--	1971	--	--	U	--	--	--	--	2327
146-094-34CAC	G.TUHY		50	--	4	1970	30	--	S	--	S	575	8.0	2310
146-094-34CCA1	G.TUHY		120	--	2	--	--	--	K	--	--	650	8.0	2324
146-094-34CCA2	G.TUHY	92	--	--	--	1973	--	--	U	--	--	--	--	--
146-094-34CCA3	G.TUHY	100	92	92	4	1973	85	5-73	H	125SNLB	1	770	9.0	--
40 146-094-34CDB	G.TUHY		140	--	4	--	--	--	S	125SNLB	1	1180	8.0	2315
146-094-34ddb	G.TUHY		166	145	4	1972	135	--	S	125SNLB	S	1750	9.5	--
146-094-35ABA	J.COMNOLLY	40	21	--	4	1965	21	--	H	125SNLB	1	729	10.0	--
146-094-36BBB	NDSWC 4743	100	--	--	--	1974	--	--	U	--	--	--	--	--
146-095-03DCB	J.KUPPER	1605	1602	1520	4	1972	1	7-72	S	211FXHL	V	2100	15.5	2092
146-095-07DDb1	A.ROBISON		20	--	6	--	16	--	H	--	S	750	6.5	--
146-095-07DDb2	A.ROBISON	50	40	--	2	1956	10	--	S	125SNLB	S	2010	7.5	--
146-095-10ABA1	J.KUPPER		35	--	6	--	32	--	H	125SNLB	1	3680	--	--
146-095-10ABA2	J.KUPPER		40	32	24	--	32	--	S	125SNLB	1	2850	8.0	--
146-095-16BBB	R.MITTELSTADT		102	90	4	1966	--	--	U	125SNLB	S	--	--	--
146-095-18DCA1	H.BENZ		26	--	24	1944	12	12-71	H	--	--	1100	--	--
146-095-18DCA2	H.BENZ		16	--	60	--	11	12-71	S	--	--	1300	8.0	--
146-095-18DCC	H.BENZ		100	80	4	1965	6	--	S	--	--	2280	7.0	--
146-095-19DDD	NDSWC 4482	100	--	--	--	1972	--	--	U	--	--	--	--	--
146-095-20CCA1	J.MITTELSTADT		68	50	4	1971	35	--	H	112BGFV	S	960	--	--
146-095-20CCA2	J.MITTELSTADT		70	50	4	1949	60	--	S	112BGFV	S	1190	--	--
146-095-20CCA3	J.MITTELSTADT		82	--	6	1906	42	--	S	--	--	1010	8.0	--
146-095-20CCB	NDSWC 8180	80	61	5R	1	1971	34	10-71	U	112BGFV	S	1130	7.5	2339
146-095-22DCA	C.KLATT		100	--	6	--	80	--	K	125SNLB	1	2080	--	--
146-095-24CCC	H.BENZ		100	--	4	--	--	--	S	--	--	980	--	--
146-095-27DDb1	C.FETTIG		35	--	6	1958	10	--	K	125SNLB	S	930	--	--

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146-095-270DB2	C.FETTIG		20	--	18	1955	4	--	S	125SNLB	S	1500	5.0	--
146-095-28BBB	F.SKACHENKO		90	--	6	--	60	--	K	--	--	630	--	--
146-095-2RCAD	G.HARTMAN		80	60	4	1962	28	--	K	125SNLB	S	540	--	--
146-095-28CCC	NDSWC 8182	80	--	--	--	1971	--	--	U	--	--	--	--	--
146-095-28DBC1	G.HARTMAN		28	--	18	--	26	--	S	125SNLB	S	1290	--	--
146-095-28DBC2	G.HARTMAN		78	--	4	1958	28	--	S	125SNLB	S	550	6.0	--
146-095-30DAC	F.SKACHENKO		70	--	4	1958	55	--	K	125SNLB	1	1360	--	--
146-095-30DAD	F.SKACHENKO		76	56	4	1972	44	4-72	S	112BGFV	R	--	--	--
146-095-30DDD	NDSWC 8181	80	66	63	1	1971	33	10-71	U	125SNLB	V	1030	8.0	2300
146-095-33ARB	NDSWC 8183	100	--	--	--	1971	--	--	U	--	--	--	--	--
146-095-34ABC	T.KIND		125	95	4	1960	105	--	U	125SNLB	S	--	--	--
146-095-34DCC1	T.KIND		21	--	18	1958	18	--	H	--	--	1720	7.0	--
146-095-34DCC2	T.KIND	67	55	--	4	1960	20	--	S	125SNLB	1	550	--	--
146-095-35CCA	H.MITTELSTEDT	258	240	--	4	1964	140	--	H	125SNLB	1	1700	--	--
146-096-01BBB	NDSWC 8177	60	--	--	--	1971	--	--	U	--	--	--	--	2600
146-096-03CCC	H.MURPHY		24	24	6	--	12	--	H	125SNLB	1	550	--	--
146-096-04DBC	D.BANG		43	--	24	1950	23	--	K	--	--	800	--	--
146-096-06BAC	T.BANG		140	--	4	1959	60	--	S	125SNLB	S	528	--	--
146-096-06CAD	D.BANG		287	--	4	1956	250	--	H	--	0	1350	--	--
41 146-096-06CCC	NDSWC 8176	40	--	--	--	1971	--	--	U	--	--	--	--	2417
146-096-06CDA	D.BANG		40	--	4	1967	20	--	S	--	S	890	8.0	--
146-096-08ACC	A.LUNDBERG		185	--	6	1967	165	--	S	--	S	805	7.0	--
146-096-11BAC2	W.LUBKE		144	--	4	1954	124	--	S	125SNLB	1	436	6.0	--
146-096-11DAC1	C.KELLING		25	--	6	--	15	--	K	--	--	810	--	--
146-096-11DAC2	C.KELLING		14	--	6	--	12	11-71	U	--	--	--	--	--
146-096-11DAC3	C.KELLING		18	--	6	--	10	11-71	U	--	--	--	--	--
146-096-12DDC1	H.REEMS		102	--	4	1961	70	--	H	125SNLB	1	1600	--	--
146-096-12DDC2	H.REEMS		102	102	8	1948	70	--	S	125SNLB	1	1750	7.0	--
146-096-13ADA	NDSWC 4483	100	84	78	1	1972	20	10-72	U	125SNLB	2V	1580	8.0	2417
146-096-13BAB	E.DVIRNAK		39	--	24	--	31	11-71	U	--	--	--	--	--
146-096-13BCC	NDSWC 8179	60	--	--	--	1971	--	--	U	--	--	--	--	--
146-096-13DCD	H.REEMS		100	--	--	1958	66	8-71	K	125SNLB	S	1800	10.0	--
146-096-14CDD1	NDSWC 4597	1180	1089	1071	2	1973	533	--	U	125TGRV	V	--	--	2531
146-096-14CDD2	NDSWC 4597A		137	131	1	1973	129	11-73	U	125SNLB	V	--	--	2531
146-096-14CCD	F.FISCHER		18	12	6	1949	12	--	H	125SNLB	1	730	--	--
146-096-18ABD	M.CUSKELLY		32	--	36	--	15	--	K	125SNLB	1	1010	--	--
146-096-19BAA	B.ROUQUETTE		70	70	24	1948	20	--	S	--	P	1050	7.5	--
146-096-24CBB	J.RYDFN		140	--	3	1956	54	--	S	--	--	1890	8.0	--
146-096-24DDD	G.RYDEN		56	--	4	1961	45	--	K	125SNLB	S	1510	8.0	--
146-096-25CBB	L.FISCHER		50	--	5	1966	40	--	H	125SNLB	S	875	--	--

LOCAL WELL NUMBER	OWNER	DRILLED DEPTH (FT)	WELL DEPTH (FT)	CASING DEPTH (FT)	CASING DIAMETER (IN)	DATE DRILLED (YEAR)	WATER LEVEL (FT)	DATE WATER LEVEL MEASURED	USE OF WATER	MAJOR AQUIFER	WATER BEARING MATERIAL	SPECIFIC CONDUCTANCE (µMHOS/CM @ 25°C)	TEMPERATURE (°C)	ALTITUDE OF LSD (FT)
146-096-26ACC	C.DAVIS	60	55	40	4	1972	42	4-72	U	125SNLB	R	--	--	--
146-096-26DRR	C.DAVIS	120	112	112	4	1973	82	5-73	S	125SNLB	S	1600	--	--
146-096-29DDD	J.SCHETTLER		65	47	4	1972	--	--	K	125SNLB	S	960	--	--
146-096-34DAD	F.THOMAS		35	--	5	1953	25	--	H	--	S	650	--	--
146-096-36AAA	NDSWC 4480	60	24	18	1	1972	8	10-72	U	125SNLB	3V	895	6.0	2340
146-096-36BRB	NDSWC 4481	60	44	38	1	1972	12	9-72	U	112BGFV	3S	931	8.0	2380
146-097-12AAB1	A.LUNDBERG		14	--	30	--	6	--	H	125SNLB	1	<500	--	--
146-097-12AAB2	A.LUNDBERG		125	105	4	1969	98	--	S	125SNLB	S	580	8.0	--
146-097-24BCA	B.ROUQUETTE		180	--	4	1968	20	--	S	--	--	1700	--	--
146-097-25AAC1	A.NLSON	330	198	192	4	1968	291	--	K	125SNLB	S	1950	--	--
146-097-25AAC2	A.NLSON		160	--	4	1950	150	--	S	125SNLB	S	1300	7.5	--
146-097-25AAC3	A.NLSON		60	--	24	1940	55	--	H	--	--	2500	--	--
146-097-25ACA	A.NLSON	408	408	388	5	1971	338	--	--	125SNLB	S	1900	11.0	--
146-097-26AAD	A.NLSON		30	--	4	1955	20	--	S	125SNLB	1	685	8.0	--
146-097-26BAA	K.NLSON		240	--	4	1965	200	--	K	--	--	1550	--	--
146-097-34CDA1	P.OBRIGEWITCH		65	--	24	1946	20	--	H	--	--	780	--	--
146-097-34CDA2	P.OBRIGEWITCH	91	81	71	2	1946	40	--	K	125SNLB	S	1150	8.0	--
147-091-15DCC	TRIBAL	63	46	--	2	--	--	--	S	125SNLB	S	--	--	2178
147-091-17AAD	TRIBAL	400	--	--	--	1950	--	--	U	--	--	--	--	2169
147-091-21DCA	S.LINCOLN	73	63	--	4	1969	23	--	U	125SNLB	1	1580	8.0	2268
147-091-22AAD	C.LINCOLN	400	87	--	4	1950	48	9-71	U	125SNLB	S	--	--	2256
147-091-25DAA	J.STARR	186	126	--	4	1951	9	9-51	U	125SNLB	6S	--	--	2087
147-091-26CCD	U.S.B.I.A.	1720	925	--	6	1966	45	9-71	P	125TGRV	1	2950	8.0	2218
147-091-26CDB	U.S.B.I.A.	100	70	55	6	1960	--	--	U	125SNLB	S	--	--	2218
147-091-27BRD	J.STONE	400	24	--	4	1950	3	11-50	H	125SNLB	6S	805	9.5	2208
147-091-28DD1	U.S.B.I.A.	89	78	--	4	1969	--	--	U	125SNLB	1	--	--	--
147-091-28DD2	U.S.B.I.A.	65	--	--	--	1969	--	--	Z	--	--	--	--	--
147-091-28DD3	U.S.B.I.A.	98	--	--	--	1969	--	--	Z	--	--	--	--	--
147-091-29BCA	J.FREDERICKS	918	917	875	4	1965	432	5-72	K	125TGRV	S	3650	13.5	2270
147-091-30AAA	TRIBAL	400	--	--	--	1950	--	--	U	--	--	--	--	2261
147-091-31CDB1	C.SMITH		250	--	4	1954	--	--	U	125SNLB	S	--	--	2090
147-091-33ADD	TRIBAL	405	--	--	--	1950	--	--	U	--	--	--	--	2308
147-091-35BDA	K.FREDERICKS		1547	906	2	--	60	9-70	H	211FXHL	V	2030	8.0	2185
147-091-36AAC	J.STARR		7	--	36	1969	2	9-71	S	--	R	1400	--	--
147-092-03CDC	C.MOSSETTE		159	--	4	1969	106	8-59	H	125SNLB	S	5060	10.0	1905
147-092-21DA	TRIBAL	405	--	--	--	1950	--	--	U	--	--	--	--	2288
147-092-36BC	TRIBAL	405	--	--	--	1950	--	--	U	--	--	--	--	2312
147-093-03DRR	TRIBAL	250	223	--	4	--	163	10-50	U	125SNLB	S	4060	--	2001
147-093-05CDD	CARTER OIL CO.	11105	--	--	--	1954	--	--	U	--	--	--	--	2133
147-093-15BCD	TRIBAL	405	--	--	--	1950	--	--	U	--	--	--	--	--

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LOCAL WELL NUMBER	OWNER	DRILLED DEPTH (FT)	WELL DEPTH (FT)	CASING DEPTH (FT)	CASING DIAMETER (IN)	DATE DRILLED (YEAR)	WATER LEVEL (FT)	DATE WATER LEVEL MEASURED	USE OF WATER	MAJOR AQUIFER	WATER BEARING MATERIAL	SPECIFIC CONDUCTANCE @ 25 °C (µMHOS/CM)	TEMPERATURE (°C)	ALTITUDE OF LSO (FT)
147-093-29DCA	A.VOIGHT		373	353	2	1930	+22	8-72	S	125SNLB	S	3240	13.5	1840
147-093-35CBC	CORPS OF ENG.		96	--	2	--	--	5-72	R	125TGRV	1	>8000	9.5	1860
147-094-02AD	TRIBAL	315	--	--	--	1950	--	--	U	--	--	--	--	2244
147-094-26BCB	K.KNUTSON	1510	1502	1470	1	1969	+72	11-72	S	211FXHL	V	2350	15.5	1940
147-094-33DB	H.LARSEN		1665	1590	1	1969	F	6-73	S	211FXHL	V	--	--	2210
147-094-34BAD	K.KNUTSON	1515	1510	1465	1	1968	+78	11-72	S	211FXHL	V	2230	23.0	1980
147-095-03AAB	J.FETTIG		360	--	1	1913	+15	7-72	U	125TGRV	V	3020	12.0	1893
147-095-04BBA	M.KLEEMAN	1350	1348	1320	2	1971	+8	7-72	S	211HLCK	S	3210	12.5	1970
147-095-08BDC	G.TAROR	1530	1490	1385	2	1966	+51	7-72	S	211FXHL	S	2450	20.0	1990
147-095-12BCD	T.SANDVICK		400	--	1	--	+12	7-72	S	125TGRV	V	3240	--	1990
147-095-12CAD	T.SANDVICK	1425	1410	1386	1	1969	+118	7-72	S	211FXHL	V	2900	18.5	--
147-095-13CCC1	NDSPS	160	--	--	--	1971	--	--	U	--	--	--	--	2420
147-095-13CCC2	NDSPS	1950	1935	--	2	1971	299	6-73	R	211FXHL	V	2120	12.0	2420
147-095-14AAA	NDSPS	1435	1430	1410	1	1968	+71	7-72	R	211FXHL	V	2880	17.0	1980
147-095-14CAC	H.GUIMONT		10	--	48	1958	5	--	K	125SNLB	1	1120	--	--
147-095-14CBB1	G.KLEEMAN		52	52	24	1933	20	--	H	125SNLB	S	3860	7.0	--
147-095-14CBB2	G.KLEEMAN		120	120	6	1963	70	--	H	125SNLB	S	2350	--	--
147-095-14CBB3	G.KLEEMAN		26	26	18	1933	10	--	S	125SNLB	1	1900	7.0	--
147-095-17ACA	G.TAROR	1580	1570	1510	1	1968	+40	7-72	S	211FXHL	V	1720	20.0	--
43 147-095-18DAC	G.TAROR		35	35	18	--	22	--	H	125SNLB	--	675	--	--
147-095-19ARA	M.DAVIS		15	15	32	1946	9	--	H	125SNLB	S	875	--	--
147-095-21ABA	M.KLEEMAN	286	50	--	6	1967	30	--	S	125SNLB	S	1010	7.0	--
147-095-22BBA?	M.KLEEMAN		95	--	6	1958	78	--	K	125SNLB	S	2550	--	--
147-095-23CCA	A.SCHWALBE		20	20	36	--	10	--	K	125SNLB	--	2750	--	--
147-095-24AAC	T.SANDVICK		1580	--	1	1969	+146	--	S	211FXHL	V	2070	24.0	1990
147-095-26BBB1	A.SCHWALBE		1850	--	1	1969	164	7-72	S	211FXHL	S	2270	--	2280
147-095-26BBB2	A.SCHWALBE		20	20	72	--	10	--	S	125SNLB	--	1800	4.0	--
147-096-21AAB1	P.PLETAN		65	65	18	1950	30	--	S	125SNLB	1	<500	6.5	--
147-096-21AAB2	P.PLETAN		50	50	18	1946	20	--	H	125SNLB	1	<500	--	--
147-096-21ACD1	P.PLETAN		65	--	6	1960	--	--	K	125SNLB	--	<500	--	--
147-096-21ACD2	P.PLETAN		100	--	6	1960	40	--	S	125SNLB	--	--	--	--
147-096-22DCD1	P.HAWKINSON		100	100	6	1946	40	--	H	125SNLB	S	<500	--	2030
147-096-22DCD2	P.HAWKINSON		60	--	6	--	20	--	S	125SNLB	S	550	6.0	2030
147-096-28BRA	NDSWC 8178	80	--	--	--	1971	--	--	U	--	--	--	--	2600
147-096-28BCC	N.BENSON		180	180	6	--	150	--	K	--	S	590	--	--
147-096-34BRA	N.BENSON	205	193	173	3	1956	150	--	S	125SNLB	S	1100	--	--
147-096-36CAC	F.BECK	101	96	78	4	1967	--	--	U	125SNLB	S	--	--	--
147-096-36DCB	J.BECK		149	135	4	1972	--	10-72	S	125SNLB	S	1600	9.0	--
147-097-05AAA	C.DANIELSON		490	--	1	1949	+2	4-73	S	125TGRV	V	3060	9.0	1918
147-097-05ADD	D.HARRIS		1400	--	2	--	+154	5-73	S	211FXHL	V	2080	24.0	1954

LOCAL WELL NUMBER	OWNER	DRILLED DEPTH (FT)	WELL DEPTH (FT)	CASING DEPTH (FT)	CASING DIAMETER (IN)	DATE DRILLED (YEAR)	WATER LEVEL (FT)	DATE WATER LEVEL MEASURED	USE OF WATER	MAJOR AQUIFER	WATER BEARING MATERIAL	SPECIFIC CONDUCTANCE (µMHOS/CM @ 25°C)	TEMPERATURE (°C)	ALTITUDE OF LSN (FT)
147-097-058DB	G. OLSON		700	--	1	1961	+25	4-73	S	125TGRV	V	2900	14.5	1920
147-097-06ARB	C. DANIELSON		475	--	1	1961	+14	4-73	S	125TGRV	V	2830	13.0	1960
147-097-100DA	A. CARUS	265	246	--	4	1968	205	--	S	125SNLB	1	1200	--	--
147-097-110AA1	F. RICE	125	53	34	4	1960	50	--	K	125SNLB	S	4500	7.0	--
147-097-110AA2	F. RICE		8	--	64	--	2	--	S	125SNLB	--	2400	3.0	--
147-097-110BB	F. RICE		64	49	6	1970	50	--	H	125SNLB	S	610	--	--
147-097-120DB1	H. RICE		285	250	3	1964	240	--	H	125SNLB	S	1890	--	--
147-097-120DB2	H. RICE		280	250	3	1961	240	--	S	125SNLB	S	1450	7.0	--
147-097-120DB3	H. RICE		50	45	24	1953	15	--	S	125SNLB	1	1680	6.0	--
147-097-180BC	D. HARRIS		700	--	1	1961	+7	10-72	S	125TGRV	V	2940	13.0	1975
147-097-20BAB	D. HARRIS		1425	--	1	1961	+116	10-72	S	211FXHL	V	1970	23.5	2002
147-097-24ADB1	A. CARUS		40	--	--	--	--	--	H	125SNLB	--	500	--	--
147-097-24ADB2	A. CARUS		29	--	--	--	7	12-71	S	125SNLB	1	580	5.0	--
148-092-03ABA2	V. HUMTSALONG		26	--	18	1969	--	--	H	125SNLB	1	1500	--	--
148-092-03DBA	TRIBAL	510	--	--	--	1950	--	--	U	--	--	--	--	2217
148-092-05	TRIBAL	400	--	--	--	1950	--	--	U	--	--	--	--	2327
148-092-06ABA	G. VANDYKE		133	129	1	1967	104	7-71	K	125SNLB	--	860	--	--
148-092-06BCA	P. VANDYKE		89	--	6	1971	40	--	S	125SNLB	S	719	9.5	--
148-092-06BDB	P. VANDYKE		98	70	4	1966	80	--	K	125SNLB	S	888	9.5	--
44 148-092-11CCB	N. BAKER		100	--	20	1971	85	8-73	H	125SNLB	YS	1210	--	--
148-092-23CCA	P. YOUNGREAR	50	23	19	20	1971	12	8-73	H	125SNLB	1	1530	--	--
148-092-24CCD	D. DUDA		119	109	4	1971	20	--	H	125SNLB	S	1900	--	--
148-092-35BDA	J. DAVIS		65	--	4	1970	--	--	H	125SNLB	S	4010	--	--
148-093-04CAB1	NDSWC 4596A		340	330	1	1973	137	5-74	U	125TGRV	V	--	--	1986
148-093-04CAB2	NDSWC 4596B		190	180	1	1973	68	11-73	U	125SNLB	V	4250	9.0	1987
148-093-04CDB	NDSWC 4596	920	480	462	2	1973	119	11-73	U	125SNLB	V	3680	8.0	1985
148-093-05CCA1	O. STANDISH		102	--	4	--	--	--	U	125SNLB	1	--	--	--
148-093-05CCA2	O. STANDISH		72	--	6	1968	50	--	H	112BGFV	R	2200	--	--
148-093-07ADA	R. GOODBIRD		--	--	4	--	--	--	U	--	--	--	--	--
148-093-09BRC	TRIBAL	510	40	--	4	1950	20	10-50	U	112BGFV	G	--	--	1955
148-093-10CCC	NDSWC 4737	120	109	103	1	1974	7	7-74	U	125SNLB	2V	3880	8.0	1920
148-093-14CNC	NDSWC 4738	100	63	57	1	1974	5	7-74	U	125SNLB	2V	5270	8.5	1840
148-093-15ACB	NDSWC 8175	40	--	--	--	1971	--	--	U	--	--	--	--	1895
148-093-17BBD	J. MCKINZE		160	--	4	--	--	--	U	125SNLB	--	1310	--	2100
148-093-20BCA	TRIBAL	450	--	--	--	1950	--	--	U	--	--	--	--	2211
148-093-32CDB	TRIBAL	400	--	--	--	1950	--	--	U	--	--	--	--	2131
148-094-01DDD	NDSWC 8174	80	--	--	--	1971	--	--	U	--	--	--	--	2055
148-094-03ABR	TRIBAL	450	--	--	--	1950	--	--	U	--	--	--	--	2366
148-094-06DBD	TRIBAL		--	--	--	--	--	--	S	125SNLB	--	819	7.0	--
148-094-13AAD	TRIBAL	450	--	--	--	1950	--	--	U	--	--	--	--	2237

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148-094-13RDD	R. HALL		30	--	6	1967	15	--	K	--	--	1090	11.0	--
148-094-14DAC	R. HALL		100	--	4	1968	40	--	S	112BGFV	R	1950	11.0	--
148-094-20DDD	TRIBAL	135	134	--	4	--	44	10-50	U	112TILL	T	1490	--	2308
148-094-25CCC	J. CHASE		120	--	5	--	--	--	U	--	--	--	--	--
148-094-26DCA	TRIBAL		290	--	4	--	220	8-72	U	125SNLB	S	--	--	2263
148-094-33ACD	TRIBAL	200	147	--	4	--	78	10-50	U	125SNLB	S	--	--	2279
148-095-01DRB	TRIBAL		240	--	4	--	176	10-50	U	125SNLB	V	--	--	2507
148-095-13ADC	TRIBAL		400	--	--	1950	--	--	U	--	--	--	--	2444
148-095-22CCA	E. CHASE	1455	1430	1372	2	--	+37	4-72	K	211FXHL	S	3080	17.0	1925
148-095-29CRC	D. MEYER		760	--	4	1937	F	8-71	S	125CBLD	--	3000	12.0	1900
148-095-31BAC	D. MEYER		700	--	1	--	F	6-73	S	125CBLD	--	--	--	1885
148-095-31CCA	G. TARDR	1355	1350	1317	2	1971	+149	7-72	S	211FXHL	V	2020	20.0	1940
148-095-32DRD	G. TARDR	1370	1365	1335	2	1971	+82	7-72	S	211FXHL	S	2660	19.0	1930
148-095-33DRR	D. MEYER		436	--	2	1931	F	8-71	S	125TGRV	--	3270	12.0	1893
148-095-35DDD	T. FETTIG		400	--	1	--	+13	7-72	U	125TGRV	S	3110	12.0	1880
148-096-06DCA	E. JORGENSEN		300	--	2	1927	+9	--	S	125TGRV	--	3280	11.0	1890
148-096-09ARD	F. JORGENSEN	1465	1460	--	1	1969	+125	10-72	S	211FXHL	V	2140	22.0	1950
148-096-11BR	F. JORGENSEN		1455	1374	2	--	+17	10-72	S	211FXHL	V	3060	16.5	2000
148-096-15AAA	E. JORGENSEN	1680	1675	1665	2	1970	289	6-73	S	211FXHL	V	2310	21.0	2400
148-096-17CCD	G. FENTON		550	--	1	1912	F	5-72	S	125TGRV	--	3080	14.0	1885
148-096-18ABC	G. FENTON		600	--	1	1912	+24	5-72	K	125TGRV	S	3230	14.0	1895
148-096-22RCR	G. FENTON	255	248	--	1	1950	F	5-72	S	125TGRV	1	3210	10.0	1895
148-096-23BRB	E. JORGENSEN		300	--	2	1927	+6	10-72	S	125TGRV	--	3150	11.0	1900
148-096-25CDA	D. MEYER		600	--	--	--	+14	6-73	S	125TGRV	--	2410	12.0	1875
148-096-35RCC	L. PELTON		29	--	48	1952	10	--	K	125SNLB	S	719	4.5	2650
148-097-04DBA	G. NELSON		700	680	1	1964	+9	5-73	S	125TGRV	--	2750	5.0	1920
148-097-09DRD	G. NELSON		1450	1350	1	1966	+196	5-73	S	211FXHL	S	2180	22.0	1935
148-097-10CAA	G. FENTON		800	--	1	1960	+26	9-72	S	125CBLD	S	2940	10.0	1910
148-097-12ABA	G. FENTON		243	--	1	1940	+15	5-72	S	125TGRV	1	3200	10.5	1884
148-097-17DAA	D. THORP		1998	1978	2	1964	277	5-73	S	211FXHL	S	2380	17.0	2390
148-097-20CAD	C. DANIELSON	1701	1693	1630	1	1970	+49	4-73	S	211FXHL	V	2140	22.5	2140
148-097-22COC	R. MONROE		1401	1381	1	1968	+220	10-72	H	211FXHL	S	2060	23.0	1920
148-097-27BCB	R. MONROE		311	291	1	1940	+6	10-72	S	125TGRV	V	3180	12.0	1905
148-097-28ACB	C. DANIELSON		675	645	1	1961	+11	4-73	S	125TGRV	V	2900	15.5	1918
148-097-30ADA	G. NELSON		1565	1523	2	1964	+33	5-73	S	211FXHL	S	2030	25.0	2080
148-097-33ARB	NDSWC 447H	1970	1325	--	2	1972	+191	9-72	U	211FXHL	4V	2020	27.0	1920
148-097-33RCC	C. DANIELSON		1130	--	1	1964	+81	4-53	S	211HLCK	V	2890	90.5	1940
149-091-17BAR	TRIBAL		400	--	--	1950	--	--	U	--	--	--	--	2177
149-091-22BRD	MORIL OIL CO.	13481	--	--	--	--	--	--	U	--	--	--	--	--
149-091-30CCD	TRIBAL		375	--	--	1950	--	--	U	--	--	--	--	2195

LOCAL WELL NUMBER	OWNER	DRILLED DEPTH (FT)	WELL DEPTH (FT)	CASING DEPTH (FT)	CASING DIAMETER (IN)	DATE DRILLED (YEAR)	WATER LEVEL (FT)	DATE WATER LEVEL MEASURED	USE OF WATER	MAJOR AQUIFER	WATER BEARING MATERIAL	SPECIFIC CONDUCTANCE (µMHOS/CM @ 25°C)	TEMPERATURE (°C)	ALLIANCE OF LSI (FT)
149-091-33BCC	TRIBAL	400	347	--	4	--	217	10-60	U	125SNLB	S	--	--	2010
149-092-22CDC	R.SMITH		40	--	4	--	--	--	U	--	--	772	9.0	--
149-092-29DCC	TRIBAL		404	--	4	--	88	8-72	U	125SNLB	I	--	--	2184
149-093-02ACB	C.PERKINS		647	627	1	1962	+13	8-72	S	125SNLB	I	2230	10.0	1950
149-093-05CDC			84	74	1	1961	+14	8-72	S	125SNLB	S	2620	9.0	2030
149-093-08NCC	M.FOX		500	--	4	1960	10	--	H	125SNLB	--	3010	--	2285
149-093-09CCD	ST.ANTHONYS		65	--	9	1952	55	--	H	125SNLB	I	3310	--	--
149-093-10AAA	TRIBAL	450	--	--	--	1950	--	--	U	--	--	--	--	2297
149-093-14CCC	TRIBAL	450	432	--	4	--	317	10-60	U	125SNLB	S	--	--	2249
149-093-18DDB	TRIBAL		465	--	4	--	362	10-60	U	125SNLB	S	--	--	2335
149-093-21DCA	F.WICKER		35	--	--	--	--	--	U	--	--	652	10.0	--
149-093-23ACD			34	--	4	--	33	--	U	125SNLB	--	--	--	--
149-093-24AC	MOBIL OIL CO.	11331	--	--	--	--	--	--	U	--	--	--	--	2131
149-093-2500D	TRIBAL	510	147	--	4	--	100	10-60	U	125SNLB	I	--	--	2065
149-093-27ARA	H.YOUNGBIRD		65	--	4	--	--	--	H	125SNLB	--	696	--	--
149-093-34ACA	TRIBAL	372	357	--	4	--	288	10-60	U	125SNLB	S	--	--	2121
150-091-35CCA	TRIBAL		126	--	4	--	60	--	P	125SNLB	S	1440	37.5	--
150-093-31ADD	TRIBAL		336	316	1	1961	+21	8-72	S	125SNLB	S	2530	9.0	1860
150-093-33CAA	W.FACE		388	368	1	1960	+23	8-72	S	125SNLB	S	2320	10.5	1950

TABLE 2.--Records of springs

Local spring number ¹	Owner	Use of water ²	Major aquifer ²	Lithology	Flow (gal/min)	Date measured	Specific conductance (μ mhos/cm @ 25°C) ³	Temperature (°C)	Remarks
141-092-24AAD	V. Staudinger	K	125SNLB	Coal	--	--	2500	--	Perennial
141-097-15ABB	G. Hecker	S	125SNLB	--	4	7-22-71	520	8.0	Perennial
142-091-06CAD	C. Siverts	K	125SNLB	Coal	6	8- 4-71	1800	--	Perennial
142-091-08ABB	S. Helsper	S	125SNLB	--	2	9-22-71	3325	9.5	Perennial
142-096-04CDB2	L. Hendricks	S	125SNLB	Coal	--	--	3600	13.0	Perennial
142-097-16CAA	W. Fisher	K	125SNLB	Coal	6	8-11-71	900	9.0	Perennial
143-094-14CDC	J. Kuntz	K	125SNLB	Coal	24	9-23-71	1960	8.5	Perennial
143-095-04AAC	D. Twist	S	125SNLB	--	--	--	1600	11.0	--
143-095-06BB	Manning	P	125SNLB	Coal	2	8- 3-71	1190	13.0	Perennial
143-095-24CDA	W. Watkins	S	125SNLB	Coal	6	6-17-72	1700	9.0	Perennial
143-097-03ADA	J. Schmidt	K	125SNLB	--	--	--	700	--	Perennial
143-097-20AAB	D. Steffan	S	125SNLB	Coal	1	6-13-72	475	11.5	Perennial
144-092-08CDB	J. McNamara	S	125SNLB	Coal	3	9-29-71	1710	9.0	Perennial
144-093-27ACC	H. Olson	S	125SNLB	Coal	--	--	1025	8.0	Perennial
144-095-30DCB	J. Leiss	S	125SNLB	--	1	9-21-71	1575	10.0	Perennial
144-096-10CDC	S. Schwindt	U	125SNLB	Coal	2	10- 6-71	950	9.5	Perennial
144-096-15BAB	A. Kostelecky	S	125SNLB	Coal	<1	10- 6-71	950	10.0	Perennial
144-096-27CBA	P. Stroh	S	112BGFV	Gravel	6	10- 6-71	1510	9.0	Perennial
144-097-04CBB	D. Jefferies	S	125SNLB	Coal	3	10- 5-71	500	9.0	Perennial
144-097-04CCA	D. Jefferies	S	125SNLB	Coal	.4	10- 5-71	500	12.0	Perennial
144-097-11BBD	R. Schmidt	S	125SNLB	Coal	12	10- 5-71	1750	8.0	Perennial
144-097-23ADD	F. Hutmacher	K	125SNLB	Coal	3	10- 5-71	2225	9.0	Perennial
144-097-23BCB	J. Thomas	K	125SNLB	--	2	10- 5-71	500	9.0	Perennial
145-091-22CBC	O. Flaget	U	125SNLB	--	--	--	5200	9.0	Intermittent
145-091-27BCC1	E. Carlson	S	125SNLB	Coal	6	10- 7-71	2100	9.0	Perennial
145-092-08DAD	R. Erdmann	S	125SNLB	Coal	<1	10-14-71	980	9.0	Perennial
145-092-130DD	O. Christensen	K	125SNLB	Coal	14	10-15-71	1200	7.5	Perennial
145-092-14BAD2	G. Ferebee	S	125SNLB	Coal	20	10-13-71	712	6.0	Perennial
145-092-20ADC3	R. Erdmann	S	125SNLB	Coal	1.7	10-14-71	1150	8.0	Perennial
145-092-20CBC	R. Johnson	S	125SNLB	Coal	20	7-21-72	1430	8.0	Perennial

Local spring number ¹	Owner	Use of water ²	Major aquifer ²	Lithology	Flow (gal/min)	Date measured	Specific conductance (µmhos/cm @ 25°C) ³	Temperature (°C)	Remarks
145-092-24BCA1	Halliday	P	125SNLB	Coal	--	8- 4-71	2000	8.0	Perennial
145-092-28DDB1	M. Dahlen	S	125SNLB	Coal	8.5	10-14-71	2100	8.0	Perennial
145-092-28DDB2	M. Dahlen	S	125SNLB	Coal	1	10-14-71	2050	9.0	Perennial
145-093-23CCC	Dunn County	U	125SNLB	Coal	1	8- 5-71	980	8.0	Perennial
145-093-27DCD	W. Benz	S	125SNLB	Coal	3	10-20-71	1200	8.0	Perennial
145-093-29BCD	G. Lynch	K	125SNLB	Coal	20	10-21-71	1300	8.0	Perennial
145-093-32AAC	W. Benz	U	125SNLB	Sand	<1	10-20-71	1050	9.0	Perennial
145-095-07BCB	R. Dolezal	S	125SNLB	--	2	10-28-71	820	6.0	Perennial
145-095-14BCB	D. Fitzlaugh	U	125SNLB	Coal/sand	--	--	1510	10.5	Perennial
145-095-18DCA	E. Kovaloff	S	125SNLB	Coal	--	--	2550	8.0	Perennial
145-095-29CDB	W. Pavlenko	S	125SNLB	--	2	11-10-71	675	7.5	Perennial
145-095-32BDA	W. Pavlenko	S	125SNLB	--	6	11-10-71	800	7.5	Perennial
145-095-33CBB	M. Truckan	S	125SNLB	Coal	1.3	10-27-71	1700	8.0	Perennial
145-096-01CBD	A. Dolenzal	S	125SNLB	--	2.5	10-28-71	690	8.0	Perennial
145-097-03AAB	P. Obrigewitch	S	125SNLB	Coal	1	11-10-71	1020	7.5	Perennial
145-097-04ADC	V. Dukart	K	125SNLB	Coal	1.7	11- 9-71	1200	7.0	Perennial
145-097-06CAB	M. Blackburn	S	--	--	1.7	11- 4-71	1000	9.0	Perennial
146-091-05CBA1	R. Crowsheart	S	125SNLB	Coal	<1	8- 9-50	3070	9.0	Perennial
146-091-05CBA2	R. Crowsheart	S	125SNLB	Coal	8.6	--	1050	8.0	Perennial
146-091-05CBA2	R. Crowsheart	S	125SNLB	Coal	8.0	9-29-71	1680	8.0	Perennial
146-091-18DBA	M. Transtrom	K	125SNLB	Sand/coal	6	5-24-72	3015	10.0	Perennial
146-091-21DDC	L. Weiss	S	125SNLB	Coal	8	9-28-71	1010	9.5	Perennial
146-091-22BBA1	G. Geegelman	K	125SNLB	Coal	1	7-12-72	1800	13.0	Perennial
146-092-02DCA	J. Burr	U	--	Sand	30	5-23-72	1220	--	Perennial
146-092-14CDD1	D. Kisse	H	125SNLB	Coal	<1	9-30-71	880	12.0	Perennial
146-092-15CBB	M. Voight	K	125SNLB	Coal	1.3	9-30-71	2050	10.0	Perennial
146-092-15CDB	D. Kisse	S	125SNLB	Coal	3	9-30-71	1430	8.0	Perennial
146-092-25BCB	A. Kisse	H	125SNLB	Coal	<1	10- 1-71	750	11.5	Perennial
146-093-10BAC	E. Voight	K	125SNLB	Coal	<1	10- 5-71	1900	10.0	Perennial
146-094-26ADB	J. Connolly	S	125SNLB	--	5	10- 7-71	675	7.0	Perennial
146-094-35AAB	J. Connolly	K	125SNLB	--	20	10- 7-71	878	8.0	Perennial
146-095-19CBA	J. Mittelstadt	S	125SNLB	Sand	2	12-16-71	710	5.0	Perennial
146-095-30CDB	F. Skachenko	U	125SNLB	Coal	--	--	1100	7.0	Perennial
146-095-30DCA	F. Skachenko	U	125SNLB	Sand	--	--	1480	8.0	Perennial
146-095-32CBB	A. Kukla	K	125SNLB	Coal	2	11-23-71	1630	7.0	Perennial

Local spring number ¹	Owner	Use of water ²	Major aquifer ²	Lithology	Flow (gal/min)	Date measured	Specific conductance ($\mu\text{mhos/cm}$ @ 25°C) ³	Temperature (°C)	Remarks
146-095-35DDC	H. Mittelstadt	S	125SNLB	Coal	10	8-25-72	6290	10.0	Perennial
146-096-06BAD	T. Bang	S	125SNLB	Coal	1.7	11-11-71	<500	6.0	Perennial
146-096-11BAC1	W. Lubke	K	124GLVD	Coal	2	11-15-71	<500	7.0	Perennial
146-096-11DAC4	C. Kelling	S	--	--	4	11-17-71	690	8.0	Perennial
146-096-15CDC	Murphy Bros.	K	112BGFV	Gravel	5	11-18-71	<500	--	Perennial
146-096-23ADD	L. Davis	S	124GLVD	Coal	--	--	2950	6.0	Perennial
146-096-23CBB	L. Davis	S	--	Sand	1.7	11-18-71	<500	5.0	Perennial
146-096-23CCC	L. Davis	S	124GLVD	Coal	6	11-18-71	800	3.0	Perennial
146-096-27ADC	F. Thomas	S	--	--	<1	11-23-71	<500	2.0	Perennial
146-096-27BCB	F. Thomas	S	112BGFV	Gravel	4	11-23-71	<500	7.5	Perennial
146-096-32CBA	A. Kukla	S	124GLVD	Coal	4	11-23-71	2400	8.0	Perennial
146-096-33ACC	Diamond "C" Ranch	K	124GLVD	Coal	20	11-23-71	660	7.0	Perennial
146-097-34CAD	P. Obrigewitch	S	125SNLB	Coal	2.5	11-10-71	625	6.0	Perennial
147-091-14BDD	F. Benson	K	125SNLB	Coal	<1	10- 1-71	1100	8.0	Perennial
147-091-15ABC	E. Fredericks	K	125SNLB	Coal	<1	9-30-71	2050	8.0	Perennial
147-091-22ABB	C. Lincoln	K	125SNLB	Coal	12	9-30-71	1610	8.0	Perennial
147-091-25DAD	J. Starr	S	125SNLB	Coal	4	9-30-71	1240	9.5	Perennial
147-091-26BDB	K. Fredericks	S	125SNLB	--	1	9-29-71	628	11.0	Perennial
147-091-26CAC	P. Huber	S	112BGFV	Sand/gravel	30	9-29-71	1500	8.0	Perennial
147-091-31CDB2	C. Smith	S	125SNLB	Coal	3	5-23-72	5550	9.0	Perennial
147-094-04DDA	Little Swallow	K	125SNLB	Coal	8	7-19-51	2250	7.0	Perennial
147-094-04ddb	Tribal	S	125SNLB	Coal	10	7-18-72	1800	10.0	Perennial
147-095-15CBA	T. Sandvick	K	125SNLB	Coal	10	12-18-71	495	5.0	Perennial
147-095-18CBA	M. Brandvik	K	125SNLB	Coal	2	12- 8-71	<500	8.0	Perennial
147-095-18DAD	G. Taber	S	125SNLB	Coal	1	12- 6-71	775	6.0	Perennial
147-095-22BBA1	M. Kleeman	S	125SNLB	Coal	1	12- 8-71	990	8.0	Perennial
147-095-23ACB	G. Kleeman	S	125SNLB	Sand/coal	3	12- 9-71	2150	7.5	Perennial
147-095-32BDC	W. Rice	H	125SNLB	Coal	11	12- 3-71	835	7.5	Perennial
147-095-32BDD	W. Rice	S	--	--	6	12- 3-71	<500	7.5	Perennial
147-096-27DDA	P. Hawkinson	S	124GLVD	Coal	1	12-16-71	1600	6.0	Perennial
147-097-01ADD	H. Bice	S	--	--	4	12- 2-71	1300	6.0	Perennial
147-097-02CBD	E. Tysver	K	125SNLB	Coal	2	11-16-71	750	8.0	Perennial
147-097-17AAA	A. Carus	K	125SNLB	Coal	1	12-17-71	<500	--	Perennial
147-097-23BAD	A. Carus	S	125SNLB	Coal	3	12-17-71	1090	6.0	Perennial
147-097-24ADB3	A. Carus	S	125SNLB	Coal	2	12-15-71	<500	6.0	Perennial

Local spring number ¹	Owner	Use of water ²	Major aquifer ²	Lithology	Flow (gal/min)	Date measured	Specific conductance (μmhos/cm @ 25°C) ³	Temperature (°C)	Remarks
147-097-26CCC	O. Olson	K	125SNLB	Sand	1.2	11-16-71	<500	8.0	Perennial
147-097-34CAA	E. Tysver	S	125SNLB	--	1.5	11-16-71	<500	8.0	Perennial
148-091-07BAA	K. Blackhawk	K	125SNLB	--	3	8- 3-72	1800	8.0	Perennial
148-092-03ABA1	V. Huntsalong	S	125SNLB	--	6	8- 3-72	1350	9.5	Perennial
148-092-04CBD	Youngbear	S	125SNLB	Coal	36	8- 8-50	447	8.0	Perennial
148-092-11AAC	P. Murphy	S	125SNLB	Coal	8	8- 3-72	461	10.0	Perennial
148-092-11ACA	Tribal	S	125SNLB	Coal	2.9	8- 8-50	550	9.5	Perennial
148-092-26ACA	E. Fredericks	K	125SNLB	Coal	2	8- 3-72	655	10.5	Perennial
148-093-01DDC	C. Woman	S	125SNLB	Sandstone	24	8- 2-72	497	8.0	Perennial
148-093-17BDD	U. Eagle	U	125SNLB	Coal	3	8- 8-50	2500	9.5	Perennial
148-093-31DBD	A. Everett	S	125SNLB	--	<1	8- 9-51	1560	7.0	Perennial
148-093-31DCC	Tribal	S	125SNLB	--	5	7-26-72	1500	9.0	Perennial
148-094-15CAD	J. Woundedface	K	125SNLB	Coal	8	7-21-72	693	10.5	Perennial
148-094-23C8D	E. Bateman	S	112BGFV	Gravel	35	7-28-72	1120	11.5	Perennial
148-095-06ACA	D. Meyer	K	125SNLB	--	15	12-14-71	<500	--	Perennial
148-095-24BDA	E. Guimont	K	125SNLB	Sandstone	5	12-10-71	1100	2.0	Perennial
148-095-27DDB	Tribal	S	125SNLB	Coal	<1	8- 6-71	3850	9.5	--
148-096-10DBC	E. Jorgenson	S	125SNLB	Sandstone	<1	6-26-73	2230	10.5	Perennial
148-097-18ACB	C. Danielson	H	125SNLB	Coal	10	4- 5-73	726	9.0	Perennial
149-091-08AAA	A. Goodbird	S	125SNLB	--	6	8-16-72	1880	9.5	Perennial
149-091-16BBB	Charging Ranch	S	125SNLB	Coal	5	8-16-72	1800	11.0	Perennial
149-091-16BCB	Charging Ranch	S	125SNLB	Coal	6	8-16-72	1250	11.5	Perennial
149-091-16BCC	Charging Ranch	S	125SNLB	Coal	4	8-16-72	1400	9.5	Perennial
149-092-07ABA	J. Danks	K	125SNLB	Coal	12	8-17-72	2300	10.0	Perennial
149-092-25CDC	H. Walker	K	125SNLB	--	8	8- 2-72	700	--	Perennial
149-092-27BBB	S. Whiteowl	S	125SNLB	Coal	50	8- 2-72	553	10.0	Perennial
149-092-30CAB	T. Lonefight	K	125SNLB	Coal	15	8- 2-72	1690	8.5	Perennial
149-092-32CCD	E. Grinnell	H	125SNLB	--	--	8- 4-72	1500	9.5	Perennial
149-092-35BDA	P. Baker	K	125SNLB	Coal	80	11- 8-50	825	10.0	Perennial
149-092-35BDA	P. Baker	K	125SNLB	Coal	80	8- 2-72	725	10.0	Perennial
149-093-03CAC	B. Chase	K	125SNLB	Coal	4	8-28-72	1900	11.0	Perennial
149-093-12ACC	A. Horn	S	125SNLB	Coal	14	8-17-72	2440	10.0	Perennial
149-093-20BDD	G. Fox	S	125SNLB	--	11	8-29-72	1600	7.5	Perennial
149-093-21DCC	R. Birdbear	S	125SNLB	Coal	3	8-17-72	622	8.5	Perennial

¹Records of other springs may be found in Dingman and Gordon, 1954.

²See page 15 for explanation.

³Value shown is field conductance, except where a chemical analysis is available.

TABLE 3.--Water levels in selected wells

EXPLANATION

Water levels shown have been adjusted to feet below or (+) above land surface

MP, measuring point lsd, land surface datum

Depth to water, in feet below or (+) above land surface

<u>141-091-22DDD MP is top of 1¼-inch plastic pipe 2.0 ft above lsd.</u>						
	Date	Water level		Date	Water level	
	July 26, 1974..	4.54		Aug. 21.....	4.49	Sept. 24.....Destroyed.
<u>141-091-23CBC MP is top of 1¼-inch plastic pipe 1.9 ft above lsd.</u>						
	Dec. 9, 1971..	1.85		Feb. 28, 1973..	Frozen	Feb. 12, 1974.. 2.39
	Mar. 22, 1972..	Frozen		Apr. 3.....	.93	Apr. 2..... 2.28
	Apr. 18.....	.56		May 9.....	1.16	May 22..... 2.09
	May 17.....	.38		June 5.....	1.37	July 26..... 3.23
	July 11.....	.19		July 18.....	2.26	Aug. 21..... 3.07
	Aug. 15.....	.59		Aug. 15.....	2.60	Sept. 24.....Destroyed.
	Oct. 17.....	.62		Sept. 12.....	2.69	
	Nov. 15.....	.33		Nov. 14.....	2.67	
<u>141-091-26BCB MP is top of 1¼-inch plastic pipe 2.0 ft above lsd.</u>						
	July 26, 1974..	12.81		Aug. 21.....	12.85	Sept. 24.....Destroyed.
<u>141-091-30DAD MP is top of 1¼-inch plastic pipe 2.7 ft above lsd.</u>						
	July 26, 1974..	+ .04		Aug. 21.....	+ .06	Sept. 24..... + .01
<u>141-092-07BBA MP is top of 1¼-inch plastic pipe 2.2 ft above lsd.</u>						
	Dec. 9, 1971..	4.66		June 5.....	3.93	Apr. 2..... 5.40
	July 11, 1972..	3.79		July 18.....	4.86	May 22..... 5.06
	Aug. 15.....	4.28		Aug. 15.....	5.31	July 26..... 5.70
	Nov. 15.....	4.59		Sept. 13.....	5.56	Aug. 22..... 6.03
	Apr. 3, 1973..	4.44		Nov. 14.....	5.64	Sept. 25..... 6.15
	May 9.....	3.74		Feb. 12, 1974..	5.64	
<u>141-092-28AAA MP is top of 1¼-inch plastic pipe 2.0 ft above lsd.</u>						
	July 24, 1974..	3.23		Aug. 21.....	3.08	Sept. 27..... 2.93

Depth to water, in feet below or (+) above land surface

141-093-02CCC MP is top of 1½-inch plastic pipe 2.3 ft above lsd.					
Date	Water level	Date	Water level	Date	Water level
July 23, 1974..	+ .86	Aug. 22.....	+ .34	Sept. 25.....	+ .27
141-093-04CBB1 MP is top of 1½-inch plastic pipe 2.0 ft above lsd.					
Dec. 11, 1973..	23.22	May 22.....	23.03	Sept. 25.....	23.27
Feb. 12, 1974..	23.12	July 23.....	23.18		
Apr. 2.....	23.06	Aug. 22.....	23.40		
141-093-06ABA MP is top of 1½-inch plastic pipe 2.0 ft above lsd.					
Feb. 14, 1974..	3.32	May 22.....	3.08	Aug. 22.....	3.48
Apr. 2.....	3.25	July 23.....	3.36	Sept. 25.....	3.50
141-093-11BCC MP is top of 1½-inch plastic pipe 2.0 ft above lsd.					
Dec. 11, 1973..	2.89	May 22.....	.48	Sept. 25.....	2.76
Feb. 12, 1974..	2.91	July 23.....	1.98		
Apr. 2.....	2.31	Aug. 22.....	2.45		
141-093-16AAA1 MP is top of 2-inch steel pipe 3.9 ft above lsd.					
July 23, 1974..	44.00	Sept. 25.....	45.42	Oct. 29.....	45.57
Aug. 22.....	44.90				
141-093-16AAA2 MP is top of 1½-inch plastic pipe 1.8 ft above lsd.					
July 23, 1974..	63.12	Sept. 25.....	63.20	Oct. 29.....	63.27
Aug. 22.....	63.28				
141-093-17BBB MP is top of 1½-inch plastic pipe 2.8 ft above lsd.					
June 13, 1974..	8.70	Aug. 22.....	8.98	Sept. 25.....	9.03
July 23.....	9.06				
141-093-19DDD MP is top of 1½-inch plastic pipe 1.0 ft above lsd.					
Dec. 10, 1973..	2.74	May 22.....	2.40	Sept. 25.....	2.89
Feb. 12, 1974..	2.69	July 23.....	2.90		
Apr. 2.....	2.62	Aug. 22.....	2.90		

Depth to water, in feet below or (+) above land surface

<u>141-093-20DCD MP is top of 1½-inch plastic pipe 2.1 ft above lsd.</u>					
Date	Water level	Date	Water level	Date	Water level
Dec. 10, 1973..	9.14	May 22.....	8.80	Sept. 25.....	9.50
Feb. 12, 1974..	9.17	July 23.....	9.36		
Apr. 2.....	9.08	Aug. 22.....	9.49		
<u>141-093-22DCD MP is top of 1½-inch plastic pipe 1.5 ft above lsd.</u>					
June 13, 1974..	14.51	Aug. 22.....	14.69	Sept. 25.....	14.29
July 23.....	14.57				
<u>141-093-30ABA MP is top of 1½-inch plastic pipe 2.0 ft above lsd.</u>					
Dec. 10, 1973..	6.21	May 22.....	6.32	Sept. 25.....	6.75
Feb. 12, 1974..	6.18	July 23.....	6.74		
Apr. 2.....	6.15	Aug. 22.....	6.75		
<u>141-094-04BAA MP is top of 1½-inch plastic pipe 2.3 ft above lsd.</u>					
July 24, 1974..	29.72	Aug. 22.....	29.77	Sept. 25.....	29.80
<u>141-094-15ABB MP is top of 1½-inch plastic pipe 2.1 ft above lsd.</u>					
May 23, 1974..	1.52	Aug. 22.....	1.90	Sept. 25.....	1.99
July 24.....	1.73				
<u>141-094-16AAA MP is top of 1½-inch plastic pipe 1.7 ft above lsd.</u>					
Oct. 19, 1972..	7.18	July 18.....	8.31	May 23.....	8.58
Nov. 17.....	7.42	Aug. 14.....	9.37	July 24.....	9.43
Feb. 28, 1973..	7.01	Sept. 12.....	9.75	Aug. 22.....	10.00
Apr. 3.....	6.90	Nov. 14.....	10.01	Sept. 25.....	10.39
May 9.....	6.33	Feb. 12, 1974..	9.50		
June 5.....	6.20	Apr. 2.....	9.14		
<u>141-094-17BAB MP is top of 1½-inch plastic pipe 2.0 ft above lsd.</u>					
Feb. 12, 1974..	9.53	May 23.....	8.84	Aug. 22.....	10.62
Apr. 2.....	9.28	July 24.....	10.21	Sept. 25.....	10.65
<u>141-094-34AAA MP is top of 1½-inch plastic pipe 2.25 ft above lsd.</u>					
July 23, 1974..	8.30	Aug. 22.....	8.66	Sept. 25.....	9.12

Depth to water, in feet below or (+) above land surface

141-094-34AAD MP is top of 1½-inch plastic pipe 2.5 ft above lsd.

Date	Water level	Date	Water level	Date	Water level
July 23, 1974..	12.15	Aug. 22.....	12.34	Sept. 25.....	12.46

141-094-34DAD MP is top of 1½-inch plastic pipe 1.9 ft above lsd.

July 23, 1974..	14.06	Aug. 22.....	14.06	Sept. 25.....	13.97
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141-094-35BBC MP is top of 1½-inch plastic pipe 1.9 ft above lsd.

Dec. 9, 1971..	12.38	Oct. 19.....	10.24	Nov. 14.....	12.47
Jan. 18, 1972..	12.57	Nov. 17.....	11.82	Feb. 12, 1974..	12.69
Feb. 16.....	12.60	Dec. 28.....	12.02	Apr. 2.....	12.71
Mar. 22.....	12.74	Apr. 3, 1973..	11.98	May 23.....	12.57
Apr. 18.....	12.32	May 9.....	11.70	July 23.....	12.75
May 17.....	11.80	June 5.....	11.65	Aug. 22.....	12.88
June 22.....	11.46	July 18.....	12.03	Sept. 25.....	12.99
July 11.....	11.59	Aug. 14.....	12.42		
Aug. 14.....	11.80	Sept. 12.....	12.29		

141-096-29CCB MP is top of 1½-inch plastic pipe 1.9 ft above lsd.

Dec. 9, 1971..	15.49	Aug. 14.....	14.60	Aug. 14.....	15.26
Jan. 18, 1972..	15.81	Oct. 18.....	14.44	Sept. 13.....	15.54
Feb. 16.....	16.00	Nov. 17.....	14.70	Nov. 14.....	15.98
Mar. 22.....	14.54	Feb. 28, 1973..	15.13	Apr. 2, 1974..	15.87
Apr. 18.....	15.32	Apr. 3.....	14.57	May 24.....	15.48
May 19.....	13.57	May 9.....	14.39	July 23.....	15.68
June 22.....	14.23	June 5.....	14.68	Aug. 22.....	15.82
July 11.....	14.54	July 18.....	15.03	Sept. 27.....	16.13

141-097-25DAB MP is top of 1½-inch plastic pipe 2.2 ft above lsd.

July 23, 1974..	8.13	Aug. 22.....	8.22	Sept. 27.....	8.33
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142-091-08DDA MP is top of 1½-inch plastic pipe 2.0 ft above lsd.

Nov. 16, 1971..	14.77	Aug. 15.....	14.64	Sept. 12.....	15.13
Dec. 9.....	14.86	Oct. 17.....	14.72	Nov. 14.....	15.28
Jan. 17, 1972..	14.97	Nov. 15.....	14.80	Feb. 12, 1974..	15.21
Feb. 16.....	14.98	Feb. 28, 1973..	13.81	Apr. 2.....	14.87
Mar. 22.....	14.43	Apr. 3.....	14.45	May 22.....	14.98
Apr. 18.....	14.20	May 9.....	14.54	July 26.....	15.25
May 17.....	14.03	June 5.....	14.70	Aug. 21.....	15.36
June 21.....	14.25	July 18.....	14.91	Sept. 24.....	15.42
July 11.....	14.41	Aug. 15.....	15.15		

142-091-14BBB MP is top of 1½-inch plastic pipe 2.6 ft above lsd.

July 26, 1974..	14.65	Aug. 21.....	14.79	Sept. 24.....	14.97
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Depth to water, in feet below or (+) above land surface

142-091-15AAD MP is top of 1½-inch plastic pipe 1.6 ft above lsd.

Date	Water level	Date	Water level	Date	Water level
July 26, 1974..	13.64	Aug. 21.....	13.96	Sept. 24.....	14.17

142-091-15CCC MP is top of 1½-inch plastic pipe 2.1 ft above lsd.

Nov. 18, 1971..	18.08	Aug. 15.....	17.02	Sept. 12.....	18.57
Dec. 9.....	18.09	Oct. 17.....	18.88	Nov. 14.....	18.60
Jan. 17, 1972..	18.13	Nov. 15.....	17.93	Feb. 12, 1974..	17.97
Feb. 16.....	18.29	Feb. 28, 1973..	17.71	Apr. 2.....	17.46
Mar. 22.....	14.82	Apr. 3.....	16.96	May 22.....	18.04
Apr. 18.....	16.02	May 9.....	17.50	July 26.....	18.67
May 17.....	16.26	June 5.....	17.71	Aug. 21.....	18.76
June 21.....	14.20	July 18.....	18.23	Sept. 24.....	18.86
July 11.....	16.11	Aug. 15.....	18.57		

142-091-17AAD MP is top of 1½-inch plastic pipe 2.2 ft above lsd.

Nov. 15, 1971..	12.10	Aug. 15.....	11.07	Aug. 15.....	12.34
Dec. 9.....	12.93	Oct. 17.....	11.93	Sept. 12.....	12.62
Jan. 17, 1972..	13.20	Nov. 15.....	12.12	Nov. 14.....	13.13
Feb. 16.....	13.31	Feb. 28, 1973..	12.74	Feb. 12, 1974..	13.27
Mar. 22.....	11.57	Apr. 3.....	10.36	Apr. 2.....	12.40
Apr. 18.....	9.19	Apr. 3.....	10.36	May 24.....	12.54
May 17.....	9.15	May 9.....	10.71	July 26.....	13.20
June 21.....	9.80	June 5.....	11.20	Aug. 21.....	13.35
July 11.....	10.16	July 18.....	11.84	Sept. 24.....	13.58

142-091-17ADA MP is top of 1½-inch plastic pipe 2.0 ft above lsd.

Nov. 16, 1971..	15.00	Aug. 15.....	13.15	Sept. 12.....	14.92
Dec. 9.....	15.07	Oct. 17.....	14.05	Nov. 14.....	15.33
Jan. 17, 1972..	15.29	Nov. 15.....	14.22	Feb. 12, 1974..	15.49
Feb. 16.....	15.46	Feb. 28, 1973..	14.88	Apr. 2.....	14.76
Mar. 22.....	14.67	Apr. 3.....	13.32	May 22.....	14.84
Apr. 18.....	12.86	May 9.....	13.17	July 26.....	15.49
May 17.....	12.20	June 5.....	13.60	Aug. 21.....	15.66
June 21.....	12.38	July 18.....	14.21	Sept. 24.....	15.88
July 11.....	12.66	Aug. 15.....	14.74		

142-091-33DCC MP is top of 1½-inch plastic pipe 2.1 ft above lsd.

July 26, 1974..	18.23	Aug. 21.....	18.34	Sept. 24.....	18.35
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Depth to water, in feet below or (+) above land surface

142-092-10BCC2 MP is top of 1½-inch plastic pipe 1.8 ft above lsd.

Date	Water level	Date	Water level	Date	Water level
Nov. 12, 1971..	12.18	Aug. 15.....	11.91	Sept. 12.....	13.16
Dec. 9.....	12.22	Oct. 17.....	12.37	Nov. 16.....	13.35
Jan. 17, 1972..	12.66	Nov. 15.....	12.50	Feb. 12, 1974..	13.44
Feb. 16.....	12.62	Feb. 28, 1973..	12.75	Apr. 2.....	12.95
Mar. 22.....	11.48	Apr. 3.....	12.00	May 22.....	12.96
Apr. 18.....	11.46	May 9.....	12.05	July 23.....	13.51
May 17.....	11.19	June 5.....	12.24	Aug. 23.....	13.72
June 21.....	11.27	July 18.....	12.72	Sept. 24.....	13.87
July 11.....	11.55	Aug. 15.....	13.01		

142-093-09BBA MP is top of 1½-inch plastic pipe 2.4 ft above lsd.

July 24, 1974..	11.90	Aug. 21.....	12.48	Sept. 25.....	12.52
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142-093-18BBB MP is top of 1½-inch plastic pipe 2.0 ft above lsd.

July 24, 1974..	66.63	Aug. 22.....	66.67	Sept. 25.....	66.49
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142-093-28BBA MP is top of 1½-inch plastic pipe 2.0 ft above lsd.

Dec. 17, 1973..	14.88	May 22.....	13.53	Sept. 25.....	14.27
Feb. 12, 1974..	13.54	July 23.....	14.07		
Apr. 2.....	13.67	Aug. 22.....	14.17		

142-093-32DCC MP is top of 1½-inch plastic pipe 1.0 ft above lsd.

May 22, 1974..	1.86	Aug. 22.....	2.35	Sept. 25.....	2.35
July 23.....	2.29				

142-094-09CDC MP is top of 1½-inch plastic pipe 2.0 ft above lsd.

July 24, 1974..	33.70	Aug. 22.....	33.74	Sept. 25.....	33.44
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142-094-09CDD MP is top of 1½-inch plastic pipe 2.7 ft above lsd.

July 24, 1974..	36.86	Aug. 22.....	36.99	Sept. 25.....	36.50
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142-094-35CCC MP is top of 1½-inch plastic pipe 2.0 ft above lsd.

Nov. 24, 1971..	6.09	Aug. 14.....	5.60	Sept. 12.....	6.19
Dec. 9.....	5.70	Oct. 19.....	5.38	Nov. 14.....	6.04
Jan. 18, 1972..	5.70	Nov. 17.....	5.26	Feb. 12, 1974..	5.78
Feb. 16.....	5.67	Feb. 28, 1973..	5.03	Apr. 2.....	5.69
Mar. 22.....	5.59	Apr. 3.....	5.03	May 23.....	5.51
Apr. 18.....	5.35	May 9.....	4.93	July 24.....	6.22
May 17.....	5.50	June 5.....	5.10	Aug. 22.....	6.53
June 22.....	5.19	July 18.....	5.75	Sept. 25.....	6.63
July 11.....	5.36	Aug. 14.....	6.12		

Depth to water, in feet below or (+) above land surface

143-091-19AAA1 MP is top of 2-inch steel pipe 1.8 ft above lsd.

Date	Water level	Date	Water level	Date	Water level
July 23, 1974..	118.70	Oct. 30.....	117.08		

143-091-19AAA2 MP is top of 1½-inch plastic pipe 1.8 ft above lsd.

July 23, 1974..	22.91	Aug. 21.....	23.42	Sept. 24.....	23.57
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143-091-19AAA3 MP is top of 1½-inch plastic pipe 2.2 ft above lsd.

July 23, 1974..	23.29	Sept. 24.....	23.60	Oct. 30.....	23.60
Aug. 21.....	23.45				

143-092-07DDD MP is top of 1½-inch plastic pipe 2.0 ft above lsd.

Nov. 4, 1971..	4.16	Oct. 17.....	2.20	Sept. 12.....	4.75
Dec. 9.....	4.20	Nov. 15.....	3.91	Nov. 14.....	5.05
Jan. 17, 1972..	4.48	Feb. 28, 1973..	3.91	Feb. 12, 1974..	5.62
Feb. 16.....	4.43	Apr. 3.....	2.40	Apr. 3.....	4.70
Mar. 22.....	1.28	May 9.....	2.50	May 22.....	4.36
Apr. 21.....	1.19	June 5.....	2.85	July 24.....	5.74
July 11.....	2.19	July 18.....	3.87	Aug. 21.....	6.09
Aug. 15.....	2.41	Aug. 15.....	4.38	Sept. 24.....	6.68

143-092-16BBA MP is top of 1½-inch plastic pipe 1.6 ft above lsd.

July 24, 1974..	9.38	Aug. 23.....	9.49	Sept. 24.....	9.56
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143-093-09AAD MP is top of 1½-inch plastic pipe 1.9 ft above lsd.

July 24, 1974..	34.99	Aug. 21.....	32.30	Sept. 25.....	33.12
Aug. 21.....	32.30				

143-093-09BCB MP is top of 2-inch steel pipe 2.1 ft above lsd.

Feb. 12, 1974..	93.00	July 24.....	93.37	Sept. 25.....	93.32
May 23.....	93.06	Aug. 21.....	93.36	Oct. 30.....	93.29

143-093-09CBC MP is top of 1½-inch plastic pipe 2.2 ft above lsd.

July 24, 1974..	31.92	Aug. 21.....	34.85	Sept. 25.....	32.03
Aug. 21.....	34.83				

143-093-10BCB MP is top of 1½-inch plastic pipe 1.9 ft above lsd.

July 24, 1974..	35.08	Aug. 21.....	34.99	Sept. 25.....	35.06
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Depth to water, in feet below or (+) above land surface

143-093-14AAD MP is top of 1½-inch plastic pipe 1.8 ft above lsd.

Date	Water level	Date	Water level	Date	Water level
Nov. 12, 1971..	14.94	Feb. 28, 1973..	13.69	Feb. 12, 1974..	14.62
Dec. 9.....	14.60	Apr. 3.....	13.25	Apr. 3.....	14.55
Jan. 17, 1972..	15.26	May 9.....	12.86	May 22.....	14.00
June 21.....	13.10	June 5.....	12.84	July 24.....	14.69
July 11.....	13.26	July 18.....	13.38	Aug. 21.....	15.02
Aug. 15.....	13.37	Aug. 15.....	13.67	Sept. 24.....	15.38
Oct. 17.....	13.24	Sept. 12.....	13.89		
Nov. 15.....	13.22	Nov. 14.....	14.25		

143-094-17BBA MP is top of 1½-inch plastic pipe 2.0 ft above lsd.

Oct. 21, 1971..	8.10	July 11.....	7.69	Sept. 12.....	8.18
Nov. 18.....	8.11	Aug. 14.....	8.00	Nov. 14.....	8.32
Dec. 9.....	8.06	Oct. 19.....	7.70	Feb. 12, 1974..	8.15
Jan. 17, 1972..	8.20	Nov. 17.....	7.52	Apr. 3.....	7.83
Feb. 16.....	8.21	Apr. 3, 1973..	7.33	May 23.....	7.68
Mar. 22.....	7.91	May 9.....	7.24	July 24.....	8.18
Apr. 18.....	7.67	June 5.....	7.35	Aug. 22.....	8.38
May 17.....	7.45	July 18.....	7.82	Sept. 25.....	8.50
June 21.....	7.44	Aug. 14.....	8.08		

143-094-19DCD2 MP is top of 1½-inch plastic pipe 1.8 ft above lsd.

Oct. 21, 1971..	17.49	July 11.....	18.75	Aug. 14.....	17.50
Nov. 18.....	17.15	Aug. 14.....	17.74	Sept. 12.....	17.59
Dec. 10.....	17.77	Oct. 19.....	17.28	Nov. 14.....	17.75
Jan. 17, 1972..	17.77	Nov. 17.....	17.38	Feb. 12, 1974..	17.83
Feb. 16.....	17.80	Feb. 28, 1973..	17.41	Apr. 3.....	17.89
Mar. 22.....	17.92	Apr. 3.....	17.46	May 23.....	17.98
Apr. 18.....	17.87	May 9.....	17.38	July 24.....	18.01
May 17.....	17.75	June 5.....	17.44	Aug. 22.....	18.11
June 21.....	17.75	July 18.....	17.54	Sept. 25.....	18.09

143-094-20DCC MP is top of 1½-inch plastic pipe 2.1 ft above lsd.

July 24, 1974..	16.68	Aug. 22.....	16.95	Sept. 25.....	17.02
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143-094-288BB MP is top of 1½-inch plastic pipe 1.7 ft above lsd.

July 24, 1974..	12.22	Aug. 22.....	12.49	Sept. 25.....	12.50
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143-094-31ADA MP is top of 1½-inch plastic pipe 1.7 ft above lsd.

Oct. 21, 1971..	10.71	July 11.....	9.79	Sept. 12.....	11.10
Nov. 18.....	10.55	Aug. 14.....	9.80	Nov. 14.....	11.29
Dec. 9.....	10.64	Oct. 19.....	10.54	Feb. 12, 1974..	11.36
Jan. 17, 1972..	10.81	Nov. 17.....	10.53	Apr. 3.....	11.25
Feb. 16.....	10.90	Apr. 3, 1973..	10.30	May 23.....	11.18
Mar. 22.....	10.14	May 9.....	10.23	Aug. 22.....	11.65
Apr. 18.....	10.00	June 5.....	10.34	Sept. 25.....	11.76
May 17.....	9.63	July 18.....	10.70		
June 21.....	9.63	Aug. 14.....	11.04		

Depth to water, in feet below or (+) above land surface

143-094-32CCC MP is top of 1½-inch plastic pipe 2.0 ft above lsd.

Date	Water level	Date	Water level	Date	Water level
Oct. 21, 1971..	34.69	Júly 11.....	34.20	Aug. 14.....	35.01
Nov. 18.....	34.68	Aug. 14.....	34.40	Sept. 12.....	35.18
Dec. 9.....	34.60	Oct. 19.....	34.64	Nov. 14.....	35.37
Jan. 17, 1972..	34.77	Nov. 17.....	34.75	Feb. 13, 1974..	35.49
Feb. 16.....	34.85	Feb. 28, 1973..	34.77	Apr. 3.....	35.39
Mar. 22.....	35.74	Apr. 3.....	35.44	May 23.....	35.52
Apr. 18.....	34.64	May 9.....	34.58	July 24.....	35.63
May 17.....	34.20	June 5.....	34.70	Aug. 22.....	35.70
June 21.....	34.30	July 18.....	34.91	Sept. 25.....	35.74

143-095-33AAD MP is top of 1½-inch plastic pipe 3.1 ft above lsd.

July 24, 1974..	8.05	Aug. 22.....	8.37	Sept. 25.....	8.43
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144-091-10CAA3 MP is top of 8-inch steel pipe 0.5 ft above lsd.

Aug. 5, 1971..	28.14	Dec. 9.....	27.86	Apr. 18.....	26.95
Sept. 24.....	27.65	Jan. 17, 1972..	27.99	May 19.....	26.83
Oct. 22.....	27.81	Feb. 16.....	28.30	July 11.....	27.47
Nov. 11.....	27.80	Mar. 22.....	27.84	Discontinued.	

144-91-30AAA1 MP is top of 2-inch steel pipe 2.3 ft above lsd.

Sept. 11, 1974..	290.6	Sept. 24.....	290.75	Oct. 30.....	291.42
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144-091-30AAA2 MP is top of 2-inch steel pipe 3.6 ft above lsd.

Sept. 11, 1974..	285.15	Sept. 24.....	286.19	Oct. 30.....	289.83
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144-092-31DCD MP is top of 1½-inch plastic pipe 1.0 ft above lsd.

Dec. 19, 1973..	33.28	July 24.....	33.23	Sept. 24.....	33.36
May 22, 1974..	32.94	Aug. 21.....	33.34		

144-092-31DDC MP is top of 1½-inch plastic pipe 2.2 ft above lsd.

Dec. 19, 1973..	3.65	July 24.....	3.53	Sept. 24.....	4.03
May 22, 1974..	1.85	Aug. 21.....	3.85		

144-093-17ADA MP is top of 1½-inch plastic pipe 1.8 ft above lsd.

July 24, 1974..	56.13	Aug. 21.....	56.25	Sept. 25.....	55.98
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Depth to water, in feet below or (+) above land surface

144-093-17ADD MP is top of 1½-inch plastic pipe 2.3 ft above lsd.

Date	Water level	Date	Water level	Date	Water level
July 24, 1974..	53.84	Aug. 21.....	53.93	Sept. 25.....	53.65

144-093-17DAA MP is top of 1½-inch plastic pipe 2.3 ft above lsd.

Oct. 21, 1971..	50.46	July 11.....	49.10	Aug. 15.....	48.11
Nov. 12.....	49.54	Aug. 15.....	48.94	Sept. 12.....	47.87
Dec. 9.....	49.26	Oct. 17.....	48.91	Nov. 14.....	47.99
Jan. 17, 1972..	49.31	Nov. 15.....	48.60	Feb. 12, 1974..	47.91
Feb. 16.....	49.28	Feb. 28, 1973..	48.35	Apr. 3.....	48.04
Mar. 22.....	49.60	Apr. 3.....	48.62	May 23.....	47.98
Apr. 18.....	49.46	May 9.....	48.23	July 24.....	47.87
May 19.....	49.33	June 5.....	48.08	Aug. 21.....	47.96
June 21.....	49.08	July 18.....	48.11	Sept. 25.....	47.70

144-093-26BCC MP is top of 1½-inch plastic pipe 2.1 ft above lsd.

July 24, 1974..	9.81	Aug. 21.....	10.33	Sept. 25.....	10.81
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144-093-29ADD MP is top of 1½-inch plastic pipe 1.4 ft above lsd.

July 24, 1974..	129.13	Aug. 21.....	128.25	Sept. 25.....	127.55
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144-094-04ABB MP is top of 1½-inch plastic pipe 1.8 ft above lsd.

July 25, 1974..	13.22	Aug. 22.....	13.36	Sept. 25.....	13.34
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144-094-06DAA MP is top of 1½-inch plastic pipe 2.0 ft above lsd.

Oct. 21, 1971..	4.87	July 11.....	4.44	Aug. 14.....	5.73
Nov. 18.....	4.89	Aug. 15.....	4.89	Sept. 12.....	5.98
Dec. 9.....	4.79	Oct. 18.....	5.21	Nov. 14.....	6.09
Jan. 17, 1972..	5.21	Nov. 15.....	5.03	Feb. 12, 1974..	6.52
Feb. 16.....	5.35	Feb. 28, 1973..	5.54	Apr. 3.....	5.44
Mar. 22.....	4.65	Apr. 3.....	4.93	May 23.....	4.69
Apr. 18.....	3.98	May 9.....	4.32	July 25.....	5.51
May 17.....	3.33	June 5.....	4.46	Aug. 22.....	5.89
June 21.....	4.10	July 18.....	5.27	Sept. 25.....	6.21

144-094-07DAA1 MP is top of 2-inch steel pipe 2.3 ft above lsd.

Feb. 12, 1974..	79.03	July 25.....	79.26	Oct. 30.....	79.51
Apr. 16.....	79.11	Aug. 22.....	79.37		
May 23.....	79.15	Sept. 25.....	79.33		

Depth to water, in feet below or (+) above land surface

144-094-07DAA2 MP is top of 2-inch steel pipe 2.1 ft above lsd.

Date	Water level	Date	Water level	Date	Water level
Feb. 12, 1974..	235.67	Sept. 25.....	237.07	Oct. 30.....	237.48
Aug. 22.....	237.68				

144-095-03AAD MP is top of 1½-inch plastic pipe 1.8 ft above lsd.

Oct. 22, 1971..	4.56	July 11.....	4.05	Aug. 14.....	5.14
Nov. 18.....	4.29	Aug. 15.....	4.49	Sept. 11.....	5.29
Dec. 10.....	4.28	Oct. 18.....	4.61	Nov. 15.....	5.27
Jan. 17, 1972..	4.40	Nov. 15.....	4.66	Feb. 12, 1974..	5.04
Feb. 16.....	4.46	Mar. 1, 1973..	4.96	Apr. 3.....	4.64
Mar. 23.....	4.02	Apr. 3.....	4.30	May 23.....	4.26
Apr. 19.....	3.65	May 9.....	3.98	July 25.....	5.07
May 17.....	3.23	June 5.....	4.12	Aug. 22.....	5.38
June 22.....	3.71	July 18.....	4.85	Sept. 25.....	5.54

144-095-05DCD MP is top of 1½-inch plastic pipe 1.9 ft above lsd.

Oct. 22, 1971..	21.65	July 11.....	21.40	Aug. 14.....	21.76
Nov. 18.....	21.34	Aug. 15.....	21.56	Sept. 11.....	21.92
Dec. 10.....	21.58	Oct. 17.....	21.53	Nov. 15.....	21.94
Jan. 17, 1972..	21.56	Nov. 15.....	21.46	Feb. 12, 1974..	21.84
Feb. 16.....	21.58	Mar. 1, 1973..	21.38	Apr. 3.....	21.54
Mar. 23.....	21.48	Apr. 3.....	21.21	May 23.....	21.52
Apr. 19.....	21.23	May 9.....	21.15	July 25.....	21.84
May 17.....	20.08	June 5.....	21.26	Aug. 22.....	22.08
June 22.....	21.28	July 18.....	21.60	Sept. 25.....	22.13

144-095-10BAA MP is top of wood curbing 0.4 ft above lsd.

Aug. 12, 1971..	12.11	Oct. 21.....	12.29	Nov. 18..	Discontinued.
Sept. 29.....	12.91				

144-095-36AAA MP is top of 1½-inch plastic pipe 2.0 ft above lsd.

Oct. 19, 1972..	8.32	July 18.....	8.75	Apr. 23.....	8.05
Nov. 15.....	8.21	Aug. 14.....	9.10	July 24.....	8.98
Feb. 28, 1973..	8.00	Sept. 12.....	9.07	Aug. 22.....	9.28
Apr. 6.....	7.80	Nov. 14.....	8.85	Sept. 25.....	9.27
May 9.....	7.69	Feb. 12, 1974..	8.72		
June 5.....	7.92	Apr. 3.....	8.45		

144-096-01DDC MP is top of 1½-inch plastic pipe 1.8 ft above lsd.

July 25, 1974..	37.80	Aug. 22.....	37.85	Sept. 25.....	37.92
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Depth to water, in feet below or (+) above land surface

144-097-26CBD1 MP is top of 2-inch steel pipe 2.5 ft above lsd.

Date	Water level	Date	Water level	Date	Water level
May 24, 1974..	196.87	Aug. 22.....	196.95	Oct. 29.....	196.79
July 25.....	196.75	Sept. 25.....	196.76		

144-097-26CBD2 MP is top of 2-inch steel pipe 2.1 ft above lsd.

Date	Water level	Date	Water level	Date	Water level
May 24, 1974..	196.10	Aug. 22.....	195.63	Oct. 29.....	194.62
July 25.....	195.65	Sept. 25.....	195.39		

144-097-26CCA MP is top of 1½-inch plastic pipe 2.0 ft above lsd.

Date	Water level	Date	Water level	Date	Water level
Nov. 10, 1971..	6.87	July 12.....	6.16	Aug. 14.....	7.59
Dec. 10.....	7.13	Aug. 15.....	6.65	Sept. 12.....	7.87
Jan. 18, 1972..	7.35	Nov. 16.....	7.36	Nov. 15.....	8.00
Feb. 16.....	7.42	Mar. 1, 1973..	7.69	Feb. 13, 1974..	8.01
Mar. 23.....	3.45	Apr. 3.....	6.41	May 1.....	7.64
Apr. 19.....	4.62	May 10.....	6.62	May 24.....	6.69
May 26.....	4.89	June 6.....	6.82	Aug. 22.....	7.75
June 22.....	5.66	July 19.....	7.36	Sept. 25.....	7.87

145-091-05DDD2 MP is top of 2-inch steel pipe 2.1 ft above lsd.

Date	Water level	Date	Water level	Date	Water level
Feb. 13, 1974..	274.2	Sept. 12.....	274.8	Oct. 30.....	274.05
Apr. 3.....	274.15	Sept. 24.....	274.19	Oct. 30.....	274.88

145-091-05DDD3 MP is top of 1½-inch plastic pipe 1.5 ft above lsd.

Date	Water level	Date	Water level	Date	Water level
July 23, 1974..	72.32	Sept. 24.....	72.12	Oct. 30.....	72.04
Aug. 22.....	72.40				

145-091-30BBD MP is top of 1½-inch plastic pipe 1.9 ft above lsd.

Date	Water level	Date	Water level	Date	Water level
Oct. 17, 1972..	11.10	July 18.....	11.41	May 23.....	11.39
Nov. 15.....	11.00	Aug. 15.....	11.73	July 23.....	11.71
Feb. 28, 1973..	11.17	Sept. 12.....	11.89	Aug. 23.....	11.78
Apr. 3.....	10.98	Nov. 14.....	12.00	Sept. 26.....	12.16
May 10.....	11.06	Feb. 13, 1974..	12.02		
June 5.....	11.07	Apr. 3.....	11.64		

145-092-24CCB MP is top of 1½-inch plastic pipe 2.0 ft above lsd.

Date	Water level	Date	Water level	Date	Water level
Nov. 18, 1971..	7.65	Aug. 15.....	7.75	Sept. 12.....	8.19
Dec. 9.....	7.64	Oct. 19.....	7.34	Nov. 14.....	7.87
Jan. 17, 1972..	7.67	Nov. 15.....	7.45	Feb. 13, 1974..	7.81
Feb. 16.....	7.74	Feb. 28, 1973..	6.99	Apr. 3.....	7.26
Mar. 22.....	5.10	Apr. 3.....	7.26	May 23.....	6.76
Apr. 18.....	6.35	May 10.....	7.33	July 23.....	7.99
May 19.....	6.63	June 5.....	7.30	Aug. 23.....	8.04
June 21.....	7.07	July 18.....	7.92	Sept. 26.....	8.05
July 11.....	7.08	Aug. 15.....	8.12		

Depth to water, in feet below or (+) above land surface

145-092-24CCC MP is top of 1½-inch plastic pipe 1.9 ft above lsd.

Date	Water level	Date	Water level	Date	Water level
Nov. 18, 1971..	5.55	Aug. 15.....	5.50	Sept. 12.....	6.19
Dec. 9.....	5.50	Oct. 19.....	5.26	Nov. 14.....	5.80
Jan. 17, 1972..	5.62	Nov. 15.....	5.21	Feb. 13, 1974..	5.74
Feb. 16.....	5.74	Feb. 28, 1973..	5.11	Apr. 3.....	4.68
Mar. 22.....	2.00	Apr. 3.....	4.66	May 23.....	4.25
Apr. 18.....	3.55	May 10.....	4.70	July 23.....	5.71
May 19.....	3.35	June 5.....	4.80	Aug. 23.....	6.04
June 21.....	4.67	July 18.....	5.64	Sept. 26.....	6.22
July 11.....	4.98	Aug. 15.....	6.12		

145-092-24CDD2 MP is top of 1½-inch plastic pipe 2.5 ft above lsd.

Date	Water level	Date	Water level	Date	Water level
Nov. 12, 1971..	9.78	Aug. 15.....	10.27	Sept. 12.....	10.67
Dec. 9.....	9.67	Oct. 19.....	9.58	Nov. 14.....	10.46
Jan. 17, 1972..	9.64	Nov. 15.....	10.02	Feb. 13, 1974..	9.94
Feb. 16.....	9.70	Feb. 28, 1973..	8.94	Apr. 3.....	9.69
Mar. 22.....	8.21	Apr. 3.....	9.76	May 23.....	9.17
Apr. 18.....	8.98	May 10.....	9.72	July 23.....	10.50
May 19.....	9.70	June 5.....	9.56	Aug. 23.....	10.65
June 21.....	9.68	July 18.....	10.43	Sept. 26.....	10.71
July 11.....	10.00	Aug. 15.....	10.61		

145-092-25AAC MP is top of 1½-inch plastic pipe 1.4 ft above lsd.

Date	Water level	Date	Water level	Date	Water level
Oct. 17, 1972..	8.26	July 18.....	8.39	May 23.....	7.78
Nov. 15.....	8.53	Aug. 15.....	8.82	July 23.....	8.21
Feb. 28, 1973..	8.85	Sept. 12.....	8.82	Aug. 23.....	8.49
Apr. 3.....	8.45	Nov. 14.....	9.02	Sept. 26.....	8.70
May 9.....	8.02	Feb. 13, 1974..	9.37		
June 5.....	7.87	Apr. 3.....	8.96		

145-092-25ADA MP is top of wood curbing 0.4 ft above lsd.

Date	Water level	Date	Water level	Notes
Sept. 28, 1971..	7.84	Nov. 11.....	7.73	Discontinued.
Oct. 22.....	7.56	Dec. 2.....	7.90	

145-092-25ADC2 MP is top of 2-inch steel pipe 0.8 ft above lsd.

Date	Water level	Date	Water level	Date	Water level
Oct. 17, 1972..	40.68	June 5.....	40.89	Apr. 3, 1974..	40.79
Nov. 15.....	40.59	July 18.....	41.32	May 23.....	40.79
Feb. 28, 1973..	40.38	Aug. 15.....	41.27	Aug. 23.....	41.60
Apr. 3.....	40.52	Sept. 12.....	41.18	Sept. 26.....	41.54
May 9.....	40.37	Nov. 14.....	41.05		

145-092-25BAA2 MP is top of 1½-inch plastic pipe 1.7 ft above lsd.

Date	Water level	Date	Water level	Notes
Nov. 11, 1971..	9.32	Mar. 22.....	5.31	Discontinued.
Dec. 9.....	9.15	Apr. 18.....	7.53	
Feb. 2, 1972..	9.78	July 11.....	9.00	

Depth to water, in feet below or (+) above land surface

<u>145-094-12BAA MP is top of 1½-inch plastic pipe 1.73 ft above lsd.</u>						
	Date	Water level	Date	Water level	Date	Water level
	July 25, 1974..	56.67	Aug. 22.....	56.87	Sept. 26.....	56.52
<u>145-094-15DDD1 MP is top of 1½-inch plastic pipe 1.8 ft above lsd.</u>						
	Dec. 10, 1974..	76.35	Jan. 7, 1975..	75.97		
<u>145-094-15DDD2 MP is top of 1½-inch plastic pipe 1.8 ft above lsd.</u>						
	Dec. 10, 1974..	60.59	Jan. 7, 1975..	60.75		
<u>145-094-23DDD MP is top of 1½-inch plastic pipe 1.8 ft above lsd.</u>						
	Dec. 10, 1974..	14.93	Jan. 7, 1975..	14.82		
<u>145-094-24CDD MP is top of 1½-inch plastic pipe 1.62 ft above lsd.</u>						
	Aug. 22, 1974..	15.77	Sept. 26.....	16.27	Dec. 4.....	16.29
<u>145-094-26AAA1 MP is top of 1½-inch plastic pipe 1.7 ft above lsd.</u>						
	Dec. 4, 1974..	17.59	Dec. 10.....	17.57	Jan. 7, 1975..	17.47
<u>145-094-26AAA2 MP is top of 1½-inch plastic pipe 1.7 ft above lsd.</u>						
	Dec. 4, 1974..	16.56	Dec. 10.....	16.47	Jan. 7, 1975..	16.32
<u>145-094-26AAA3 MP is top of 6-inch plastic pipe 0.3 ft above lsd.</u>						
	Dec. 4, 1974..	15.60	Dec. 10.....	15.35	Jan. 7, 1975..	15.20
<u>145-094-26AAA4 MP is top of 6-inch plastic pipe 0.3 ft above lsd.</u>						
	Dec. 3, 1974..	9.60	Dec. 5.....	9.66	Jan. 7, 1975..	9.71
	Dec. 4.....	9.62	Dec. 10.....	9.69		
<u>145-094-26AAA5 MP is top of 1½-inch plastic pipe 2.0 ft above lsd.</u>						
	Dec. 3, 1974..	8.88	Dec. 5.....	8.91	Jan. 7, 1975..	8.93
	Dec. 4.....	8.90	Dec. 10.....	8.92		

Depth to water, in feet below or (+) above land surface

145-094-26AAA6 MP is top of 1½-inch plastic pipe 2.0 ft above lsd.

Date	Water level	Date	Water level	Date	Water level
Dec. 18, 1974..	10.09	Jan. 7, 1975..	10.91		

145-094-26AAA7 MP is top of 1½-inch plastic pipe 0.4 ft above lsd.

Dec. 18, 1974..	11.59	Jan. 7, 1975..	11.58
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145-094-26BDD MP is top of 2-inch steel pipe 1.9 ft above lsd.

Aug. 4, 1971..	13.26	Dec. 9.....	12.68	Apr. 18.....	12.27
Sept. 24.....	13.16	Jan. 17, 1972..	12.72	May 17.....	12.08
Oct. 21.....	12.83	Feb. 16.....	12.68	July 11..	Discontinued.
Nov. 18.....	12.77	Mar. 22.....	12.50		

145-094-27ABC MP is top of 1½-inch plastic pipe 1.85 ft above lsd.

July 25, 1974..	5.07	Aug. 22.....	5.65	Sept. 25.....	5.91
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145-094-27CAA MP is top of 1½-inch plastic pipe 1.9 ft above lsd.

July 25, 1974..	+ .34	Aug. 22.....	.47	Sept. 25.....	.64
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145-094-35BAA MP is top of 1½-inch plastic pipe 2.0 ft above lsd.

Oct. 21, 1971..	12.09	July 11.....	12.00	Aug. 14.....	12.64
Nov. 18.....	12.16	Aug. 15.....	12.07	Sept. 12.....	12.57
Dec. 9.....	11.86	Oct. 19.....	11.94	Nov. 14.....	12.62
Jan. 17, 1972..	12.15	Nov. 15.....	11.80	Feb. 12, 1974..	12.48
Feb. 16.....	12.19	Feb. 28, 1973..	12.15	Apr. 3.....	12.25
Mar. 22.....	10.54	Apr. 3.....	12.16	May 23.....	11.83
Apr. 18.....	11.16	May 9.....	11.90	July 24.....	12.43
May 17.....	11.16	June 5.....	12.19	Aug. 22.....	12.49
June 21.....	11.83	July 18.....	12.51	Sept. 25.....	12.50

145-095-09AAB MP is top of 1½-inch plastic pipe 2.2 ft above lsd.

Oct. 18, 1972..	.40	July 19.....	2.57	Apr. 4.....	1.74
Nov. 16.....	.71	Aug. 14.....	2.94	May 23.....	1.24
Apr. 4, 1973..	1.40	Sept. 11.....	2.66	July 24.....	2.66
May 9.....	1.22	Nov. 15.....	2.32	Aug. 23.....	2.75
June 6.....	1.51	Feb. 13, 1974..	2.04	Sept. 26.....	2.68

145-095-22DAD2 MP is top of 1½-inch plastic pipe 2.0 ft above lsd.

Sept. 5, 1972..	4.31	June 6.....	3.87	May 23.....	3.91
Oct. 18.....	4.26	July 19.....	4.78	July 25.....	4.82
Nov. 16.....	4.16	Aug. 14.....	5.18	Aug. 23.....	5.08
Feb. 28, 1973..	4.02	Sept. 11.....	5.24	Sept. 26.....	5.22
Apr. 4.....	3.82	Feb. 13, 1974..	4.52		
May 9.....	3.67	Apr. 3.....	4.34		

Depth to water, in feet below or (+) above land surface

145-095-22DAD3 MP is top of 4-inch plastic pipe 0.5 ft above lsd.

Date	Water level	Date	Water level	Date	Water level
Sept. 12, 1972..	4.92	May 15.....	4.02	Sept. 5.....	5.58
Oct. 18.....	4.63	20.....	4.04	10.....	5.55
20.....	4.53	25.....	4.05	15.....	5.55
25.....	4.53	30.....	4.05	20.....	5.54
Nov. 20.....	4.50	June 5.....	4.51	25.....	5.53
25.....	4.51	10.....	4.54	30.....	5.52
30.....	4.51	15.....	4.56	Nov. 20.....	5.08
Dec. 5.....	4.50	20.....	4.57	25.....	5.07
10.....	4.51	25.....	4.60	30.....	5.07
15.....	4.50	July 1.....	4.68	Dec. 5.....	5.07
20.....	4.49	5.....	4.70	10.....	5.07
25.....	4.49	10.....	4.72	15.....	5.07
30.....	4.49	15.....	4.74	20.....	5.06
Apr. 5, 1973..	4.15	20.....	4.76	25.....	5.06
10.....	4.15	25.....	4.76	30.....	5.06
15.....	4.16	30.....	4.77	Jan. 5, 1974..	5.06
20.....	4.13	Aug. 5.....	4.78	10.....	5.03
25.....	4.14	10.....	4.80	15.....	5.04
30.....	4.12	15.....	4.82	Apr. 3.....	4.59
May 5.....	4.12	20.....	4.83	May 23.....	4.20
10.....	4.00	30.....	5.57		

145-095-29AAA MP is top of 1½-inch plastic pipe 1.9 ft above lsd.

Nov. 9, 1971..	19.11	July 11.....	18.13	Aug. 14.....	19.02
Nov. 18.....	19.04	Aug. 15.....	18.29	Sept. 11.....	19.10
Dec. 10.....	19.05	Oct. 18.....	18.43	Nov. 15.....	19.41
Jan. 17, 1972..	19.16	Nov. 16.....	18.55	Feb. 13, 1974..	19.75
Feb. 16.....	19.29	Feb. 28, 1973..	18.88	Apr. 3.....	19.34
Mar. 23.....	18.96	Apr. 3.....	18.12	May 24.....	18.72
Apr. 19.....	18.22	May 9.....	17.97	July 25.....	19.47
May 17.....	17.76	June 5.....	18.47	Aug. 22.....	19.69
June 22.....	18.08	July 19.....	18.77	Sept. 25.....	19.82

145-095-29ADA1 MP is top of 1½-inch plastic pipe 1.2 ft above lsd.

Oct. 18, 1972..	12.38	July 19.....	12.70	May 24.....	12.67
Nov. 16.....	12.41	Aug. 14.....	12.99	July 25.....	13.29
Feb. 28, 1973..	12.62	Sept. 11.....	12.98	Aug. 22.....	13.49
Apr. 3.....	12.16	Nov. 15.....	12.22	Sept. 25.....	13.59
May 9.....	12.09	Feb. 13, 1974..	13.22		
June 5.....	12.36	Apr. 3.....	13.10		

145-095-29DAA1 MP is top of 1½-inch plastic pipe 2.0 ft above lsd.

Nov. 9, 1971..	13.43	July 11.....	12.80	Aug. 14.....	13.51
Nov. 18.....	13.46	Aug. 15.....	12.96	Sept. 11.....	13.61
Dec. 10.....	13.46	Oct. 18.....	12.95	Nov. 15.....	13.84
Jan. 17, 1972..	13.56	Nov. 16.....	13.11	Feb. 13, 1974..	14.12
Feb. 16.....	13.68	Feb. 28, 1973..	13.36	Apr. 3.....	13.72
Mar. 23.....	13.36	Apr. 3.....	12.92	May 24.....	13.49
Apr. 19.....	12.76	May 9.....	12.79	July 25.....	13.85
May 17.....	12.52	June 5.....	13.06	Aug. 22.....	14.10
June 22.....	12.65	July 19.....	13.35	Sept. 25.....	14.17

Depth to water, in feet below or (+) above land surface

145-095-29DDD MP is top of 1½-inch plastic pipe 1.9 ft above lsd.

Date	Water level	Date	Water level	Date	Water level
Nov. 18, 1971..	20.08	Aug. 15.....	19.77	Sept. 11.....	20.05
Dec. 10.....	20.27	Oct. 18.....	19.69	Nov. 15.....	20.31
Jan. 17, 1972..	20.40	Nov. 16.....	19.65	Feb. 13, 1974..	20.55
Feb. 16.....	20.57	Feb. 28, 1973..	19.85	Apr. 3.....	20.17
Mar. 23.....	20.00	Apr. 3.....	19.45	May 24.....	19.65
Apr. 19.....	19.25	May 9.....	19.33	Aug. 22.....	20.42
May 17.....	19.13	June 5.....	19.51	Sept. 25.....	20.54
June 22.....	19.45	July 19.....	19.77		
July 11.....	19.59	Aug. 14.....	20.01		

145-095-34DCC MP is top of 1½-inch plastic pipe 1.9 ft above lsd.

Oct. 18, 1972..	5.22	July 19.....	5.60	May 23.....	5.08
Nov. 15.....	4.80	Aug. 14.....	5.99	July 25.....	5.78
Feb. 28, 1973..	5.00	Sept. 11.....	6.03	Aug. 22.....	6.03
Apr. 3.....	4.76	Nov. 15.....	5.72	Sept. 25.....	6.15
May 9.....	4.58	Feb. 12, 1974..	5.56		
June 5.....	4.83	Apr. 3.....	5.36		

145-096-21DDD MP is top of 1½-inch plastic pipe 1.9 ft above lsd.

July 25, 1974..	24.95	Aug. 22.....	25.06	Sept. 25.....	25.00
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146-091-17CDC MP is top of 1½-inch plastic pipe 1.85 ft above lsd.

Aug. 23, 1974..	33.41	Sept. 24.....	33.60
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146-091-21CDD1 MP is top of 1½-inch plastic pipe 1.9 ft above lsd.

Oct. 28, 1971..	25.95	July 11.....	25.32	Aug. 15.....	26.01
Nov. 18.....	25.85	Aug. 15.....	25.16	Sept. 12.....	26.20
Dec. 9.....	25.76	Oct. 19.....	25.76	Nov. 14.....	26.67
Jan. 17, 1972..	26.00	Nov. 15.....	25.73	Feb. 13, 1974..	27.22
Feb. 16.....	26.25	Feb. 28, 1973..	26.18	Apr. 3.....	26.56
Mar. 22.....	26.34	Apr. 3.....	25.74	May 23.....	25.83
Apr. 18.....	25.30	May 10.....	25.27	July 25.....	26.52
May 19.....	24.92	June 5.....	25.17	Aug. 22.....	26.85
June 21.....	25.15	July 18.....	25.77	Sept. 24.....	27.06

146-091-21CDD2 MP is top of 1½-inch plastic pipe 2.0 ft above lsd.

Oct. 28, 1971..	17.86	July 11.....	17.21	Aug. 15.....	18.22
Nov. 18.....	17.96	Aug. 15.....	16.99	Sept. 12.....	18.54
Dec. 9.....	17.50	Oct. 19.....	17.77	Nov. 14.....	19.35
Jan. 17, 1972..	18.08	Nov. 15.....	17.77	Feb. 13, 1974..	20.20
Feb. 16.....	18.48	Feb. 28, 1973..	18.43	Apr. 3.....	19.25
Mar. 22.....	18.76	Apr. 3.....	17.59	May 23.....	18.01
Apr. 18.....	17.29	May 10.....	16.97	July 25.....	19.13
May 19.....	16.26	June 5.....	16.70	Aug. 22.....	19.64
June 21.....	16.93	July 18.....	16.78	Sept. 24.....	19.99

Depth to water, in feet below or (+) above land surface

<u>146-091-28ABA MP is top of 1½-inch plastic pipe 1.9 ft above lsd.</u>					
Date	Water level	Date	Water level	Date	Water level
Oct. 28, 1971..	24.57	June 21.....	24.63	June 5.....	25.20
Nov. 18.....	25.25	July 11.....	24.89	July 18.....	25.41
Dec. 9.....	25.07	Aug. 15.....	24.63	Aug. 15.....	25.74
Jan. 17, 1972..	25.23	Oct. 19.....	24.99	Sept. 12.....	25.85
Feb. 16.....	25.47	Nov. 15.....	25.10	Nov. 14.....	26.37
Mar. 22.....	25.53	Feb. 28, 1973..	25.55	Feb. 13, 1974..	27.14
Apr. 18.....	25.29	Apr. 3.....	25.40	Apr. 3.....	26.68
May 19.....	25.00	May 10.....	25.24	May 23.....	26.54
<u>146-091-35BBC MP is top of 1½-inch plastic pipe 2.0 ft above lsd.</u>					
July 25, 1974..	37.25	Aug. 22.....	37.46	Sept. 24.....	37.60
<u>146-092-27DDD MP is top of 1½-inch plastic pipe 2.0 ft above lsd.</u>					
July 25, 1974..	37.50	Aug. 23.....	37.76	Sept. 24.....	37.91
<u>146-093-27CCC MP is top of 1½-inch plastic pipe 1.9 ft above lsd.</u>					
July 25, 1974..	31.80	Aug. 23.....	32.12	Sept. 26.....	31.48
<u>146-093-27CDD MP is top of 1½-inch plastic pipe 1.6 ft above lsd.</u>					
July 25, 1974..	19.20	Aug. 23.....	19.34	Sept. 26.....	Dry.
<u>146-093-28AAA2 MP is top of 1½-inch plastic pipe 2.3 ft above lsd.</u>					
Dec. 10, 1974..	50.39	Jan. 7, 1975..	50.29		
<u>146-093-34CCC MP is top of 1½-inch plastic pipe 1.8 ft above lsd.</u>					
July 25, 1974..	11.08	Aug. 23.....	11.00	Sept. 26.....	11.20
<u>146-094-25AAA MP is top of 1½-inch plastic pipe 1.9 ft above lsd.</u>					
Aug. 23, 1974..	77.41	Sept. 26.....	77.08		
<u>146-094-25ABA MP is top of 1½-inch plastic pipe 1.0 ft above lsd.</u>					
July 25, 1974..	40.46	Aug. 23.....	40.53	Sept. 26.....	40.13
<u>146-094-25BAA MP is top of 1½-inch plastic pipe 1.6 ft above lsd.</u>					
July 25, 1974..	43.67	Aug. 23.....	43.42	Sept. 26.....	43.51

Depth to water, in feet below or (+) above land surface

146-095-20CCB MP is top of 1½-inch plastic pipe 1.5 ft above lsd.

Date	Water Level	Date	Water Level	Date	Water Level
Oct. 22, 1971..	33.70	July 12.....	30.61	Aug. 14.....	32.34
Nov. 9.....	33.70	Aug. 15.....	31.70	Sept. 11.....	33.09
Dec. 10.....	33.45	Oct. 18.....	33.81	Nov. 15.....	34.80
Jan. 17, 1972..	34.06	Nov. 16.....	34.11	Feb. 13, 1974..	36.51
Feb. 16.....	34.72	Mar. 1, 1973..	35.72	Apr. 4.....	37.04
Mar. 22.....	35.75	Apr. 4.....	35.16	May 23.....	33.65
Apr. 19.....	35.53	May 9.....	31.44	Aug. 23.....	33.18
May 17.....	32.43	June 6.....	31.03	Sept. 26.....	33.75
June 22.....	29.94	July 19.....	31.54		

146-095-30DDD MP is top of 1½-inch plastic pipe 1.9 ft above lsd.

Date	Water Level	Date	Water Level	Date	Water Level
Oct. 22, 1971..	32.61	July 12.....	32.03	Aug. 14.....	31.91
Nov. 9.....	32.50	Aug. 15.....	31.95	Sept. 11.....	31.90
Dec. 10.....	32.42	Oct. 18.....	31.99	Nov. 15.....	32.12
Jan. 17, 1972..	32.24	Nov. 16.....	31.85	Feb. 13, 1974..	32.31
Feb. 16.....	32.02	Mar. 1, 1973..	31.93	Apr. 4.....	32.49
Mar. 22.....	32.32	Apr. 4.....	31.72	May 23.....	32.37
Apr. 19.....	32.27	May 9.....	31.78	July 25.....	32.16
May 19.....	32.00	June 6.....	31.96	Aug. 23.....	32.32
June 22.....	32.00	July 19.....	32.02	Sept. 26.....	31.99

146-096-13ADA MP is top of 1½-inch plastic pipe 2.1 ft above lsd.

Date	Water Level	Date	Water Level	Date	Water Level
Oct. 18, 1972..	19.57	June 6.....	21.09	Feb. 13, 1974..	21.53
Nov. 16.....	21.50	July 19.....	21.39	Apr. 4.....	21.85
Mar. 1, 1973..	21.80	Aug. 14.....	21.59	May 23.....	21.04
Apr. 4.....	21.61	Sept. 11.....	21.31	Aug. 23.....	21.48
May 9.....	21.30	Nov. 15.....	21.40	Sept. 26.....	23.40

146-096-14CDD2 MP is top of 1½-inch plastic pipe 2.3 ft above lsd.

Date	Water Level	Date	Water Level	Date	Water Level
Nov. 15, 1973..	129.23	May 23.....	129.54	Sept. 26.....	128.90
Feb. 13, 1974..	129.57	July 25.....	129.40		
Apr. 4.....	129.63	Aug. 23.....	129.58		

146-096-36AAA MP is top of 1½-inch plastic pipe 1.8 ft above lsd.

Date	Water Level	Date	Water Level	Date	Water Level
Nov. 16, 1972..	7.72	July 19.....	7.67	Apr. 4.....	8.33
Mar. 1, 1973..	7.86	Aug. 14.....	8.32	May 23.....	8.17
Apr. 4.....	7.53	Sept. 11.....	8.16	July 25.....	8.19
May 9.....	7.15	Nov. 15.....	8.74	Aug. 23.....	8.50
June 6.....	7.43	Feb. 13, 1974..	8.47	Sept. 26.....	8.64

Depth to water, in feet below or (+) above land surface

146-096-36BBB MP is top of 1½-inch plastic pipe 2.2 ft above lsd.

Date	Water level	Date	Water level	Date	Water level
Oct. 18, 1972..	12.68	July 19.....	12.42	May 23.....	12.19
Nov. 16.....	12.70	Aug. 14.....	12.56	July 25.....	12.23
Mar. 1, 1973..	12.37	Sept. 11.....	12.60	Aug. 23.....	12.46
Apr. 4.....	12.13	Nov. 15.....	12.77	Sept. 26.....	12.39
May 9.....	12.06	Feb. 13, 1974..	12.56		
June 6.....	12.11	Apr. 4.....	12.39		

148-093-04CAB1 MP is top of 1½-inch plastic pipe 2.3 ft above lsd.

May 23, 1974..	136.83	Aug. 23.....	138.27	Oct. 29.....	137.80
July 25.....	137.15	Sept. 26.....	137.87		

148-093-04CAB2 MP is top of 1½-inch plastic pipe 2.0 ft above lsd.

Nov. 15, 1973..	68.52	May 23.....	68.06	Sept. 26.....	67.97
Feb. 14, 1974..	68.38	July 25.....	68.40	Oct. 29.....	68.06
Apr. 4.....	68.30	Aug. 23.....	68.33		

148-093-04CBD MP is top of 2-inch steel pipe 2.0 ft above lsd.

Nov. 15, 1973..	119.45	Apr. 4.....	119.20	Aug. 23.....	119.14
Nov. 15.....	119.43	May 23.....	118.94	Sept. 26.....	118.91
Feb. 14, 1974..	119.30	July 25.....	119.07	Oct. 29.....	119.04

148-093-10CCC MP is top of 1½-inch plastic pipe 1.9 ft above lsd.

July 25, 1974..	7.24	Aug. 23.....	7.62	Sept. 26.....	7.56
-----------------	------	--------------	------	---------------	------

148-093-14CDC MP is top of 1½-inch plastic pipe 1.8 ft above lsd.

July 25, 1974..	4.85	Sept. 13.....	5.02	Sept. 26.....	4.84
Aug. 23.....	5.03				

TABLE 4.--Logs of wells and test holes

EXPLANATION

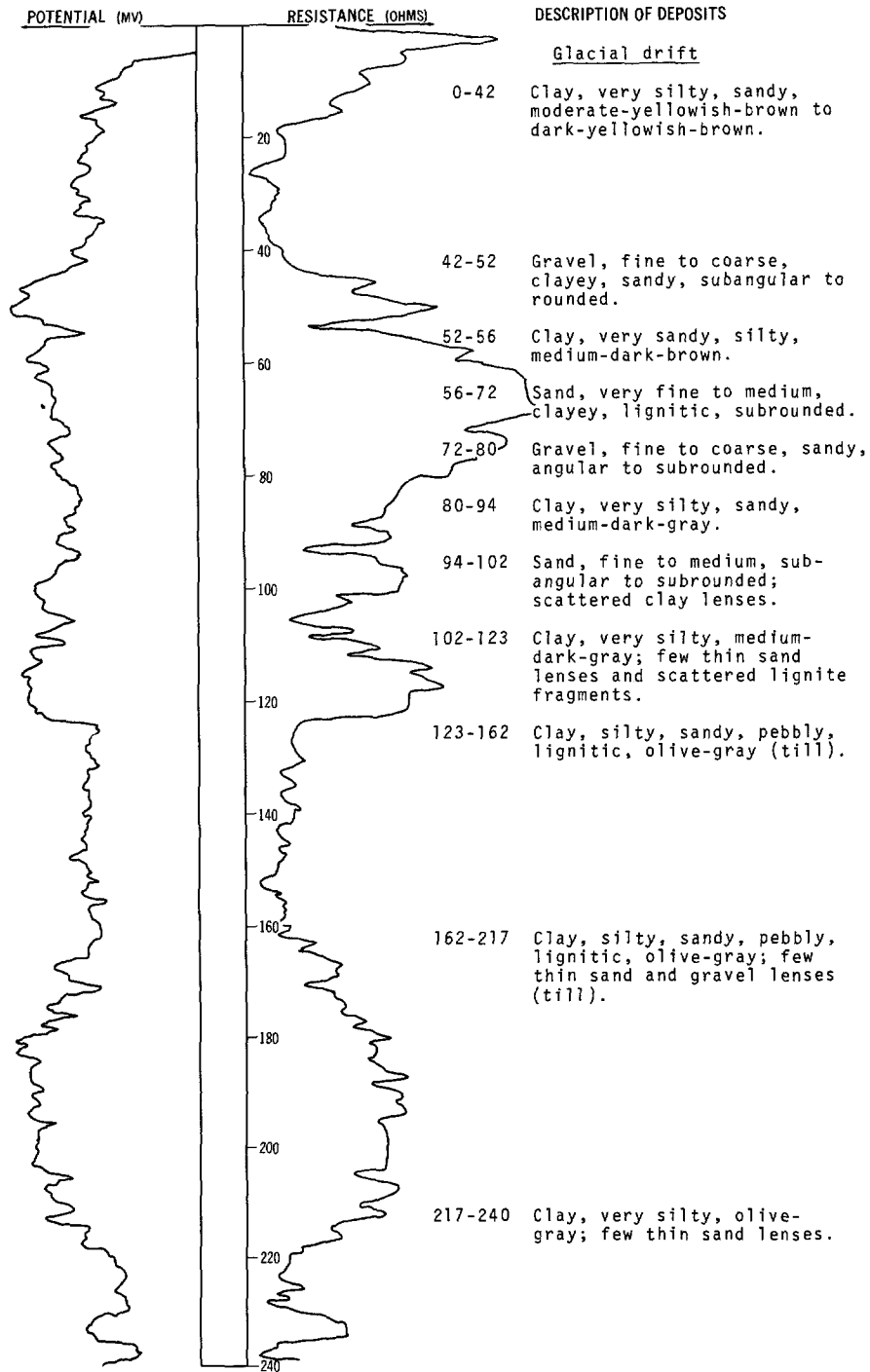
Potential given in millivolts (MV).	Depths shown are in feet below land surface.
Resistance in ohms.	Gamma logs (T.C. 4)
Electric logs are uncalibrated.	(Time Constant 4).

LOCATION: 141-091-03CCC

DATE DRILLED: November 1971

ALTITUDE: 1993
(FT, MSL)

DEPTH: 300
(FT)



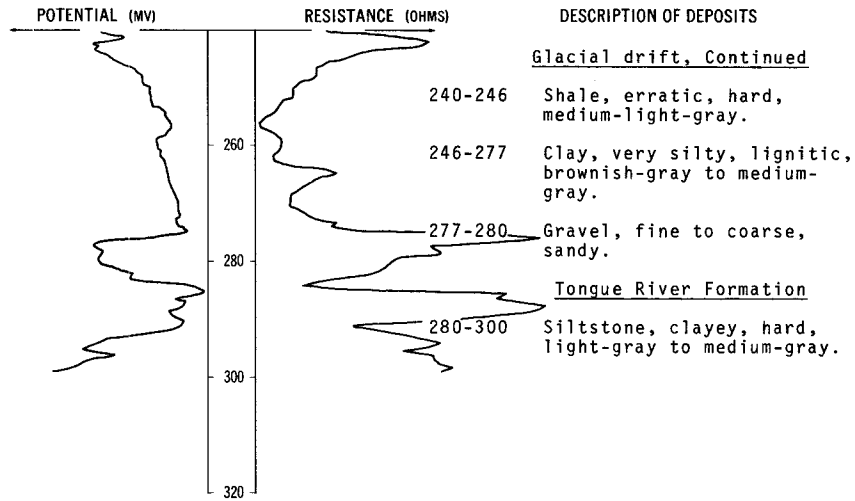
NDSWC 8260, Continued

LOCATION: 141-091-03CCC

DATE DRILLED: November 1971

ALTITUDE: 1993
(FT, MSL)

DEPTH: 300
(FT)



141-091-03DCC
NDSWC 8261

Altitude: 2029 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Glacial drift:			
	Topsoil, silty, clayey, grayish-black-----	1	1
	Clay, very silty, sandy, pebbly, moderate-yellowish-brown (till)-----	26	27
Sentinel Butte Formation:			
	Shale, silty, hard, calcareous, yellowish-gray-----	8	35
	Shale, silty, hard, calcareous, medium-gray-----	7	42
	Shale, hard, carbonaceous, brownish-gray---	5	47
	Sandstone, fine-grained, hard, micaceous, medium-bluish-gray-----	13	60

141-091-04DCD
NDSWC 8259

Altitude: 1972 ft

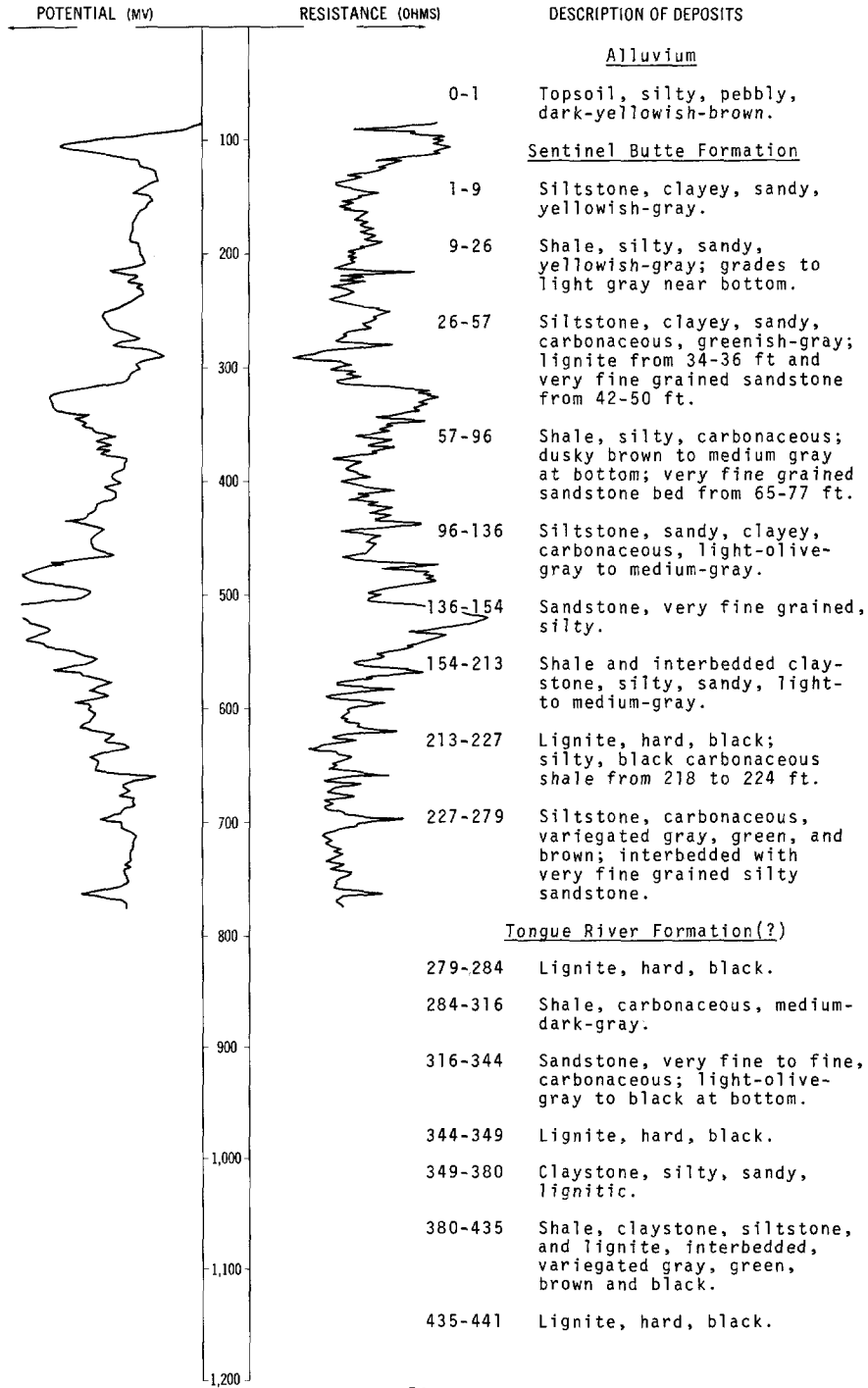
Alluvium and glacial drift, undifferentiated:			
	Topsoil, silty, sandy, grayish-black-----	1	1
	Clay, very silty, dark-yellowish-brown----	17	18
	Clay, very silty, olive-gray-----	7	25
	Gravel, fine to coarse, sandy, angular to subrounded-----	2	27
Sentinel Butte Formation(?):			
	Siltstone, clayey, hard, medium-light-gray-	13	40

LOCATION: 141-091-08DDD

DATE DRILLED: October 1973

ALTITUDE: 2107
(FT, MSL)

DEPTH: 780
(FT)



NDSWC 4601, Continued

LOCATION: 141-091-08DDD

DATE DRILLED: October 1973

ALTITUDE: 2107
(FT, MSL)

DEPTH: 780
(FT)

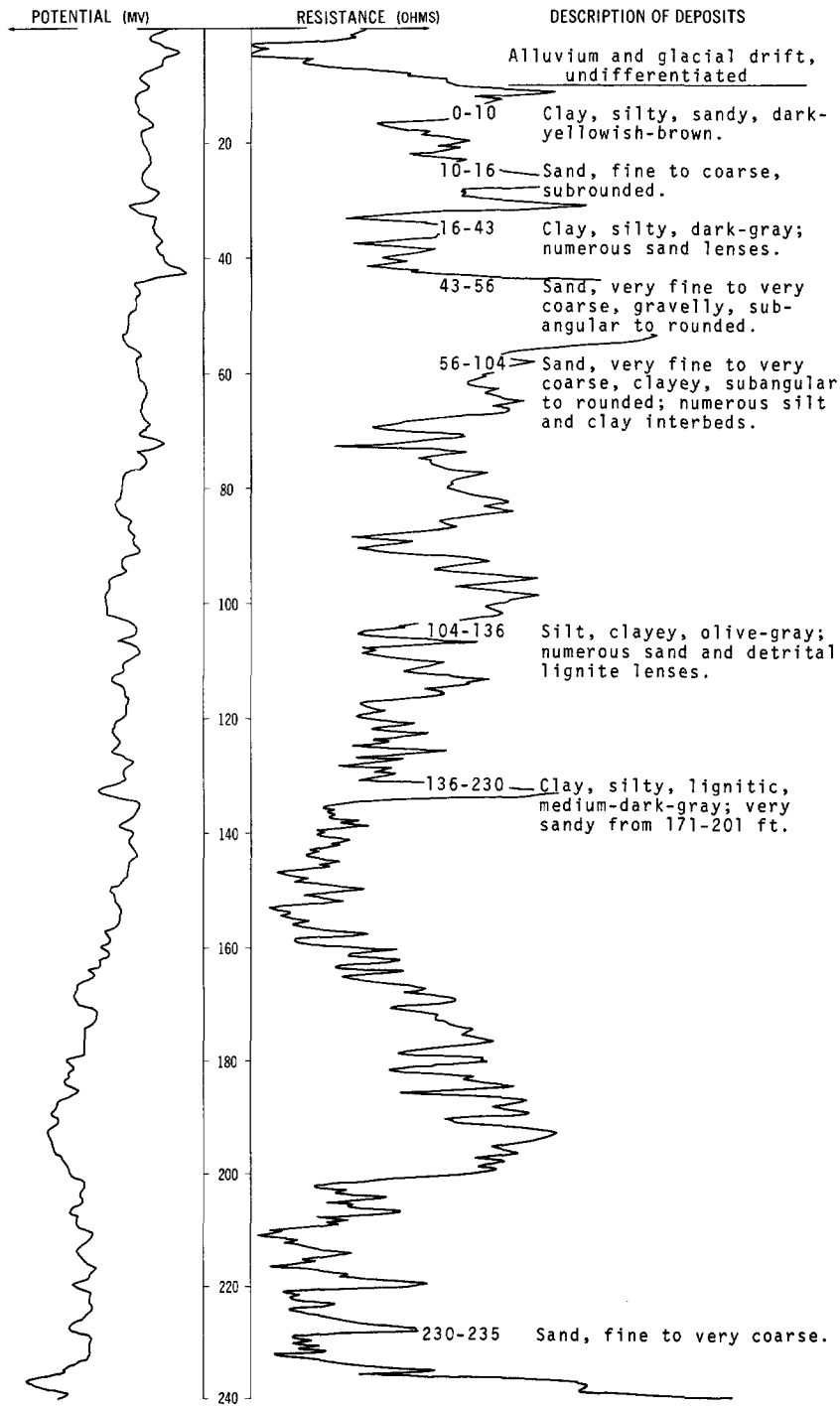
POTENTIAL (MV)	RESISTANCE (OHMS)	DESCRIPTION OF DEPOSITS
		<u>Tongue River Formation(?), Continued</u>
	441-471	Shale and siltstone, interbedded, variegated gray, green, and brown.
1,300	471-476	Lignite, hard, black.
	476-494	Siltstone, brownish-black.
1,400	494-509	Shale, medium-gray; laminated.
	509-530	Sandstone, fine to very fine grained, carbonaceous, greenish-gray to light-olive-gray.
1,500	530-566	Siltstone, clayey, sandy, carbonaceous, variegated gray, green, and brown.
	566-610	Shale, silty, carbonaceous, dark-gray to brownish-black; thin lignite interbeds.
1,600		<u>Cannonball-Ludlow Formations, undifferentiated</u>
1,700	610-655	Siltstone, clayey, sandy, variegated green, gray, and brown.
	655-780	No samples.
1,800		
1,900		
2,000		
2,100		
2,200		
2,300		
2,400		

LOCATION: 141-091-09DDD

DATE DRILLED: June 1974

ALTITUDE: 1979
(FT, MSL)

DEPTH: 280
(FT)



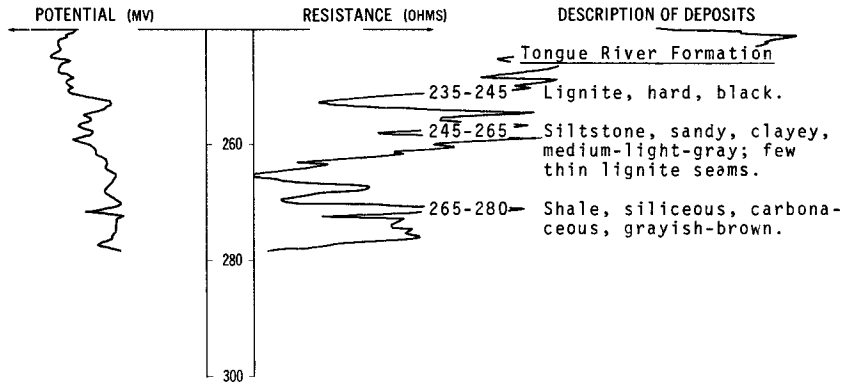
NDSWC 4696, Continued

LOCATION: 141-091-09DDD

DATE DRILLED: June 1974

ALTITUDE: 1979
(FT, MSL)

DEPTH: 280
(FT)



141-091-19DDD
NDSWC 8263

Altitude: 2011 ft

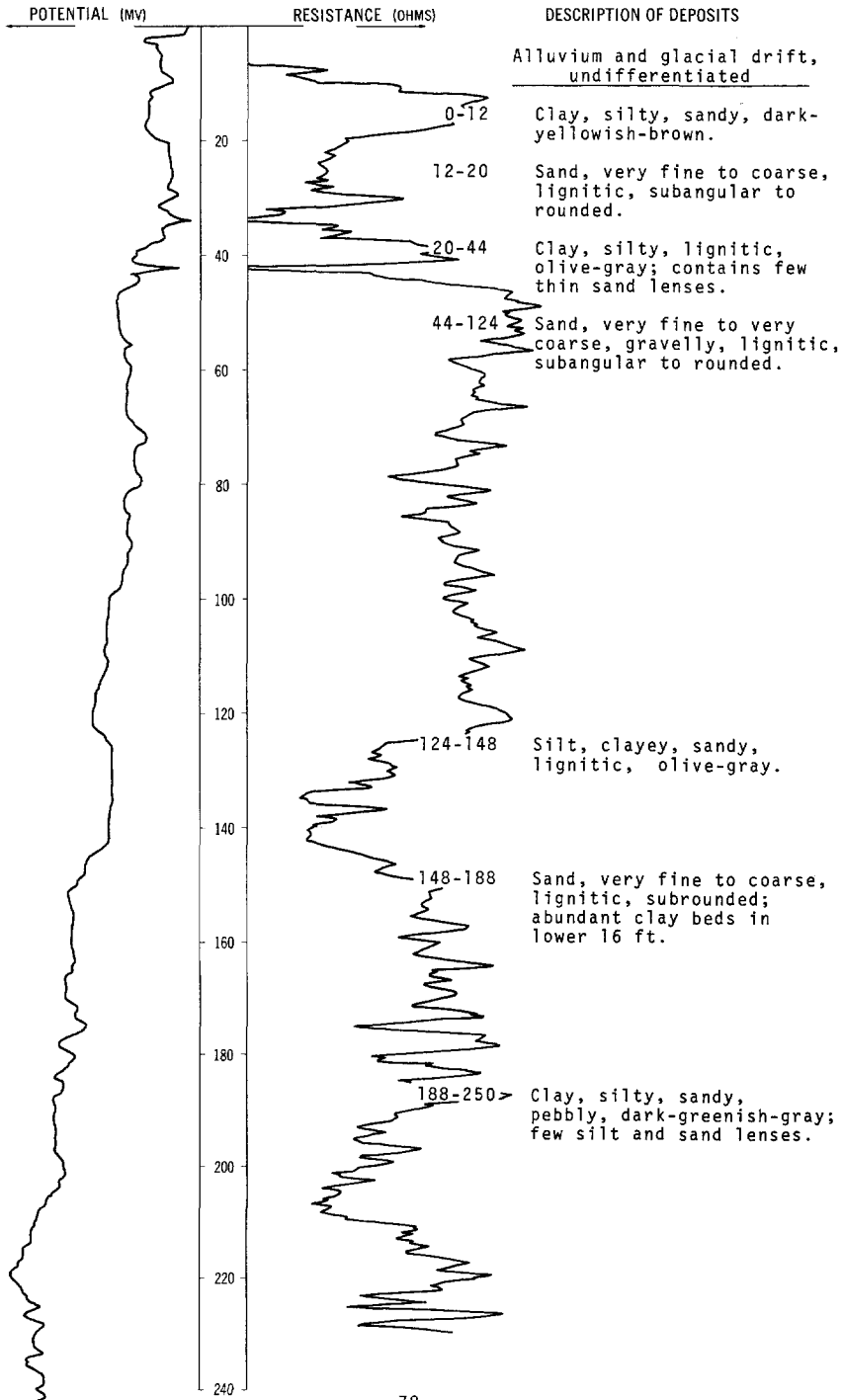
Geologic source	Material	Thickness (feet)	Depth (feet)
Alluvium and glacial drift, undifferentiated:			
	Topsoil, silty, clayey, grayish-black-----	1	1
	Clay, silty, moderate-yellowish-brown-----	19	20
	Gravel, fine to coarse, clayey, angular to subrounded-----	4	24
	Clay, very silty, olive-gray-----	49	73
	Clay, very sandy, silty, lignitic, olive-gray (till)-----	7	80
Sentinel Butte Formation:			
	Siltstone, clayey, hard, calcareous, medium-gray; few thin lignite beds-----	20	100

LOCATION: 141-091-22DDD

DATE DRILLED: June 1974

ALTITUDE: 1994
(FT, MSL)

DEPTH: 340
(FT)



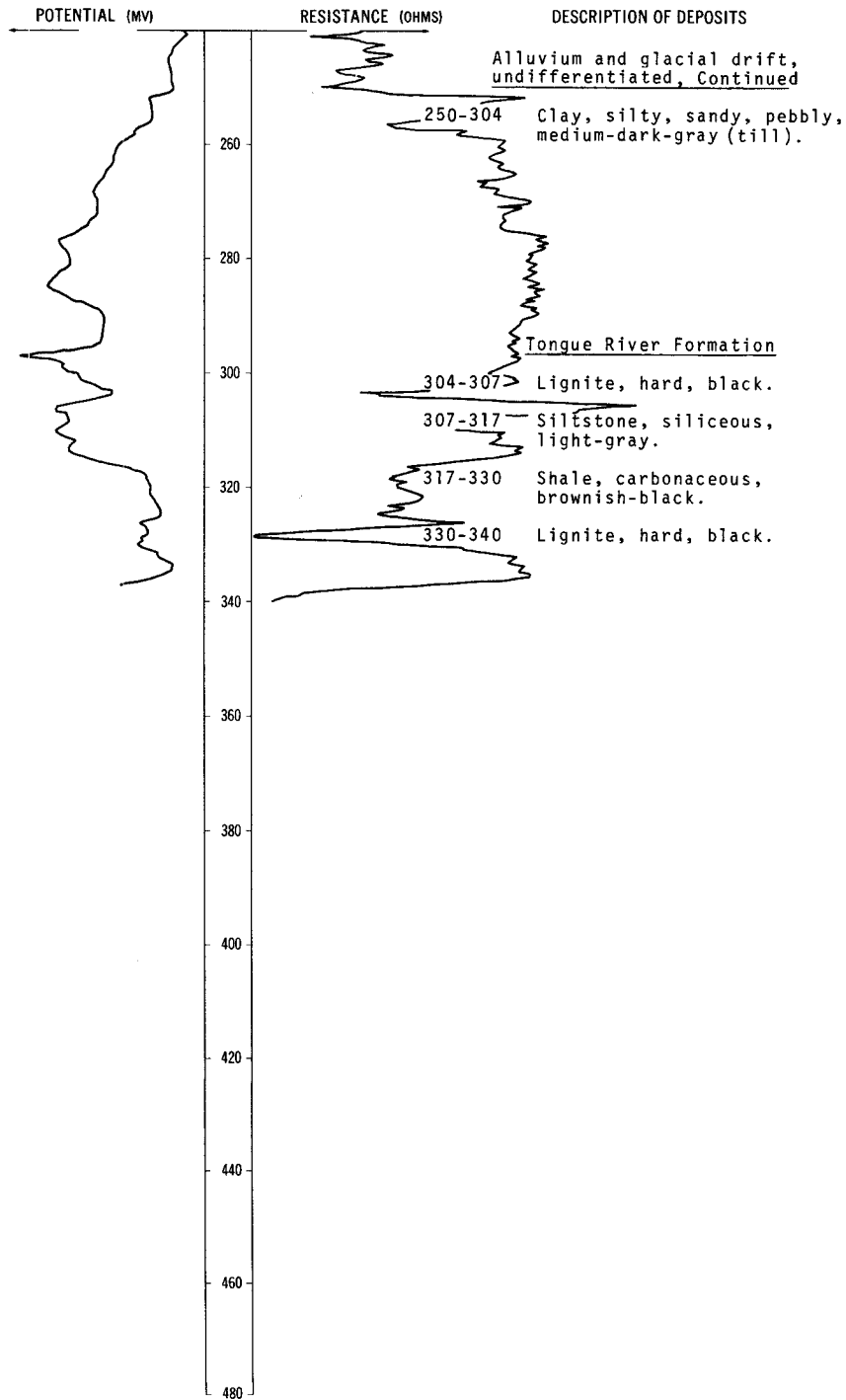
NDSWC 4695, Continued

LOCATION: 141-091-22DDD

DATE DRILLED: June 1974

ALTITUDE: 1994
(FT, MSL)

DEPTH: 340
(FT)

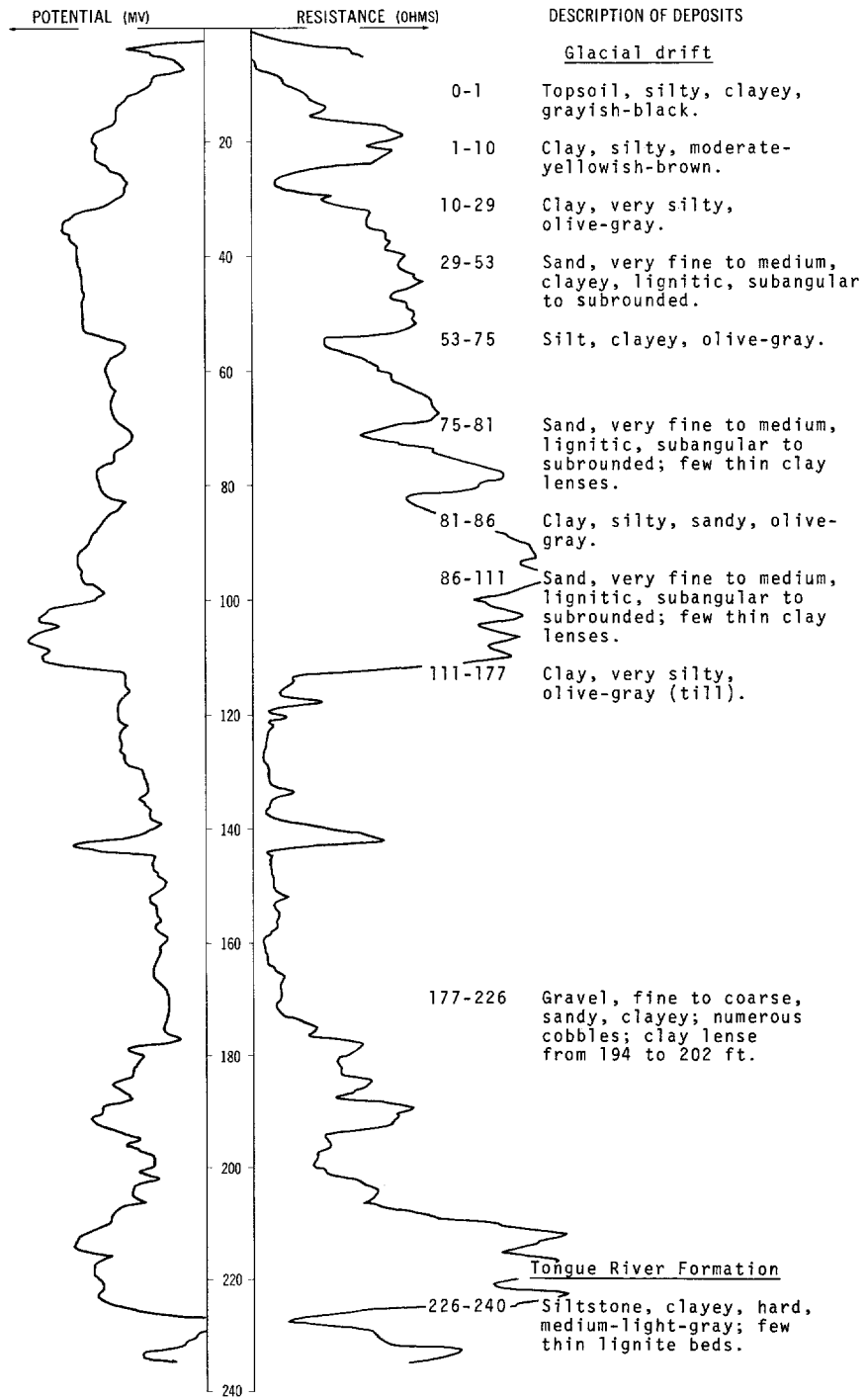


LOCATION: 141-091-23CBC

DATE DRILLED: November 1971

ALTITUDE: 1985
(FT. MSL)

DEPTH: 240
(FT)

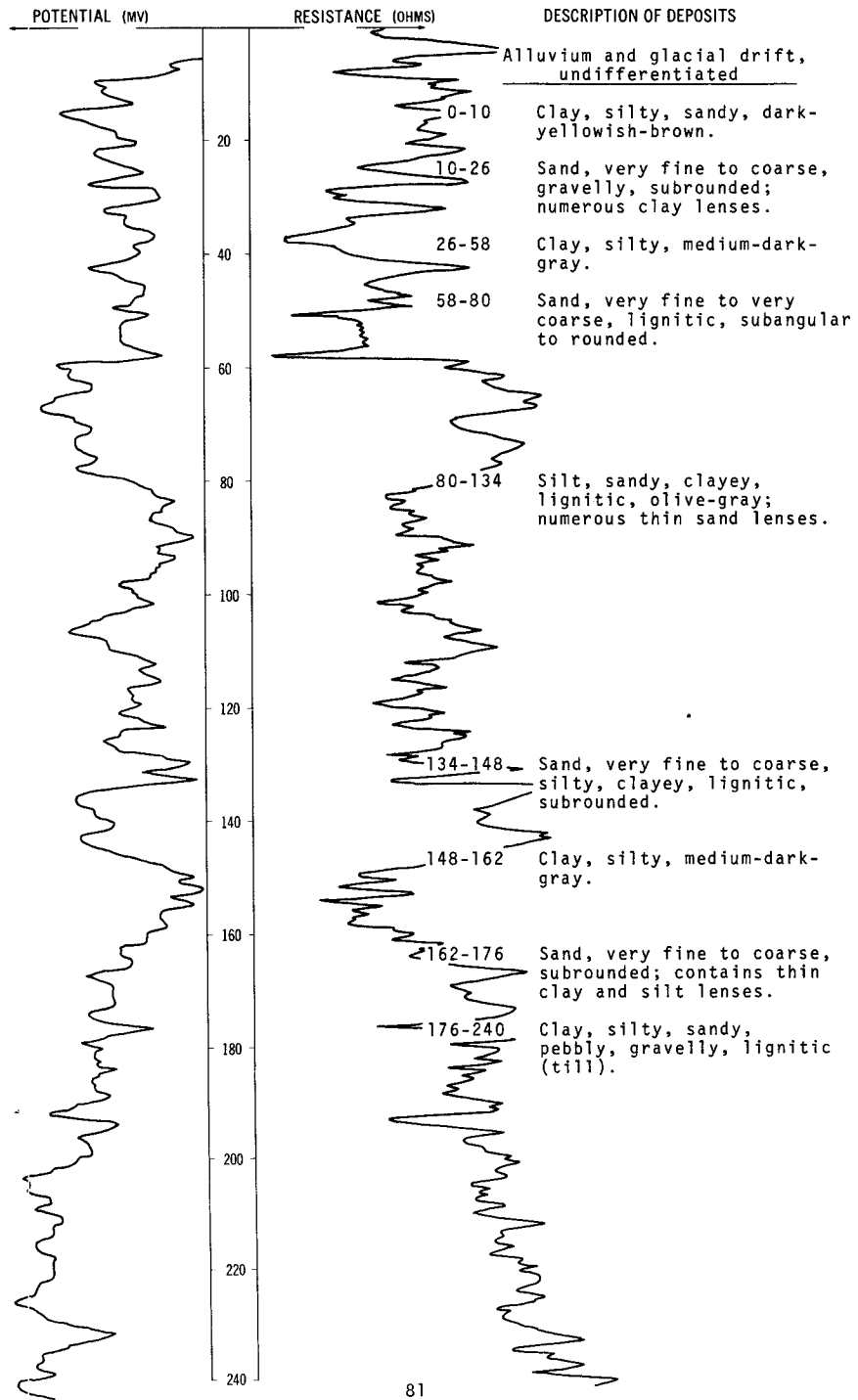


LOCATION: 141-091-26BCB

DATE DRILLED: June 1974

ALTITUDE: 2009
(FT, MSL)

DEPTH: 340
(FT)

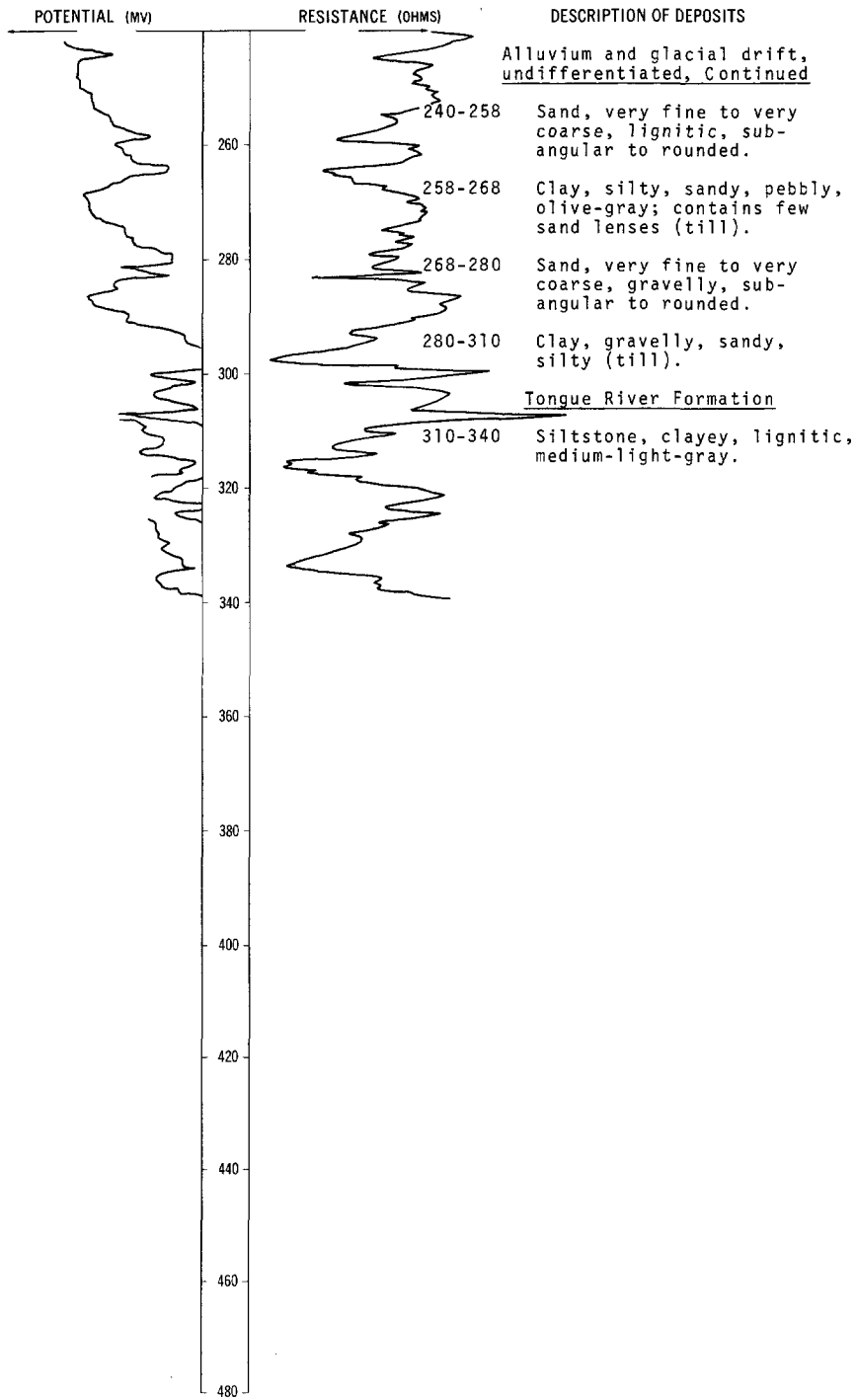


LOCATION: 141-091-26BCB

DATE DRILLED: June 1974

ALTITUDE: 2009
(FT, MSL)

DEPTH: 340
(FT)

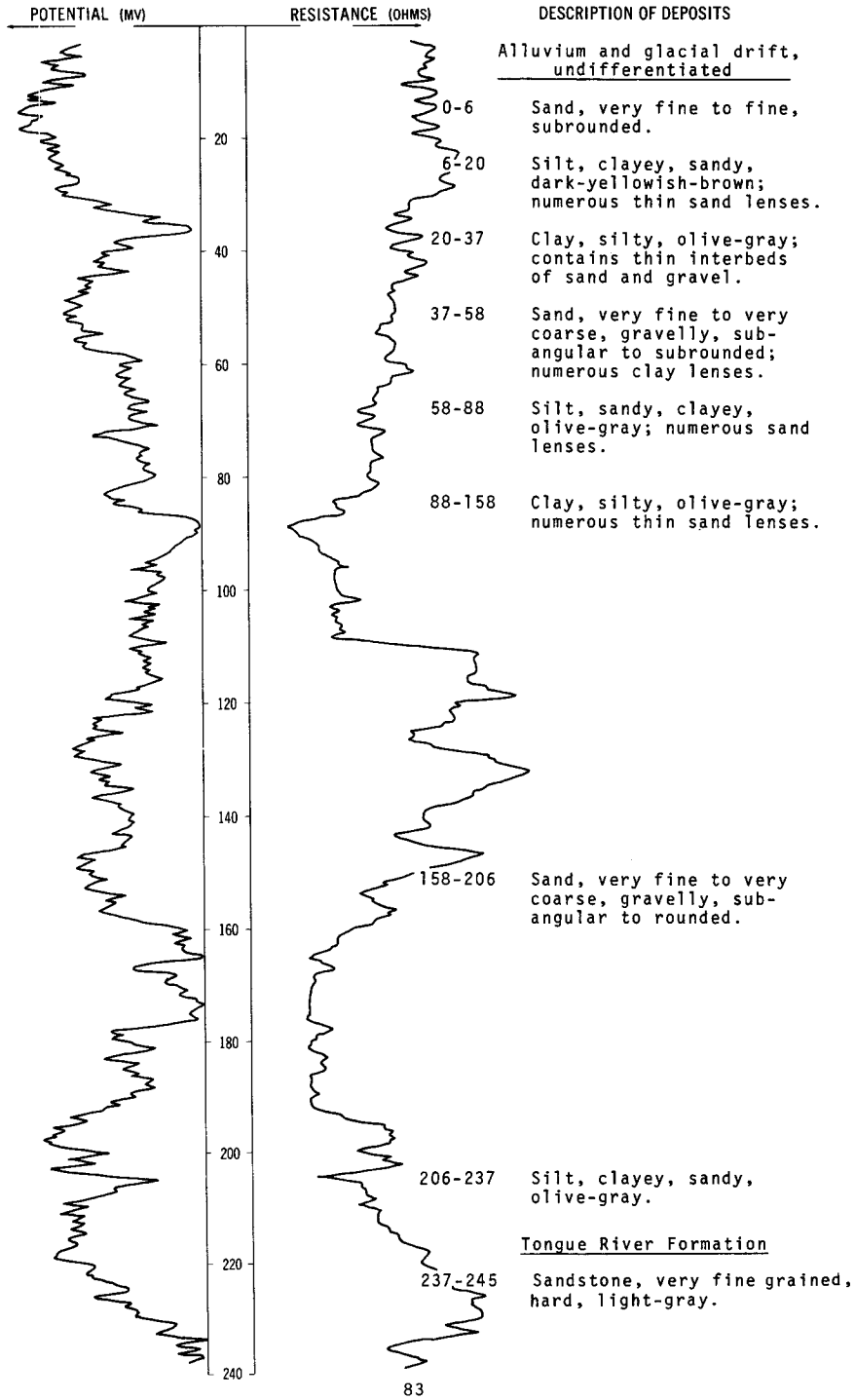


LOCATION: 141-091-30DAD

DATE DRILLED: June 1974

ALTITUDE: 2011
(FT, MSL)

DEPTH: 245
(FT)



141-092-04CCA
(Log from K. J. Thompson)

Altitude:

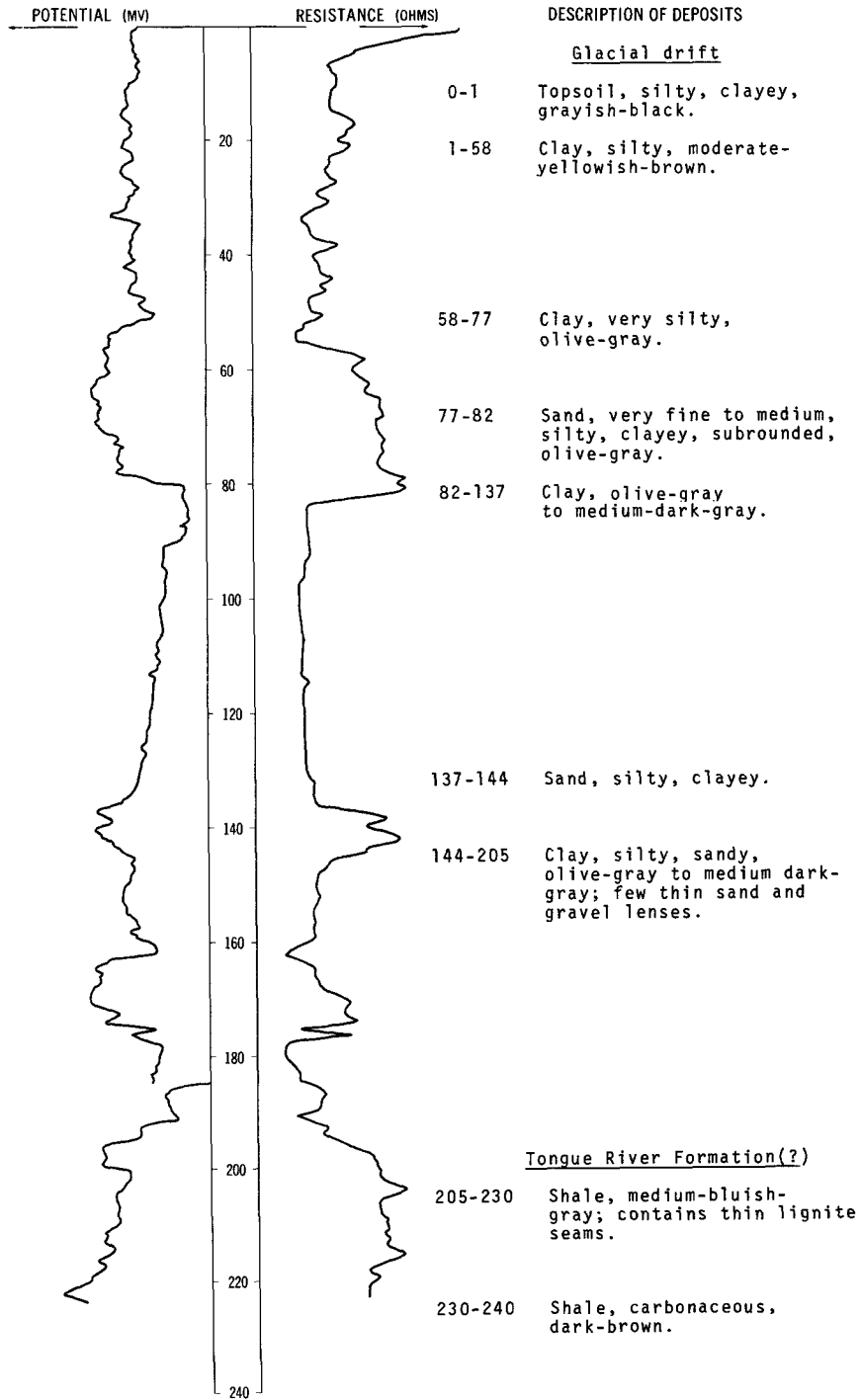
<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Sand, red-----	40	40
	Clay, black-----	6	46
	Sand, blue (water)-----	20	66
	Coal (water)-----	2	68
	Sand (water)-----	2	70
	Coal-----	1	71
	Clay-----	4	75

LOCATION: 141-092-04CCC

DATE DRILLED: November 1971

ALTITUDE: 2115
(FT, MSL)

DEPTH: 240
(FT)



141-092-07BBA
NDSWC 8266

Altitude: 2090 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
Alluvium and glacial drift, undifferentiated:			
	Topsoil, silty, clayey, grayish-black-----	1	1
	Clay, silty, dark-yellowish-brown-----	44	45
	Clay, very silty, olive-gray; isolated sand lenses-----	11	56
	Sand, very fine to fine, silty, lignitic, subangular-----	4	60
	Clay, silty, sandy, olive-gray-----	6	66
	Sand, very fine to medium, subangular to subrounded-----	19	85
	Clay, silty, sandy, olive-gray; thin sand lenses near base-----	15	100
Sentinel Butte Formation:			
	Siltstone, clayey, calcareous, medium-light-gray; carbonaceous laminae-----	15	115
	Shale, noncalcareous, greenish-gray-----	5	120

141-092-07CDD
(Log from K. J. Thompson)

Altitude:

Sand and gravel-----	73	73
Coal-----	2	75
Clay-----	17	92
Rock-----	2	94
Clay-----	4	98
Rock-----	4	102
Clay-----	32	134
Rock-----	3	137
Clay-----	5	142
Coal (water)-----	4	146
Clay-----	14	160

141-092-09BBD2
(Log from Moe Drilling Co.)

Altitude:

Topsoil-----	1	1
Till (clay), yellow-----	35	36
Clay, gray-----	16	52
Clay, black-----	6	58
Clay, green-----	5	63
Sand, gray, chunky-----	15	78
Clay, gray-----	3	81

141-092-12DCC
(Log from Moe Drilling Co.)

Altitude:

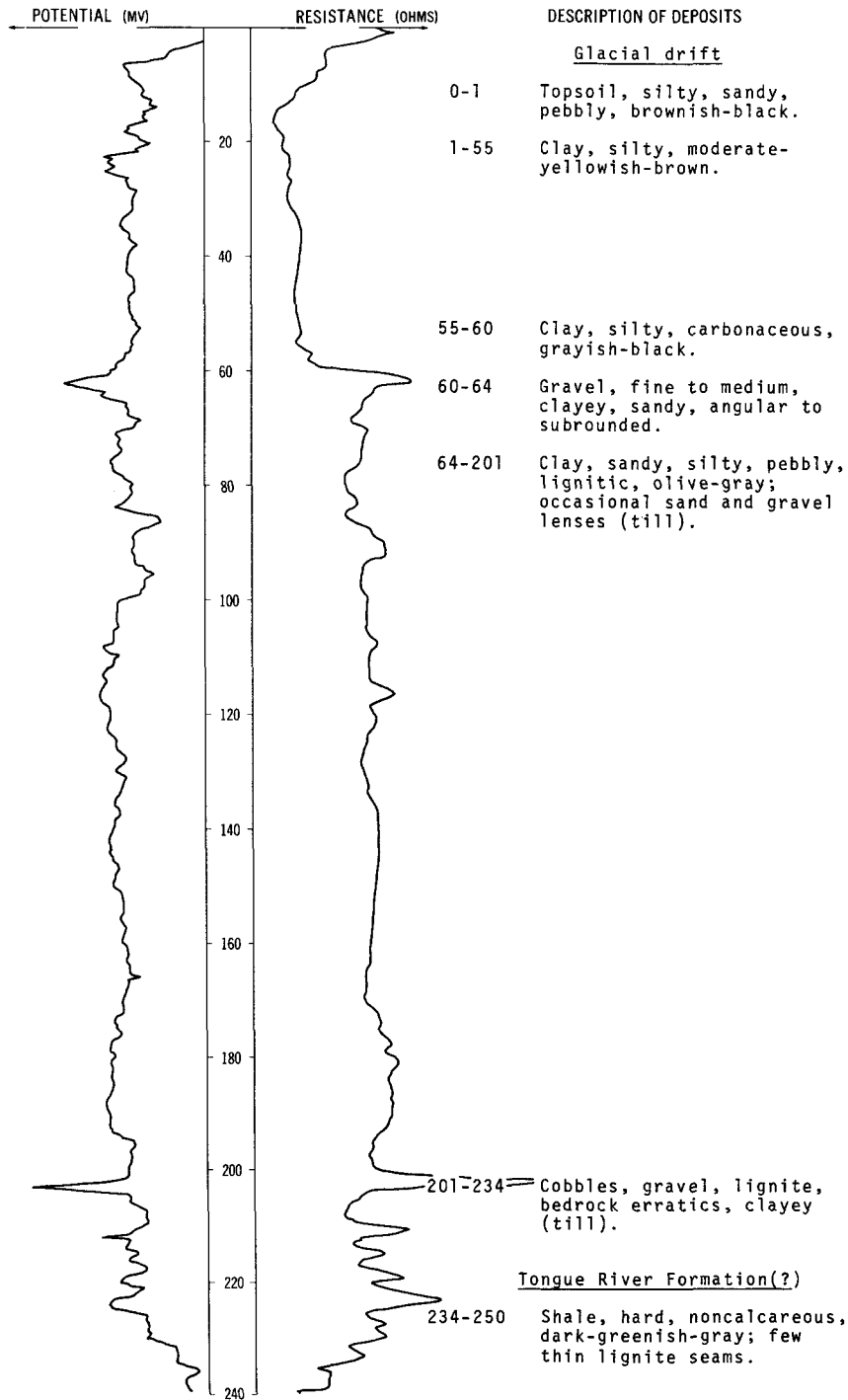
Sand-----	22	22
Clay, brown-----	9	31
Clay, green-----	10	41
Lignite-----	3	44
Clay, brown-----	19	63
Sand, gray-----	13	76
Clay, gray-----	1	77

LOCATION: 141-092-13BBB

DATE DRILLED: November 1971

ALTITUDE: 2055
(FT, MSL)

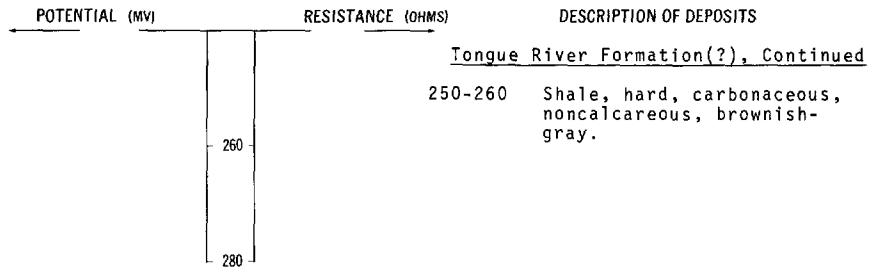
DEPTH: 260
(FT)



NDSWC 8264, Continued

LOCATION: 141-092-13BBB
 ALTITUDE: 2055
 (FT, MSL)

DATE DRILLED: November 1971
 DEPTH: 260
 (FT)



141-092-18ABB
 NDSWC 8267

Altitude: 2155 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Topsoil, silty, clayey, grayish-black-----	1	1
	Clay, silty, moderate-yellowish-brown (till)-----	29	30
	Clay, silty, olive-gray; few thin sand lenses (till)-----	50	80
	Clay, silty, sandy, lignitic, olive-gray; numerous thin sand lenses (till)-----	60	140
	Cobbles, gravel, bedrock erratics, clayey (till)-----	5	145
Sentinel Butte Formation:			
	Sandstone, very fine grained, hard, calcareous; few thin shale seams-----	15	160

141-092-20BBD1
 (Log from K. J. Thompson)

Altitude:

Sand and gravel (pumped 10 gal/min)-----	38	38
--	----	----

141-092-20BBD2
 (Log from K. J. Thompson)

Altitude:

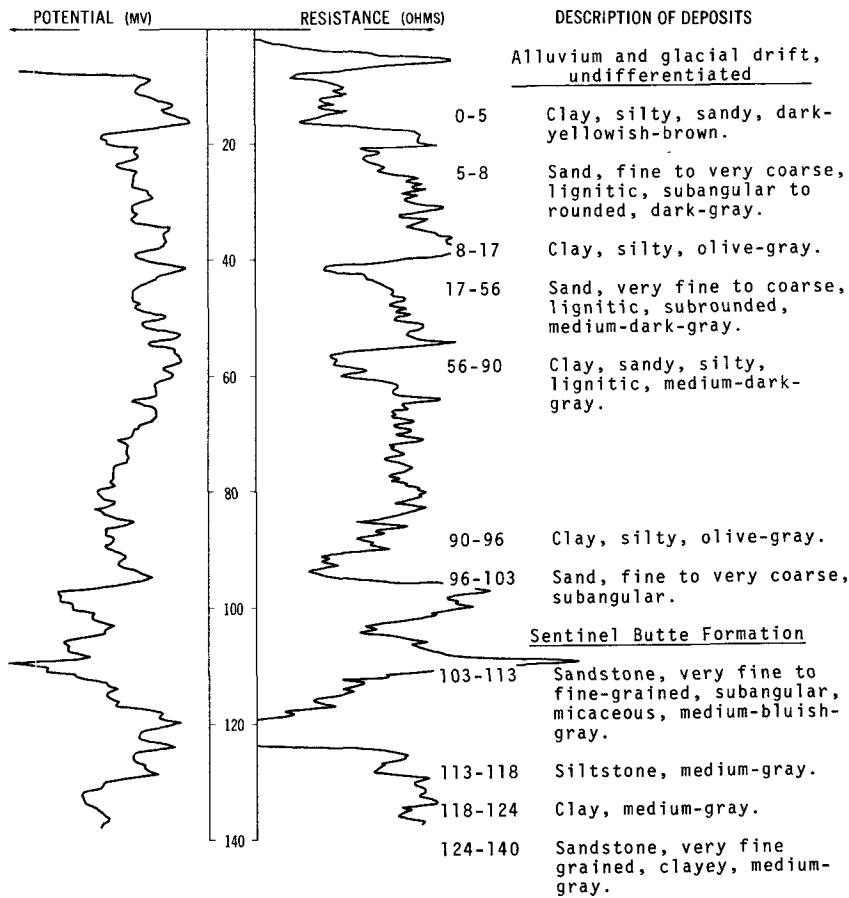
Topsoil and sand-----	31	31
Gravel (dry)-----	2	33
Silt(?)-----	12	45
Sand and gravel-----	5	50
Coal slack and gravel-----	3	53
Coal slack and gravel bottom (water)-----	2	55

LOCATION: 141-092-28AAA

DATE DRILLED: June 1974

ALTITUDE: 2056
(FT, MSL)

DEPTH: 140
(FT)



141-093-02ABB
(Log from K. J. Thompson)

Altitude:

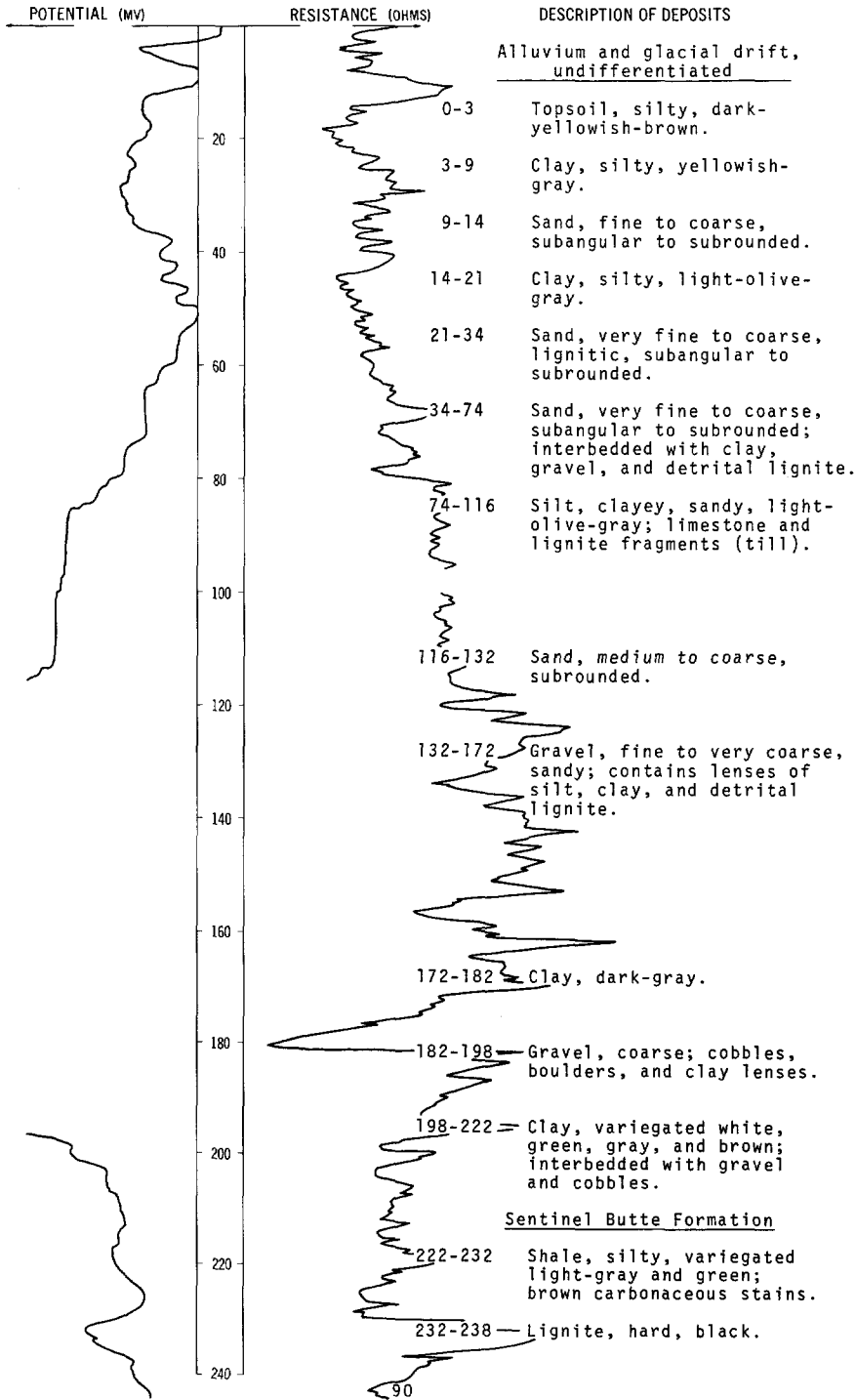
Geologic source	Material	Thickness (feet)	Depth (feet)
	Topsoil and clay-----	41	41
	Rock-----	1	42
	Sand-----	1	43
	Rock-----	1	44
	Sand-----	11	55
	Sand (wet)-----	5	60
	Sand (dry)-----	16	76
	Coal (water)-----	2	78
	Clay-----	5	83
	Rock-----	1	84
	Clay-----	13	97
	Coal (water)-----	5	102
	Clay-----	4	106
	Clay, hard-----	6	112

LOCATION: 141-093-02CCC

DATE DRILLED: December 1973

ALTITUDE: 2081
(FT, MSL)

DEPTH: 260
(FT)



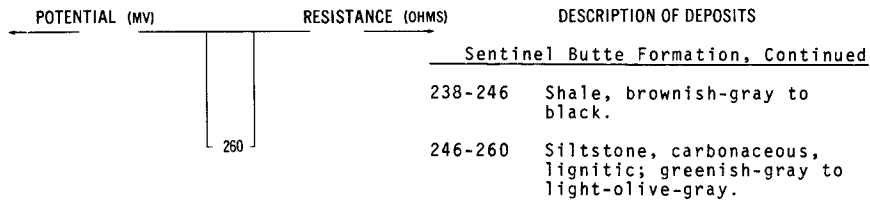
NDSWC 4615, Continued

LOCATION: 141-093-02CCC

DATE DRILLED: December 1973

ALTITUDE: 2081
(FT, MSL)

DEPTH: 260
(FT)



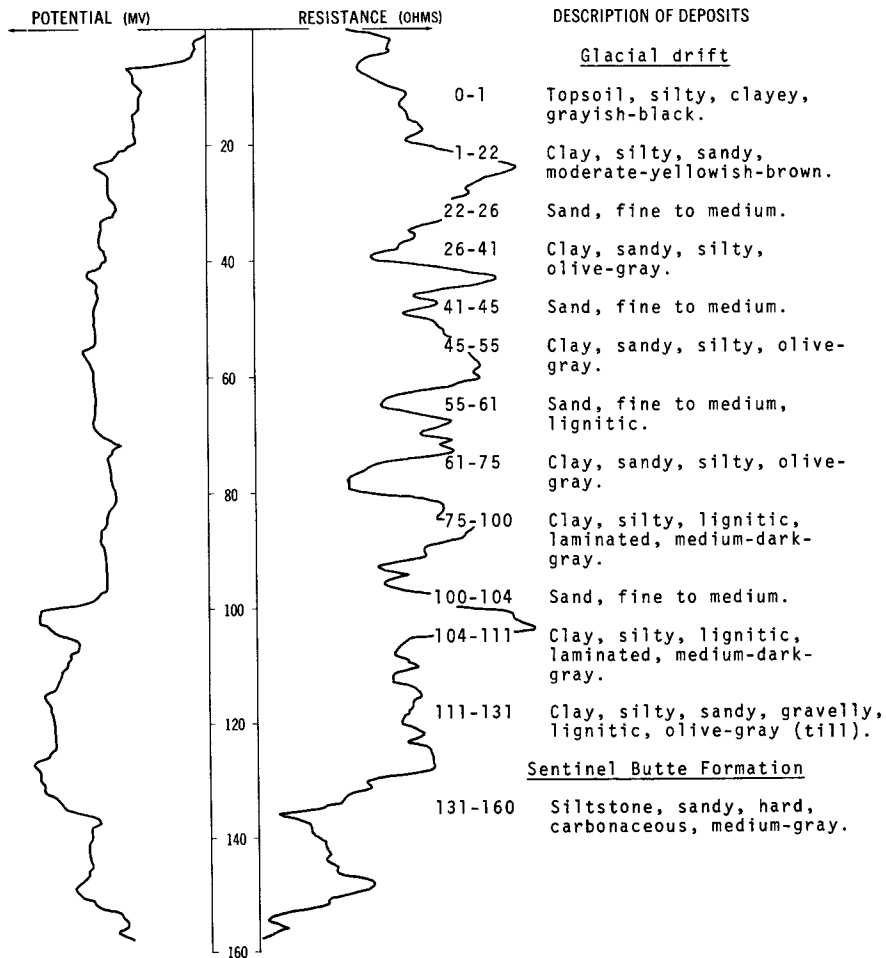
NDSWC 8268

LOCATION: 141-093-03AAA

DATE DRILLED: November 1971

ALTITUDE: 2088
(FT, MSL)

DEPTH: 160
(FT)



Altitude:

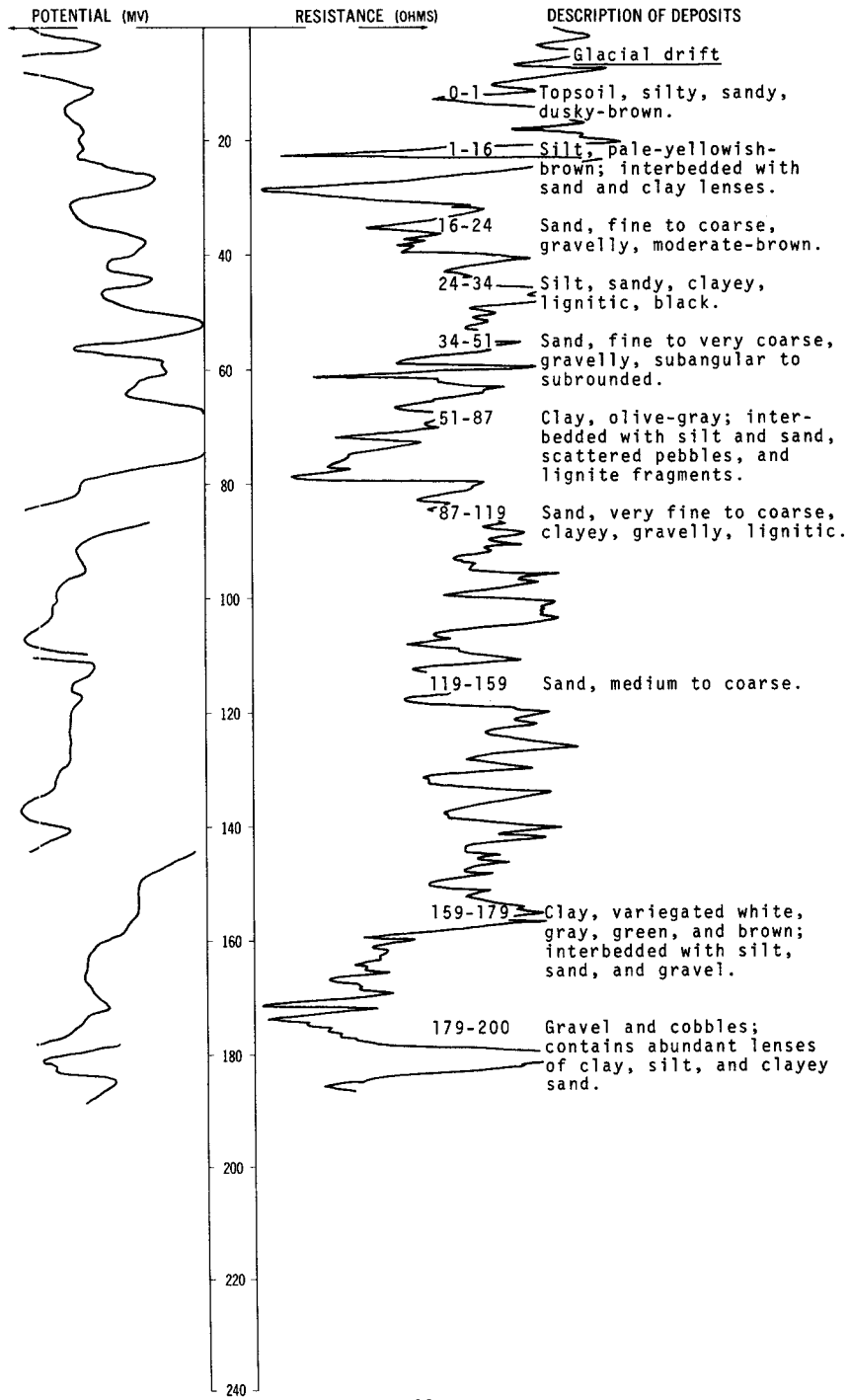
<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Alluvium and glacial drift, undifferentiated:			
	Topsoil, silty, black-----	1	1
	Clay, silty, moderate-brown-----	14	15
	Sand, fine to coarse, gravelly, angular to subrounded-----	13	28
	Clay, silty, sandy, olive-gray; scattered pebbles and lignite fragments (till)-----	63	91
	Sand, medium to very coarse, gravelly, silty, clayey, subangular to subrounded; cobbles and boulders from 114 to 117 ft--	26	117
Sentinel Butte Formation:			
	Claystone, variegated gray, green, and brown; interbedded with siltstone, lignite, and limestone concretions-----	23	140

LOCATION: 141-093-04CBB1

DATE DRILLED: November 1973

ALTITUDE: 2100
(FT, MSL)

DEPTH: 200
(FT)

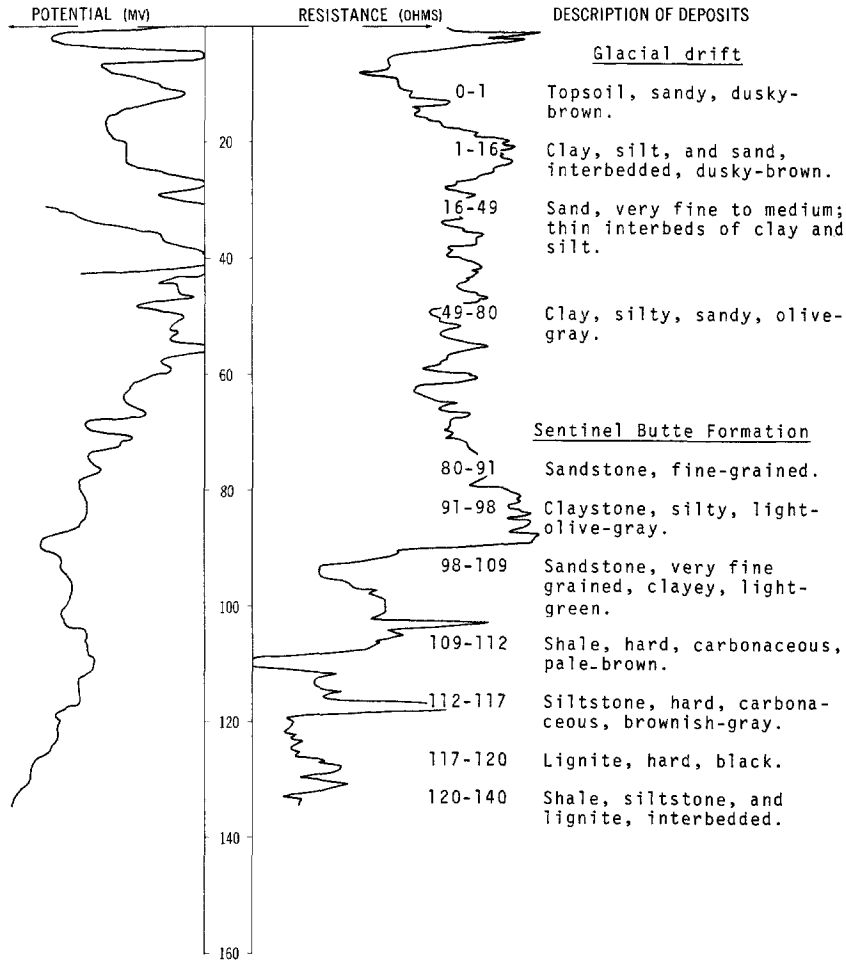


LOCATION: 141-093-04CBB2

DATE DRILLED: December 1973

ALTITUDE: 2110
(FT. MSL)

DEPTH: 140
(FT)



141-093-05BAB
NDSWC 4617

Altitude: 2080 ft

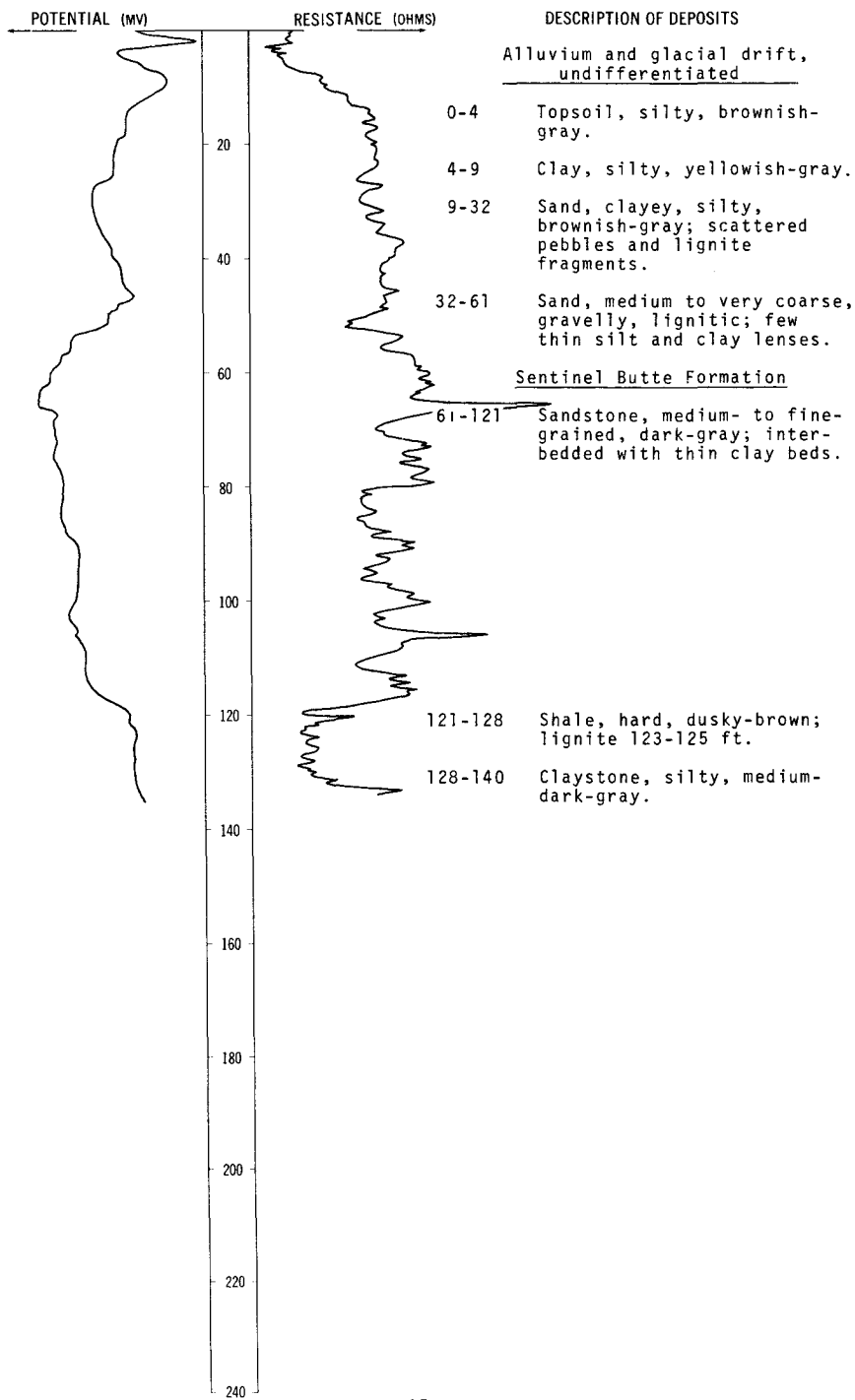
<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Alluvium and glacial drift, undifferentiated:			
	Topsoil, silty, black-----	2	2
	Clay, silty, yellowish-brown-----	3	5
	Sand, medium, subangular to subrounded-----	6	11
Sentinel Butte Formation:			
	Claystone and sandstone, interbedded, light-gray to medium-gray-----	9	20
	Sandstone, very fine to medium-grained, subangular, carbonaceous-----	15	35
	Sandstone, very fine grained, calcareous---	4	39
	Sandstone, fine- to medium-grained, lignitic, subangular, dark-gray-----	21	60

LOCATION: 141-093-06ABA

DATE DRILLED: December 1973

ALTITUDE: 2092
(FT, MSL)

DEPTH: 140
(FT)

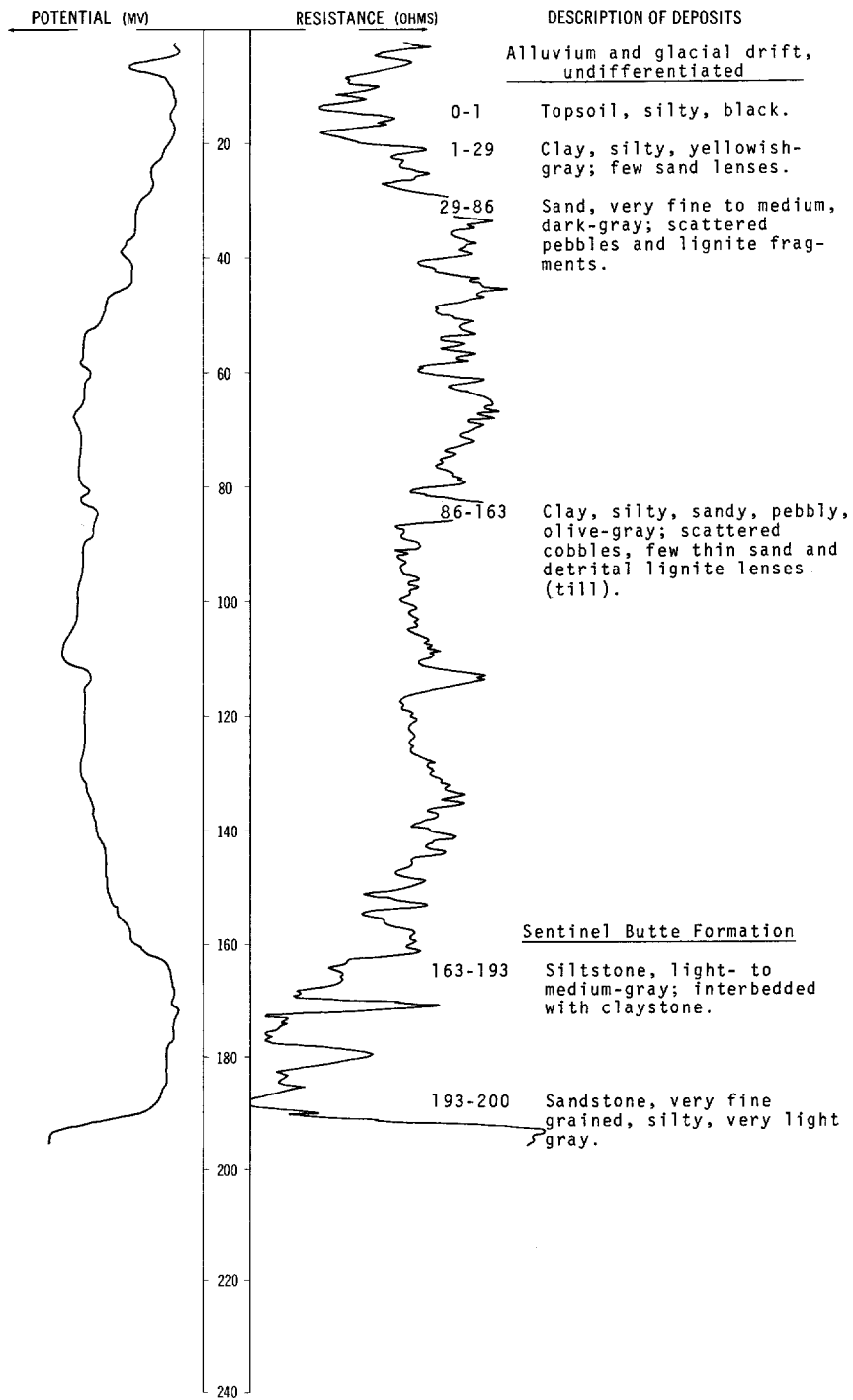


LOCATION: 141-093-118CC

DATE DRILLED: December 1973

ALTITUDE: 2087
(FT, MSL)

DEPTH: 200
(FT)

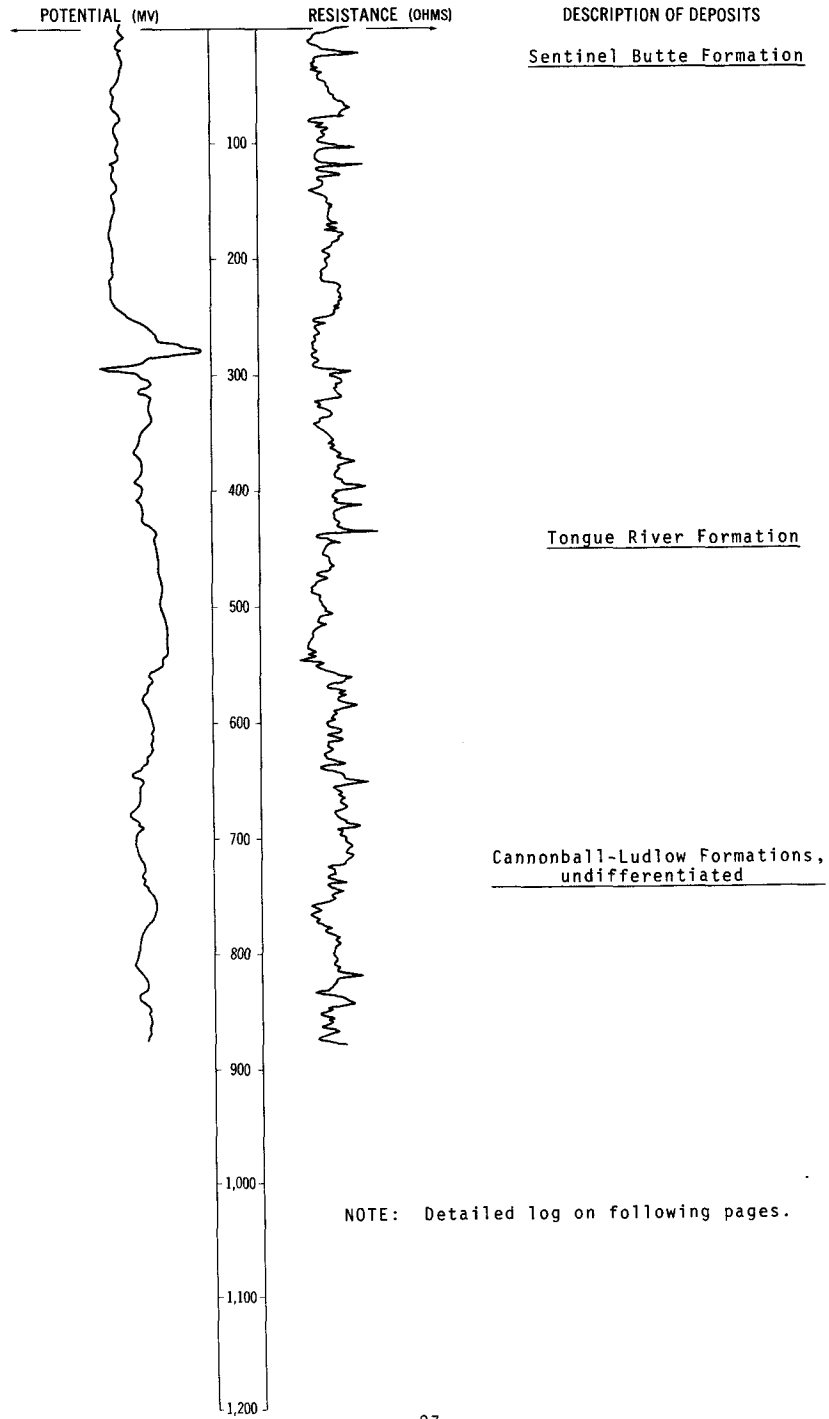


LOCATION: 141-093-16AAA1,2

DATE DRILLED: June 1974

ALTITUDE: 2158
(FT, MSL)

DEPTH: 880
(FT)



NOTE: Detailed log on following pages.

141-093-16AAA1,2, Continued
NDSWC 4662 and 4662A

Altitude: 2158 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Topsoil, silty, sand, brownish-black-----	1	1
	Claystone, moderate-yellowish-brown-----	19	20
	Sandstone, fine-grained, hard, light-gray--	4	24
	Siltstone, clayey, medium-light-gray-----	11	35
	Lignite, hard, black-----	2	37
	Siltstone, clayey, medium-light-gray-----	13	50
	Claystone, sandy, medium-gray-----	14	64
	Sandstone, very fine to medium-grained, subangular, medium-gray to bluish-gray---	12	76
	Lignite, hard, black-----	2	78
	Claystone, hard, greenish-gray-----	10	88
	Shale, silty, carbonaceous, moderate-brown-	4	92
	Siltstone, clayey, siliceous, medium-gray--	12	104
	Limestone concretion, hard, medium-gray---	2	106
	Siltstone, medium-gray; few limestone concretions-----	20	126
	Lignite, hard, brownish-black-----	4	130
	Siltstone, greenish-gray-----	10	140
	Claystone, silty, light-brownish-gray-----	30	170
	Lignite, soft, oily, shaly, brownish-black-	3	173
	Claystone, sandy, light-gray to brownish- gray; contains thin lignite seams and siliceous concretions-----	32	205
	Sandstone, very fine to fine-grained, subangular, micaceous, medium-bluish- gray-----	7	212
	Siltstone, clayey, light-gray to medium- gray-----	9	221
	Siltstone, sandy, soft, light-brownish-gray	29	250
	Lignite, soft, oily, shaly, dark-brown----	1	251
	Shale, silty, soft, carbonaceous, dark- brown-----	6	257
	Siltstone, clayey, medium-gray to greenish- gray-----	37	294
	Siltstone, hard, calcareous, white-----	9	303
	Sandstone, very fine to fine-grained, sub- angular to subrounded, micaceous, bluish-gray; contains shell fragments----	19	322
	Shale, carbonaceous, brownish-black-----	3	325
	Lignite, brownish-black-----	1	326
	Claystone, sandy, medium-gray to light- bluish-gray-----	19	345
	Sandstone, very fine to fine-grained, lignitic, fossiliferous, subangular, micaceous, greenish-gray; cemented from 394-397 ft, 412-414 ft-----	91	436
	Siltstone, greenish-gray-----	8	444
Tongue River Formation:			
	Lignite, hard, black-----	2	446
	Claystone, sandy, silty, medium-gray to light-brownish-gray; few thin lignite seams-----	44	490
	Siltstone, sandy, light-gray to medium- gray; few limestone concretions-----	70	560
	Lignite, hard, brownish-black to black-----	9	569
	Siltstone, clayey, medium-gray to light- brownish-gray; few thin lignite seams----	13	582
	Claystone, soft, bentonitic, light- greenish-gray to brownish-gray; few thin lignite seams-----	18	600

141-093-16AAA1,2, Continued
 NDSWC 4662 and 4662A

Altitude: 2158 ft

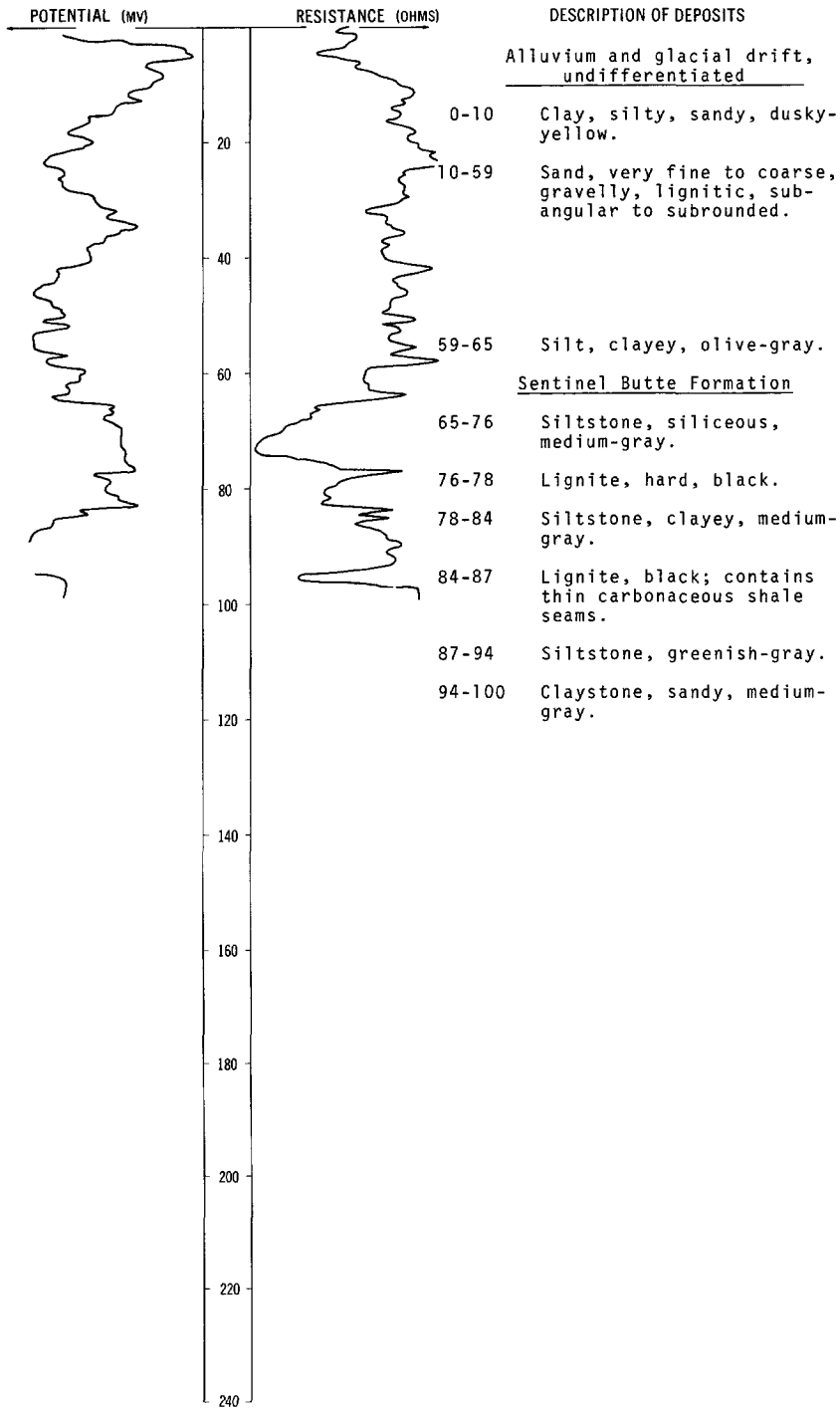
<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Tongue River Formation, Continued:			
	Claystone, silty, medium-gray to brownish-gray; numerous sand interbeds-----	66	666
	Lignite, oily, black; few thin shale interbeds-----	10	676
	Siltstone, clayey, calcareous, light-greenish-gray to medium-gray-----	8	684
	Sandstone, very fine to fine-grained silty, subangular, calcareous, light-gray; few thin siltstone interbeds-----	42	726
Cannonball-Ludlow Formations, undifferentiated:			
	Claystone, sandy, silty, medium-gray to light-brownish-gray; thin lignite seams and carbonaceous shale interbeds-----	30	756
	Siltstone, hard, siliceous, light-greenish-gray-----	20	776
	Sandstone, very fine to fine-grained clayey, hard to semihard, subangular to subrounded, micaceous, greenish-gray to bluish-gray-----	74	850
	Claystone, silty, calcareous, medium-gray; brownish-gray interbeds-----	30	880

LOCATION: 141-093-17BBB

DATE DRILLED: June 1974

ALTITUDE: 2110
(FT, MSL)

DEPTH: 100
(FT)

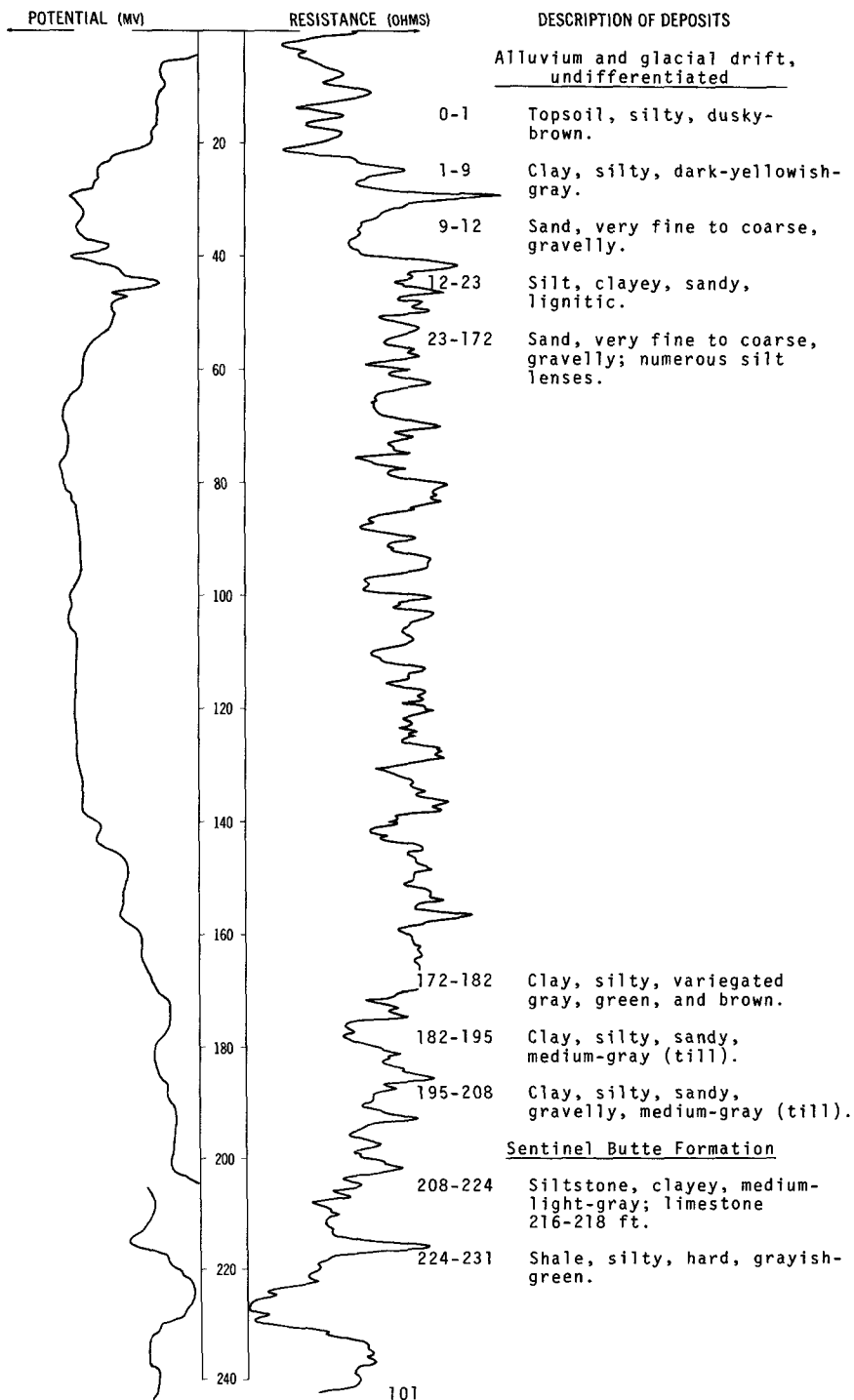


LOCATION: 141-093-19DDD

DATE DRILLED: November 1973

ALTITUDE: 2123
(FT, MSL)

DEPTH: 260
(FT)



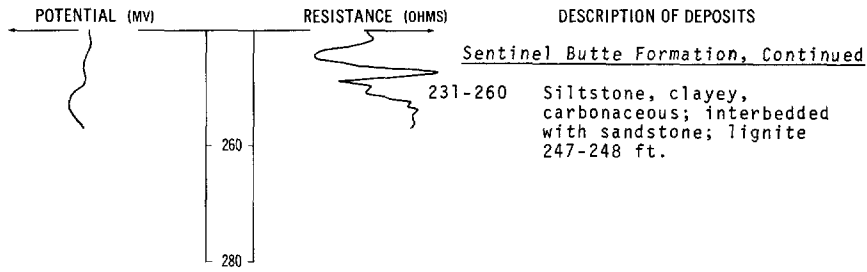
NDSWC 4609, Continued

LOCATION: 141-093-19DDD

DATE DRILLED: November 1973

ALTITUDE: 2123
(FT, MSL)

DEPTH: 260
(FT)



141-093-20DCD
NDSWC 4610

Altitude: 2132 ft

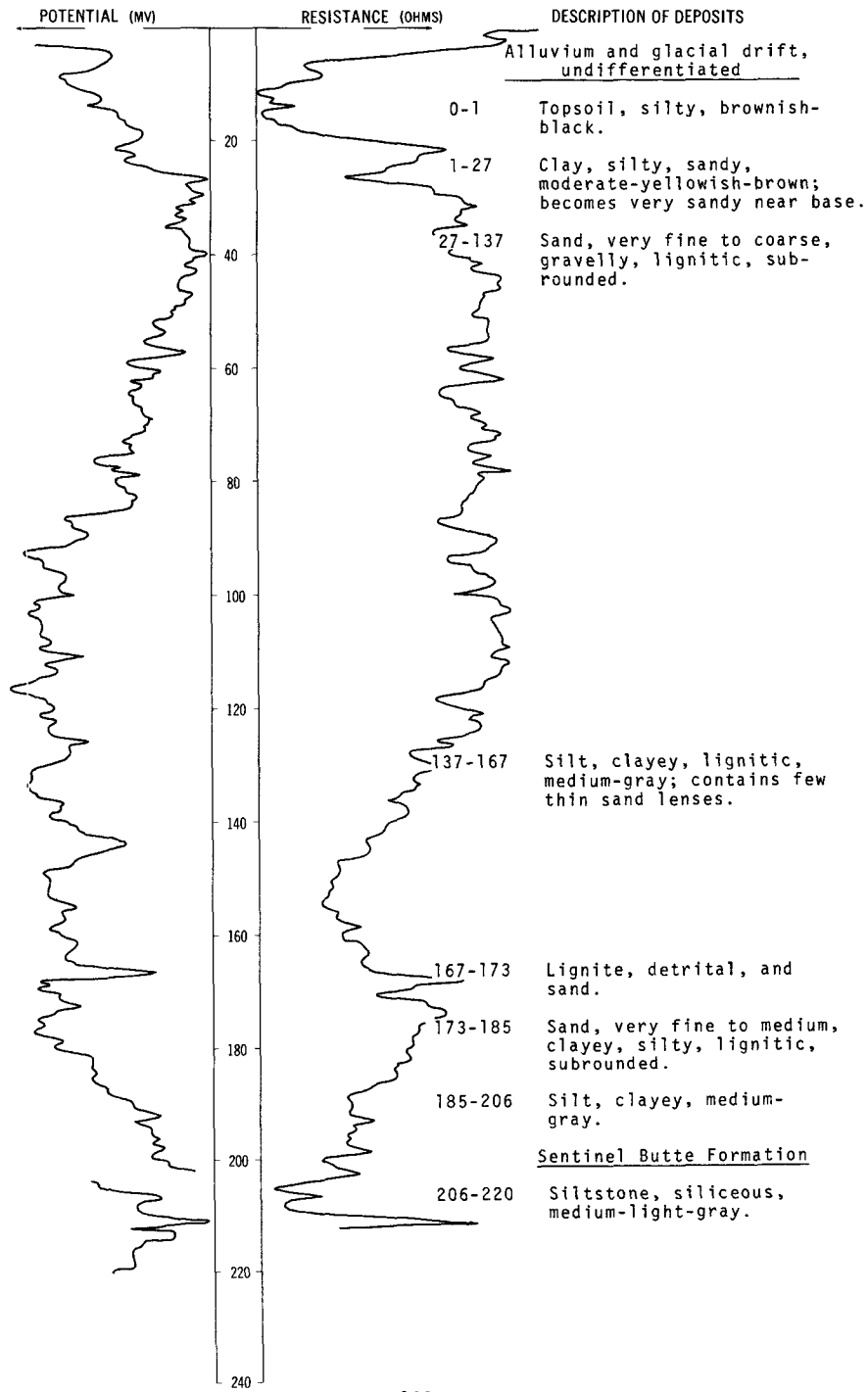
<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Alluvium and glacial drift, undifferentiated:			
	Topsoil, sandy, silty, dusky-brown-----	1	1
	Silt, moderate-yellowish-brown-----	3	4
	Silt, clayey, moderate-brown-----	5	9
	Sand, medium to coarse, lignitic, sub-angular to subrounded-----	58	67
Sentinel Butte Formation:			
	Sandstone, very fine grained, hard, very light-gray to light green-----	8	75
	Siltstone, hard, lignitic; interbedded with claystone-----	25	100

LOCATION: 141-093-22DCD

DATE DRILLED: June 1974

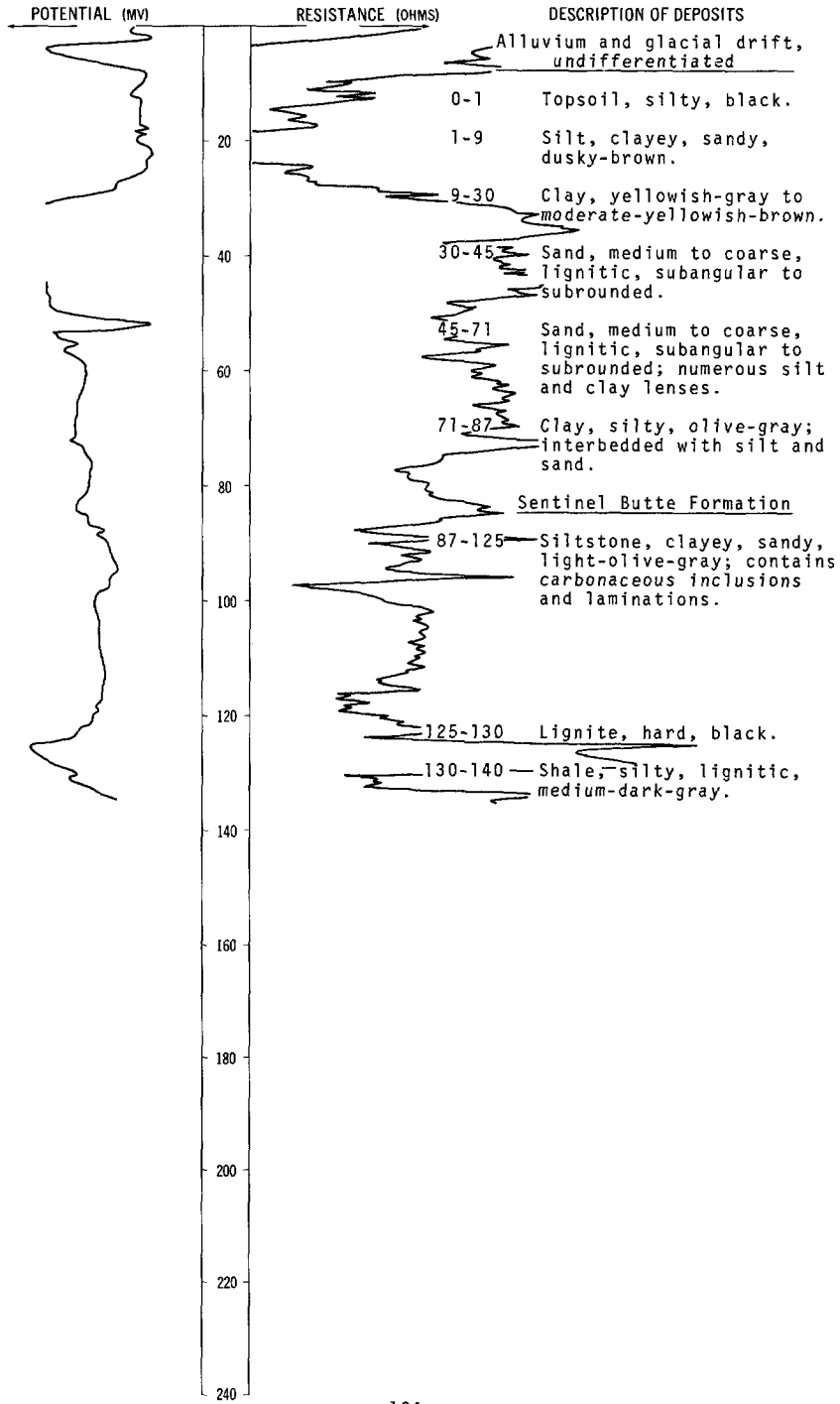
ALTITUDE: 2133
(FT, MSL)

DEPTH: 220
(FT)



LOCATION: 141-093-30ABA
 ALTITUDE: 2135
 (FT, MSL)

DATE DRILLED: November 1973
 DEPTH: 140
 (FT)

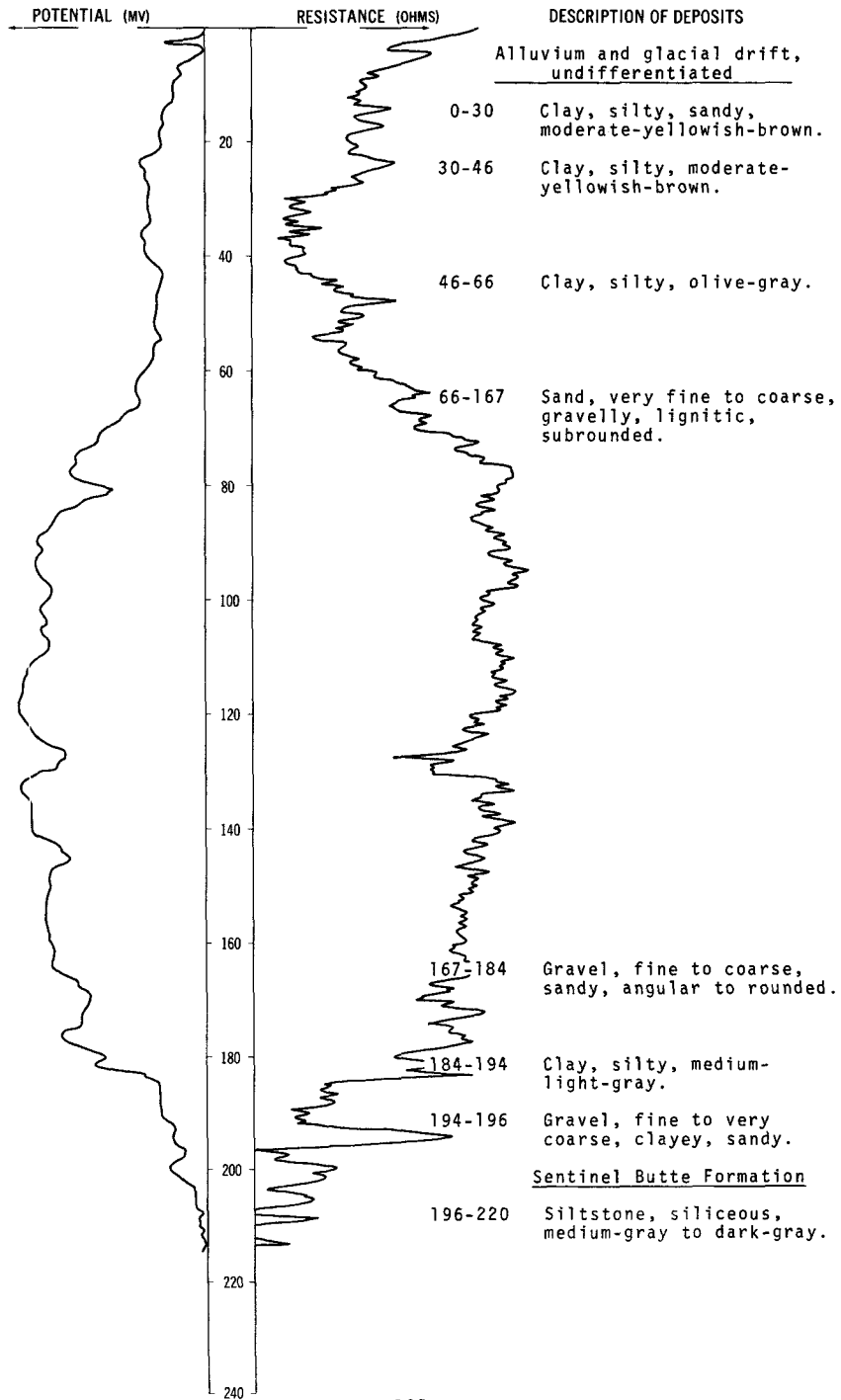


LOCATION: 141-094-04BAA

DATE DRILLED: June 1974

ALTITUDE: 2175
(FT, MSL)

DEPTH: 220
(FT)

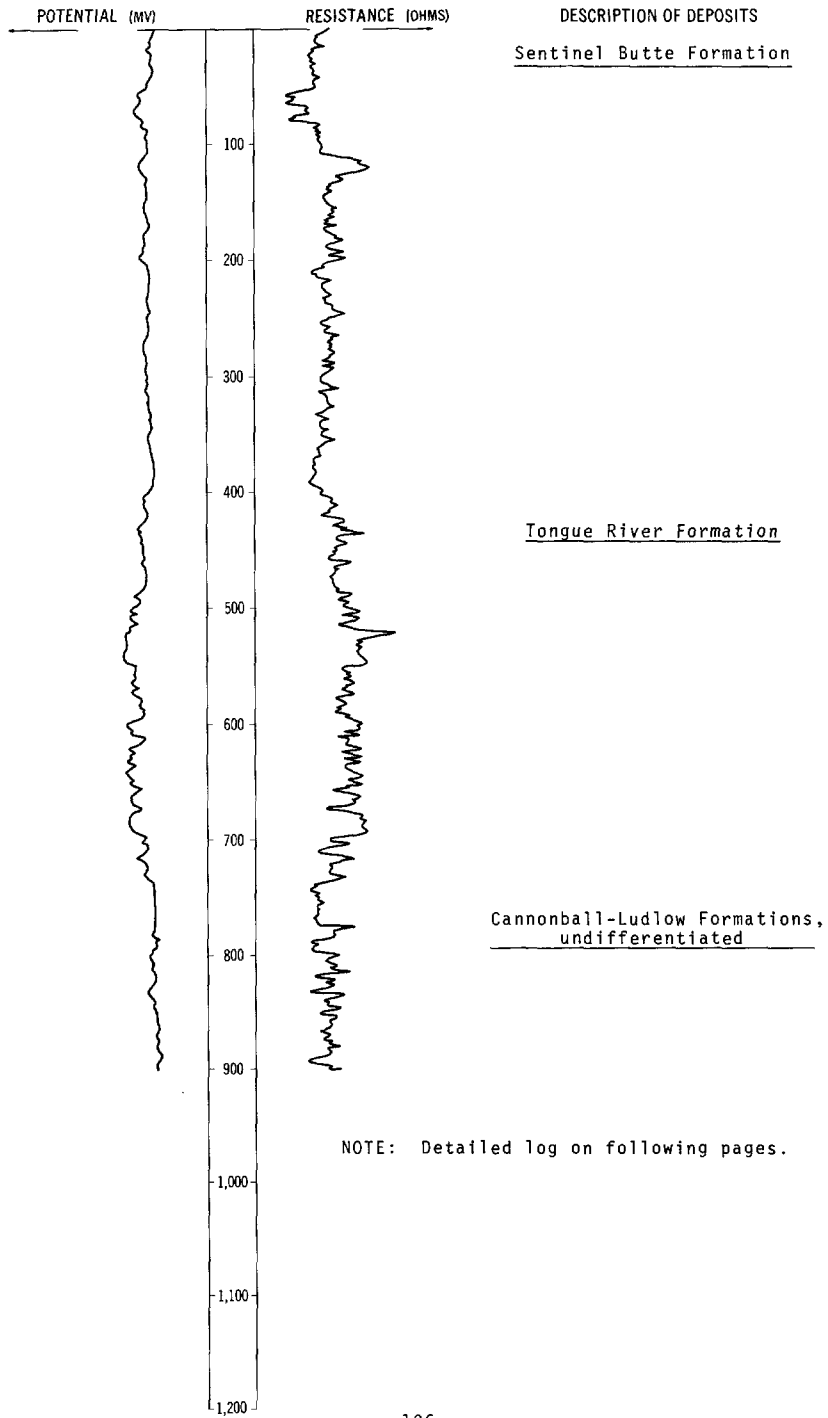


LOCATION: 141-094-06DDD

DATE DRILLED: June 1974

ALTITUDE: 2288
(FT, MSL)

DEPTH: 900
(FT)



NOTE: Detailed log on following pages.

141-094-06DDD, Continued
NDSWC 4669

Altitude: 2288 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:			
	Claystone, sandy, silty, carbonaceous, dark-yellowish-brown; shale from 5 to 9 ft	8	8
	Siltstone, sandy, moderate-yellowish-brown; contains thin lignite seams-----	8	15
	Siltstone, clayey, sandy, medium-gray-----	53	68
	Lignite, hard, black-----	2	70
	Siltstone, soft, light-greenish-gray-----	6	76
	Siltstone, clayey, medium-dark-gray-----	11	87
	Lignite, soft, shaly, brownish-black-----	5	92
	Claystone, sandy, brownish-gray-----	20	112
	Sandstone, very fine to fine-grained, clayey, subangular to subrounded, micaceous, medium-gray-----	13	125
	Claystone, silty, medium-dark-gray-----	5	130
	Lignite, black-----	4	134
	Siltstone, siliceous, light-gray-----	18	152
	Siltstone, clayey, medium-gray; contains sandy claystone interbeds and thin lignite seams-----	40	192
	Sandstone, very fine to fine-grained, clayey, hard, micaceous, medium-bluish-gray-----	12	204
	Siltstone, clayey, calcareous, medium-gray to light-brownish-gray; contains small limestone concretions-----	8	212
	Shale, oily, carbonaceous, brownish-black; contains thin lignite seams-----	8	220
	Siltstone, clayey, medium-gray-----	40	260
	Siltstone, clayey, sandy, medium-gray; interbedded with claystone; contains small limestone concretions and thin lignite seams-----	162	422
Tongue River Formation:			
	Lignite, dark-brown to black-----	7	429
	Siltstone, sandy, clayey, medium-gray; contains thin lignite seams-----	89	518
	Limestone concretion, hard, dark-gray-----	5	523
	Sandstone, very fine grained, clayey, silty, subangular, light-gray-----	27	550
	Siltstone, clayey, medium-light-gray; contains thin lignite seams-----	12	562
	Shale, clayey, carbonaceous, dark-brown-----	22	584
	Siltstone, greenish-gray to medium-gray; contains thin lignite seams, limestone concretions, and thin sand interbeds-----	76	660
	Sandstone, very fine to fine-grained, silty, subangular, calcareous, light-gray-----	12	672
	Claystone, soft, silty, medium-light-gray---	5	677
	Sandstone, very fine grained, silty, clayey, angular, micaceous, light-gray-----	20	697
	Siltstone, sandy, clayey, dark-gray-----	39	736
	Siltstone, medium-dark-gray; contains a few limestone concretions-----	36	772
Cannonball-Ludlow Formations, undifferentiated:			
	Shale, carbonaceous, dark-brown; contains thin lignite seams, sandstone beds, and a few limestone concretions-----	128	900

141-094-08CCC
 NDSWC 4605

Altitude:

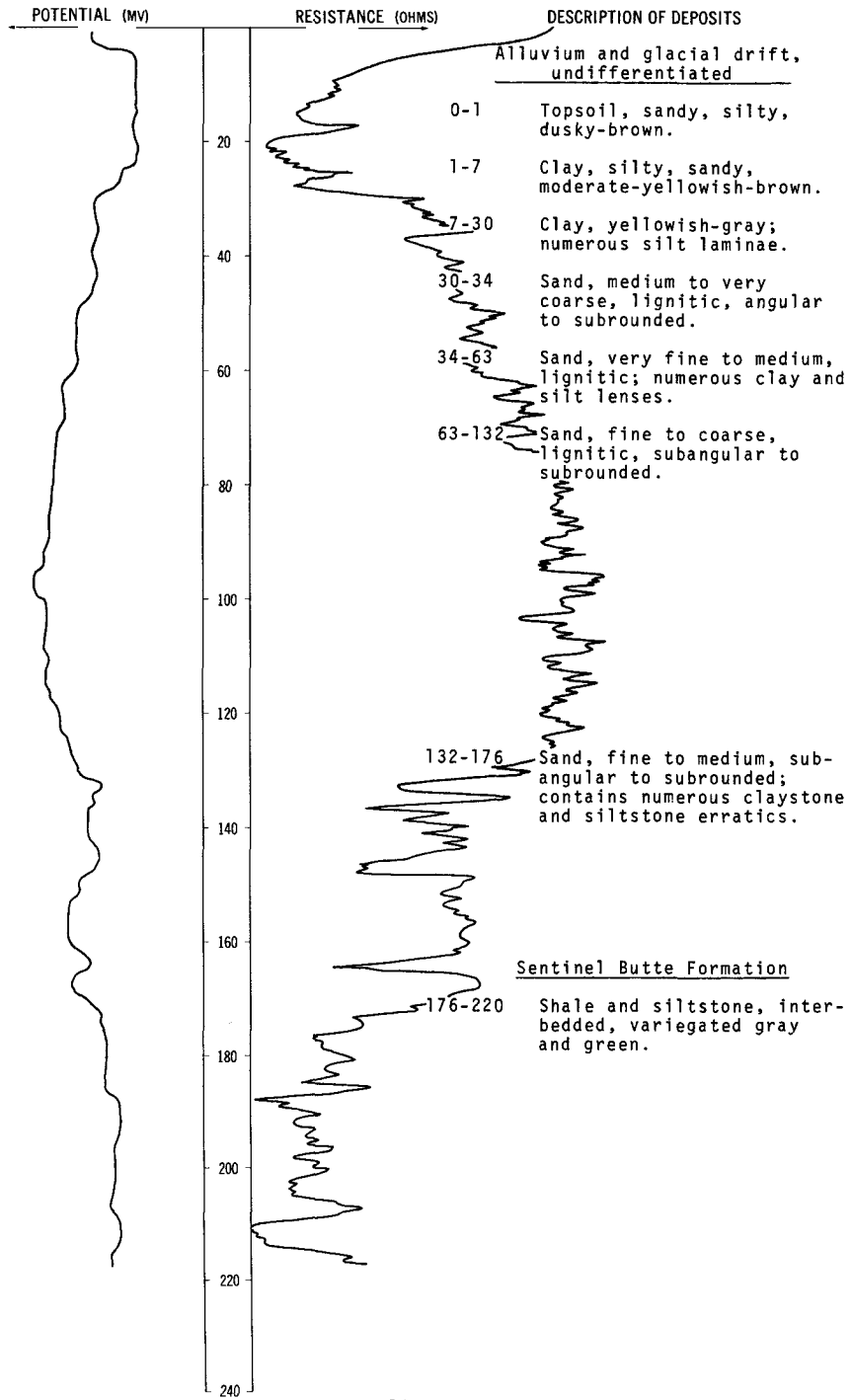
<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Alluvium	and glacial drift, undifferentiated:		
	Topsoil, sandy, dusky-brown-----	1	1
	Sand, very fine to medium, silty, clayey, moderate brown-----	21	22
	Sand, fine to medium, moderate-brown-----	7	29
	Silt, clayey, sandy, dusky-brown-----	11	40
Sentinel Butte Formation:			
	Lignite, black; interbedded with black carbonaceous claystone-----	8	48
	Siltstone, clayey, sandy, medium-gray; numerous thin lignite seams-----	32	80

LOCATION: 141-094-15ABB

DATE DRILLED: November 1973

ALTITUDE: 2162
(FT, MSL)

DEPTH: 220
(FT)



141-094-16AAA
NDSWC 4472

Altitude: 2188 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Glacial drift:			
	Topsoil, silty, brown-----	1	1
	Silt, clayey, sandy, olive-brown-----	5	6
	Clay, silty, olive-brown-----	12	18
	Sand, very fine to fine, subrounded, olive-gray-----	4	22
	Clay, olive-gray-----	3	25
	Sand, fine to coarse, lignitic, subrounded-	33	58
	Sand, fine to coarse, lignitic; inter-bedded with silt and clay-----	2	60
Sentinel Butte Formation:			
	Shale, hard, medium-dark-gray-----	1	61
	Sandstone, fine to medium, dark-green-----	5	66
	Shale, silty, hard, medium-gray-----	8	74
	Shale, silty, sandy, micaceous, carbonaceous, brownish-gray-----	26	100

141-094-17BAB
NDSWC 4606

Altitude: 2230 ft

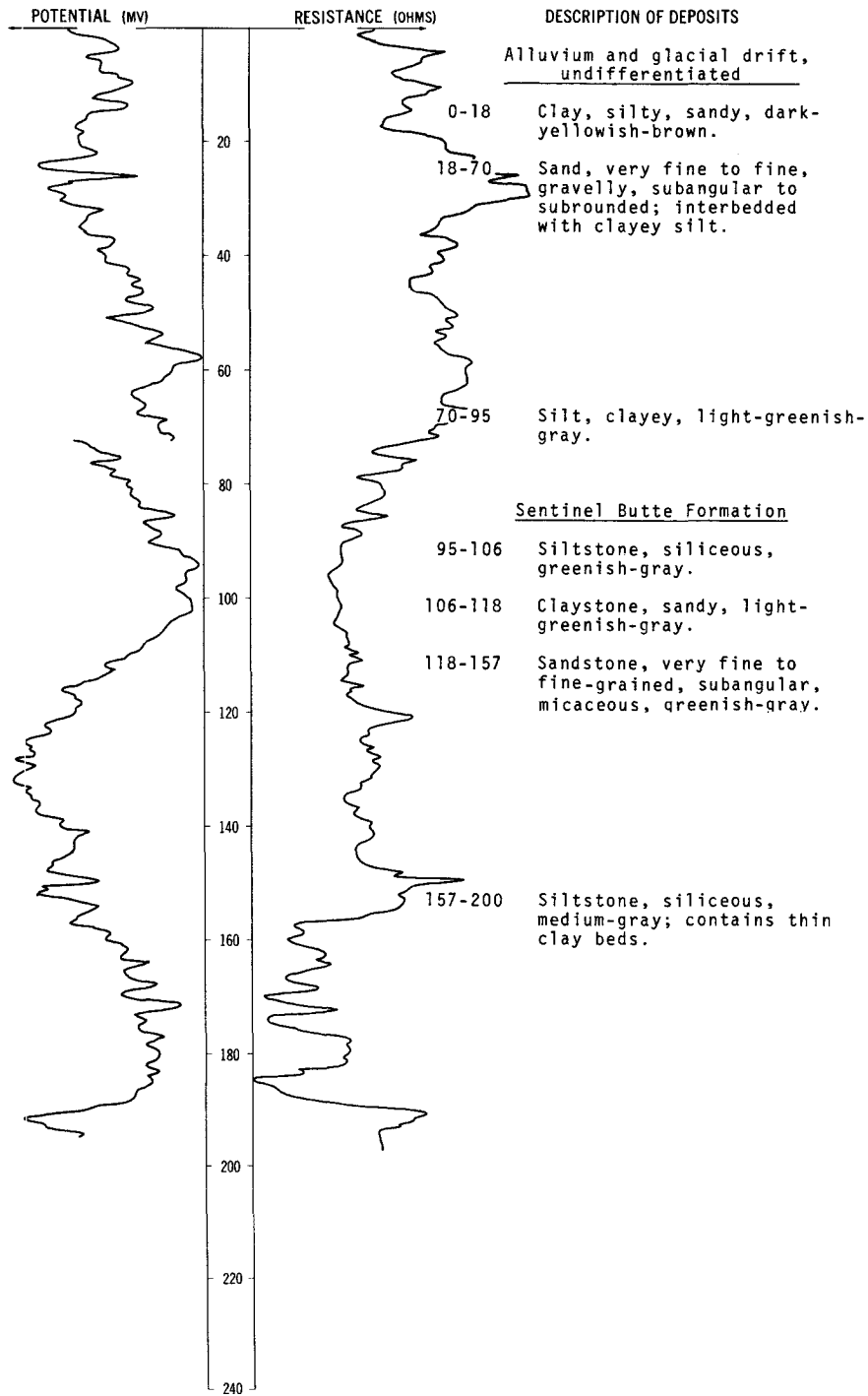
Alluvium and glacial drift, undifferentiated:			
	Topsoil, silty, sandy, dusky-brown-----	1	1
	Silt, clayey, sandy, moderate-brown-----	9	10
	Sand, very fine to medium, clayey, silty; gravel lense at 20 ft-----	17	27
	Sand, very fine to fine, clayey, silty, dark-yellowish-brown-----	9	36
	Sand, medium, subangular to subrounded-----	18	54
Sentinel Butte Formation:			
	Sandstone, very fine grained, silty, subangular, medium-bluish-gray-----	54	61
	Shale, hard, carbonaceous, medium-gray-----	61	80

LOCATION: 141-094-34AAA

DATE DRILLED: June 1974

ALTITUDE: 2167
(FT, MSL)

DEPTH: 200
(FT)



141-094-34AAD
 NDSWC 4666

Altitude: 2170 ft

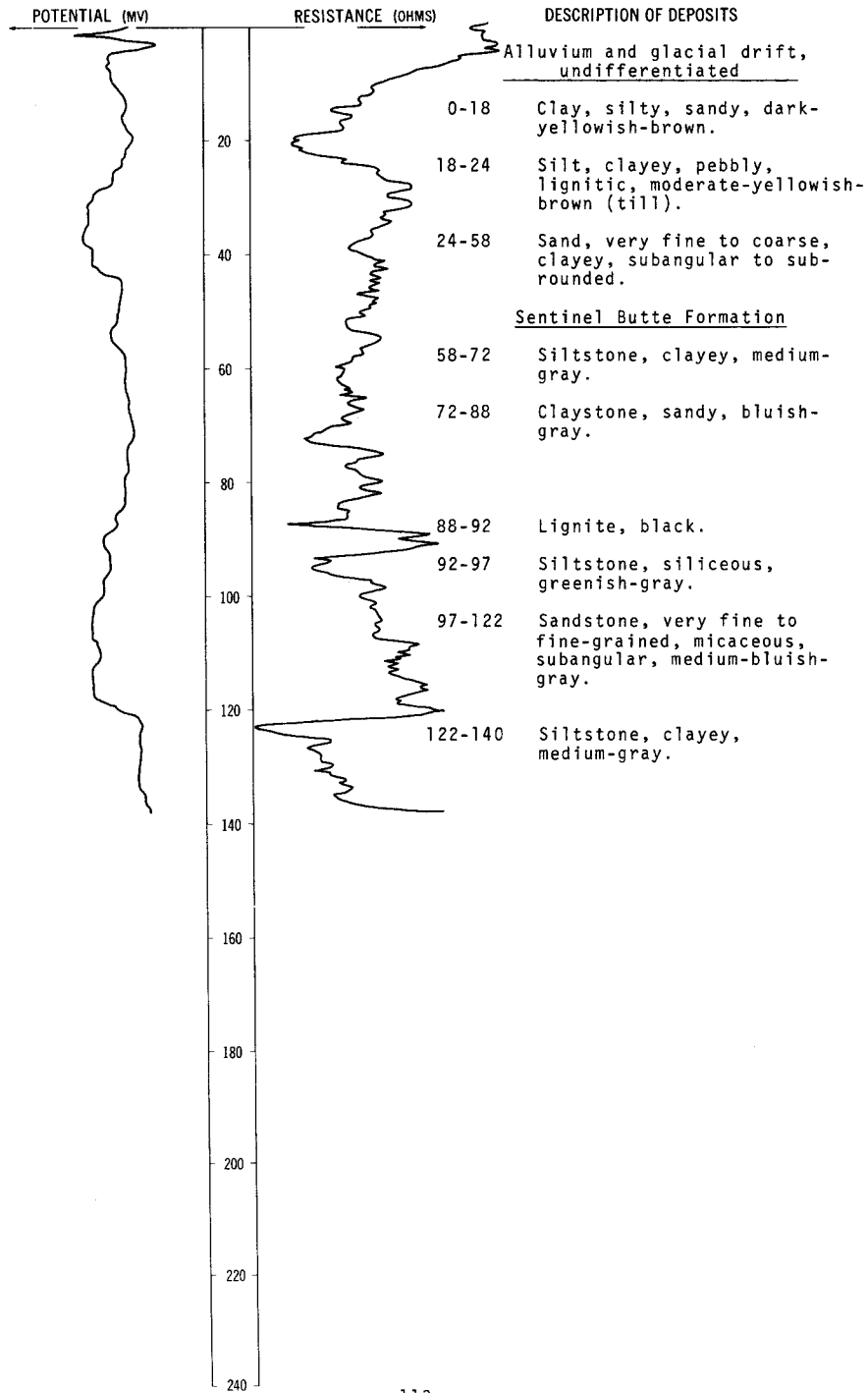
<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Alluvium	and glacial drift, undifferentiated:		
	Clay, silty, sandy, dark-yellowish-brown---	20	20
	Clay, silty, silty, laminated, moderate-		
	to yellowish-brown-----	20	40
	Clay, silty, olive-gray; scattered sand		
	lenses-----	17	57
	Sand, very fine to coarse, silty, lignitic,		
	subrounded; scattered clay lenses-----	23	80
	Sand, very fine to coarse, subrounded;		
	scattered detrital lignite beds and thin		
	clay lenses-----	86	166
Sentinel Butte Formation:			
	Sandstone, very fine to fine-grained, hard,		
	light-gray-----	5	171
	Siltstone, siliceous, medium-gray; contains		
	thin carbonaceous shale interbeds-----	7	178
	Lignite, black-----	3	181
	Siltstone, siliceous, medium-gray-----	5	186
	Claystone, silty, medium-gray-----	14	200

LOCATION: 141-094-34DAD

DATE DRILLED: June 1974

ALTITUDE: 2172
(FT, MSL)

DEPTH: 140
(FT)

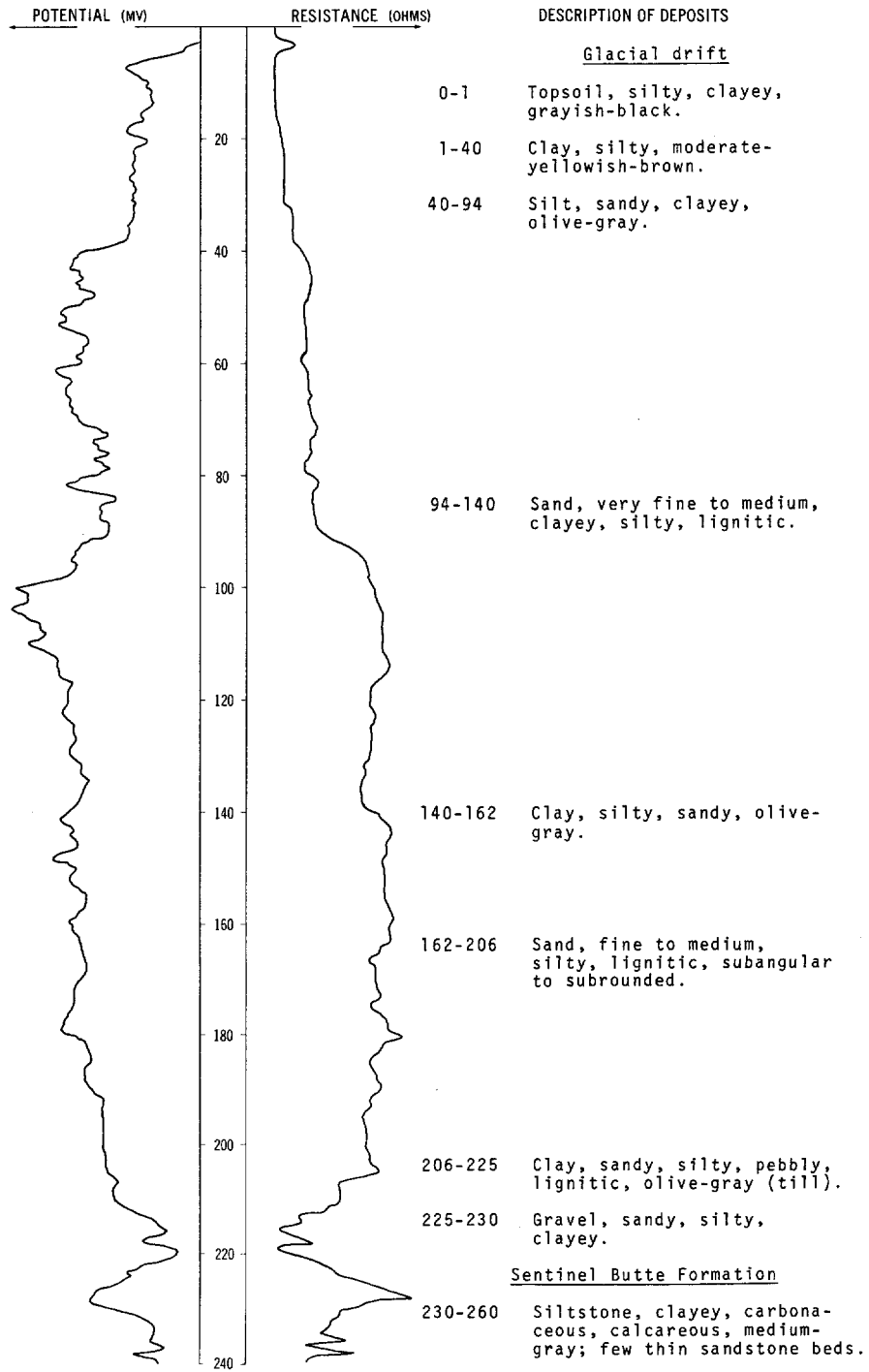


LOCATION: 141-094-35BBC

DATE DRILLED: November 1971

ALTITUDE: 2167
(FT, MSL)

DEPTH: 260
(FT)



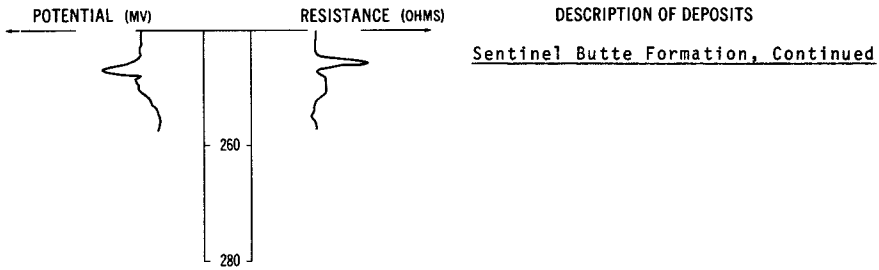
NDSWC 8276, Continued

LOCATION: 141-094-358BC

DATE DRILLED: November 1971

ALTITUDE: 2167
(FT, MSL)

DEPTH: 260
(FT)



141-095-06CCD
(Log from Mann Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay-----	49	49
	Clay, sandy-----	6	55
	Coal-----	2	57
	Clay-----	5	62
	Coal-----	3	65
	Clay-----	63	128
	Clay, sandy-----	31	159
	Coal-----	7	166
	Clay-----	19	185
	Sandstone-----	3	188
	Clay, sandy-----	22	210
	Clay-----	42	252
	Sandstone-----	11	263
	Clay, sandy-----	8	271
	Sand-----	29	300
	Clay-----	--	--

141-095-20CCD
NDSWC 4670

Altitude:

Alluvium:

Clay, sandy, silty, moderate-yellowish-brown-----	7	7
Gravel, fine to coarse, sandy, angular to subrounded-----	8	15

Sentinel Butte Formation:

Siltstone, clayey, medium-gray-----	6	21
Lignite, brownish-black-----	11	25
Siltstone, clayey, brownish-gray-----	15	40

141-095-29BAC
(Log from Mann Drilling Co.)

Altitude:

Clay, sandy, brown-----	28	28
Lignite (water, 10 gal/min)-----	3	31
Clay, gray-----	21	52
Lignite-----	2	54
Clay-----	10	64
Lignite-----	2	66

141-095-33BBB
NDSWC 8277

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Alluvium	and glacial drift, undifferentiated:		
	Topsoil, silty, clayey, grayish-black-----	1	1
	Clay, silty, dark-yellowish-brown-----	4	5
	Sand, fine to medium, silty, clayey, gravelly, subangular-----	6	11
	Clay, silty, medium-dark-gray-----	7	18
Sentinel	Butte Formation:		
	Shale, silty, hard, noncalcareous, medium- gray; few thin lignite beds-----	22	40

141-096-13BCC
NDSWC 4672

Altitude:

Alluvium:	Clay, sandy, silty, dark-yellowish-brown---	2	2
	Gravel, sandy, clayey-----	3	5
Sentinel	Butte Formation:		
	Sandstone, very fine to fine-grained, subrounded, moderate-yellowish-brown----	5	15
	Sandstone, very fine to fine-grained, clayey, subrounded, medium-gray-----	7	22
	Siltstone, medium-gray-----	8	30
	Lignite, dark-brown-----	5	35
	Siltstone, clayey, brownish-gray-----	5	40

141-096-13CCC
NDSWC 4671

Altitude:

Alluvium:	Clay, silty, sandy, dark-yellowish-brown---	6	6
Sentinel	Butte Formation:		
	Sandstone, very fine to fine-grained, subrounded, moderate-yellowish-brown; cemented 15-17 ft-----	12	18
	Siltstone, medium-light-gray-----	19	37
	Lignite, shaly, brownish-black-----	3	40

141-096-22CCA
(Log from Mann Drilling Co.)

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Clay-----	21	21
	Clay, sandy-----	12	33
	Sandstone-----	3	36
	Clay-----	36	72
	Clay, sandy-----	7	79
	Clay-----	23	102
	Coal-----	4	106
	Clay-----	32	138
	Coal-----	2	140
	Clay-----	28	168
	Clay, sandy-----	20	188
	Sandstone-----	3	191
	Sand-----	5	196
	Sandstone-----	5	201
	Sand-----	24	225

141-096-24BBA
NDSWC 8278

Altitude:

Alluvium and glacial drift, undifferentiated:			
	Topsoil, silty, clayey, brownish-black-----	1	1
	Clay, silty, sandy, moderate-yellowish-brown-----	2	3
	Gravel, fine to coarse, angular to subrounded-----	13	16
	Clay, silty, medium-dark-gray-----	7	23
Sentinel	Butte Formation:		
	Siltstone, hard, noncalcareous, medium-gray	17	40

141-096-29CCB
NDSWC 8279

Altitude: 2485 ft

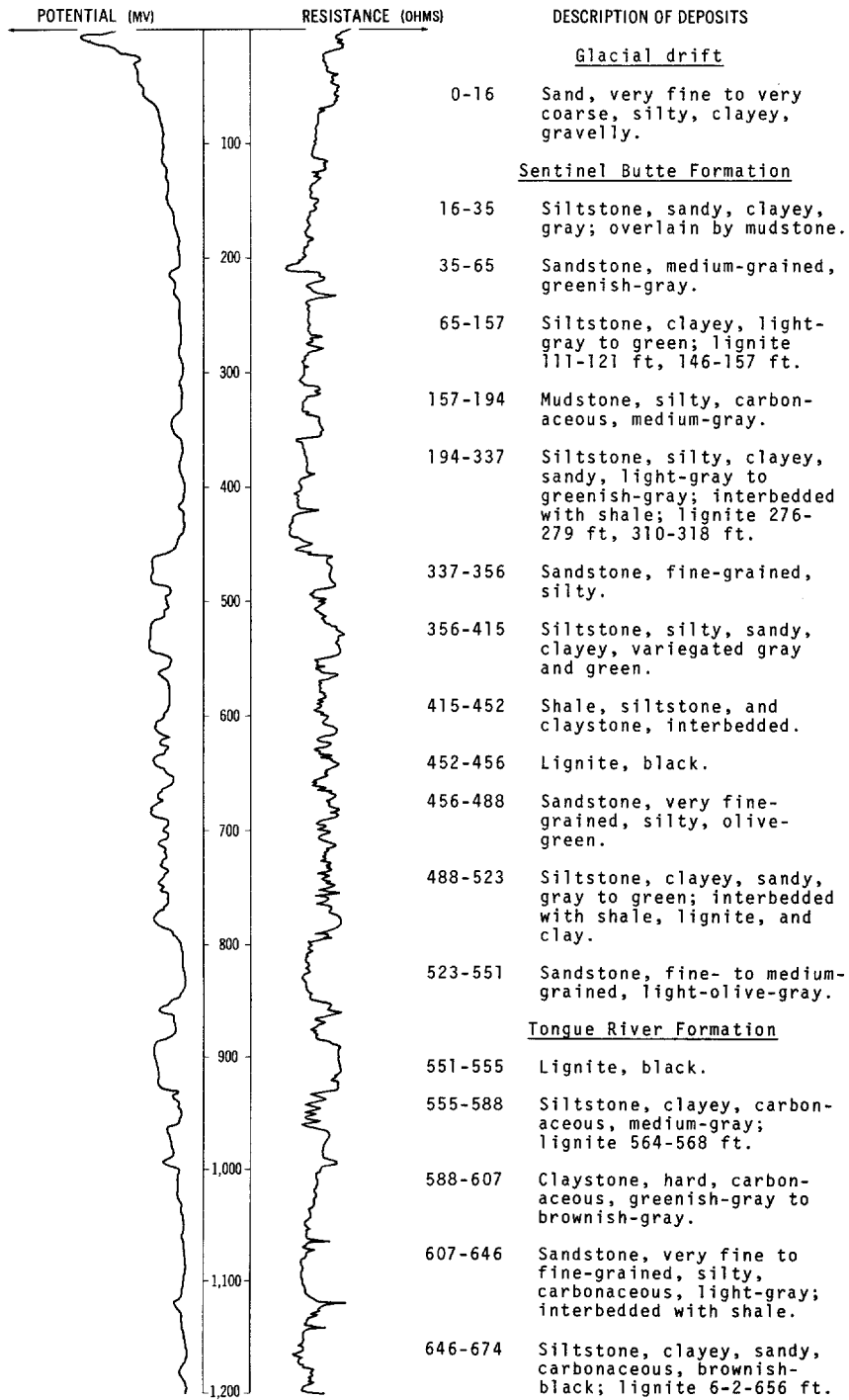
Terrace deposits:			
	Topsoil, silty, sandy, brownish-black-----	1	1
	Clay, silty, sandy, moderate-yellowish-brown-----	7	8
	Sand, fine to very coarse, angular to subrounded-----	33	41
	Clay, silty, olive-gray-----	14	55
Sentinel	Butte Formation:		
	Shale, hard, noncalcareous, medium-gray----	25	80

LOCATION: 141-096-29CCC

DATE DRILLED: August 1973

ALTITUDE: 2483
(FT, MSL)

DEPTH: 2100
(FT)

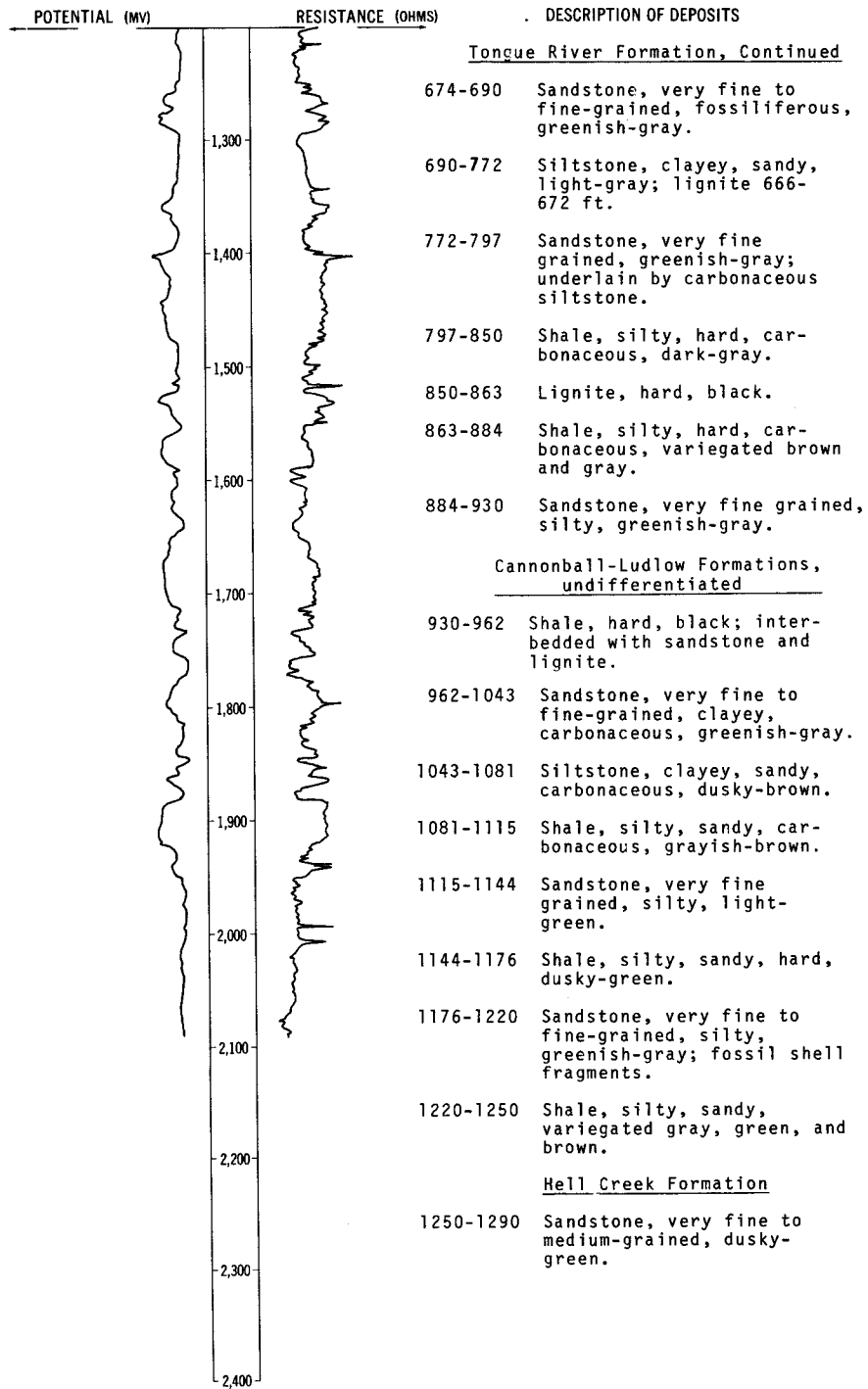


LOCATION: 141-096-29CCC

DATE DRILLED: August 1973

ALTITUDE: 2483
(FT. MSL)

DEPTH: 2100
(FT)



NDSWC 4529, Continued

LOCATION: 141-096-29CCC

DATE DRILLED: August 1973

ALTITUDE: 2483
(FT. MSL)

DEPTH: 2100
(FT)

POTENTIAL (MV)	RESISTANCE (OHMS)	DESCRIPTION OF DEPOSITS
		<u>Hell Creek Formation, Continued</u>
		1290-1376 Siltstone, brownish-gray to greenish-gray; interbedded with very fine grained sandstone.
-1,300		
		1376-1400 Shale, silty, carbonaceous, medium-dark-gray to brownish-black.
-1,400		
		1400-1478 Sandstone, very fine to fine-grained, carbonaceous, olive-gray to brownish-black.
-1,500		
		1478-1555 Siltstone, clayey, sandy, medium-gray to greenish-gray; thin clay and sandstone interbeds.
-1,600		
		1555-1590 Sandstone, very fine to fine-grained, silty, greenish-gray; few thin shale interbeds.
-1,700		
		1590-1604 Shale.
		1604-1632 Sandstone, fine to medium-grained, dusky-green.
-1,800		
		1632-1652 Shale.
		<u>Fox Hills Formation</u>
-1,900		
		1652-1754 Sandstone, fine- to medium-grained, dusky-green; interbedded with clay, siltstone, and lignitic shale.
-2,000		
		1754-1772 Shale, hard, dusky-brown to black.
-2,100		
		1772-1815 Sandstone, very fine to medium-grained, dark-greenish-gray.
-2,200		
		1815-1844 Siltstone, clayey, sandy, light-greenish-gray; fossil shell fragments.
-2,300		
		1844-1882 Shale, silty, sandy, carbonaceous, variegated green, brown, and black.
-2,400		
		1882-1922 Sandstone, medium-grained.
		1922-1938 Sandstone, very fine grained, silty; thin siltstone and shale interbeds.
		1938-1948 Sandstone, fine-grained, fossiliferous, greenish-gray.

NDSWC 4529, Continued

LOCATION: 141-096-29CCC

DATE DRILLED: August 1973

ALTITUDE: 2483
(FT, MSL)

DEPTH: 2100
(FT)

POTENTIAL (MV)	RESISTANCE (OHMS)	DESCRIPTION OF DEPOSITS
		<u>Pierre Shale</u>
	1948-2068	Siltstone, clayey, sandy, dark-gray; thin limestone and clay interbeds.
-1,300		
	2068-2100	Shale, gypsiferous, hard, dark-gray to black.
-1,400		

141-096-32BCC
NDSWC 8280

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
Alluvium and glacial drift, undifferentiated:			
	Topsoil, silty, clayey, grayish-black-----	1	1
	Clay, silty, sandy, moderate-yellowish-brown-----	10	11
	Gravel, fine to coarse-----	1	12
Sentinel Butte Formation:			
	Shale, silty, hard, calcareous, medium-light-gray; few carbonaceous laminae-----	28	40

141-096-32CCB
NDSWC 8281

Altitude:

Alluvium and glacial drift, undifferentiated:			
	Topsoil-----	1	1
	Clay, silty, sandy, moderate-yellowish-brown-----	9	10
	Gravel, fine to coarse, sandy, angular-----	1	11
Sentinel Butte Formation:			
	Shale, silty, hard, calcareous, medium-light-gray-----	9	20

141-096-34CCC
NDSWC 4673

Altitude:

Topsoil:			
	Clay, sandy, silty, dark-yellowish-brown-----	3	3
Sentinel Butte Formation:			
	Limestone, hard, white-----	3	5
	Siltstone, sandy; moderate-yellowish-brown with gray mottling-----	13	18
	Siltstone, sandy, medium-gray-----	14	32
	Lignite, hard, brownish-black-----	8	40

141-097-03AAA
(Log from Ray Mohl)

Altitude: 2555 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Sand, yellow-----	11	11
	Sand, blue-----	42	53
	Sandstone-----	2	55
	Sand, blue-----	20	75
	Clay, gray-----	4	79
	Lignite, hard-----	4	83
	Clay, gray-----	36	119
	Lignite, hard-----	1	120
	Sandstone-----	3	123
	Clay, sandy, gray-----	22	145
	Sandstone-----	1	146
	Clay, sandy, blue-----	34	180
	Sandstone-----	2	182
	Clay, gray-----	14	196
	Lignite, hard-----	5	201
	Clay, brown-----	6	207
	Lignite, hard-----	27	234
	Clay, brown-----	1	235
	Lignite-----	11	246
	Clay, gray-----	4	250

141-097-11DDD
(Log from Ray Mohl)

Altitude: 2555 ft

	Sand, yellow-----	11	11
	Sandstone, soft-----	5	16
	Sand, blue-----	40	56
	Lignite-----	1	57
	Clay, sandy, gray-----	21	78
	Lignite, hard-----	4	82
	Clay, gray-----	13	95
	Sandstone-----	3	98
	Clay, sandy, gray-----	28	126
	Lignite-----	1	127
	Clay, sandy, blue-----	17	144
	Sandstone, gray-----	3	147
	Clay, sandy, blue-----	20	167
	Lignite, hard-----	6	173
	Clay, brown-----	4	177
	Rock-----	1	178
	Clay, gray-----	10	188
	Lignite, moderately hard-----	27	215
	Clay, gray-----	12	227
	Lignite, hard-----	3	230
	Clay, gray-----	1	231
	Lignite, hard-----	14	245
	Clay, gray-----	9	254

141-097-15BBB
(Log from Ray Mohl)

Altitude: 2550 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Clay, sandy, yellow-----	8	8
	Lignite, slack-----	1	9
	Clay, yellow-----	7	16
	Lignite-----	1	17
	Sand, hard, blue-----	21	38
	Sandstone-----	2	40
	Clay, blue-----	5	45
	Sand, blue-----	30	75
	Lignite-----	1	76
	Clay, sandy, blue-----	8	84
	Clay, gray-----	9	93
	Clay, sandy, blue-----	28	121
	Lignite, hard-----	4	125
	Clay, gray-----	4	129
	Lignite, hard (flow)-----	26	155
	Clay, gray-----	5	160

141-097-15DDD
NDSWC 4676

Altitude:

Alluvium:

	Clay, silty, sandy, dark-yellowish-brown---	9	9
	Sand, fine to very coarse, gravelly, lignitic, subangular-----	2	11

Sentinel Butte Formation:

	Siltstone, siliceous, medium-gray-----	14	25
	Lignite, hard, black-----	3	28
	Siltstone, siliceous, medium-gray-----	12	40

141-097-17B
(Log from Ray Mohl)

Altitude: 2526 ft

	Clay, yellow-----	15	15
	Clay, blue-----	5	20
	Lignite-----	1	21
	Clay, blue-----	11	32
	Clay, sandy, blue-----	31	63
	Lignite, hard-----	2	65
	Clay, brown-----	1	66
	Lignite, hard-----	5	71
	Clay, blue-----	35	106
	Lignite, hard-----	18	124
	Clay, brown-----	1	125
	Lignite, hard-----	1	126
	Clay, gray-----	4	130

141-097-19BBC
(Log from Ray Mohl)

Altitude: 2567 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay, yellow-----	9	9
	Clay, black-----	7	10
	Clay, blue-----	31	41
	Lignite, hard (water)-----	5	46
	Clay, sandy, gray-----	8	54
	Sandstone-----	3	57
	Clay, sandy, gray-----	40	97
	Lignite, hard-----	11	108
	Clay, blue-----	29	137
	Lignite, hard-----	4	141
	Clay, gray-----	4	145
	Lignite-----	1	146
	Clay, gray-----	8	154
	Rock-----	2	156
	Clay, sandy, gray-----	10	166
	Lignite, hard-----	5	171
	Clay, gray-----	8	179
	Lignite, hard-----	5	184
	Clay, gray-----	2	186
	Rock-----	1	187
	Clay, gray-----	10	197
	Lignite, hard-----	8	205
	Clay, gray-----	6	211
	Lignite with clay parting-----	2	213
	Clay, blue-----	7	220

141-097-21BBC
NDSWC 8282

Altitude:

Alluvium and glacial drift, undifferentiated:			
	Topsoil, silty, clayey, grayish-black-----	1	1
	Clay, silty, sandy, moderate-yellowish-brown-----	10	11
	Gravel, fine to coarse, sandy, angular to subrounded-----	1	12
	Clay, silty, medium-dark-gray-----	6	18
Sentinel Butte Formation:			
	Sandstone, silty, clayey, calcareous, medium-light-gray-----	22	40

141-097-23AAA
(Log from Ray Mohl)

Altitude: 2515 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Clay, yellow-----	12	12
	Clay, yellow and gray-----	9	21
	Clay, blue-----	38	59
	Lignite-----	1	60
	Clay, gray-----	3	63
	Lignite-----	4	67
	Clay, brown-----	1	68
	Lignite-----	1	69
	Clay, sandy, gray-----	33	102
	Lignite-----	1	103
	Clay, gray-----	10	113
	Sandstone-----	2	115
	Clay, sandy, gray-----	15	130
	Lignite, hard, water-----	6	136
	Clay, gray-----	1	137
	Lignite, hard-----	1	138
	Clay, gray-----	1	139
	Lignite, hard-----	18	157
	Clay, gray-----	3	160

141-097-25DAB
NDSWC 4674

Altitude: 2488 ft

Alluvium:	Clay, silty, sandy, pebbly, dark-yellowish-brown-----	7	7
Terrace deposits:			
	Sand, fine to very coarse, angular to well rounded-----	8	15
	Gravel, fine to coarse, sandy, angular to rounded-----	15	30

141-097-26ABB
NDSWC 4675

Altitude:

Alluvium:	Clay, silty, sandy, dark-yellowish-brown---	5	5
Sentinel Butte Formation:			
	Siltstone, sandy, moderate-yellowish-brown-	4	9
	Lignite, hard, brownish-black-----	4	13
	Siltstone, sandy, medium-gray-----	27	40

141-097-31DCD
(Log from Ray Mohl)

Altitude: 2620 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Clay-----	35	35
	Lignite, soft-----	1	36
	Clay, blue-----	9	45
	Lignite, hard-----	2	47
	Clay, blue-----	22	69
	Rock-----	4	73
	Clay, sandy, gray-----	12	85
	Sandstone, soft-----	4	89
	Sand, fine, gray-----	13	102
	Lignite, hard-----	8	110
	Clay, blue-----	42	152
	Lignite, hard-----	1	153
	Clay, brown to gray-----	9	162
	Sand, gray-----	33	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

141-097-35CDC
(Log from Ray Mohl)

Altitude: 2544 ft

	Topsoil-----	5	5
	Clay, sandy, yellow-----	6	11
	Clay, sandy, black-----	4	15
	Clay, blue-----	18	33
	Lignite, hard-----	3	36
	Clay, brown to gray-----	19	55
	Clay, sandy, gray-----	36	91
	Clay, brown-----	6	97
	Lignite, hard-----	9	106
	Clay, brown-----	2	108
	Clay, blue-----	30	138
	Lignite-----	1	139
	Sand, soft, lignite-----	4	143
	Sand, blue-----	4	147
	Rock-----	2	149
	Clay, sandy, gray-----	23	172
	Rock, hard, blue-----	3	175
	Clay, blue-----	7	182
	Lignite, hard-----	5	187
	Clay, gray-----	5	192
	Lignite, hard-----	9	201
	Clay, gray-----	1	202
	Lignite-----	1	203
	Clay, gray-----	7	210

142-091-08DDA
NDSWC 8256

Altitude: 1929 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Alluvium	and glacial drift, undifferentiated:		
	Topsoil, silty, clayey, grayish-black-----	1	1
	Clay, silty, dark-yellowish-brown-----	9	10
	Sand, fine to coarse, clayey, subangular to subrounded-----	10	20
	Gravel, fine to coarse, sandy, angular to well rounded-----	10	30
Sentinel Butte Formation:			
	Siltstone, hard, calcareous, medium-gray---	10	40

142-091-10CDD
NDSWC 8255

Altitude:

Alluvium	and glacial drift, undifferentiated:		
	Clay, silty, sandy, dark-yellowish-brown---	12	12
	Gravel, fine to coarse, clayey, angular to subrounded-----	2	14
	Clay, silty, sandy, dark-yellowish- brown-----	6	20
	Gravel, fine to coarse, angular to sub- rounded-----	2	22
Sentinel Butte Formation:			
	Siltstone, hard, calcareous, medium- light-gray-----	18	40

142-091-10DCC
(Log from K. J. Thompson)

Altitude:

Topsoil and sand-----	24	24
Sand and gravel-----	14	38
Sand, blue (water)-----	20	58
Rock-----	12	70
Sand (water)-----	17	87
Coal-----	3	90
Clay-----	1	91

142-091-12DD
(Log from Frank Bandy)

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Surface soil-----	40	40
	Shale, blue-----	22	62
	Sand-----	23	85
	Shale, blue-----	275	360
	Coal-----	2	362
	Shale, blue-----	58	420
	Shale, sandy-----	45	465
	Shale, blue-----	330	795
	Sand and clay-----	35	830
	Shale, blue-----	23	853
	Sand-----	10	863
	Rock, hard-----	4	867
	Sand and clay-----	78	945

142-091-14BBB
NDSWC 4698

Altitude: 1912 ft

Alluvium and glacial drift, undifferentiated:			
	Clay, silty, sandy, moderate-yellowish-brown-----	12	12
	Sand, fine to coarse, clayey, silty-----	10	22
	Sand, very fine to very coarse, gravelly, subangular to rounded; numerous thin clay lenses-----	38	60
	Silt, clayey, lignitic, light-gray; few thin sand lenses-----	56	116
	Clay, silty, lignitic, olive-gray-----	24	140
Tongue River Formation:			
	Limestone, hard, medium-gray-----	5	145
	Siltstone, sandy, light-gray-----	5	150
	Limestone, hard, medium-dark-gray-----	3	153
	Siltstone, sandy, light-gray-----	7	160

142-091-14BCB
NDSWC 4699

Altitude: 1918 ft

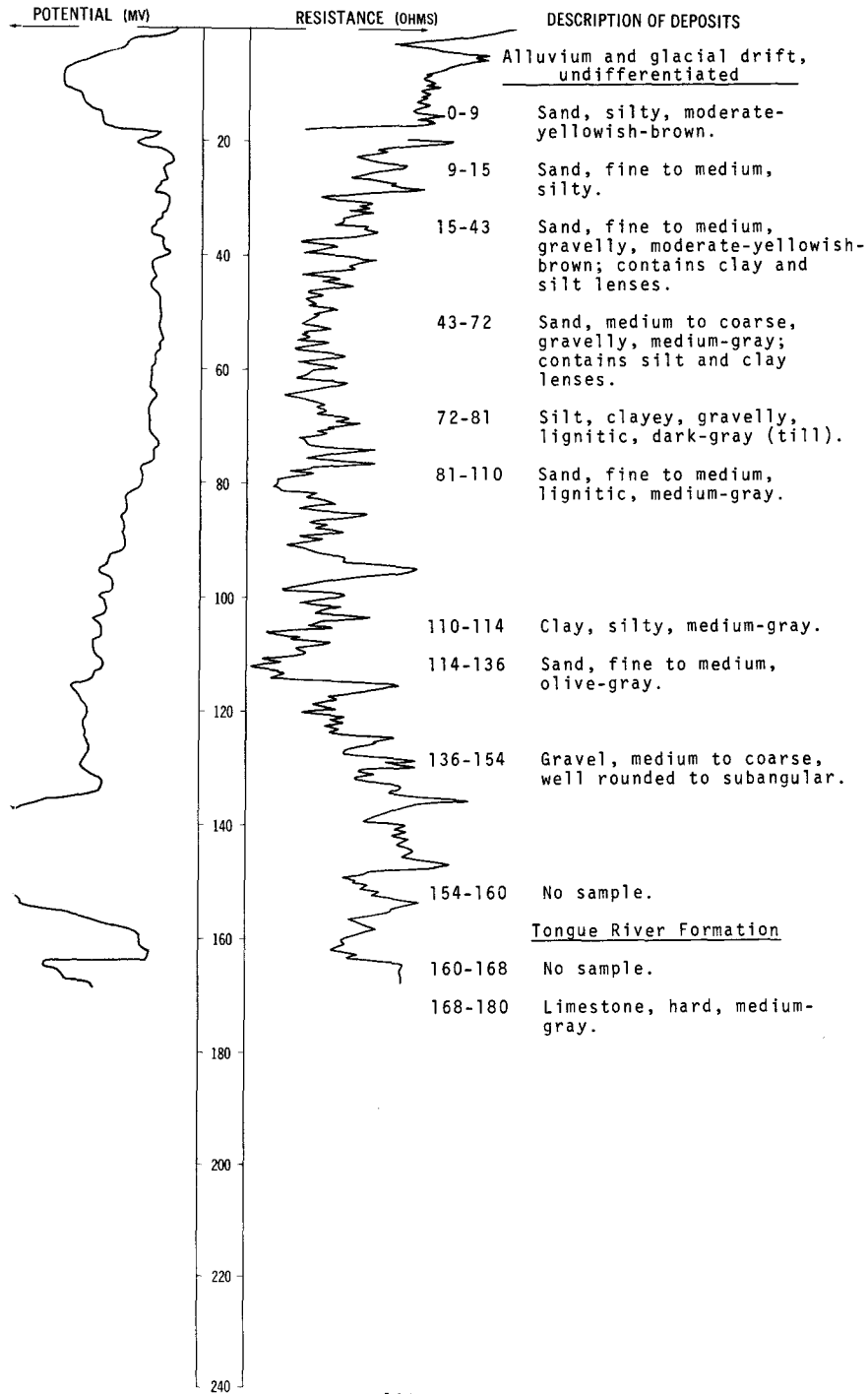
Alluvium and glacial drift, undifferentiated:			
	Silt, sandy, clayey, moderate-yellowish-brown-----	15	15
	Sand, gravelly, clayey, silty-----	5	20
	Gravel, coarse, sandy-----	15	35
Sentinel Butte Formation:			
	Siltstone, lignitic, medium-gray-----	5	40

LOCATION: 142-091-15AAD

DATE DRILLED: June 1974

ALTITUDE: 1908
(FT, MSU)

DEPTH: 180
(FT)

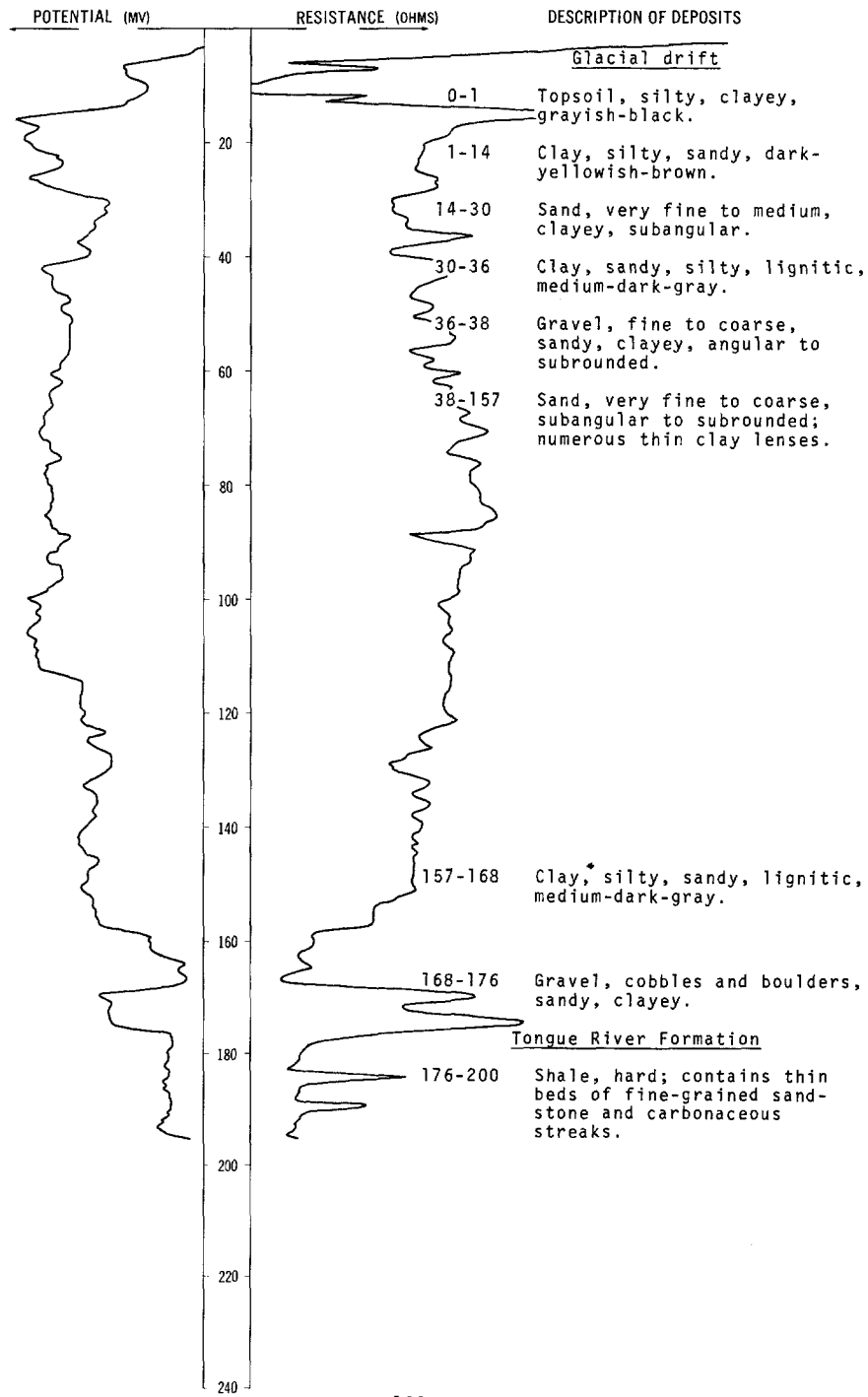


LOCATION: 142-091-15CCC

DATE DRILLED: November 1971

ALTITUDE: 1923
(FT, MSL)

DEPTH: 200
(FT)



142-091-17AAD
NDSWC 8254

Altitude: 1928 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Alluvium	and glacial drift, undifferentiated: Clay, silty, sandy, moderate-yellowish-brown-----	19	19
	Sand, very fine to very coarse, gravelly---	14	33
Sentinel Butte Formation:	Siltstone, hard, calcareous, medium-light-gray-----	27	60

142-091-17ADA
NDSWC 8257

Altitude: 1930 ft

Alluvium	and glacial drift, undifferentiated: Clay, silty, dark-yellowish-brown-----	10	10
	Sand, very fine to coarse, gravelly, subangular-----	9	19
	Gravel, fine to coarse, sandy, angular to rounded-----	5	24
Sentinel Butte Formation:	Siltstone, hard, noncalcareous, medium-light-gray-----	16	40

142-091-22BCA
(Log from K. J. Thompson)

Altitude:

Topsoil and sand-----	22	22
Gravel-----	1	23
Sand and clay-----	15	38
Coal (water)-----	1	39
Clay-----	7	46
Coal-----	1	47
Clay-----	3	50

142-091-25DBB
(Log from Frank Bandy)

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Topsoil-----	10	10
	Gravel-----	2	12
	Shale, blue-----	22	34
	Sandstone-----	4	38
	Shale, blue-----	24	62
	Sandstone-----	6	68
	Shale, blue-----	12	80
	Rock, hard-----	3	83
	Shale, blue-----	67	150
	Coal-----	8	158
	Shale, sandy-----	22	180
	Rock, hard-----	3	183
	Shale, sandy-----	15	198
	Sandstone-----	80	278
	Shale, blue-----	46	324
	Rock, hard-----	3	327
	Shale, blue-----	94	421
	Rock, hard-----	1	422
	Shale, blue-----	62	484
	Coal-----	11	495
	Shale, blue-----	65	560
	Sandstone-----	18	578
	Shale, blue-----	105	683
	Rock, hard-----	4	687
	Shale, blue-----	97	784
	Rock, hard-----	1	785
	Shale, blue-----	50	835
	Rock, hard-----	5	840
	Shale, blue-----	40	880
	Sandstone-----	45	925
	Shale, blue-----	150	1075
	Sandstone-----	20	1095
	Shale, blue-----	135	1230
	Sandstone-----	60	1290
	Shale, blue-----	10	1300

142-091-28ACD
(Log from K. J. Thompson)

Altitude:

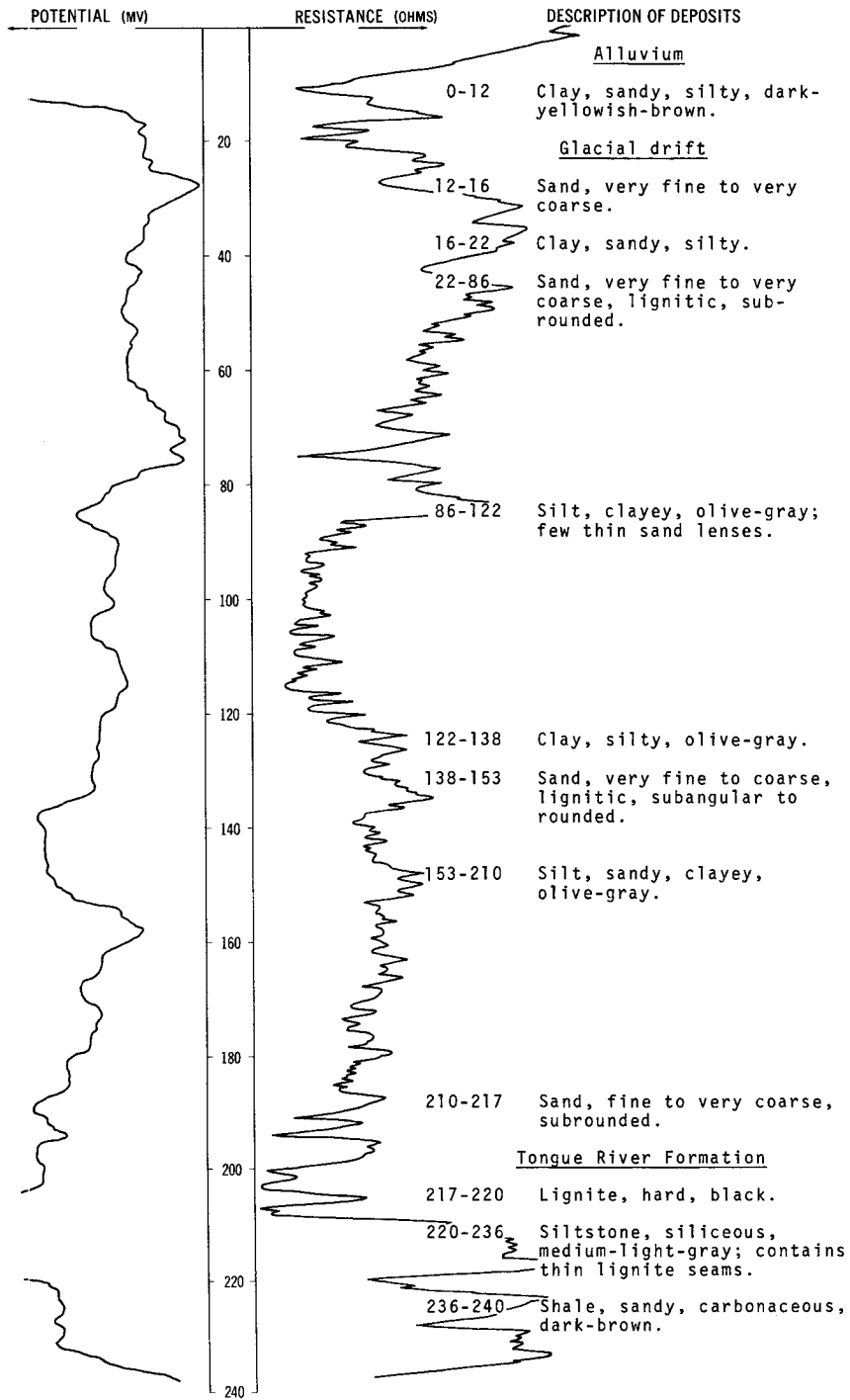
	Sand and gravel-----	100	100
	Sand, blue (water)-----	64	164

LOCATION: 142-091-33DCC

DATE DRILLED: June 1974

ALTITUDE: 1945
(FT, MSL)

DEPTH: 240
(FT)



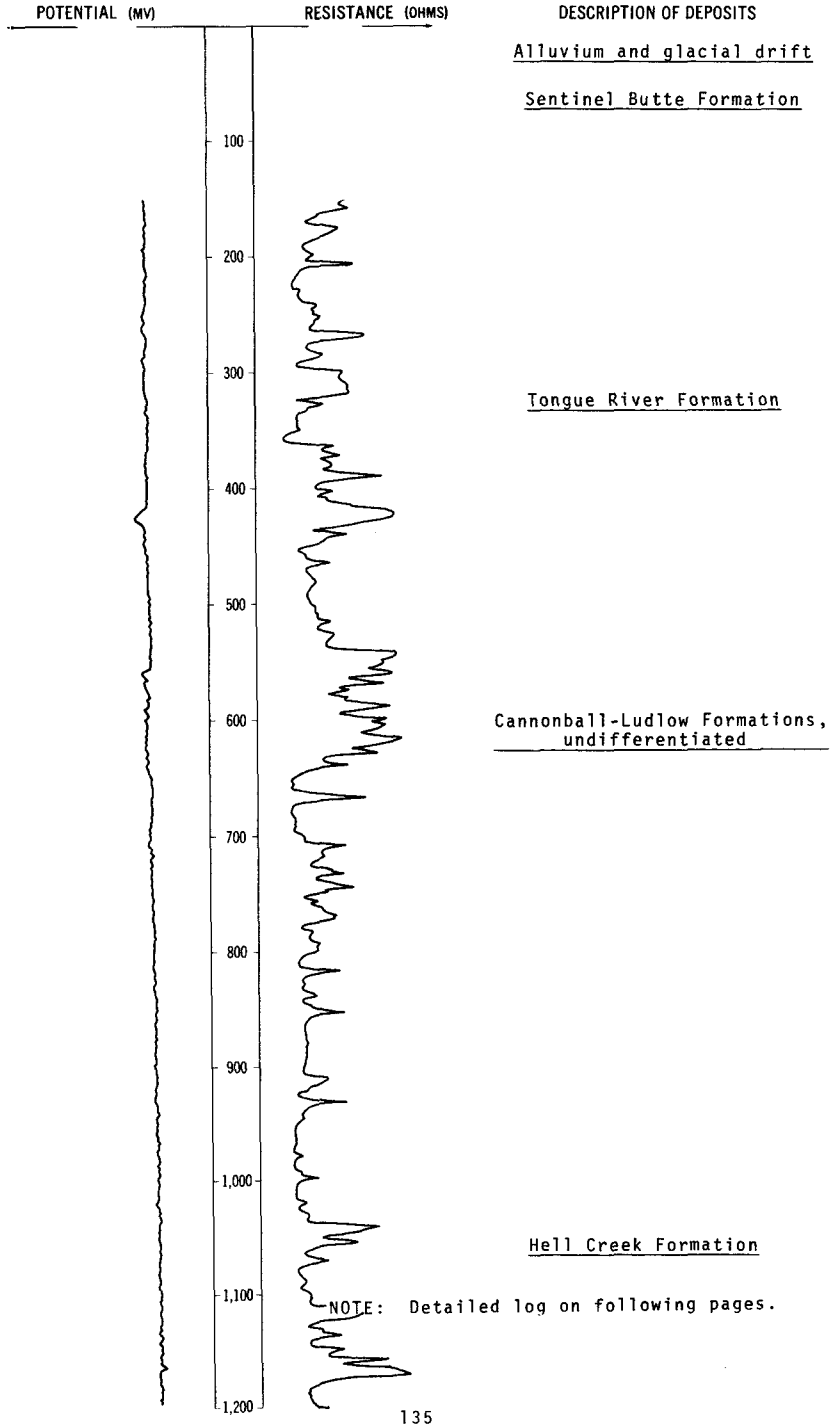
142-092-08BBB
(Log from Mann Drilling Co.)

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Sand-----	17	17
	Clay, sandy-----	8	25
	Clay-----	15	40
	Coal-----	3	43
	Clay-----	11	54
	Clay, sandy-----	32	86
	Coal-----	11	97

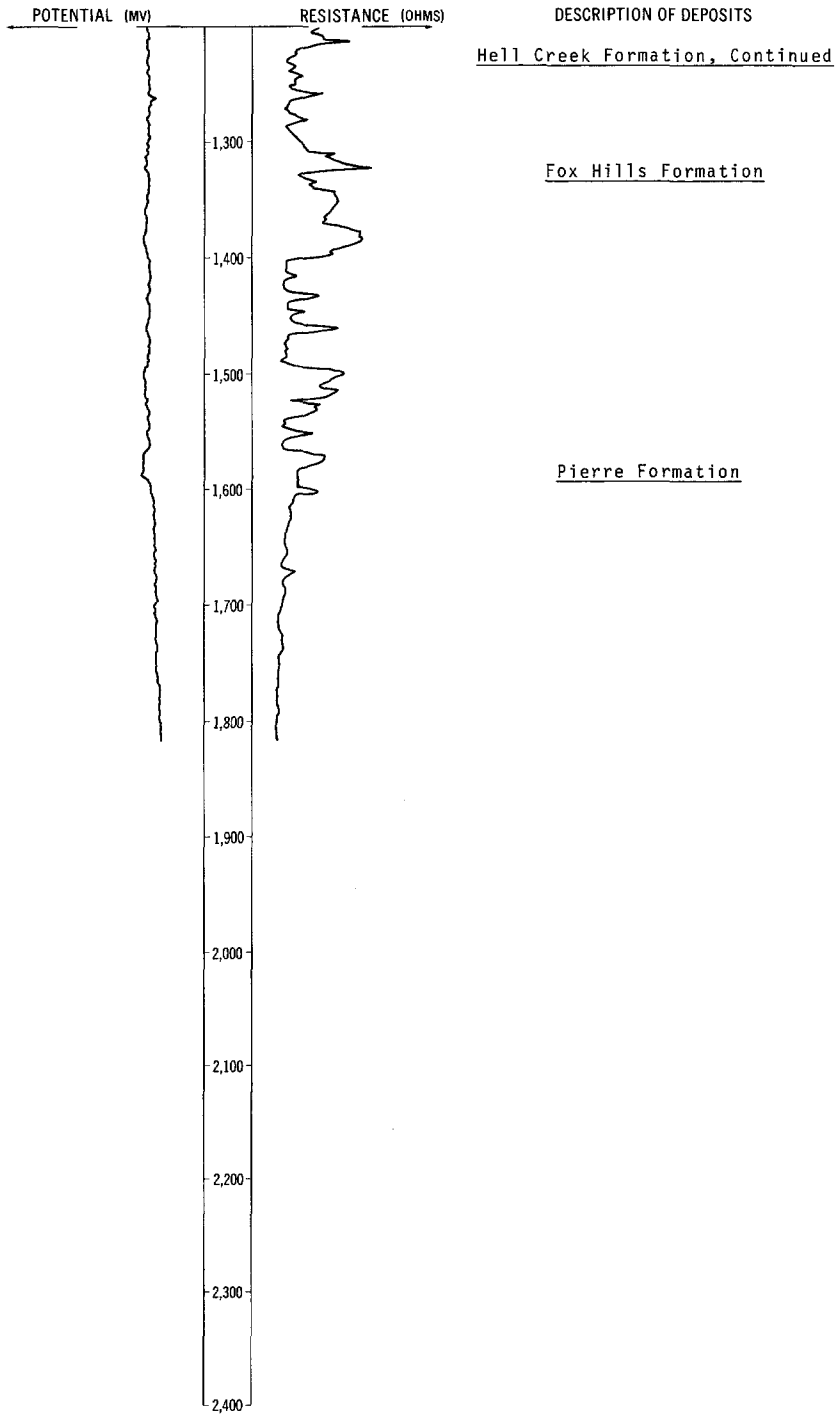
LOCATION: 142-092-09DAB
ALTITUDE: 1990
(FT, MSL)

DATE DRILLED: July 1972
DEPTH: 1800
(FT)



LOCATION: 142-092-09DAB
ALTITUDE: 1990
(FT. MSL)

DATE DRILLED: July 1972
DEPTH: 1800
(FT)



142-092-09DAB, Continued
NDSWC 4467

Altitude: 1990 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Alluvium	and glacial drift, undifferentiated:		
	Topsoil, sandy, dark-brown-----	1	1
	Sand, very fine to medium, clayey, sub- rounded, yellowish-gray-----	8	9
	Sand, very fine to medium, clayey, sub- rounded, reddish-brown; lensed with fine gravel-----	7	16
Sentinel	Butte Formation:		
	Sandstone, very fine to fine-grained, clayey, carbonaceous, brownish-green; lignite 18-27 ft-----	26	42
	Siltstone, shaly, light-green-----	11	53
	Shale, silty, green-----	19	72
	Siltstone, sandy, lignitic, carbonaceous, variegated gray, green, and brown-----	27	99
	Shale, silty, carbonaceous, grayish-brown--	10	109
	Sandstone, very fine to fine-grained, clayey, carbonaceous, light-olive-gray---	16	125
	Shale, silty, carbonaceous, dark-gray-----	8	133
	Siltstone, light-gray; thin interbeds of shale and lignite-----	36	169
	Sandstone, very fine to fine-grained, greenish-gray; scattered pyrite and shell fragments-----	13	182
	Siltstone, sandy, shaly, gray to green-----	21	203
	Sandstone, very fine grained, hard, greenish-gray-----	4	207
	Claystone, silty, medium-gray; contains thin sandstone, shale, and lignite beds--	16	223
	Siltstone, sandy, shaly, carbonaceous, olive-gray-----	40	263
	Lignite, hard, black-----	8	271
	Siltstone, sandy, carbonaceous, gray, green, and brown; contains thin lignite interbeds-----	23	294
	Sandstone, very fine to medium-grained, greenish-gray-----	24	318
Tongue River	Formation:		
	Siltstone, shaly, sandy, gray to brown; contains thin lignite beds; becomes clayey near bottom-----	40	358
	Lignite, hard, black-----	4	362
	Siltstone, sandy, shaly, carbonaceous, olive-gray-----	20	382
	Sandstone, very fine grained, silty, olive-gray-----	11	393
	Siltstone, clayey, carbonaceous, brownish- gray-----	21	414
	Sandstone, very fine grained, clayey, carbonaceous, olive-gray to greenish- gray-----	16	430
	Siltstone, sandy, shaly, carbonaceous, variegated gray, green, and brown-----	6	436
	Lignite, hard, black-----	4	440
	Siltstone, clayey, sandy, variegated gray, green, and brown; upper 32 ft is inter- bedded sandstone, shale, and lignite----	58	498
	Sandstone, very fine grained, clayey, silty, light-green-----	40	538
	Lignite, hard, black-----	13	551
	Siltstone, clayey, sandy, carbonaceous, brownish-gray-----	19	570

142-092-09DAB, Continued
NDSWC 4467

Altitude: 1990 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Tongue River Formation, Continued:			
	Shale, hard, carbonaceous, brownish-black-----	27	597
	Siltstone, sandy, micaceous, variegated gray, green, and brown-----	45	642
Cannonball-Ludlow Formations, undifferentiated:			
	Shale, silty, sandy, carbonaceous, gray to green-----	21	663
	Lignite, hard, black-----	7	670
	Shale, hard, carbonaceous, black-----	14	696
	Siltstone, sandy, carbonaceous-----	79	775
	Sandstone, very fine grained, micaceous, fossiliferous-----	27	802
	Sandstone, very fine grained, silty, clayey, carbonaceous, fossiliferous-----	53	855
	Siltstone, sandy, shaly, carbonaceous, greenish-gray to brown-----	180	1035
Hell Creek Formation:			
	Sandstone, very fine to fine-grained, silty, carbonaceous, fossiliferous-----	15	1050
	Lignite, hard, black-----	5	1055
	Sandstone, very fine to fine-grained, silty, carbonaceous, olive-gray to grayish-green-----	19	1074
	Shale, silty, carbonaceous, variegated gray, green, and black-----	21	1095
	Sandstone, very fine to fine-grained, silty, olive-gray to greenish-gray; contains thin shale interbeds-----	21	1216
	Shale, silty, carbonaceous, hard, variegated gray, green, and black; lignite 1256-1262-----	62	1278
	Sandstone, very fine to medium-grained, sub-angular, fossiliferous-----	48	1326
Fox Hills Formation:			
	Shale, silty, carbonaceous, hard, dark-gray-----	16	1342
	Sandstone, very fine to medium-grained, micaceous, fossiliferous, dark-green-----	58	1400
	Shale, silty, sandy, greenish-gray; few thin sandstone interbeds-----	95	1495
	Sandstone, very fine to medium-grained, silty, micaceous, fossiliferous, greenish-gray-----	25	1520
	Shale, silty, sandy, greenish-gray-----	5	1525
	Sandstone, very fine grained, silty, greenish-gray-----	11	1536
	Shale, silty, sandy, greenish-gray-----	12	1548
	Sandstone, very fine to medium-grained, silty, greenish-gray-----	6	1554
	Shale, silty, sandy, greenish-gray-----	14	1568
	Sandstone, very fine to medium-grained, silty, fossiliferous-----	14	1582
	Sandstone, very fine to fine-grained, clayey, shaly, greenish-gray-----	23	1605

142-092-09DAB, Continued
NDSWC 4467

Altitude: 1990 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Pierre Formation:			
	Shale, silty, sandy, greenish-gray-----	95	1690
	Shale, siliceous, hard, dark-gray-----	110	1800

NOTE: Dual induction laterolog, bulk density, and gamma-gamma logs available.

142-092-10AAD
(Log from K. J. Thompson)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand and gravel-----	28	28
	Clay-----	6	34
	Sand (dry)-----	5	39
	Coal and sand (water)-----	2	41
	Sand-----	14	55

142-092-10BBC
(Log from K. J. Thompson)

Altitude:

	Sand-----	15	15
	Sand and gravel (wet)-----	11	26
	Clay, sandy (small flow)-----	111	137
	Rock-----	3.5	140.5
	Sand (small flow)-----	9.5	150
	Clay, sandy-----	26.5	176.5
	Coal-----	1	177.5
	Clay-----	12.5	190
	Sand, blue (water)-----	20	210
	Clay-----	5	215

142-092-10BCC1
NDSWC 8253

Altitude: 1982 ft

Alluvium and glacial drift, undifferentiated:			
	Topsoil, silty, sandy, brownish-black-----	1	1
	Clay, silty, sandy, moderate-yellowish-brown-----	10	11
	Sand, very fine to medium, clayey, subangular to subrounded-----	7	18
	Gravel, fine to coarse, sandy, angular to rounded-----	11	29
	Clay, silty, sandy, lignitic, medium-dark-gray; occasional thin sand lenses-----	56	85
	Sand, fine to medium, subangular-----	4	89
	Silt, clayey, olive-gray-----	11	100
	Clay, silty, sandy, lignitic, light-gray---	20	120
Sentinel Butte Formation:			
	Siltstone, hard, calcareous, medium-light-gray; thin carbonaceous streaks-----	20	140

142-092-10BCC2
NDSWC 8253A

Altitude: 1982 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Alluvium	and glacial drift, undifferentiated:		
	Topsoil, silty, sandy, brownish-black-----	1	1
	Clay, silty, sandy, moderate-yellowish-brown-----	10	11
	Sand, very fine to medium, clayey, sub-angular to subrounded-----	7	18
	Gravel, fine to coarse, sandy, angular to rounded-----	11	29
	Clay, silty, sandy, lignitic, medium-dark-gray; occasional thin sand lense----	11	40

142-092-11BBC
(Log from K. J. Thompson)

Altitude:

Clay, sandy-----	37	37
Coal-----	1	38
Clay-----	8	46
Coal-----	2	48
Clay with hard streaks-----	50	98
Sand (water)-----	10	108
Clay-----	17	125
Sand-----	11	136
Clay-----	8	144
Coal-----	3	147
Clay-----	3	150

142-092-12BCC1
(Log from K. J. Thompson)

Altitude:

Sand and gravel-----	26	26
Rock-----	1	27
Clay with thin coal seams-----	15	42
Sand (water)-----	11	53
Clay-----	7	60

142-092-26BCA
(Log from K. J. Thompson)

Altitude:

Clay-----	26	26
Coal slack (dry)-----	2	28
Clay-----	11	39
Coal-----	4	43
Clay-----	37	80
Clay-----	12	92
Rock-----	1	93
Clay-----	13	106
Coal (water)-----	4	110
Clay-----	7	117
Rock-----	1	118
Clay-----	20	138
Coal (seep, red water)-----	4	142
Clay-----	8	150

142-092-27CBB
(Log from Mann Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay-----	50	50
	Sandstone-----	2	52
	Clay-----	351	403
	Sand-----	12	415
	Sandstone-----	2	417
	Sand-----	19	436
	Lignite-----	6	442
	Clay-----	111	553
	Sandstone-----	7	560
	Clay-----	60	620
	Lignite-----	18	638
	Clay-----	169	807
	Sandstone-----	2	809
	Clay and silt-----	318	1127
	Sand-----	33	1160

142-092-29CCD
(Log from K. J. Thompson)

Altitude:

	Sand and gravel-----	25	25
	Sand-----	5	30
	Coal (water)-----	1.5	31.5
	Clay-----	12.5	44
	Rock-----	1	45

142-092-34BBB
(Log from Moe Drilling Co.)

Altitude:

	Topsoil-----	1	1
	Clay, silty, yellow-----	16	17
	Clay, gray-----	10	27
	Lignite-----	4	31
	Clay, gray-----	10.5	41.5
	Lignite-----	2.5	44
	Clay, gray-----	63	107
	Rock, hard, gray-----	1	108
	Clay, gray-----	19	127
	Lignite-----	2.5	129.5
	Clay, gray-----	20.5	150
	Lignite-----	3	153
	Clay, gray-----	21	174
	Rock-----	.5	174.5
	Clay, gray-----	8.5	183
	Sand, fine, light-green-----	3	186
	Clay, green-----	6	192
	Coal-----	2	194
	Clay, white-----	41	235
	Sand, very fine, gray-----	7	242
	Clay, white-----	37	279
	Sand, gray-----	14	293
	Rock-----	1	294
	Sand-----	10	304
	Rock-----	1	305

142-093-03DAB
(Log from K. J. Thompson)

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Altitude:			
	Sand and gravel-----	47	47
	Clay-----	15	62
	Coal (dry)-----	1	63
	Clay-----	9	72
	Coal (water)-----	8	80
	Clay-----	1	81

142-093-04DDD
NDSWC 8270

Altitude:

Alluvium and glacial drift, undifferentiated:			
	Clay, silty, moderate-yellowish-brown-----	17	17
	Gravel, fine to coarse, clayey, sandy, angular-----	2	19
Sentinel Butte Formation:			
	Lignite, hard, black; few thin clay beds---	9	28
	Shale, hard, noncalcareous, medium-gray---	12	40

142-093-05DAC
(Log from K. J. Thompson)

Altitude:

	Sand and gravel, clayey-----	51	51
	Coal (seep)-----	3	54
	Clay-----	16	70
	Sand (water)-----	9	79
	Coal (water)-----	1	80
	Sand (water)-----	10	90

142-093-08AAB
NDSWC 8271

Altitude: 2056 ft

Alluvium and glacial drift, undifferentiated:			
	Topsoil, silty, clayey, brownish-black----	1	1
	Clay, silty, moderate-yellowish-brown-----	19	20
	Sand, very fine to medium, lignitic, subangular to subrounded-----	8	28
	Clay, silty, lignitic, olive-gray-----	22	50
	Clay, silty, sandy, pebbly, lignitic, olive-gray (till)-----	105	155
Sentinel Butte Formation(?):			
	Siltstone, calcareous, medium-gray-----	25	180

LOCATION: 142-093-09BBA

DATE DRILLED: June 1974

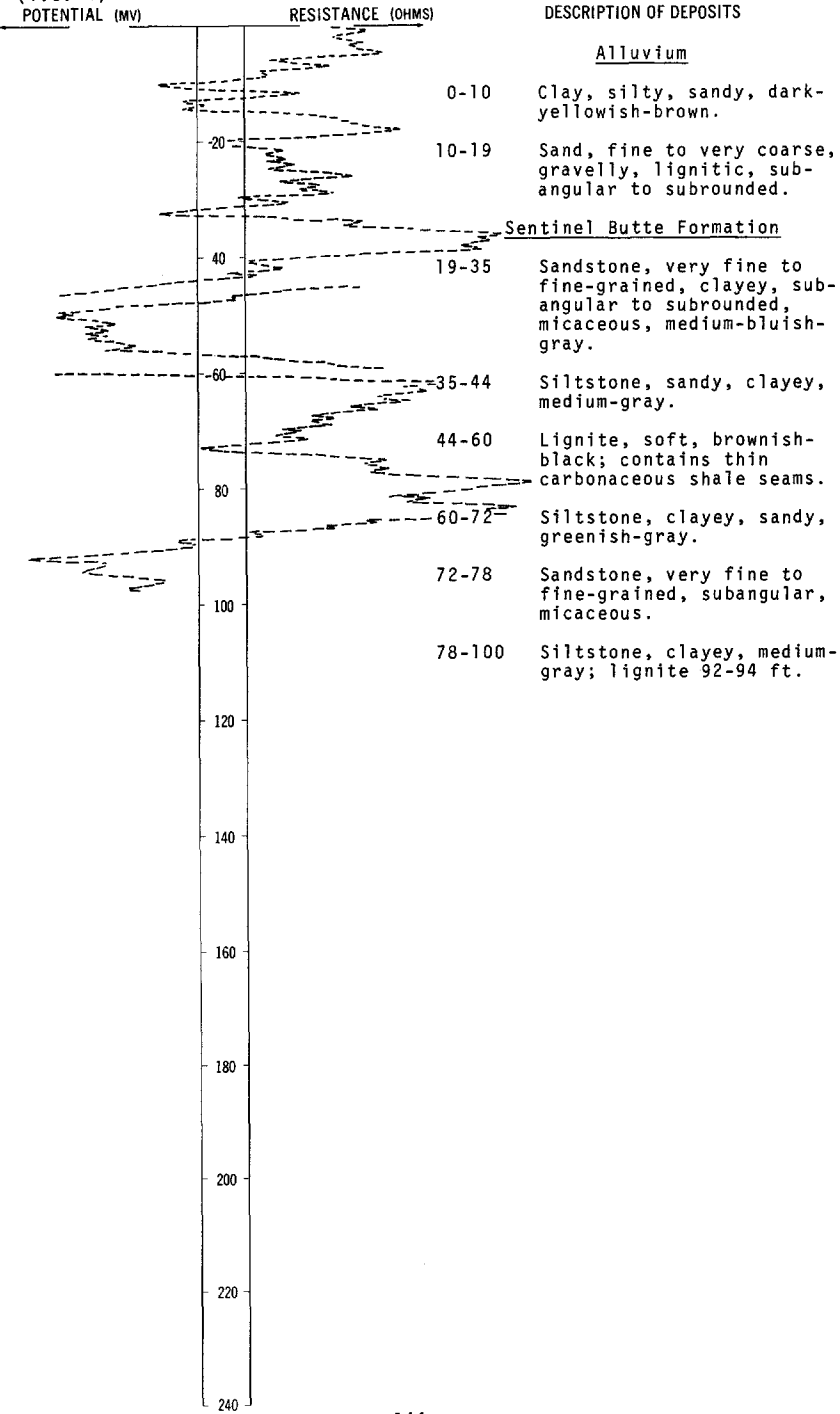
ALTITUDE: 2024

DEPTH: 100

(FT, MSL)

(FT)

Gamma log
(T.C. 4)



142-093-1888B
NDSWC 4690

Altitude: 2157 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Glacial drift:			
	Clay, silty, sandy, moderate-yellowish-brown (till)-----	13	13
	Clay, silty, sandy, pebbly, lignitic, moderate-yellowish-brown (till)-----	23	36
	Clay, silty, moderate-yellowish-brown; laminated-----	6	42
	Sand, fine to coarse, gravelly, subangular to subrounded, moderate-reddish-brown---	30	72
	Gravel, sandy, lignitic; boulders; few clay lenses-----	24	96
Sentinel	Butte Formation: Claystone, silty, medium-gray-----	24	120

142-093-28BAA
NDSWC 8269

Altitude: 2067 ft

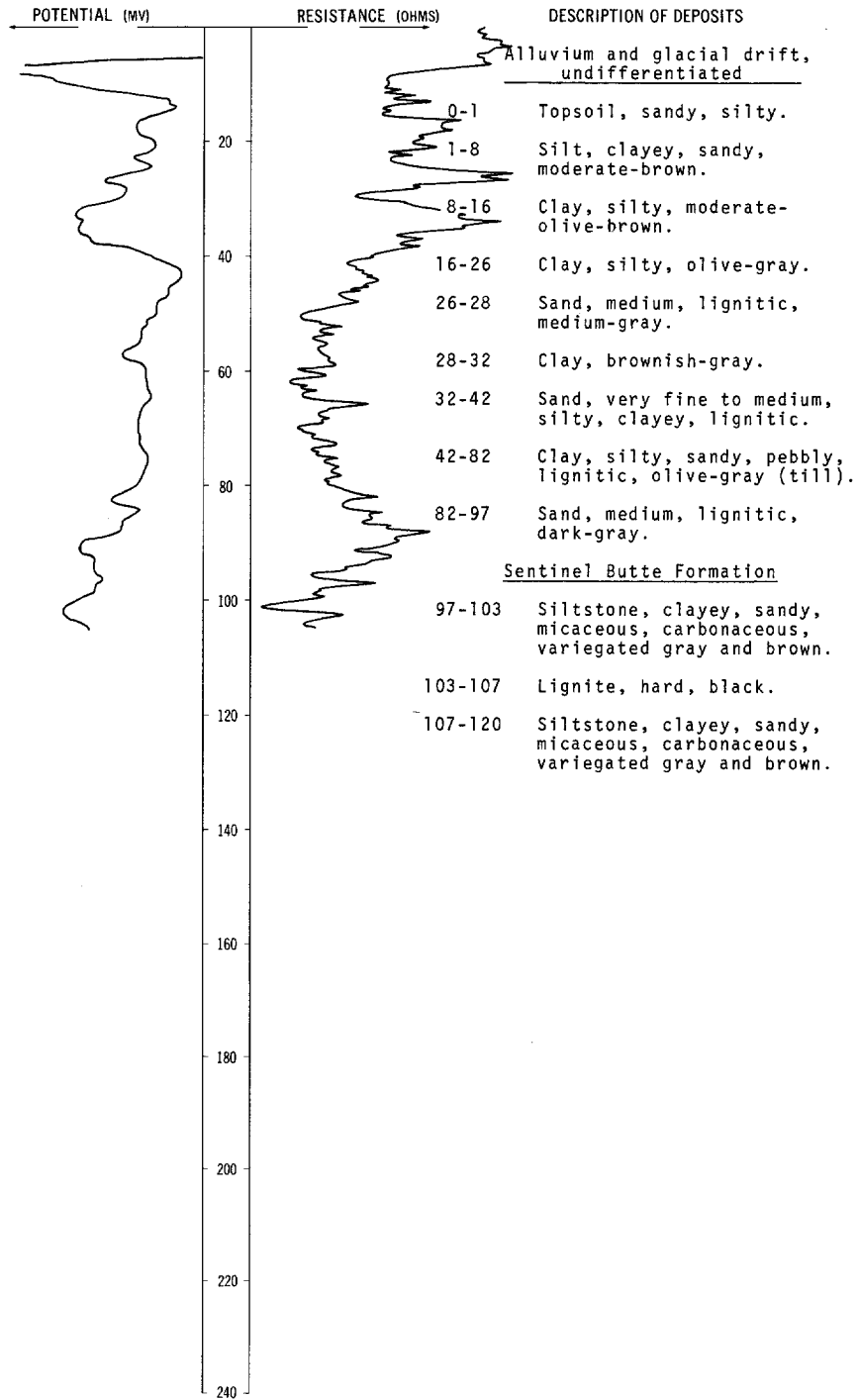
Alluvium and glacial drift, undifferentiated:			
	Topsoil, silty, clayey, grayish-black-----	1	1
	Clay, silty, moderate-yellowish-brown-----	20	21
	Sand, very fine to medium, silty, subangular-----	5	26
	Clay, silty, sandy, pebbly, moderate-yellowish-brown (till)-----	8	34
	Clay, silty, sandy, pebbly, lignitic, olive-gray (till)-----	58	92
Sentinel	Butte Formation: Siltstone, noncalcareous, medium-light-gray-----	28	120

LOCATION: 142-093-28BBA

DATE DRILLED: December 1973

ALTITUDE: 2066
(FT, MSL)

DEPTH: 120
(FT)



142-093-31BBB
NDSWC 4619

Altitude: 2096 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Alluvium and glacial drift, undifferentiated:			
	Topsoil, clayey, silty, dusky-brown-----	2	2
	Clay, silty, dark-yellowish-orange-----	11	13
	Gravel, fine, sandy, subrounded to sub- angular-----	2	15
	Clay, dark-olive-gray; contains organic material and numerous lignite fragments--	7	22
	Sand, fine to coarse, lignitic-----	10	32
Sentinel Butte Formation:			
	Sandstone, fine-grained, clayey, light- greenish-gray-----	8	40
	Claystone, silty, sandy, carbonaceous, dark-gray-----	10	50
	Siltstone, very light gray-----	10	60

142-093-31DDD
NDSWC 8272

Altitude:

Alluvium:			
	Topsoil, silty, clayey, grayish-black-----	1	1
Sentinel Butte Formation:			
	Shale, hard, silty, moderate-yellowish- brown-----	26	27
	Shale, hard, calcareous, medium-gray; lignite streaks-----	13	40

142-093-32DCC
NDSWC 4616

Altitude: 2088 ft

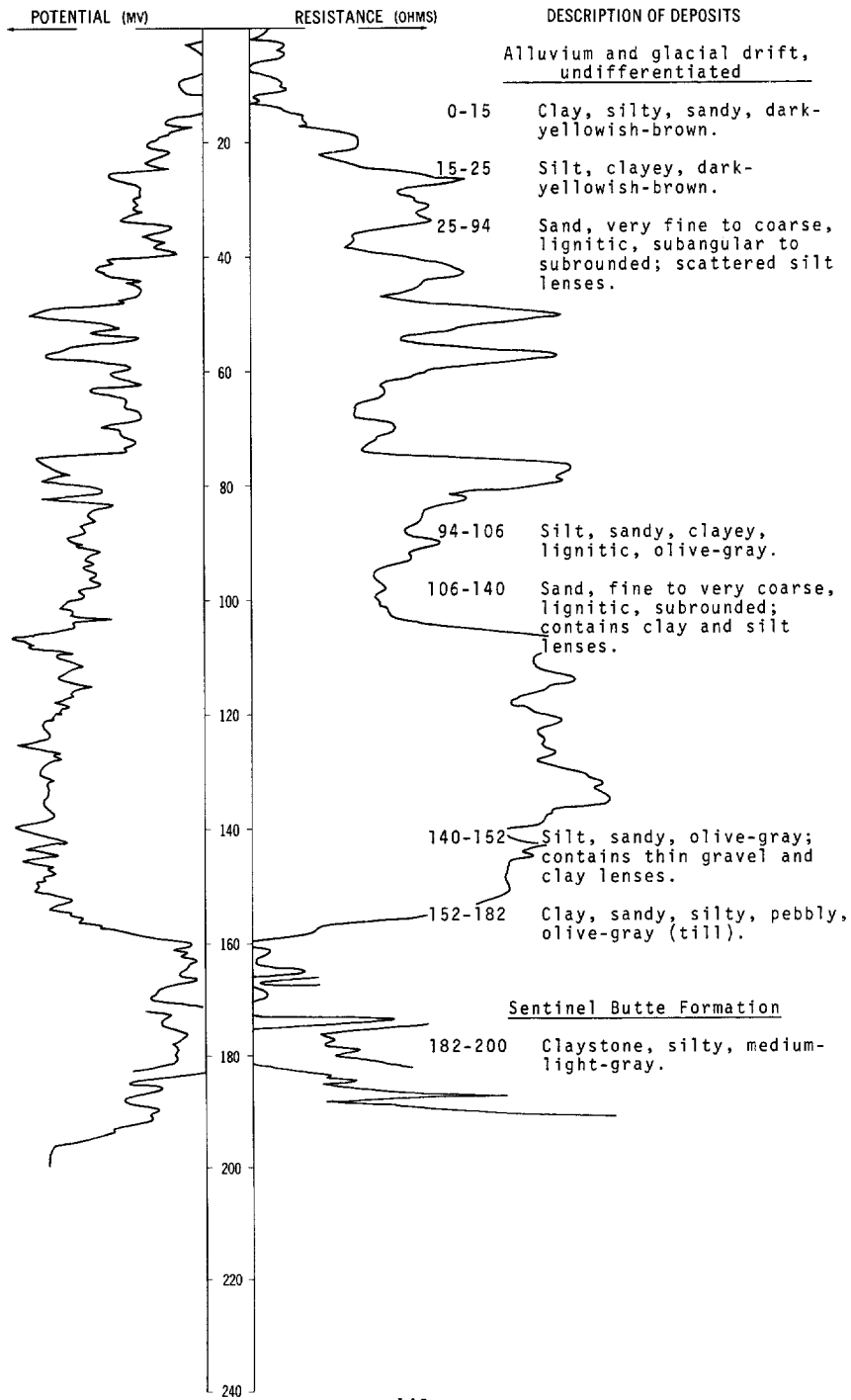
Alluvium:			
	Topsoil, silty, clayey, black-----	2	2
	Clay, silty, dark-yellowish-orange-----	10	12
	Sand, gravelly, subrounded to subangular---	10	22
Sentinel Butte Formation:			
	Claystone, silty, sandy, hard, carbonaceous	7	29
	Lignite, soft, fractured-----	1	30
	Shale, medium-gray-----	11	41
	Sandstone, medium-grained, subangular, dark-gray; clayey and carbonaceous from 46-48 ft-----	32	73
	Shale, hard, carbonaceous, variegated gray and brown-----	7	80

LOCATION: 142-094-09CDC

DATE DRILLED: June 1974

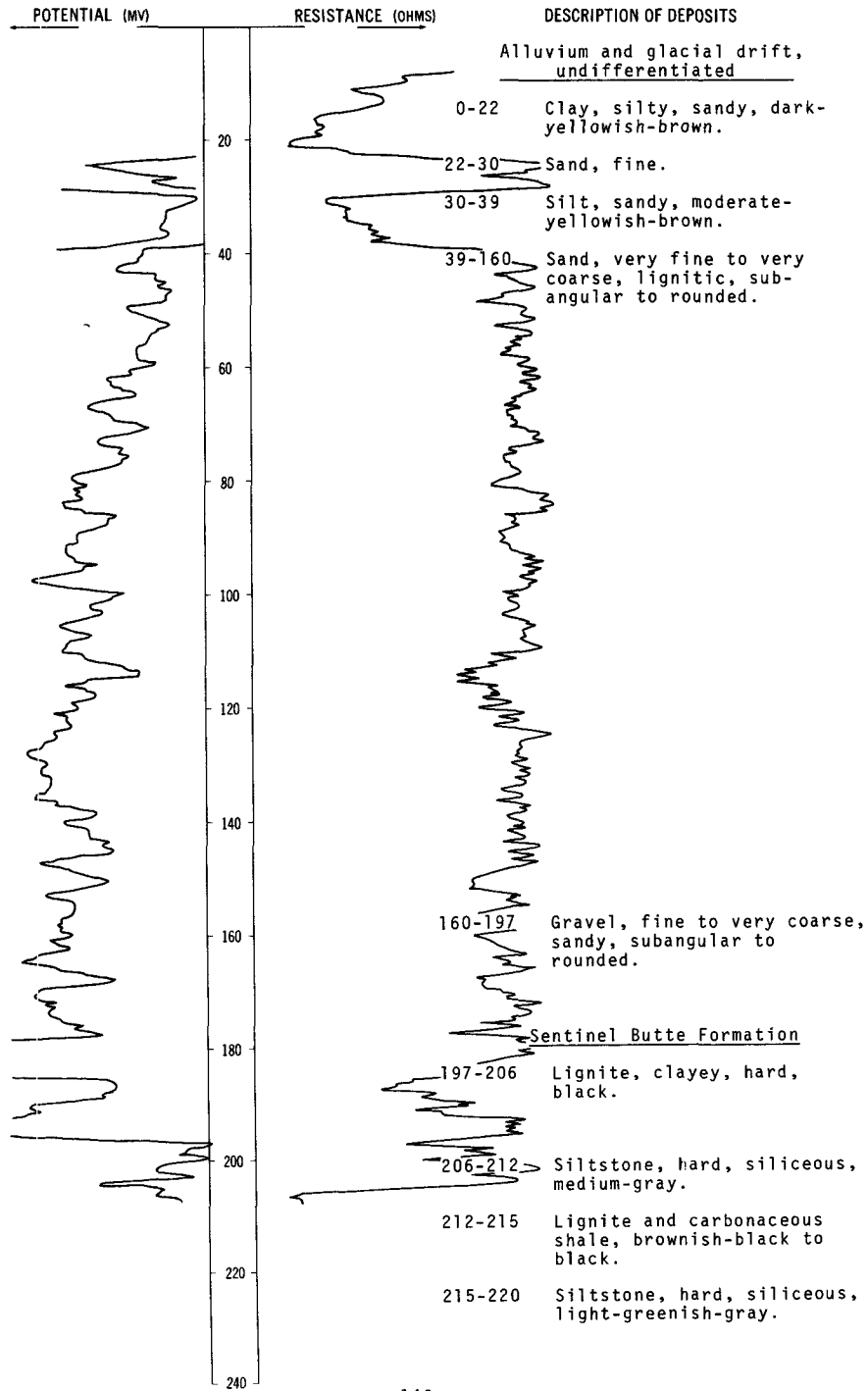
ALTITUDE: 2157
(FT, MSL)

DEPTH: 200
(FT)



LOCATION: 142-094-09CDD
 ALTITUDE: 2157
 (FT, MSL)

DATE DRILLED: June 1974
 DEPTH: 220
 (FT)



142-094-09DDD
NDSWC 4687

Altitude: 2191 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Alluvium:	Clay, silty, sandy, dark-yellowish-brown---	2	2
Sentinel Butte Formation:	Siltstone, sandy, moderate-yellowish-brown-----	28	30
	Sandstone, very fine to fine-grained, subangular; greenish-gray mottled gray and brown-----	27	57
	Siltstone, dark-yellowish-brown-----	3	60

142-094-27DDC
NDSWC 4471

Altitude:

Glacial drift:	Topsoil, silty, brown-----	1	1
	Silt, clayey, sandy, dark-olive-brown-----	23	24
Sentinel Butte Formation:	Shale, silty, hard, medium-gray-----	14	38
	Siltstone, clayey, sandy, light-gray-----	18	56
	Lignite, hard, black-----	4	60

142-094-28DCD
NDSWC 4470

Altitude:

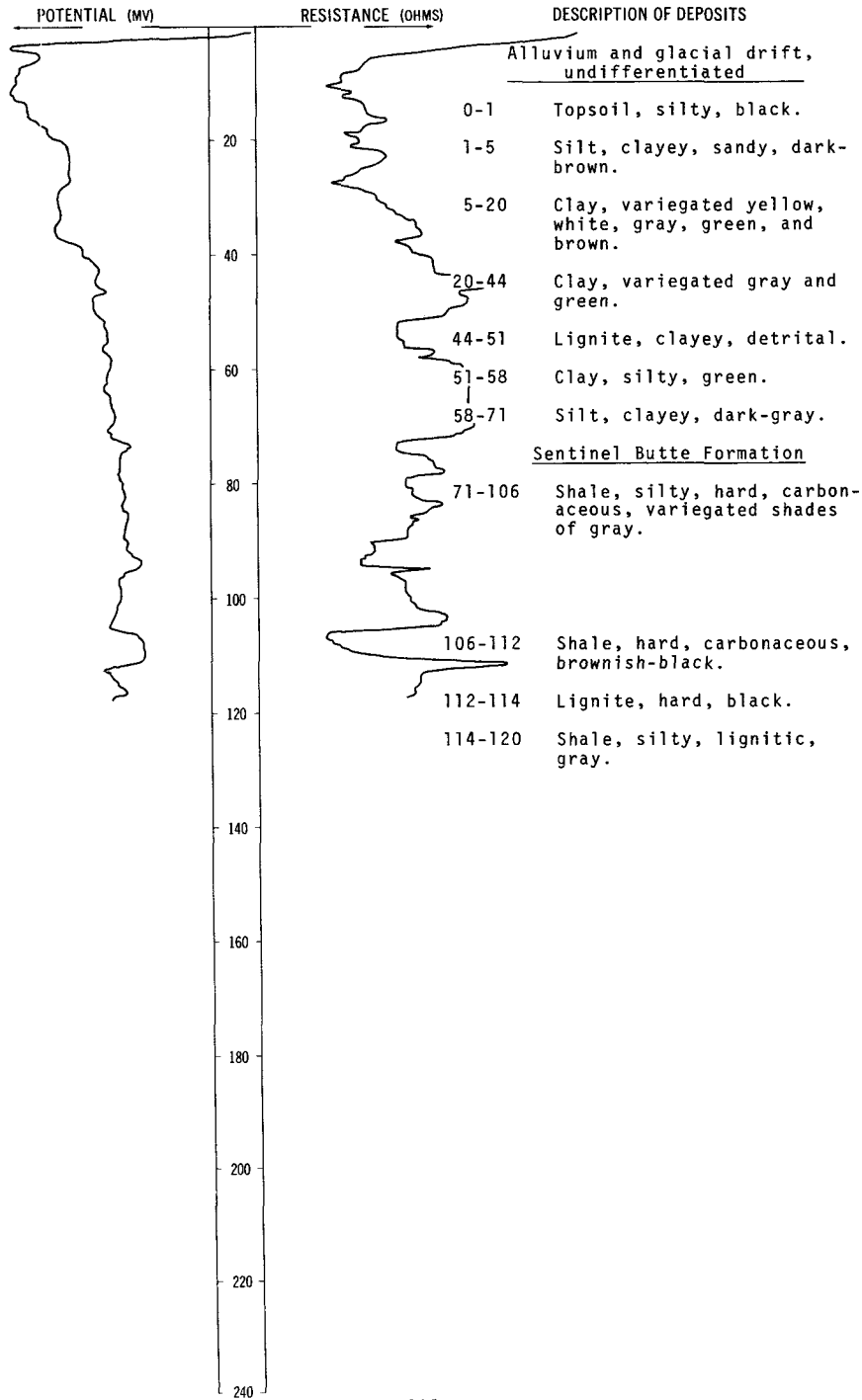
Glacial drift:	Topsoil, sandy, brown-----	1	1
	Silt, clayey, sandy, yellowish-gray to dark-yellowish-brown-----	22	23
Sentinel Butte Formation:	Sandstone, fine-grained, yellowish-green---	2	25
	Shale, silty, hard, greenish-yellow-----	17	42
	Lignite, hard, black-----	1	43
	Shale, silty, hard, medium-gray-----	8	51
	Sandstone, fine-grained, greenish-gray-----	9	60

LOCATION: 142-094-33BCC

DATE DRILLED: August 1972

ALTITUDE:
(FT, MSL)

DEPTH: 120
(FT)



142-094-35BBB
NDSWC 8274

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Alluvium	and glacial drift, undifferentiated:		
	Topsoil, silty, clayey, grayish-black-----	1	1
	Clay, silty, moderate-yellowish-brown-----	33	34
	Clay, silty, olive-gray-----	4	38
	Gravel, fine to coarse, clayey, sandy, angular to subrounded-----	3	41
	Clay, silty, olive-gray-----	10	51
	Sand, fine to medium, lignitic, subangular to subrounded-----	2	53
	Clay, silty, olive-gray-----	22	75
Sentinel Butte Formation:			
	Siltstone, hard, calcareous, medium- light-gray-----	25	100

142-094-35CBB
NDSWC 8275

Altitude:

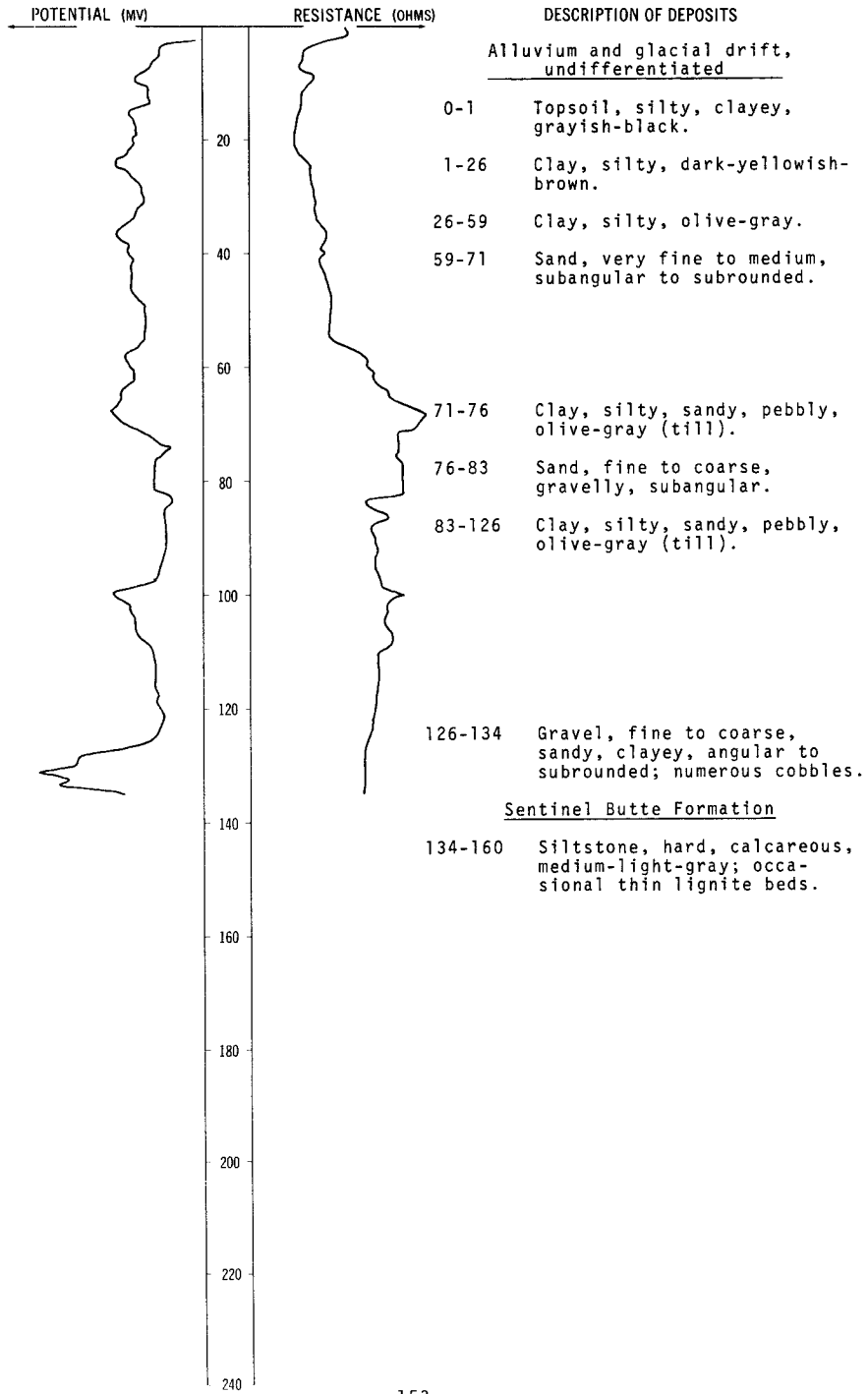
Alluvium	and glacial drift, undifferentiated:		
	Topsoil, silty, clayey, grayish-black-----	1	1
	Clay, silty, moderate-yellowish-brown-----	32	33
	Gravel, fine to coarse, clayey, angular to subrounded-----	3	36
	Clay, silty, olive-gray-----	26	62
Sentinel Butte Formation:			
	Shale, hard, noncalcareous, medium-gray; contains carbonaceous laminae-----	18	80

LOCATION: 142-094-35CCC

DATE DRILLED: November 1971

ALTITUDE: 2127
(FT, MSL)

DEPTH: 160
(FT)



142-095-02BCB
(Log from Mann Drilling Co.)

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Clay, sandy, buff-----	44	44
	Clay, gray-----	18	62
	Lignite-----	2	64
	Clay, gray-----	18	82
	Lignite-----	3	85

142-095-17BDB
(Log from Heiser Well Drilling)

Altitude:

	Clay, dark-----	9	9
	Sand and gravel-----	3	12
	Clay, blue-----	27	39

142-096-06DAB
(Log from Mann Drilling Co.)

Altitude:

	Silt-----	45	45
	Small rocks and scoria-----	19	64
	Coal-----	6	70
	Clay-----	33	103
	Coal-----	12	115
	Rock-----	43	158
	Clay-----	37	195
	Clay, sandy-----	5	200
	Rock-----	1	201
	Clay, sandy-----	9	210
	Rock-----	3	213
	Sand-----	35	248

142-096-18BBA
(Log from Mann Drilling Co.)

Altitude:

	Sand-----	13	13
	Clay, sandy-----	13	26
	Sand, blue-----	5	31
	Clay-----	16	47
	Coal-----	5	52

143-091-03CCC
NDSWC 4702

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel	Butte Formation:		
	Sand, fine to medium-grained, micaceous, moderate-brown; iron concretions-----	17	17
	Lignite, black-----	4	21
	Clay, light-greenish-gray-----	12	33
	Siltstone, clayey, medium-gray; contains carbonaceous inclusions-----	7	40

143-091-04AAA2
(Log from Opp Well Drilling)

Altitude:

	Topsoil, black-----	2	2
	Clay, brown-----	18	20
	Clay, sandy, gray-----	30	50
	Sand, blue-----	19	69
	Coal-----	1	70
	Clay, blue-----	2	72

143-091-07CAA
(Log from K. J. Thompson)

Altitude:

	Sand and clay-----	30	30
	Rock-----	2	32
	Clay-----	28	60
	Sand, red; wet mud-----	11	71
	Rock-----	1	72
	Clay-----	18	90
	Sand, coal streaks (water)-----	28	118
	Coal (water)-----	2	120
	Clay-----	6	126
	Clay bottom-----	--	--

143-091-11CBA
(Log from K. J. Thompson)

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Sand-----	28	28
	Gravel and red sand-----	7	35
	Sand-----	17	52
	Gravel-----	1	53
	Clay-----	20	73
	Clay, sandy-----	14	87
	Coal-----	9	96
	Clay-----	2	98

143-091-17BCD
(Log from Ray Mohl)

Altitude:

	Clay, soft, yellow, and blue-----	62	62
	Clay, hard, gray and blue-----	4	66
	Coal, soft-----	2	68
	Clay, gray-----	17	85
	Coal, hard-----	2	87
	Clay, gray-----	14	101
	Clay, broken; small layers of sandstone (water)-----	6	107
	Clay, sandy, blue-----	18	125
	Sand, hard-----	13	138
	Sandstone, broken (water?)-----	10	148

143-091-18BAD
(Log from Ray Mohl)

Altitude:

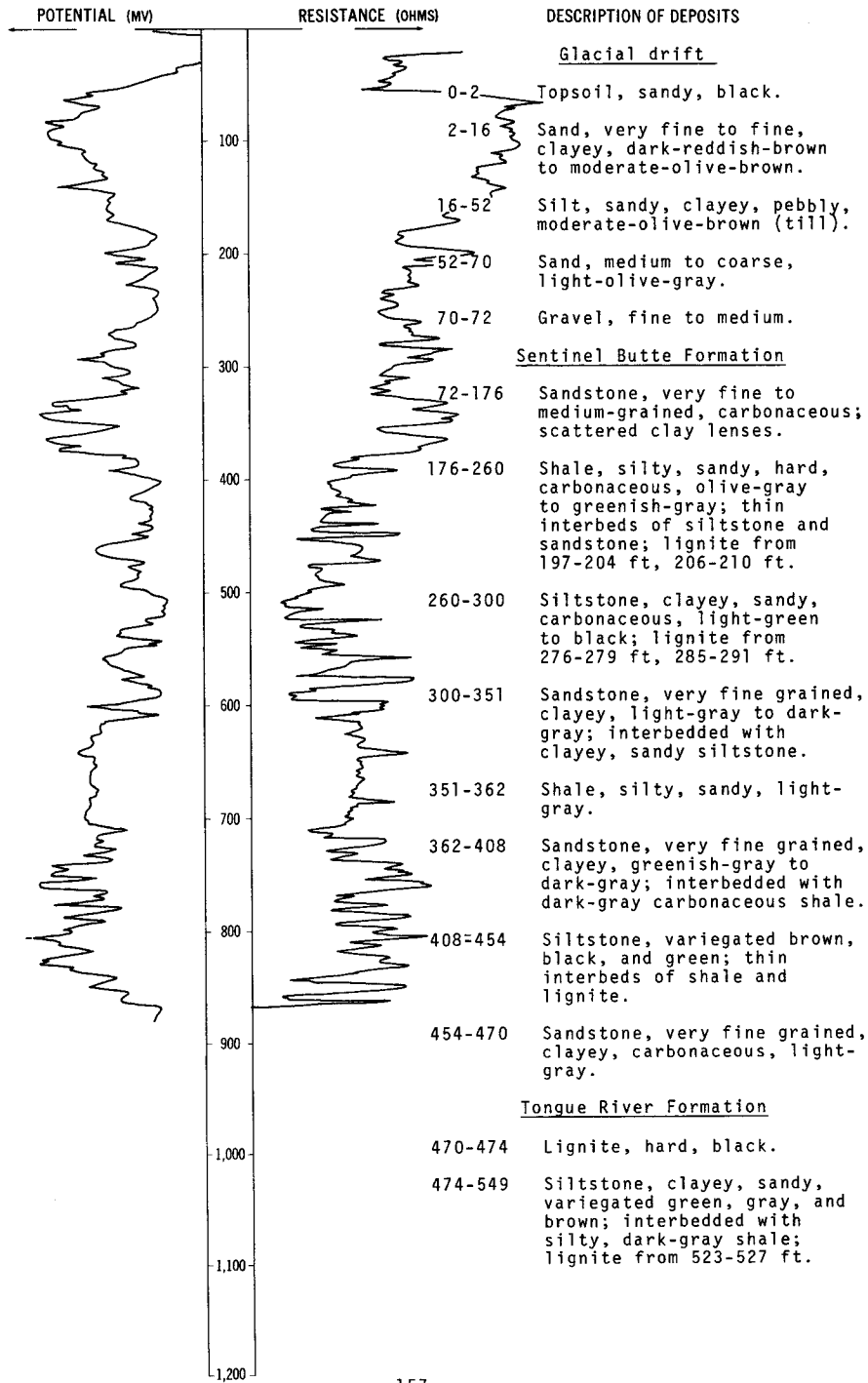
	Clay, sticky, yellow-----	19	19
	Clay, sticky, gray-----	61	80
	Sandstone, soft-----	1	81
	Clay, blue-----	11	92
	Gravel-----	5	97
	Clay-----	2	99
	Loam, silty, gravelly-----	3	102
	Rock and gravel (water)-----	2	104

LOCATION: 143-091-19AAA1,2,3

DATE DRILLED: October 1973

ALTITUDE: 2130
(FT, MSL)

DEPTH: 900, 80, 160
(FT)



NDSWC 4602, 4602A, and 4602B, Continued

LOCATION: 143-091-19AAA1,2,3

DATE DRILLED: October 1973

ALTITUDE: 2130
(FT, MSL)

DEPTH: 900, 80, 160
(FT)

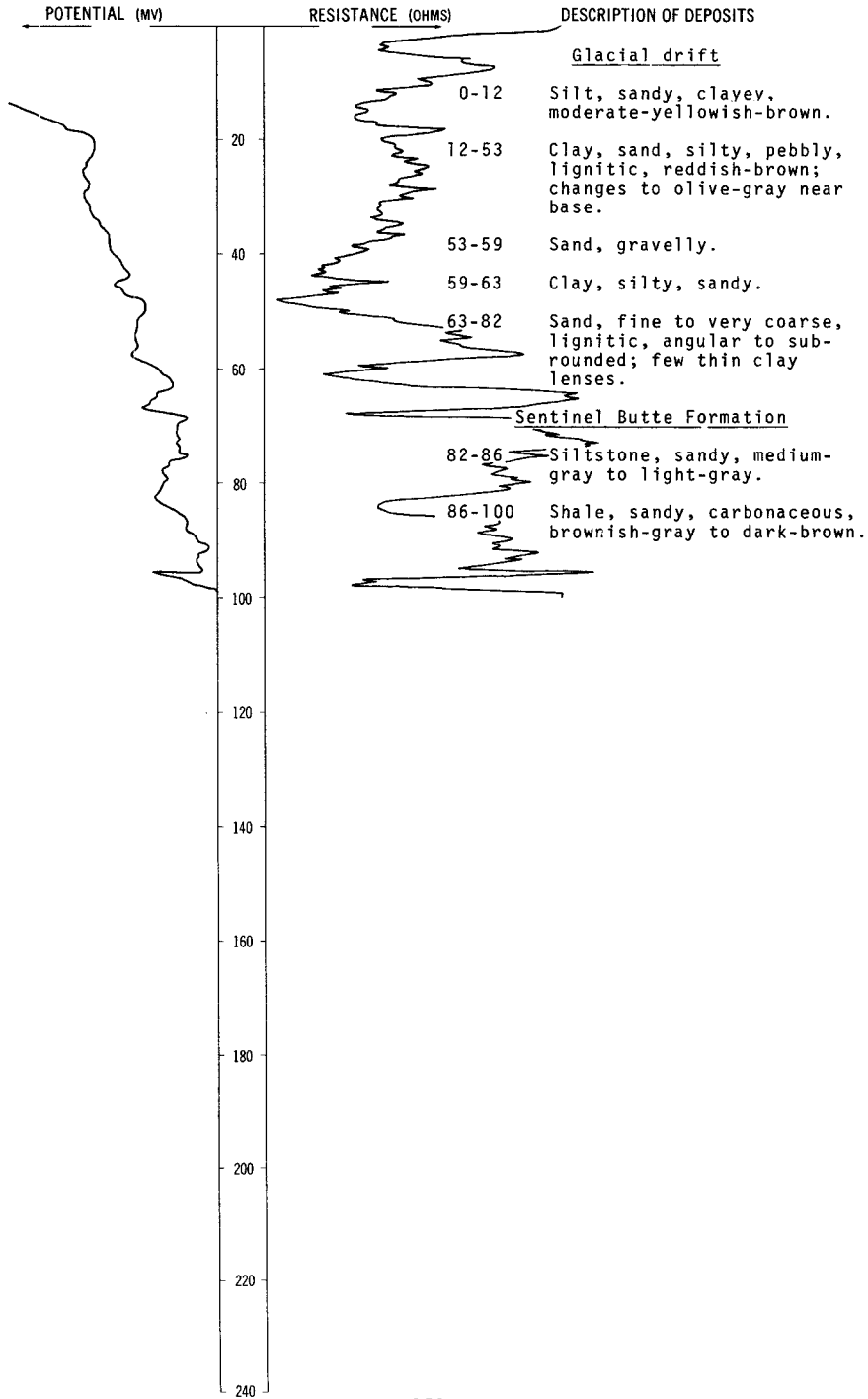
POTENTIAL (MV)	RESISTANCE (OHMS)	DESCRIPTION OF DEPOSITS
		<u>Tongue River Formation, Continued</u>
	549-575	Sandstone, fine to medium-grained, light-olive-gray; clay and carbonaceous content increase with depth.
-1,300		
	575-581	Lignite, hard, black.
	581-587	Siltstone, lignitic, black.
-1,400		
	587-596	Shale, carbonaceous, dark-gray to black.
	596-607	Lignite.
	607-613	Shale, carbonaceous, dark-gray to black.
-1,500		
	613-719	Sandstone, very fine to medium-grained, greenish-gray to dusky-green; bottom 11 ft is clayey and carbonaceous.
-1,600		
	719-727	Lignite, hard, black.
	727-740	Shale, siltstone, sandstone, and lignite, dusky-brown to black; thinly interbedded.
-1,700		
	740-766	Sandstone, very fine to fine-grained, clayey, silty, light-olive-gray.
	766-787	Shale, carbonaceous, dark-gray to black; interbedded with siltstone.
-1,800		
	787-840	Shale, silty, sandy, carbonaceous, moderate-brown to black; lignite from 848-855 ft.
-1,900		
	840-864	Shale, silty, sandy, carbonaceous, moderate-brown to black; lignite from 848-855 ft.
-2,000		
		<u>Cannonball-Ludlow Formation, undifferentiated</u>
	864-867	Lignite, hard, black.
-2,100		
	867-900	Shale, silty, hard, carbonaceous, brownish-gray.
-2,200		
-2,300		
-2,400		

LOCATION: 143-091-218BB

DATE DRILLED: June 1974

ALTITUDE: 2135
(FT, MSL)

DEPTH: 100
(FT)



143-092-03BAA1
(Log from K. J. Thompson)

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Sand (dry)-----	20	20
	Sand (some water)-----	71	91
	Clay-----	5	96
	Coal (water)-----	8	104
	Clay-----	4	108

143-092-04BCB2
(Log from K. J. Thompson)

Altitude:

	Clay-----	25	25
	Sand, wet-----	2	27
	Clay-----	26	53
	Coal (water)-----	2	55
	Clay-----	5	60

143-092-07DDD
NDSWC 8226

Altitude: 2156 ft

Alluvium and glacial drift, undifferentiated:			
	Topsoil, silty, clayey, grayish-black-----	1	1
	Clay, silty, sandy, moderate-yellowish-brown-----	2	3
	Sand, very fine to coarse, silty, sub-rounded; contains occasional clay lenses-----	21	24
	Clay, silty, sandy, medium-gray; occasional thin sand lenses-----	17	41
	Gravel, fine to medium, sandy, subangular--	2	43
Sentinel Butte Formation:			
	Shale, hard, calcareous, medium-gray-----	17	60

143-092-10ACD
(Log from K. J. Thompson)

Altitude:

	Clay-----	27	27
	Rock-----	1	28
	Clay-----	30	58
	Coal, dry-----	2	60
	Clay-----	3	63
	Coal, dry-----	7	70
	Clay-----	40	110
	Sandy, wet-----	2	112
	Coal, dry-----	6	118
	Clay-----	12	130
	Sand (water)-----	26	156
	Sandy bottom-----	--	--

143-092-13CDD
NDSWC 8225

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
Alluvium and glacial drift, undifferentiated:			
	Topsoil, silty, clayey, grayish-black-----	1	1
	Clay, silty, sandy, pebbly, dark-yellowish-brown (till)-----	10	11
	Clay, silty, sandy, pebbly, medium-dark-gray (till)-----	15	26
	Sand, fine to coarse, lignitic, subangular-	3	29
	Clay, silty, sandy, pebbly, olive-gray (till)-----	11	40
Sentinel Butte Formation:			
	Sandstone, fine-grained, hard, calcareous, medium-bluish-gray-----	2	42
	Shale, silty, hard, noncalcareous, light-brownish-gray-----	18	60

143-092-14DAD
(Log from K. J. Thompson)

Altitude:

Clay-----	20	20
Sand, wet-----	11	31
Clay-----	48	79
Rock-----	1	80
Sand-----	4	84
Rock-----	1	85
Sand-----	6	91
Coal-----	.5	91.5
Clay-----	2	93.5
Coal-----	1	94.5
Clay-----	3.5	98

143-092-16BBA
NDSWC 4716

Altitude: 2180 ft

Colluvium and glacial drift, undifferentiated:			
	Clay, silty, sandy, dark-yellowish-brown-----	4	4
	Sand, very fine to very coarse, silty, gravelly, subangular, moderate-yellowish-brown; few thin clay lenses-----	23	27
	Silt, clayey, moderate-yellowish-brown to olive-gray-----	5	32
	Sand, very fine to medium, silty, lignitic, subangular to subrounded-----	19	51
Sentinel Butte Formation:			
	Silt, clayey, sandy, olive-gray-----	2	53
	Lignite, hard, black-----	5	58
	Siltstone, clayey, sandy, medium-gray; thin lignite seams-----	22	80

143-092-17CCC
NDSWC 8227

Altitude: 2182 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Alluvium	and glacial drift, undifferentiated:		
	Topsoil, silty, clayey, grayish-black-----	1	1
	Clay, silty, sandy, gravelly, moderate- yellowish-brown (till)-----	24	25
	Gravel, fine to coarse, sandy, angular to rounded-----	7	32
	Clay, silty, sandy, pebbly, olive-gray (till)-----	14	46
Sentinel	Butte Formation:		
	Shale, sandy, silty, noncalcareous, medium-bluish-gray-----	14	60

143-092-17DDC
(Log from R. J. Thompson)

Altitude:

Sand and gravel-----	6	6
Clay-----	17	23
Rock-----	1	24
Clay-----	12	36
Rock-----	2	38
Clay-----	8	46
Coal-----	4	50
Clay-----	5	55
Coal-----	3	58
Clay-----	56	114
Clay, sandy-----	8	122
Coal-----	5	127
Clay-----	8	135

143-092-26BCA
(Log from Ray Mohl)

Altitude:

Clay, gray-----	36	36
Coal-----	1	37
Clay, sandy, gray-----	5	42
Coal, water-----	7	49
Clay, gray-----	11	60

143-093-06DAD
(Log from K. J. Thompson)

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Sand and clay-----	38	38
	Rock-----	1	39
	Clay-----	16	55
	Coal (water)-----	9	64
	Clay-----	4	68
	Coal, dry-----	2	70

143-093-08DAA
NDSWC 8196

Altitude:

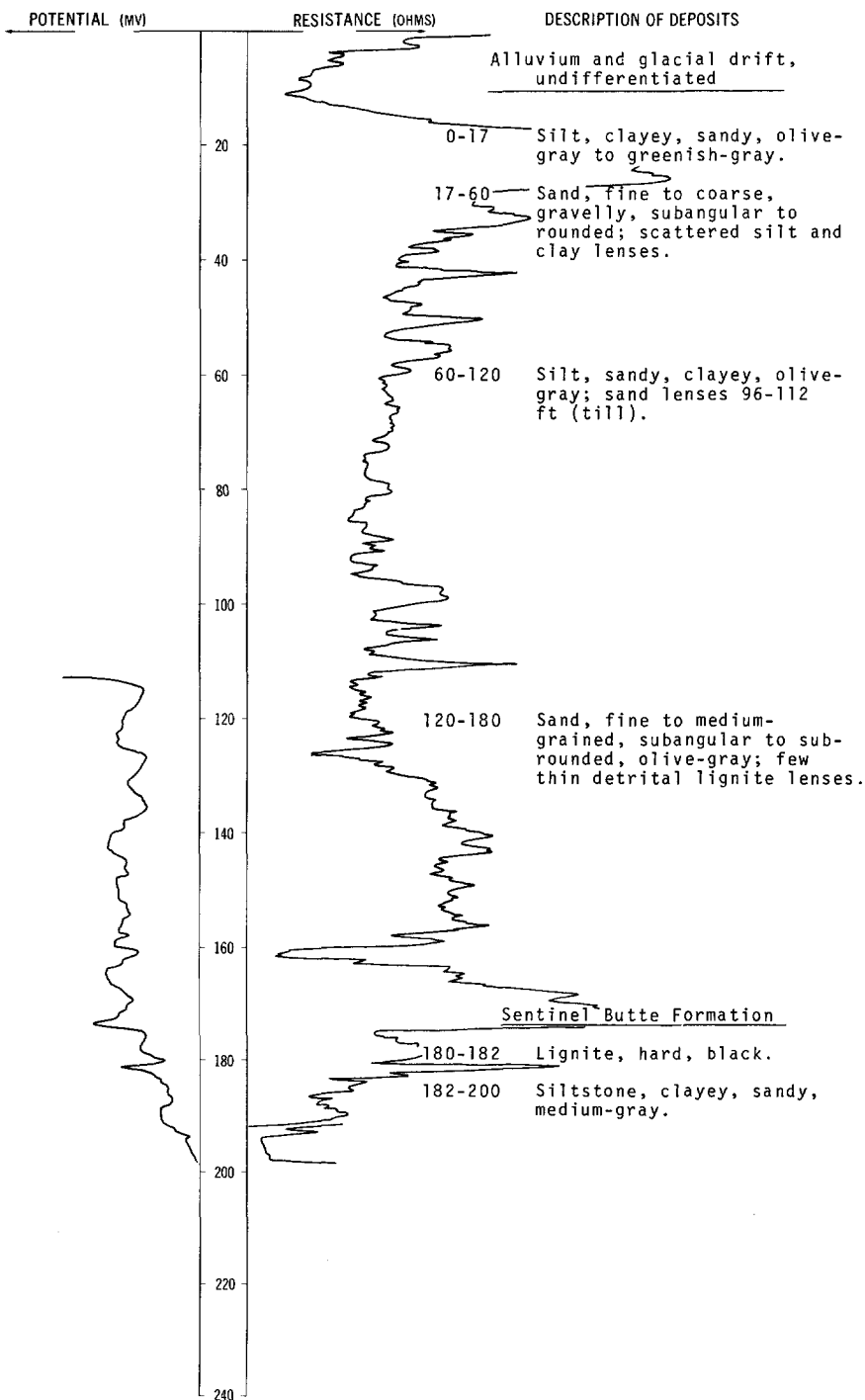
Alluvium and glacial drift, undifferentiated:			
	Topsoil, silty, clayey, grayish-black-----	1	1
	Clay, silty, sandy, gravelly, moderate-yellowish-brown (till)-----	31	32
	Clay, silty, sandy, pebbly, olive-gray (till)-----	26	58
	Sand, fine to medium, silty, clayey, subrounded-----	19	77
	Clay, sandy, silty, olive-gray-----	29	106
	Clay, silty, sandy, pebbly; occasional gravel lenses and lignite fragments (till)-----	82	188
Sentinel Butte Formation:			
	Shale, silty, hard, noncalcareous, carbonaceous, grayish-brown-----	8	196
	Sandstone, fine, silty, clayey, non-calcareous, medium-light-gray-----	4	200

LOCATION: 143-093-09AAD

DATE DRILLED: June 1974

ALTITUDE: 2161
(FT, MSL)

DEPTH: 200
(FT)



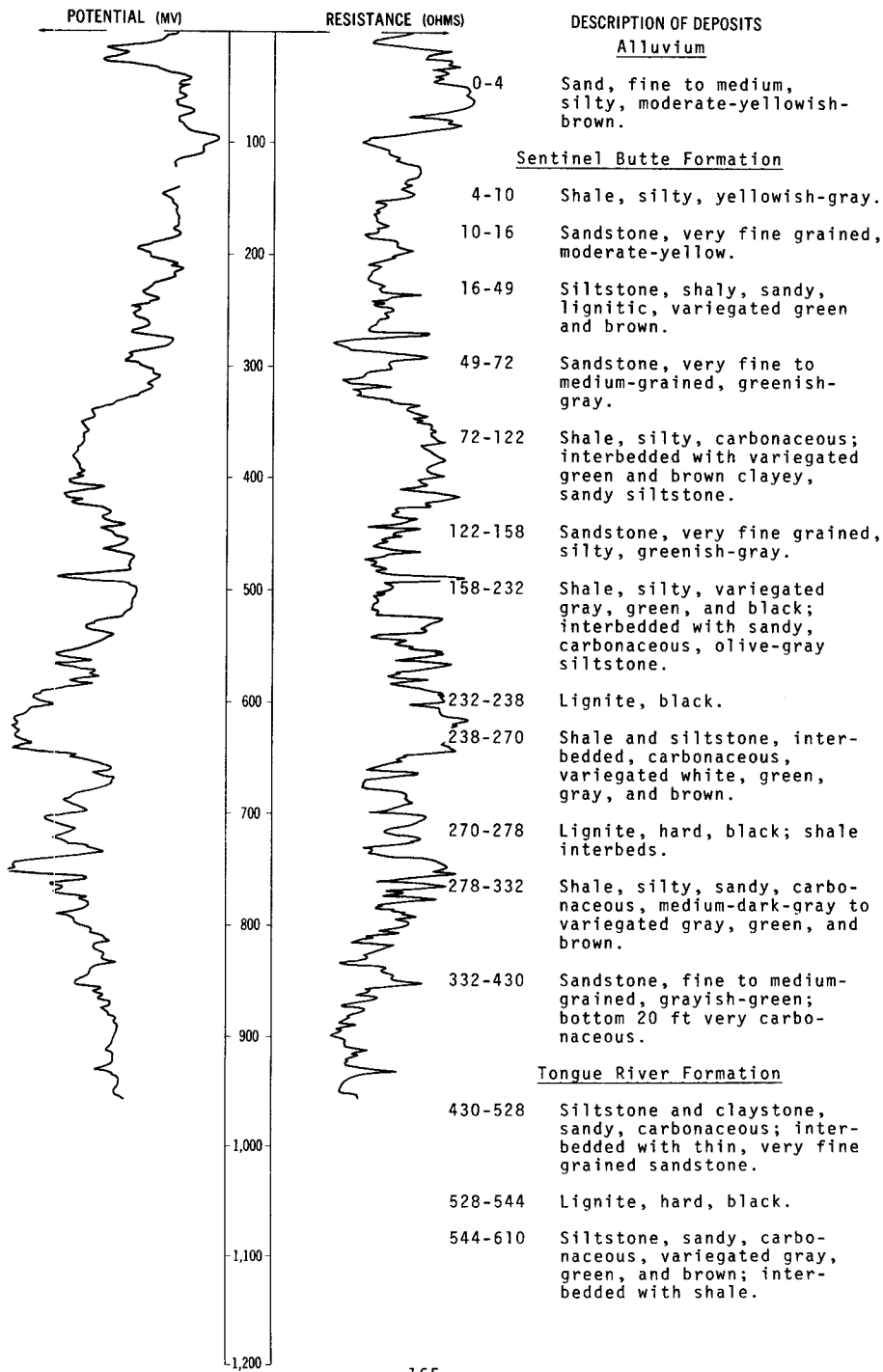
LOCATION: 143-093-09BCB

NDSWC 4600

DATE DRILLED: October 1973

ALTITUDE: 2133
(FT, MSL)

DEPTH: 965
(FT)



NDSWC 4600, Continued

LOCATION: 143-093-09BCB
 ALTITUDE: 2133
 (FT, MSL)

DATE DRILLED: October 1973
 DEPTH: 965
 (FT)

POTENTIAL (MV)	RESISTANCE (OHMS)	DESCRIPTION OF DEPOSITS
		<u>Tongue River Formation,</u> Continued
		610-650 Sandstone, very fine to fine-grained, greenish-gray.
1,300		
		650-682 Shale, silty, sandy, carbonaceous, greenish-gray to dusky-brown; lignite from 666 to 671 ft.
1,400		
		682-733 Sandstone, fine to medium-grained, dark-green; thin carbonaceous shale beds at 700 and 720 ft; lignite 730-733 ft.
1,500		
		733-742 Shale, carbonaceous, grayish-brown.
		742-759 Sandstone, medium-grained, dark-green.
1,600		
		<u>Cannonball-Ludlow Formations,</u> undifferentiated
		759-840 Shale, carbonaceous, interbedded with siltstone, sandstone, and lignite.
1,700		
		840-856 Sandstone, very fine grained, clayey, greenish-gray.
1,800		
		856-861 Lignite, hard, black.
		861-965 Claystone, carbonaceous, variegated green and gray; interbedded with siltstone.
1,900		
2,000		
2,100		
2,200		
2,300		
2,400		

NDSWC 4718

LOCATION: 143-093-09CBC

DATE DRILLED: June 1974

ALTITUDE: 2128

DEPTH: 140

(FT, MSL)

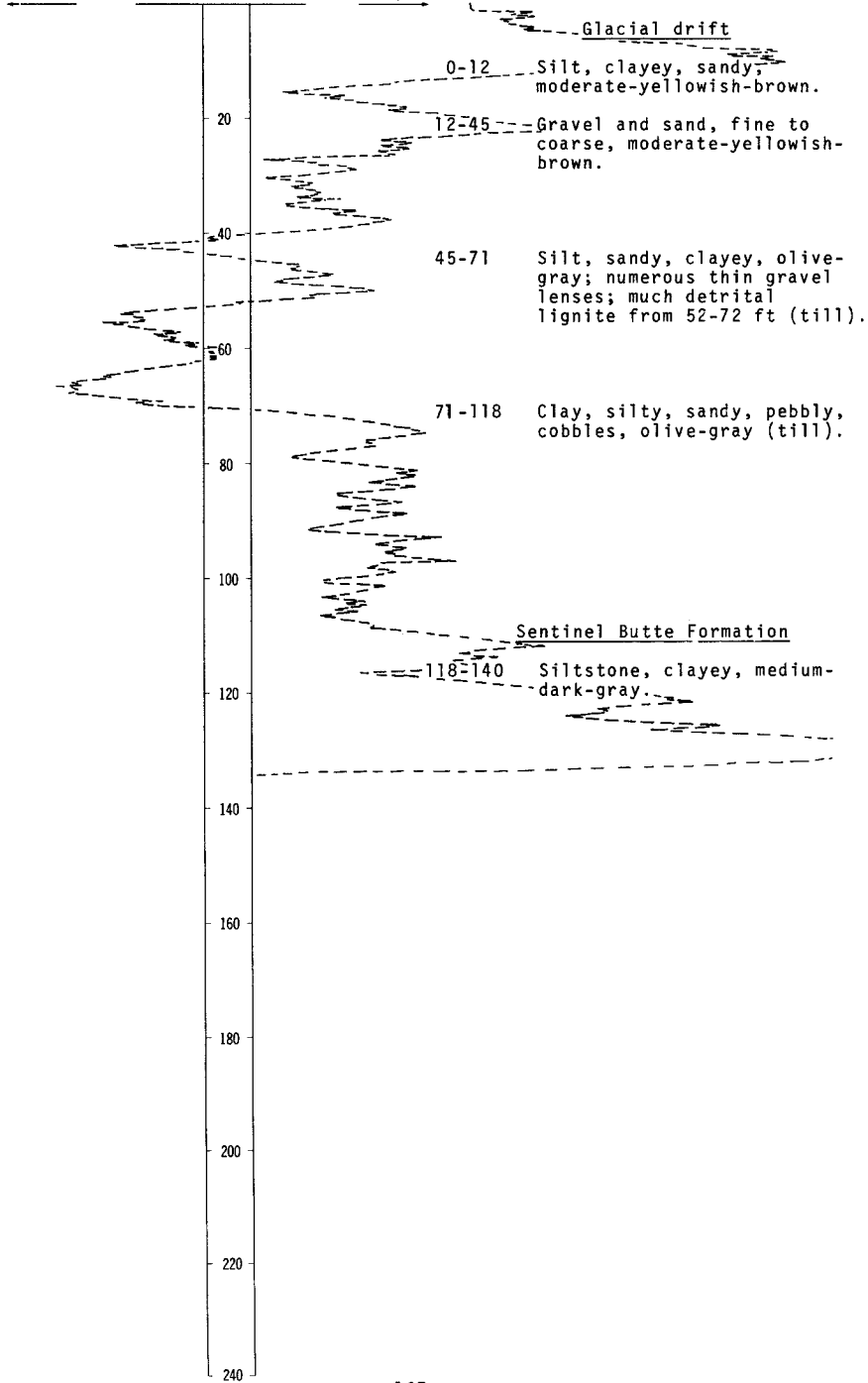
(FT)

Gamma log
(T.C. 4)

POTENTIAL (MV)

RESISTANCE (OHMS)

DESCRIPTION OF DEPOSITS

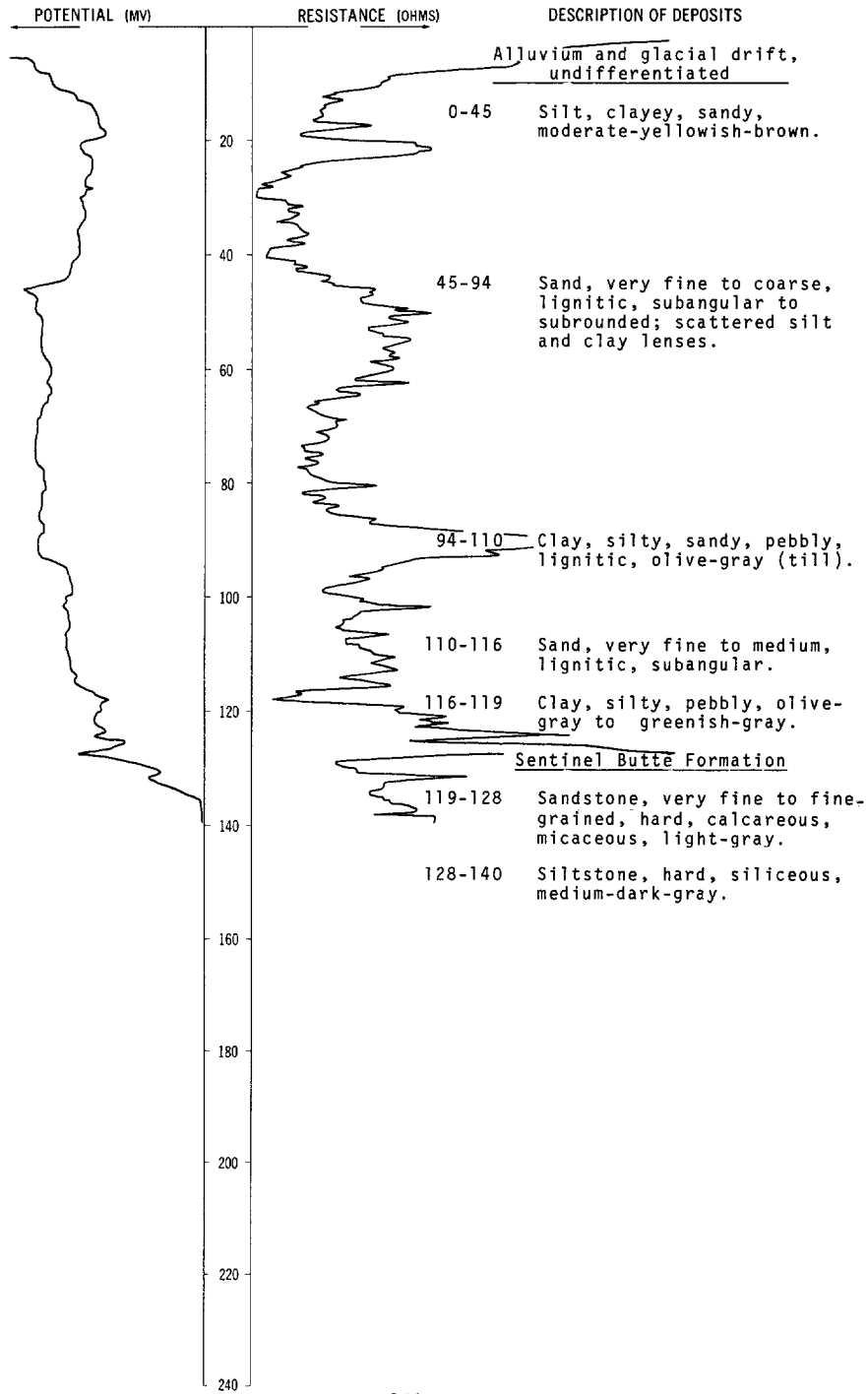


LOCATION: 143-093-10BCB

DATE DRILLED: June 1974

ALTITUDE: 2165
(FT, MSL)

DEPTH: 140
(FT)

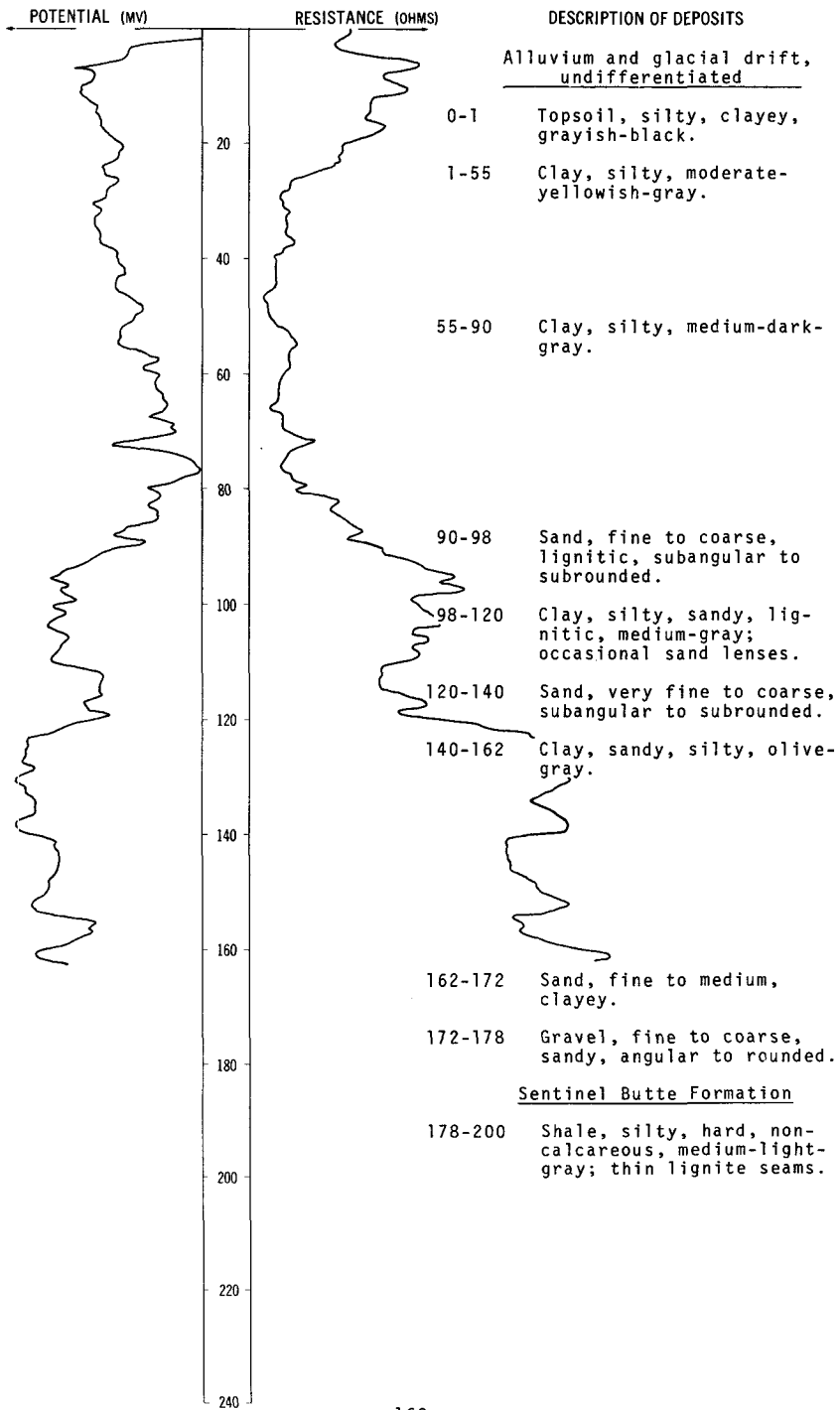


LOCATION: 143-093-14AAD

DATE DRILLED: November 1971

ALTITUDE: 2143
(FT, MSL)

DEPTH: 200
(FT)



143-093-31CCC
(Log from R. J. Thompson)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay-----	79	79
	Coal-----	.5	79.5
	Clay-----	10.5	90
	Coal-----	5	95
	Clay-----	3	98

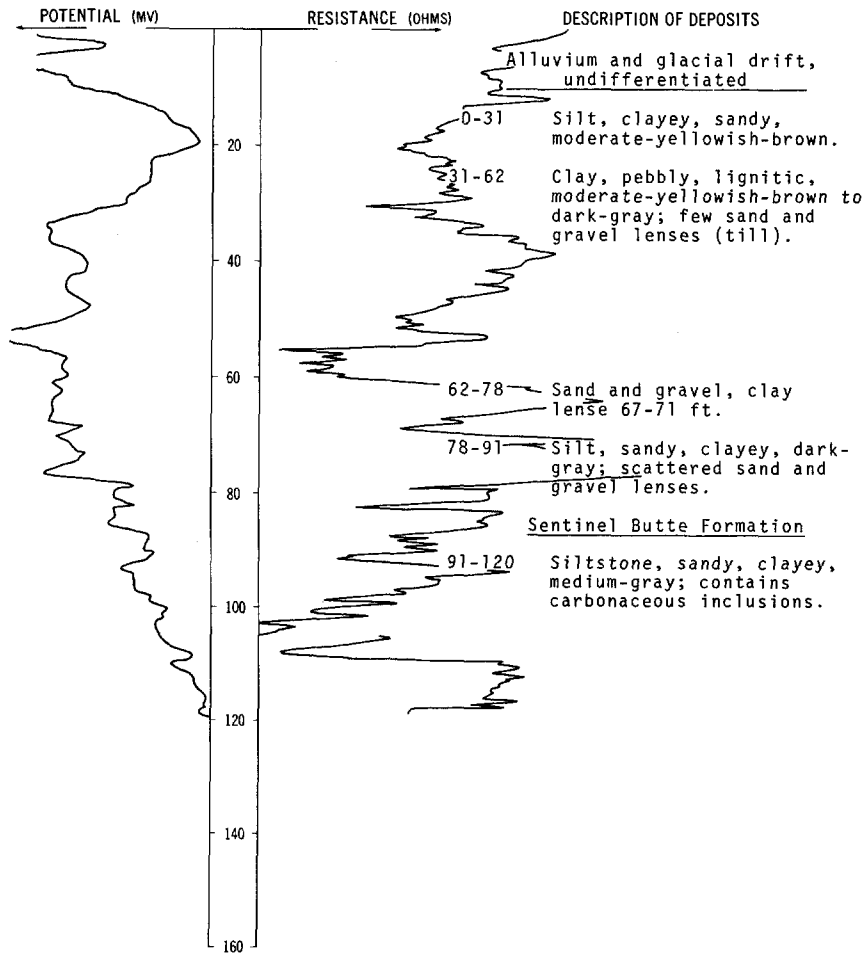
NDSWC 4717

LOCATION: 143-093-33BBB

DATE DRILLED: June 1974

ALTITUDE: 2078
(Ft, MSL)

DEPTH: 120
(Ft)



143-093-33BCC
(Log from K. J. Thompson)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Gravel-----	4	4
	Sand-----	9	13
	Clay, sandy-----	7	20
	Sand, coarse, gravelly-----	5	25
	Coal slack-----	2	27
	Clay-----	21	48
	Gravel, sandy-----	2	50
	Coal slack-----	1	51
	Clay, sandy-----	15	66
	Clay-----	11	77
	Coal-----	2	79
	Clay-----	6	85

143-093-33DDD
NDSWC 4621

Altitude: 2032 ft

Alluvium and glacial drift, undifferentiated:			
	Topsoil, sandy, dusky-brown-----	2	2
	Silt, yellowish-gray-----	3	5
	Clay, silty, moderate-yellowish-brown-----	3	8
	Clay, olive-gray; contains thin sand and gravel lenses; gravel composed largely of "scoria"-----	11	19
	Sand, medium to coarse, lignitic, subrounded, medium-gray-----	18	37
	Gravel, fine to medium, sandy; numerous clay lenses; gravel composed largely of "western-type gravel" and abundant lignite-----	10	47
Sentinel Butte Formation:			
	Sandstone, fine-grained, clayey, light-green-----	3	50
	Shale, hard, medium-gray-----	8	58
	Siltstone, lignitic, carbonaceous, medium-gray; interbedded with thin clay and sand beds-----	42	100

143-094-05BCB
(Log from R. J. Thompson)

Altitude:

	Sand and gravel-----	5	5
	Sand-----	27	32
	Clay-----	29	61
	Coal (water)-----	2	63
	Clay-----	7	70

143-094-08CCC2
(Log from K. J. Thompson)

Altitude:

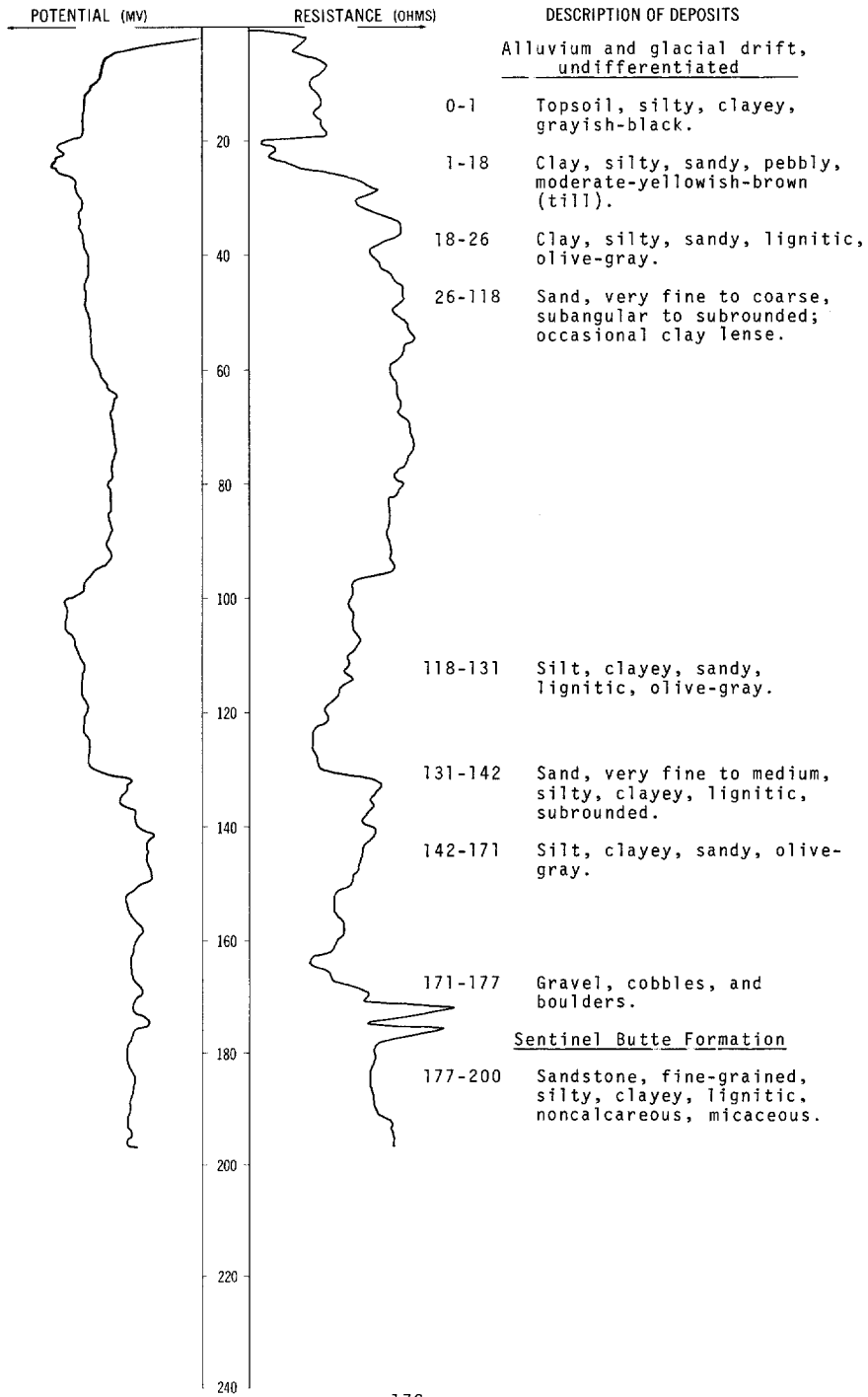
	Clay, sandy-----	18	18
	Gravel-----	2	20
	Sand (water)-----	62	82
	Gravel-----	--	--

LOCATION: 143-094-17BBA

DATE DRILLED: October 1971

ALTITUDE: 2110
(FT, MSL)

DEPTH: 200
(FT)



143-094-19CBC
NDSWC 4682

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Alluvium:	Clay, sandy, silty, dark-yellowish-brown---	10	10
	Sand, fine to coarse, clayey, silty, subrounded, dark-yellowish-brown-----	5	15
	Gravel, fine to coarse, sandy-----	2	17
	Lignite, detrital-----	1	18
Sentinel Butte Formation:	Siltstone, sandy, medium-gray-----	22	40

143-094-19DCD2
NDSWC 8199

Altitude: 2115 ft

Glacial drift:	Topsoil, silty, clayey, grayish-black-----	1	1
	Clay, silty, sandy, moderate-yellowish-brown; scattered pebbles (till)-----	19	20
	Sand, very fine to medium, lignitic, subrounded-----	43	63
	Gravel, fine to coarse, sandy, angular to well rounded-----	10	73
	Clay, silty, olive-gray-----	6	79
	Gravel, fine to coarse, sandy, clayey, angular to rounded-----	11	90
	Cobbles and boulders-----	2	92
Sentinel Butte Formation:	Shale, hard, noncalcareous, medium-light-gray; contains carbonaceous laminae-----	8	100

143-094-20BCC
NDSWC 8198

Altitude: 2090 ft

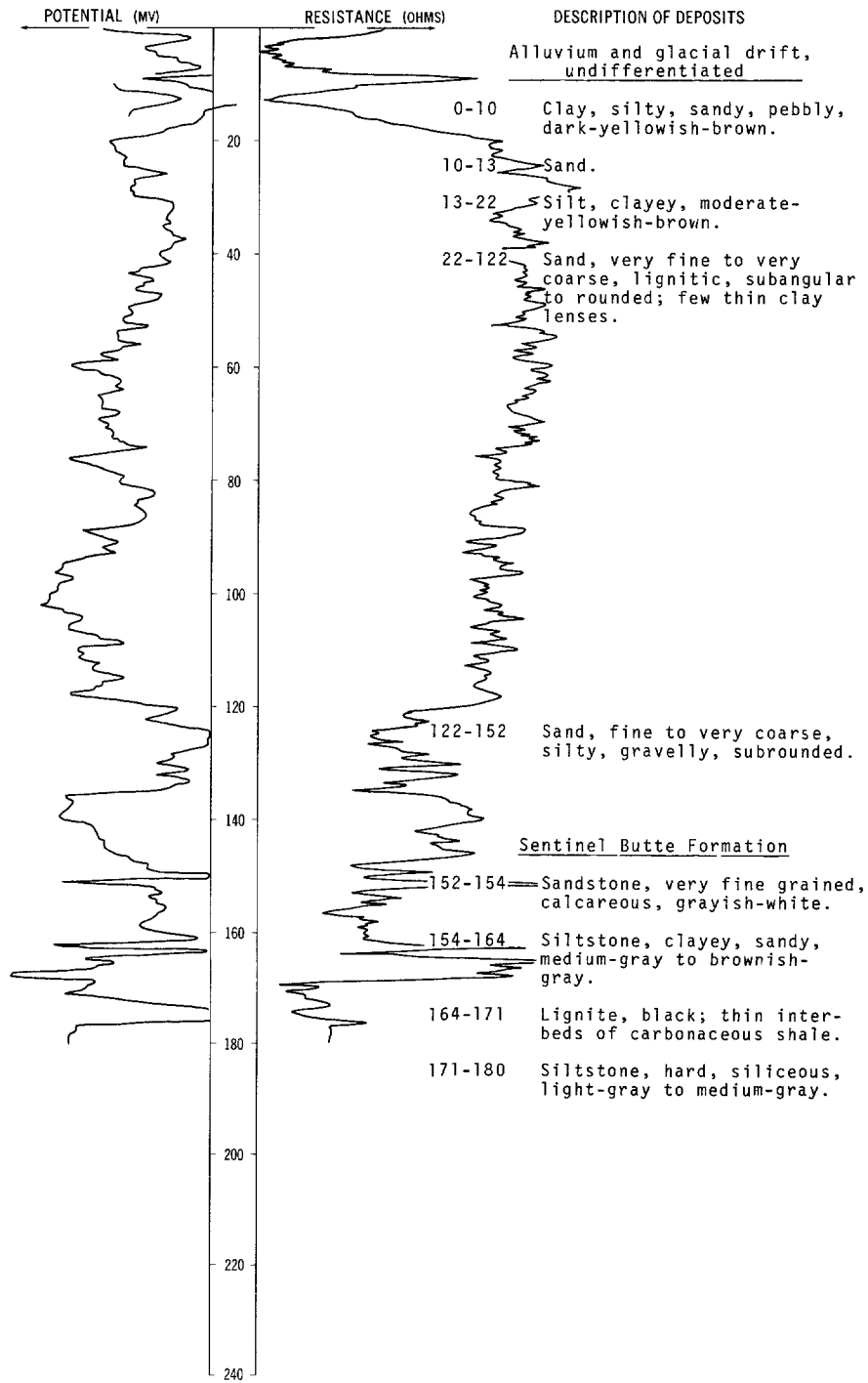
Alluvium and glacial drift, undifferentiated:	Topsoil, silty, clayey, sandy, grayish-black-----	1	1
	Clay, silty, sandy, moderate-yellowish-brown-----	5	6
	Gravel, fine to coarse, sandy, angular to well rounded-----	13	19
Sentinel Butte Formation:	Shale, silty, calcareous, medium-light-gray to light-greenish-gray; few lignite streaks-----	41	60

LOCATION: 143-094-20DCC

DATE DRILLED: June 1974

ALTITUDE: 2097
(FT, MSL)

DEPTH: 180
(FT)



143-094-21CCA1
(Log from Mann Drilling Co.)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand-----	16	16
	Gravel-----	8	24
	Clay-----	35	59
	Clay, sandy-----	22	81
	Coal-----	8	89
	Clay-----	--	

143-094-23BAC
NDSWC 4685

Altitude:

Alluvium:	Clay, silty, sandy, dark-yellowish-brown---	6	6
	Sand, very fine to coarse, silty, clayey, lignitic-----	13	19
Sentinel Butte Formation:	Siltstone, medium-light-gray-----	21	40

143-094-23BCD
NDSWC 4686

Altitude:

Alluvium:	Clay, sandy, silty, dusky-yellow-----	7	7
	Sand, fine to very coarse, lignitic, subrounded-----	11	18
	Clay, sandy, dark-gray-----	1	19
Sentinel Butte Formation:	Siltstone, clayey, medium-light-gray to greenish-gray; few thin lignite seams----	21	40

143-094-28AAB
(Log from Mann Drilling Co.)

Altitude:

	Clay, sandy, brown-----	14	14
	Clay, gray-----	8	22
	Lignite-----	1	23
	Clay, gray-----	61.5	84.5
	Lignite-----	1.5	86

143-094-28BBB
NDSWC 4684

Altitude: 2089 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Alluvium	and glacial drift, undifferentiated: Clay, silty, sandy, dark-yellowish-brown; scattered pebbles-----	10	10
	Sand, very fine to very coarse, gravelly, subangular to rounded-----	16	26
	Gravel, fine to coarse, sandy, sub- rounded-----	4	30
Sentinel Butte Formation:	Siltstone, clayey, greenish-gray-----	30	60

143-094-31ADA
NDSWC 8200

Altitude: 2111 ft

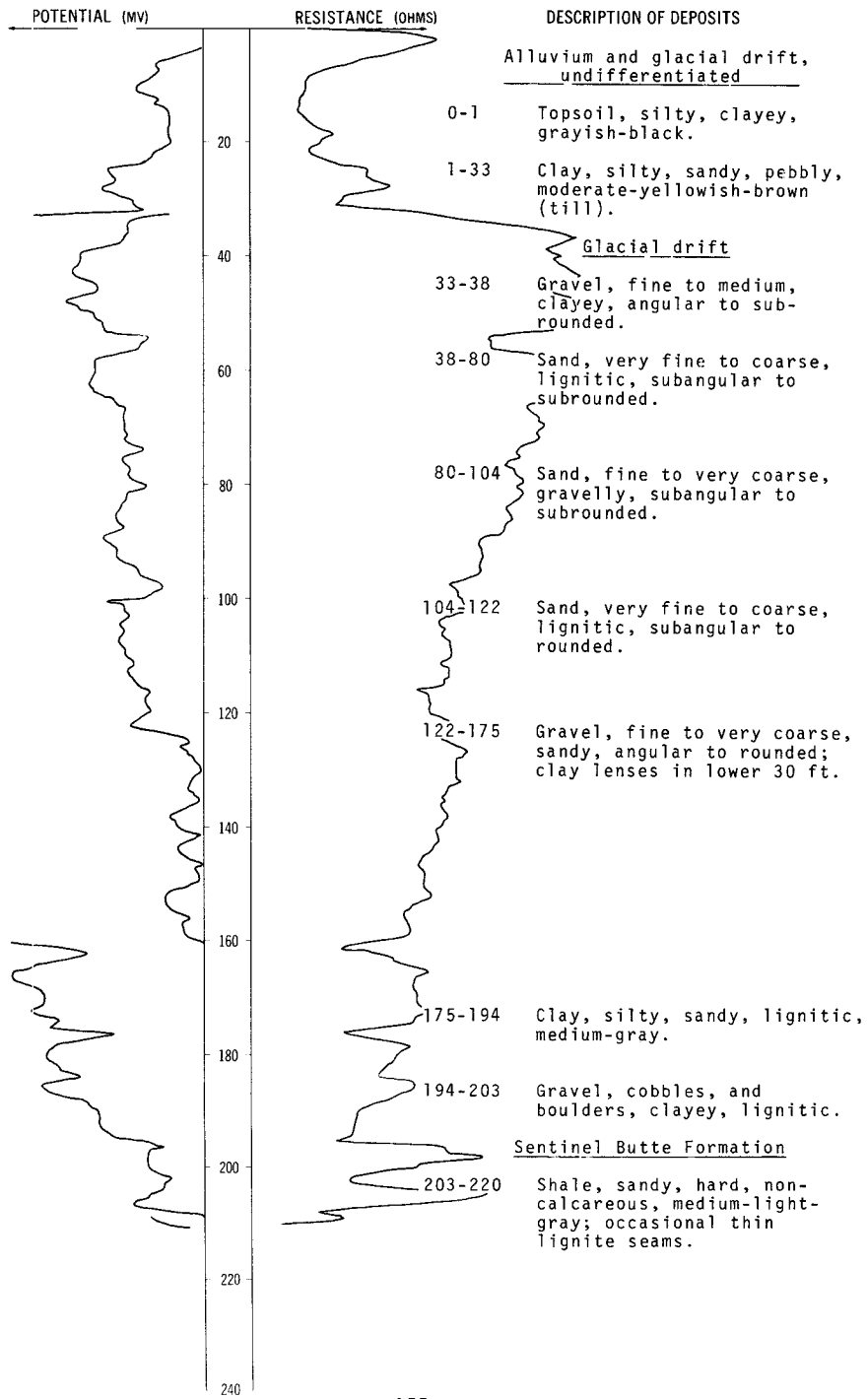
Alluvium	and glacial drift, undifferentiated: Topsoil, silty, clayey, grayish-black-----	1	1
	Clay, silty, sandy, moderate-yellowish- brown-----	12	13
	Sand, very fine to medium, silty, clayey, subrounded-----	6	19
	Clay, silty, olive-gray; isolated sand lenses-----	13	32
	Sand, very fine to coarse, subangular to subrounded-----	28	60
	Sand, very fine to coarse, clayey, sub- angular to subrounded-----	51	111
	Gravel, fine to coarse, sandy, angular to subrounded-----	4	115
	Sand, very fine to coarse, gravelly, subangular to subrounded-----	25	140
	Clay, silty, medium-gray-----	9	149
	Boulder, sandstone, light-gray-----	1	150
	Sand, fine to very coarse, clayey, gravelly, subangular to subrounded-----	29	179
	Clay, sandy, silty, olive-black-----	9	188
	Clay, silty, sandy, medium-gray-----	12	200
Sentinel Butte Formation:	Shale, silty, hard, calcareous, medium- light-gray-----	11	211
	Sandstone, fine-grained, micaceous, calcareous-----	9	220

LOCATION: 143-094-32CCC

DATE DRILLED: October 1971

ALTITUDE: 2130
(FT, MSL)

DEPTH: 220
(FT)



143-095-03CBB
(Log from K. J. Thompson)

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Topsoil, scoria-----	44	44
	Coal, dry-----	1	45
	Clay-----	10	55
	Coal, dry-----	1	56
	Clay-----	1	57
	Coal-----	2	59
	Clay-----	19	78
	Coal (water)-----	5	83
	Clay-----	17	100

143-095-06BDD
NDSWC 4677

Altitude:

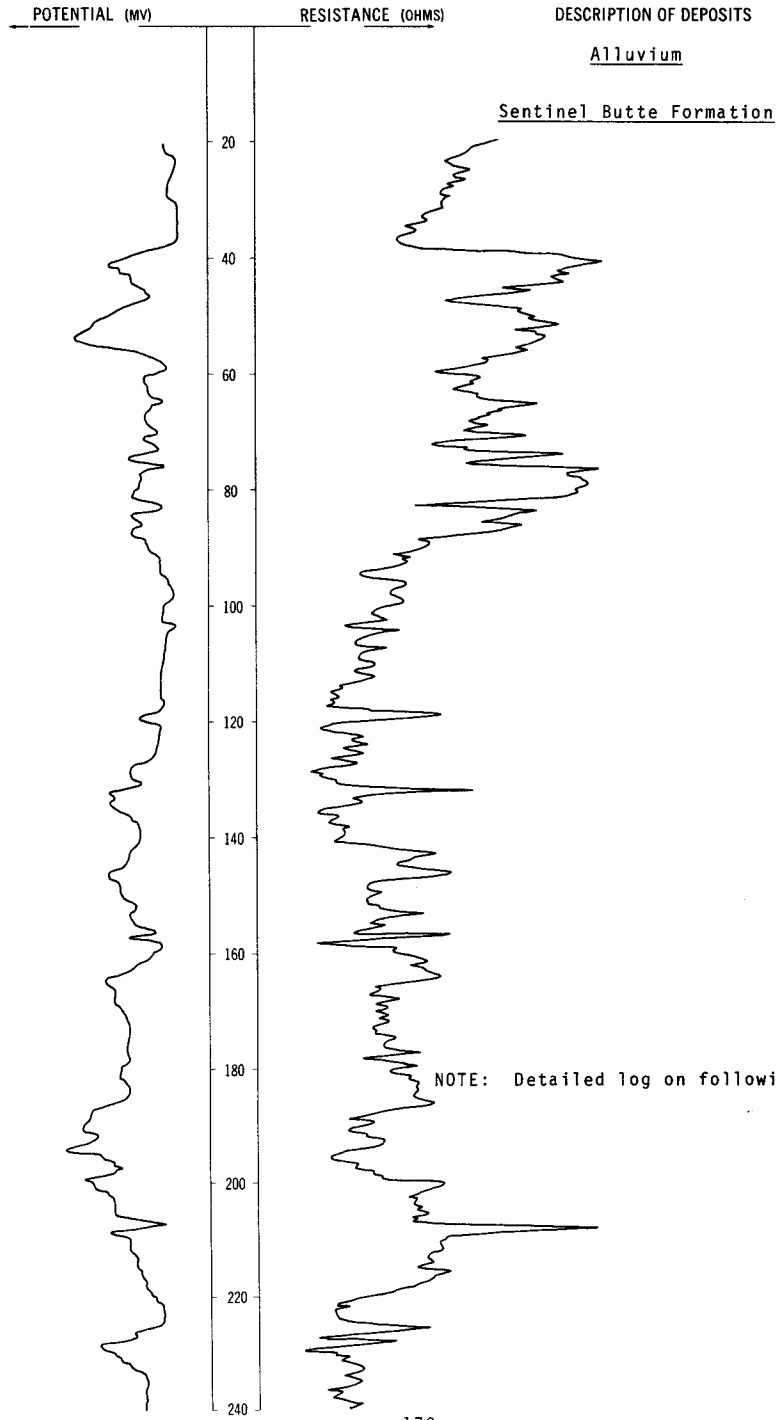
Alluvium:	Clay, silty, sandy, moderate-yellowish-brown-----	11	11
	Sand, fine to very coarse, gravelly, subangular to rounded, moderate-yellowish-brown-----	11	22
Sentinel Butte Formation:	Siltstone, clayey, medium-gray-----	18	40

LOCATION: 143-095-06CAB

DATE DRILLED: June 1974

ALTITUDE: 2218
(FT, MSL)

DEPTH: 400
(FT)



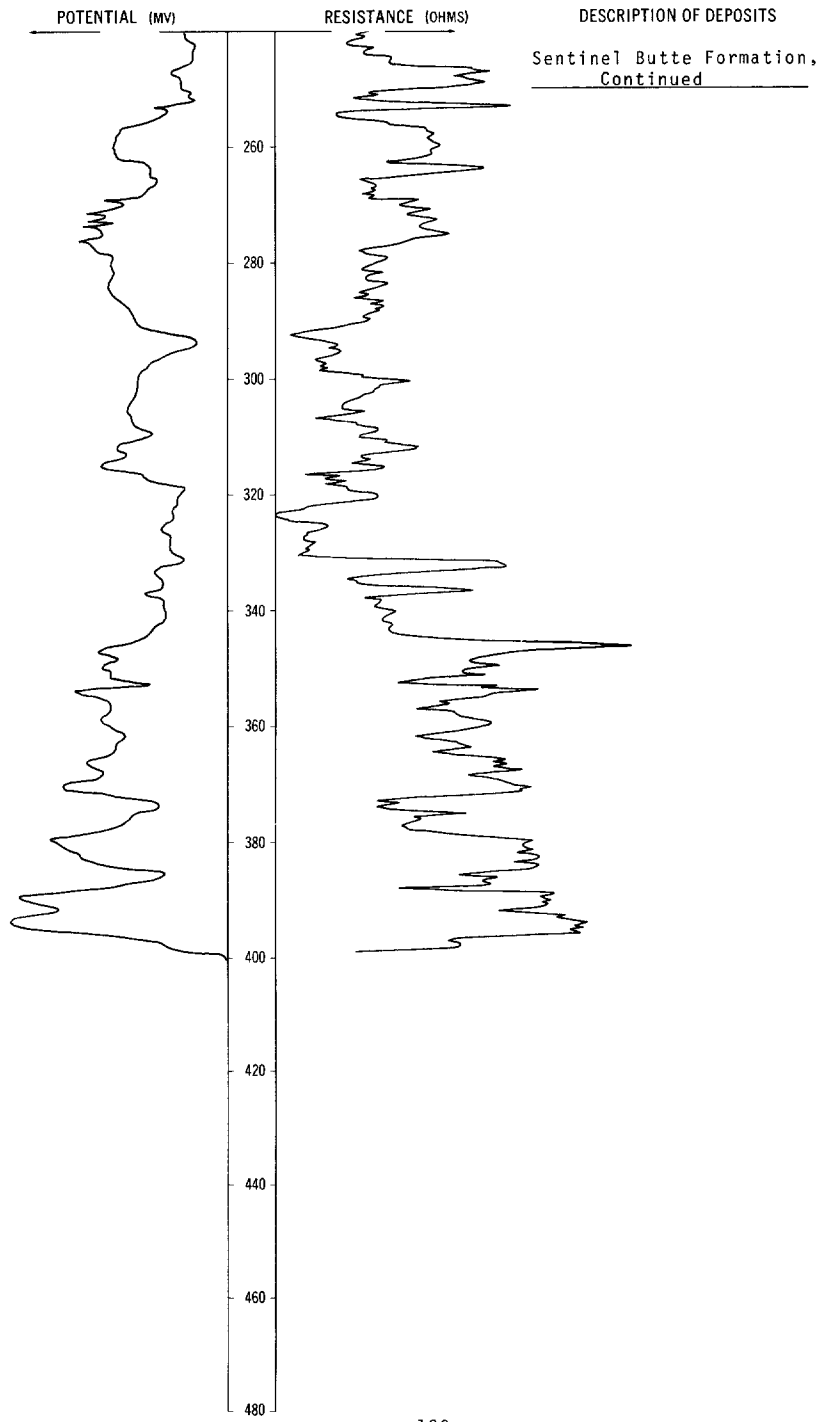
NDSWC 4678, Continued

LOCATION: 143-095-06CAB

DATE DRILLED: June 1974

ALTITUDE: 2218
(FT, MSL)

DEPTH: 400
(FT)



143-095-06CAB, Continued
NDSWC 4678

Altitude: 2218 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Alluvium:			
	Sand, medium to very coarse, gravelly, subangular to subrounded, pale-yellowish-brown-----	7	7
Sentinel Butte Formation:			
	Sandstone, very fine to fine-grained, micaceous, moderate-yellowish-brown-----	7	14
	Siltstone, medium-gray-----	9	23
	Lignite, hard, brownish-black-----	4	27
	Siltstone, sandy, calcareous, light-gray; contains thin lignite seams-----	34	61
	Lignite, hard, shaly, brownish-black-----	9	70
	Siltstone, calcareous, medium-gray-----	18	88
	Claystone, silty, light-brownish-gray-----	72	160
	Claystone, sandy, carbonaceous, light-greenish-gray-----	5	165
	Siltstone, medium-gray; interbedded with sandy claystone-----	27	192
	Sandstone, fine-grained, hard, light-gray--	2	194
	Sandstone, very fine to fine-grained, clayey, subangular, micaceous, greenish-gray-----	14	208
	Shale, silty, carbonaceous, brownish-gray--	12	220
	Claystone, medium-gray; contains sandstone concretions-----	26	246
	Sandstone, very fine to fine-grained, subangular to subrounded, greenish-gray--	4	250
	Siltstone, hard, greenish-gray to brownish-gray; contains thin lignite seams-----	6	256
	Sandstone, very fine grained, clayey, silty, greenish-gray-----	10	266
	Claystone, silty, medium-gray-----	58	324
	Siltstone, clayey, medium-light-gray-----	22	346
	Limestone, hard, light-gray-----	3	349
	Siltstone, sandy, calcareous, light-gray---	51	400

143-095-07CBB
(Log from Heiser Well Drilling)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand-----	18	18
	Coal-----	2	20
	Clay, heavy-----	10	30
	Coal-----	2	32

143-095-32ACB
(Log from Mann Drilling Co.)

Altitude:

	Clay, sandy, buff-----	8	8
	Gravel-----	1	9
	Clay, gray-----	19	28
	Lignite-----	8	36
	Clay, gray-----	13	49
	Lignite-----	1	50
	Clay-----	180	230
	Sand-----	40	270

143-095-33AAD
NDSWC 4681

Altitude: 2163 ft

Alluvium:

	Clay, silty, sandy, moderate-yellowish-brown-----	5	5
	Sand, very fine to coarse, gravelly, lignitic-----	25	30

Sentinel Butte Formation:

	Claystone, sandy, medium-gray-----	10	40
--	------------------------------------	----	----

143-096-03ABA
NDSWC 4679

Altitude:

Alluvium:

	Clay, silty, sandy, moderate-yellowish-brown-----	2	2
	Sand, very fine to very coarse, clayey, silty, subangular-----	8	10

Sentinel Butte Formation:

	Sandstone, very fine to fine-grained, silty, medium-bluish-gray-----	8	18
	Claystone, silty, sandy, medium-gray-----	22	40

143-096-12ADB
(Log from Wallace Beaudoin)

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Topsoil-----	1	1
	Sand, yellow-----	29	30
	Clay, blue-----	20	50
	Coal-----	3	53
	Clay, blue-----	27	80
	Coal, water seepage-----	4	84
	Clay, blue-----	16	100
	Coal-----	2	102
	Clay, sandy-----	33	135
	Coal, water-bearing-----	2	137
	Clay-----	13	150

143-096-12ADD
(Log from R. J. Thompson)

Altitude:

	Topsoil and sand-----	13	13
	Clay-----	11.5	24.5
	Rock-----	1	25.5
	Clay-----	8.5	44
	Coal with clay streaks (water)-----	18	62
	Clay-----	20	82
	Rock-----	2.5	84.5
	Clay-----	12.5	97
	Coal-----	1	98
	Clay-----	5	103
	Rock-----	1	104
	Clay-----	29.5	133.5
	Coal-----	1	134.5
	Sand (red water)-----	15.5	150
	Clay-----	6	156
	Rock-----	1	157
	Clay-----	38.5	195.5
	Coal (red water)-----	3.5	199
	Clay-----	5	204
	Dry hole		

143-096-21BDD
(Log from K. J. Thompson)

Altitude:

	Topsoil-----	1	1
	Sand, yellow-----	79	80
	Sandstone-----	30	110
	Sand, blue-----	15	125
	No sample-----	25	150
	Coal-----	1	151
	Clay-----	16	167

143-096-22BBC
(Log from Wallace Beaudoin)

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Topsoil-----	1	1
	Sand, yellow-----	94	95
	Sand and gravel-----	5	100
	Clay-----	50	150
	Coal-----	1	151
	Clay-----	9	160
	Clay, sandy-----	5	165
	Sand, blue (water)-----	15	180
	Coal (water)-----	1	181
	Clay-----	3	184

143-096-25DCC
(Log from Mann Drilling Co.)

Altitude:

	Sand, brown-----	14	14
	Clay, gray-----	29	43
	Sand, oxidized-----	43	86
	Clay, sandy, gray-----	29	115
	Lignite-----	1	116
	Clay, brown-----	12	128
	Lignite-----	10	138
	Clay-----	2	140

143-096-27DBB
(Log from Mann Drilling Co.)

Altitude:

	Sand, fine, brown-----	90	90
	Lignite-----	20	110
	Clay, gray-----	40	150
	Sand-----	25	175

143-096-32DBA
(Log from Mann Drilling Co.)

Altitude:

	Clay, sandy-----	17	17
	Clay-----	26	43
	Rock-----	1	44
	Clay-----	32	76
	Coal, soft-----	8	84
	Coal, hard-----	6	90

143-096-33BCB
NDSWC 8202

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
Alluvium and glacial drift, undifferentiated:			
	Topsoil, silty, clayey, grayish-black-----	1	1
	Clay, silty, sandy, moderate-yellowish-brown-----	20	21
	Sand, very fine to medium, silty, lignitic, subangular to subrounded-----	5	26
	Clay, silty, dark-yellowish-brown-----	3	29
	Gravel, fine to coarse, clayey, angular to subrounded-----	3	32
Sentinel Butte Formation:			
	Siltstone, clayey, hard, calcareous-----	28	60

143-096-33CBB
NDSWC 8203

Altitude:

Glacial drift:			
	Topsoil, silty, clayey, grayish-black-----	1	1
	Clay, silty, sandy, pebbly, moderate-yellowish-brown (till)-----	20	21
	Sand, very fine to medium, silty, clayey, subangular-----	4	25
Sentinel Butte Formation:			
	Siltstone, clayey, hard, moderate-yellowish-brown-----	19	44
	Siltstone, clayey, sandy, hard, calcareous-----	36	80

143-097-05DAC
(Log from R. J. Thompson)

Altitude:

Topsoil and clay-----	25	25
Coal, slack-----	1	26
Clay, sandy-----	12	38
Sand-----	30	68
Sand, blue-----	11	79
Rock-----	1	80
Sand, blue-----	13	93
Rock-----	.5	93.5
Clay-----	1.5	95
Coal-----	.5	95.5
Clay, black-----	3	98.5
Coal-----	1.5	100
Clay-----	2	102

144-091-05ADA
NDSWC 8214

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
Alluvium and glacial drift, undifferentiated:			
	Topsoil, silty, sandy, brownish-black-----	1	1
	Sand, fine to very coarse, silty, gravelly, lignitic-----	9	10
	Gravel, fine to very coarse, sandy, angular to subrounded-----	8	18
Sentinel Butte Formation:			
	Shale, noncalcareous, medium-gray to light-greenish-gray-----	22	40

144-091-10ACD
(Log from Opp Drilling)

Altitude:

Topsoil, black-----	1	1
Clay, black to brown-----	3	4
Gravel-----	1	5
Sand, yellow-----	17	22
Sand, blue-green (water)-----	6	28

144-091-10BDB
(Log from Opp Drilling)

Altitude:

Sand, dark-----	4	4
Gravel-----	3	7
Sand, gray-----	5	12
Sand, yellow-----	10	22
Rock-----	3	25
Clay, blue-----	18	43
Coal (water)-----	2	45

144-091-10CAA3
(Log from E. A. Bodin)

Altitude:

Topsoil, gray-----	3	3
Clay, yellow-----	19	22
Clay, sandy, yellow-----	32	54
Coal slack-----	1	55
Sand, fine (water-bearing)-----	2	57
Coal-----	9	66
Shale, gray-----	2	68

144-091-10CBB
NDSWC 4703

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Glacial drift:			
	Sand, fine to very coarse, gravelly, subangular to rounded-----	5	5
Sentinel Butte Formation:			
	Sandstone, fine-grained, clayey, subangular, moderate-yellowish-brown-----	5	10
	Siltstone, clayey, moderate-yellowish-brown-----	6	16
	Siltstone, clayey, medium-gray-----	16	32
	Lignite, hard, black-----	6	38
	Siltstone, clayey, medium-gray to brownish-gray; thin lignite seams-----	7	45
	Siltstone, clayey, greenish-gray-----	15	60

144-091-10CCB
(Log from Opp Drilling)

Altitude:

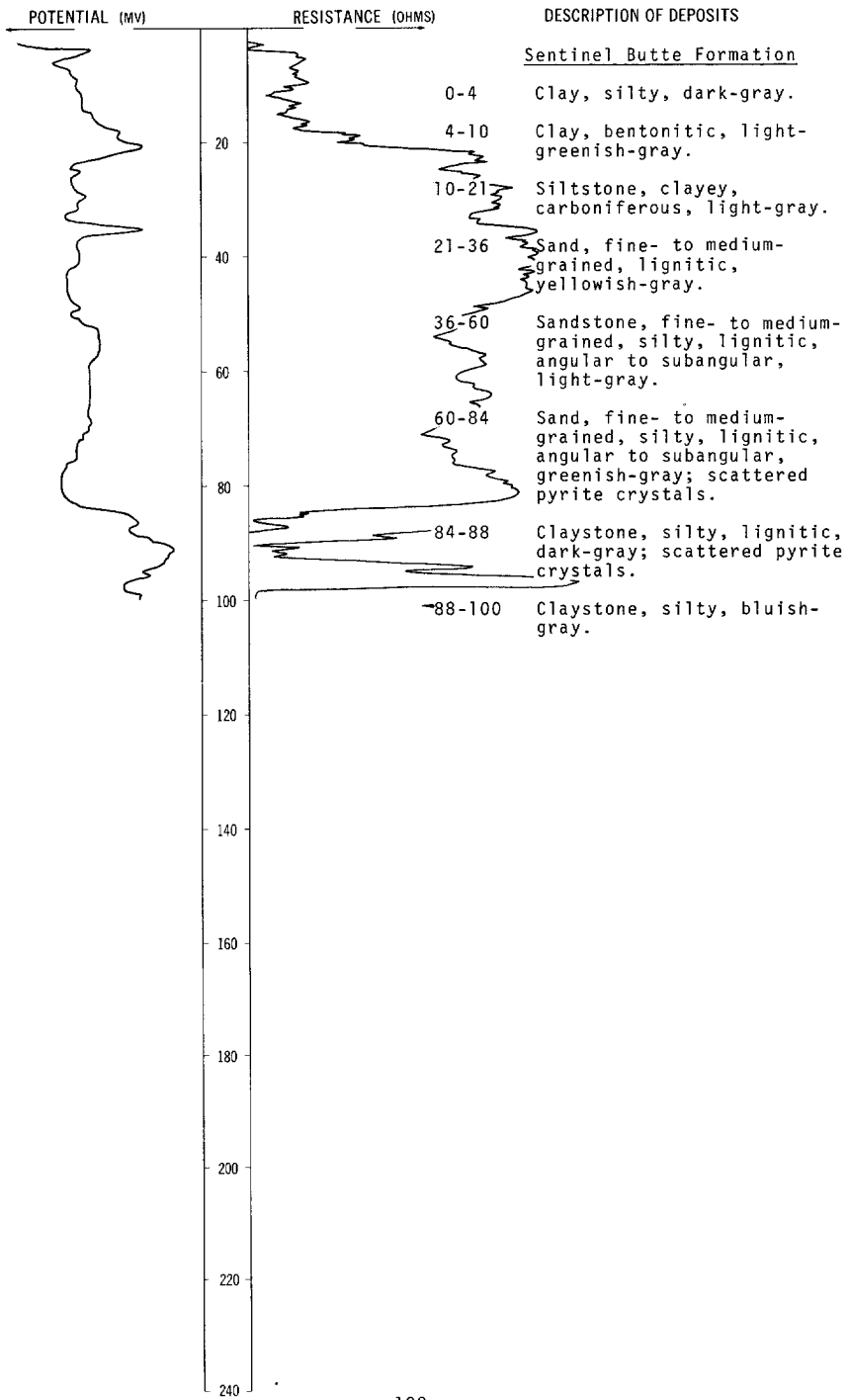
Topsoil, black-----	2	2
Clay, dark-----	8	10
Clay, yellow-----	15	25
Sand, yellow-----	24	49
Sand, blue (water)-----	7	56
Gravel-----	2	58

LOCATION: 144-091-11BBB

DATE DRILLED: June 1974

ALTITUDE:
(FT, MSL)

DEPTH: 100
(FT)



144-091-11BCA1
(Log from K. J. Thompson)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	No sample-----	10	10
	Sand and clay-----	46	56
	Sand and gravel (water)-----	16	72
	Sand-----	2	74

144-091-11BCA2
(Log from K. J. Thompson)

Altitude:

	Clay-----	20	20
	Sand, red, dry-----	5	25
	Sand and gravel (water)-----	20	45

144-091-11CCC
NDSWC 4706

Altitude:

Sentinel Butte Formation:			
	Silt, sandy, clayey, moderate-yellowish-brown-----	10	10
	Siltstone, clayey, carbonaceous, dark-yellowish-brown-----	7	17
	Lignite, hard, black-----	3	20
	Siltstone, clayey, carbonaceous, greenish-gray-----	6	26
	Lignite, black-----	1	27
	Sand, very fine to fine-grained, silty, angular to subangular, carbonaceous; scattered pyrite crystals-----	8	35
	Siltstone, clayey, sandy, carbonaceous, olive-gray; scattered pyrite crystals-----	41	76
	Lignite, black-----	4	80

144-091-11DDD
NDSWC 4704

Altitude:

Alluvium:			
	Sand, fine to very coarse, subangular, moderate-reddish-brown-----	13	13
Sentinel Butte Formation:			
	Sandstone, very fine to fine-grained, lignitic, subangular to subrounded, moderate-yellowish-brown-----	33	46
	Sandstone, very fine to medium-grained, lignitic, angular to subangular, medium-bluish-gray; contains numerous pyrite crystals-----	26	72
	Siltstone, brownish-gray; interbedded with brown carbonaceous shale-----	7	79
	Lignite, hard, black-----	4	83
	Siltstone, medium-gray-----	2	85
	Lignite, hard, black-----	2	87
	Siltstone, medium-dark-gray; lignite 98-99 ft-----	13	100

144-091-15CAD1
(Log from K. J. Thompson)

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Clay-----	44	44
	Rock-----	2	46
	Clay-----	23	69
	Coal (seep)-----	5	74
	Clay-----	7	81
	Clay, coal streak-----	2	83
	Coal (dry)-----	1	84
	Clay-----	40	124
	Coal (water)-----	8	132
	Clay-----	5	137
	Coal(?)-----	2	139
	Clay-----	6	145

144-091-23D8B
(Log from Frank Bandy)

Altitude: 1963 ft

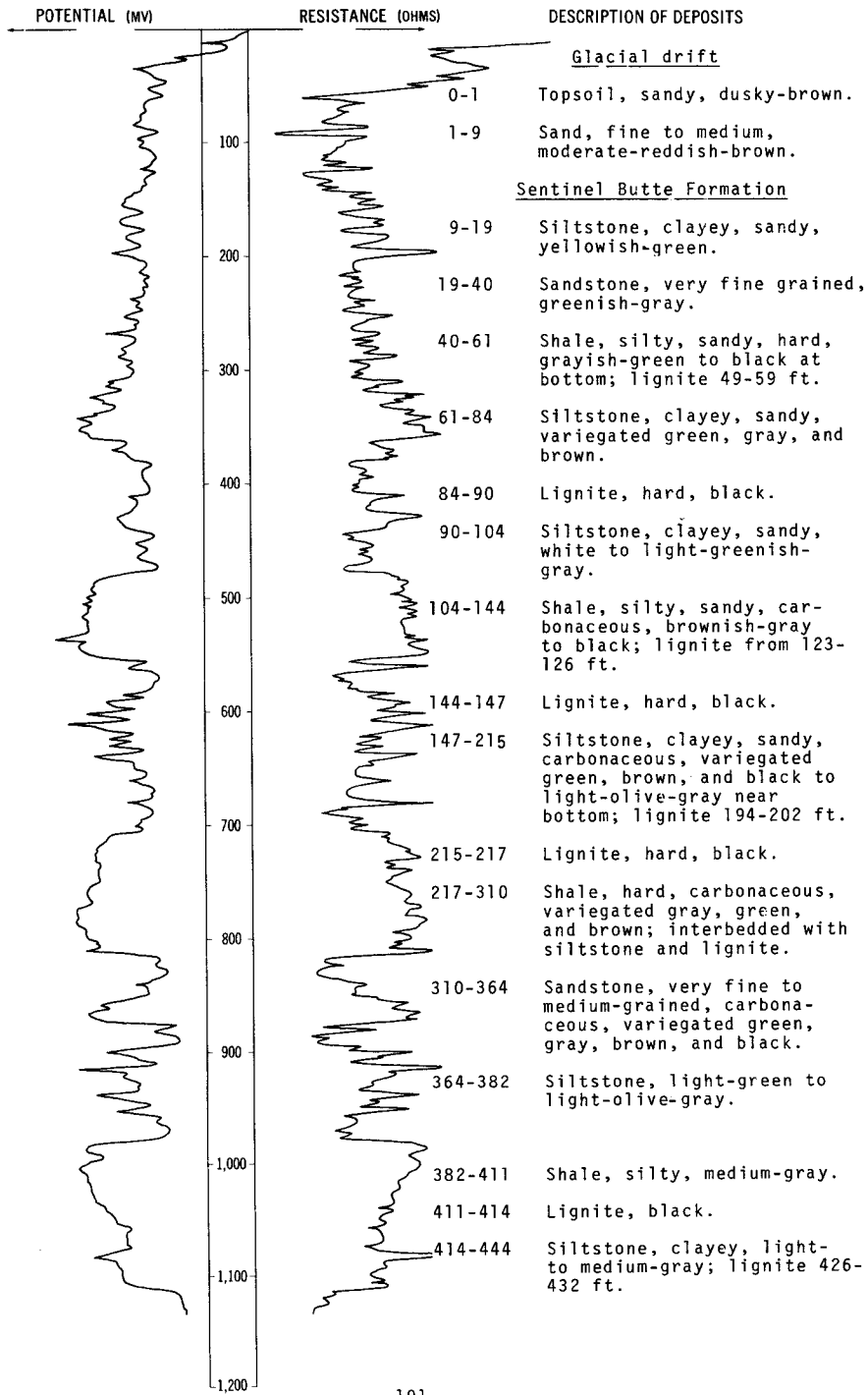
	Topsoil-----	21	21
	Shale, blue-----	28	49
	Coal-----	2	51
	Shale, blue-----	53	104
	Coal-----	5	109
	Shale, blue-----	94	203
	Coal-----	3	206
	Shale, blue-----	114	320
	Sand-----	62	382
	Coal-----	13	395
	Shale, blue-----	200	595
	Shale, sandy-----	12	607
	Shale, blue-----	499	1106
	Sand and clay-----	126	1232
	Sand, water-----	68	1300
	Shale, blue-----	20	1320

LOCATION: 144-091-30AAA1,2

DATE DRILLED: November 1973

ALTITUDE: 2222
(FT, MSL)

DEPTH: 1140, 520
(FT)



NDSWC 4603 and 4603A, Continued

LOCATION: 144-091-30AAA1,2
 ALTITUDE: 2222
 (FT, MSL)

DATE DRILLED: November 1973
 DEPTH: 1140, 520
 (FT)

POTENTIAL (MV)	RESISTANCE (OHMS)	DESCRIPTION OF DEPOSITS
		<u>Sentinel Butte Formation, Continued</u>
	444-482	Shale, laminated, medium- to dark-gray.
1,300	482-556	Sandstone, very fine to fine-grained, silty, light-olive-gray to greenish-gray.
1,400	556-562	Shale, hard, lignitic, dusky-green.
		<u>Tongue River Formation</u>
	562-566	Lignite, hard, black.
1,500	566-585	Siltstone, clayey, hard, carbonaceous, light-green to light-olive-gray.
1,600	585-619	Sandstone, very fine to medium-grained, light-olive-gray.
1,700	619-709	Shale, silty and sandy, carbonaceous; color varies from brownish-gray to black to light-olive-gray; few thin sandstone interbeds; lignite from 641-646 ft and 680-686 ft.
1,800	709-819	Sandstone, medium-grained, dusky-green; contains shell fragments and thin lignite beds in lower part.
1,900	819-838	Shale, hard, dark-gray.
	838-852	Siltstone, clayey, sandy, light-green.
	852-878	Sandstone, very fine to fine-grained, greenish-gray to grayish-green.
2,000	878-901	Shale, silty, light-gray.
	901-916	Siltstone, sandy, carbonaceous, dark-gray; interbedded with shale.
2,100	916-920	Lignite, hard, black.
	920-940	Shale, silty, sandy, carbonaceous, dusky-brown.
2,200		<u>Cannonball-Ludlow Formations, undifferentiated</u>
	940-944	Lignite.
2,300	944-982	Shale, hard, variegated gray, green, and brown; interbedded with lignite seams.
	982-1040	Sandstone, very fine to fine-grained, silty, light-greenish-gray; shell fragments.
2,400		

NDSWC 4603, Continued

LOCATION: 144-091-30AAA1,2

DATE DRILLED: November 1973

ALTITUDE: 2222
(FT, MSL)

DEPTH: 1140, 520
(FT)

POTENTIAL (MV)	RESISTANCE (OHMS)	DESCRIPTION OF DEPOSITS
		<u>Cannonball-Ludlow Formations, undifferentiated, Continued</u>
	1040-1116	Siltstone, clayey, sandy, white to light-gray.
	1116-1140	Siltstone, clayey, hard, greenish-gray.
1,300		
1,400		
1,500		
1,600		
1,700		
1,800		
1,900		
2,000		
2,100		
2,200		
2,300		
2,400		

144-091-34DDB2
(Log from Opp Drilling)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand, black-----	2	2
	Sand, yellow-----	13	15
	Sand, blue (water)-----	21	36

144-092-04DDB
(Log from Sailer Drilling)

Altitude:

	Topsoil-----	2	2
	Clay, sandy-----	48	50
	Clay-----	8	58
	Coal-----	2	60
	Clay-----	29	89
	Coal-----	11	100

144-092-05ABB
NDSWC 8213

Altitude:

Glacial drift:			
	Topsoil, silty, sandy, brownish-black-----	1	1
	Clay, silty, sandy, dark-yellowish-brown (till)-----	9	10
Sentinel Butte Formation:			
	Shale, hard, noncalcareous, moderate-yellowish-brown-----	5	15
	Shale, silty, hard, noncalcareous, medium-gray to light-greenish-gray-----	25	40

144-092-07ADD
(Log from K. J. Thompson)

Altitude:

	Topsoil, sandy-----	66	66
	Coal-----	2	68
	Rock-----	.5	68.5
	Coal-----	6.5	75
	Clay-----	5	80

144-092-08CDA2
(Log from K. J. Thompson)

Altitude:

	Topsoil, sandy-----	16	16
	Gravel and coal, wet-----	3	19
	Clay-----	20	39
	Sand, blue-----	6	45
	Clay-----	1	46
	Coal (water)-----	2.5	48.5
	Clay-----	22.5	71
	Coal(?), dry-----	6	77
	Clay-----	4	81

144-092-10ADD
(Log from Ray Mohl)

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Clay, sandy, yellow-----	34	34
	Sandstone, broken-----	2	36
	Sand, hard-----	10	46
	Coal-----	1	47
	Clay, sandy, blue-----	14	61
	Coal, hard-----	9	70
	Clay, gray-----	18	88
	Coal-----	2	90
	Clay, sandy, gray-----	24	114
	Rock-----	2	116
	Clay, sandy, gray-----	20	136
	Coal-----	4	140
	Clay, gray-----	2	142
	Coal and clay-----	8	150

144-092-11DCB
(Log from K. J. Thompson)

Altitude:

	Topsoil, sand-----	20	20
	Clay-----	14	34
	Rock-----	1	35
	Clay-----	11	46
	Coal (water)-----	10	56
	Clay-----	6	62

144-092-14BDD
(Log from K. J. Thompson)

Altitude:

	Topsoil and sand-----	10	10
	Gravel-----	2	12
	Sand-----	15	27
	Coal (water)-----	4	31
	Clay-----	9	40

144-092-14CDD
NDSWC 8224

Altitude:

Glacial drift:

	Topsoil, silty, sandy, clayey, grayish-black-----	1	1
	Clay, silty, sandy, pebbly, moderate-yellowish-brown (till)-----	27	28
	Clay, silty, sandy, pebbly, olive-gray (till)-----	29	57
	Gravel, cobbles, and boulders-----	2	59

Sentinel Butte Formation:

	Sandstone, fine-grained, calcareous, medium-bluish-gray-----	2	61
	Lignite, hard, black-----	5	66
	Shale, silty, hard, calcareous, medium-gray-----	14	80

144-092-24CBC
(Log from K. J. Thompson)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Topsoil and sand, dry, red-----	38	38
	Sand, blue (water)-----	6	44
	Clay-----	1	45

144-092-26CAD
(Log from K. J. Thompson)

Altitude:

	Sand and clay-----	76	76
	Coal-----	2	78
	Clay-----	32	110
	Rock-----	3	113
	Clay-----	15	128
	Coal-----	8	136
	Clay-----	24	160
	Coal-----	2	162
	Clay-----	46	208
	Coal-----	8	216
	Clay-----	6	222
	Coal-----	2	224
	Clay-----	4	228
	Coal-----	2	230
	Clay-----	14	244
	Rock-----	3	247
	Sand-----	23	270

144-092-27AAA
(Log from K. J. Thompson)

Altitude:

	Topsoil and sand-----	67	67
	Rock-----	1	68
	Sand, blue (water)-----	14	82
	Rock-----	.5	82.5
	Sand-----	17.5	100

144-092-29DDD
NDSWC 4714

Altitude:

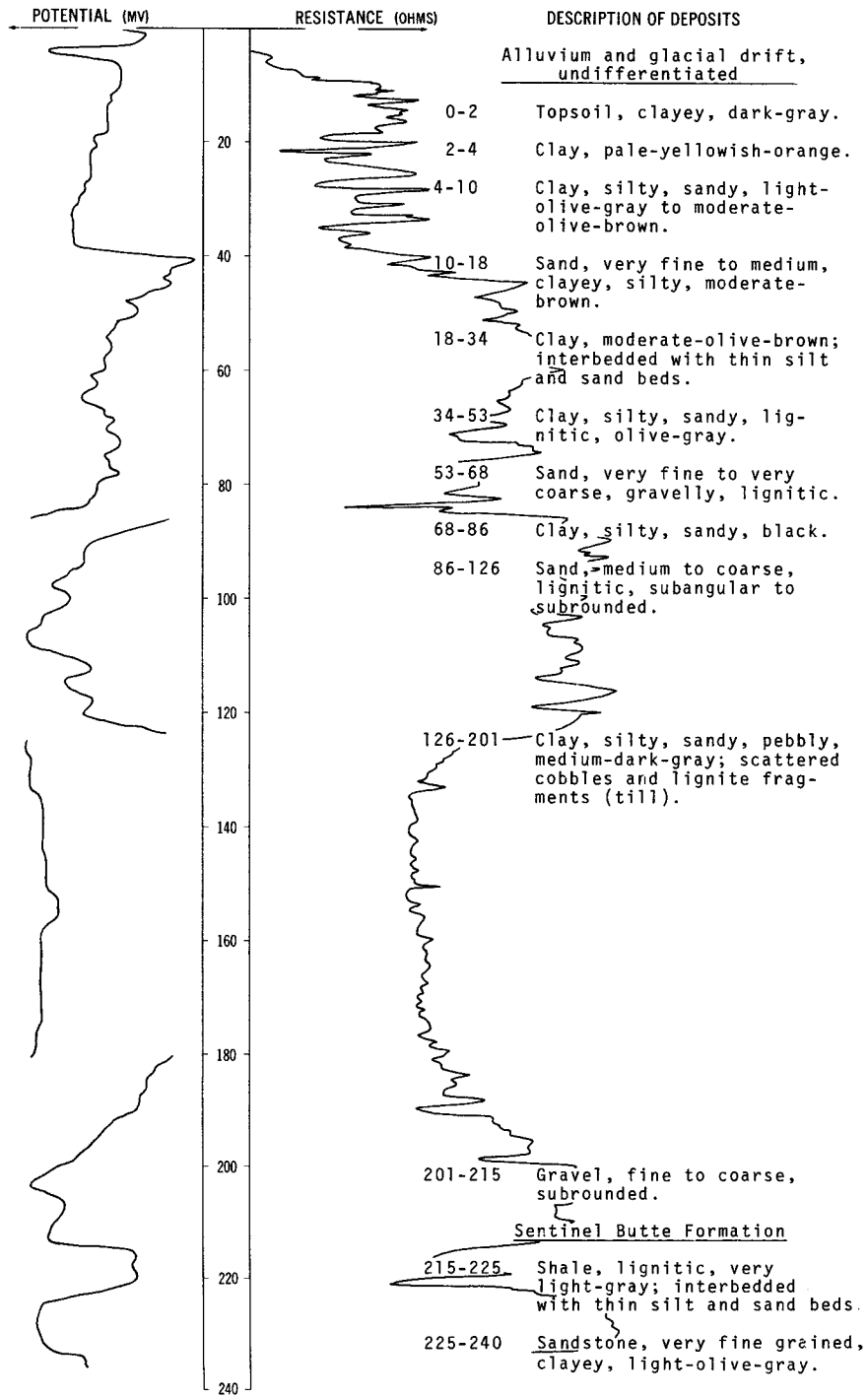
Alluvium and glacial drift, undifferentiated:			
	Silt, sandy, dusky-yellow-----	3	3
	Sand, fine to very coarse, gravelly, sub- angular to subrounded, moderate- yellowish-brown-----	14	17
	Silt, sandy, clayey, dusky-yellow-----	5	22
	Sand, fine to medium, and gravel, fine to very coarse, subangular to subrounded---	18	40
Sentinel Butte Formation:			
	Siltstone, clayey, medium-gray; contains carbonaceous inclusions-----	13	53
	Lignite, hard, black-----	5	58
	Siltstone, siliceous, greenish-gray-----	2	60

LOCATION: 144-092-31DCD

DATE DRILLED: December 1973

ALTITUDE: 2163
(FT, MSL)

DEPTH: 240
(FT)

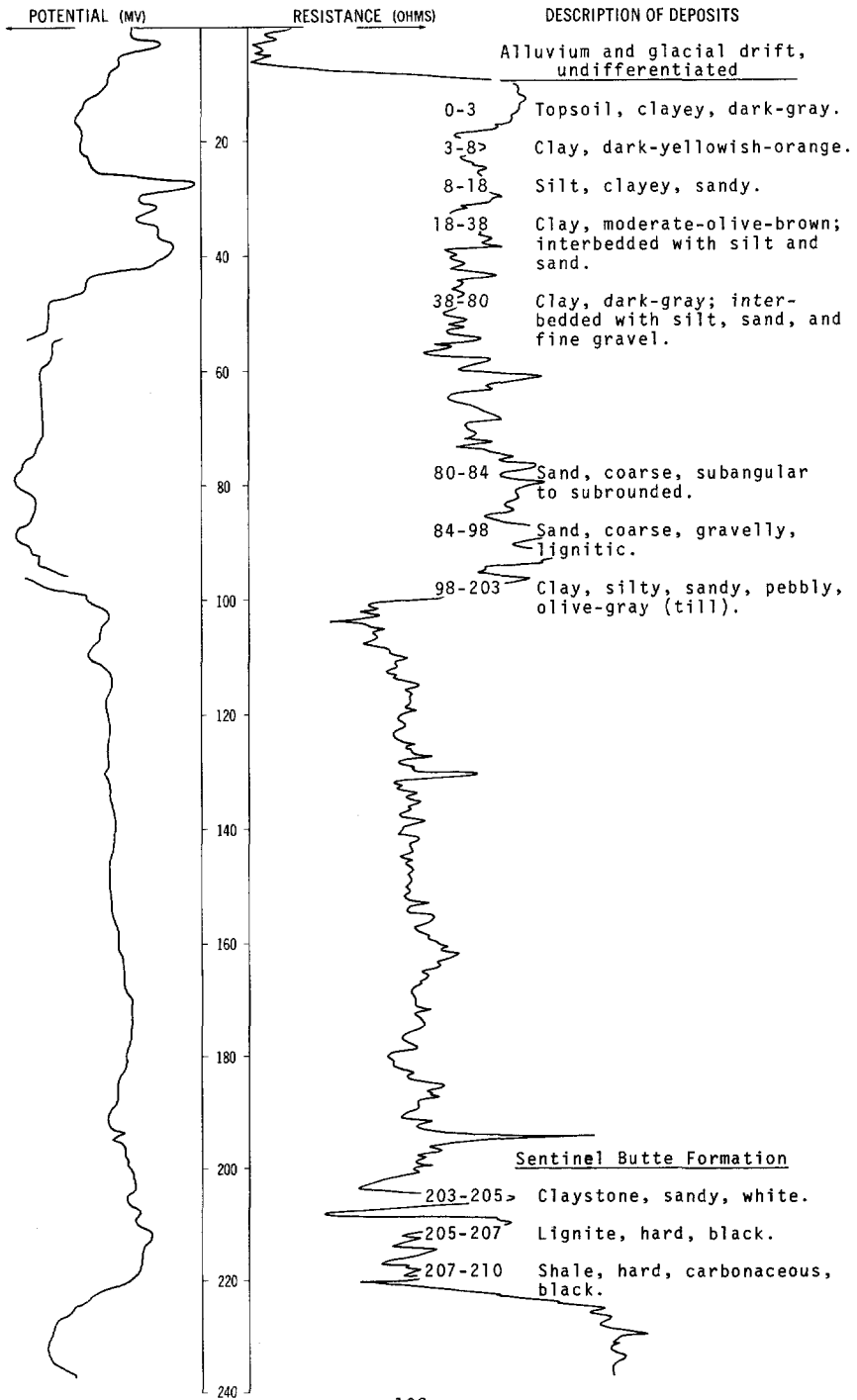


LOCATION: 144-092-31DDC

DATE DRILLED: December 1973

ALTITUDE: 2168
(FT, MSL)

DEPTH: 240
(FT)



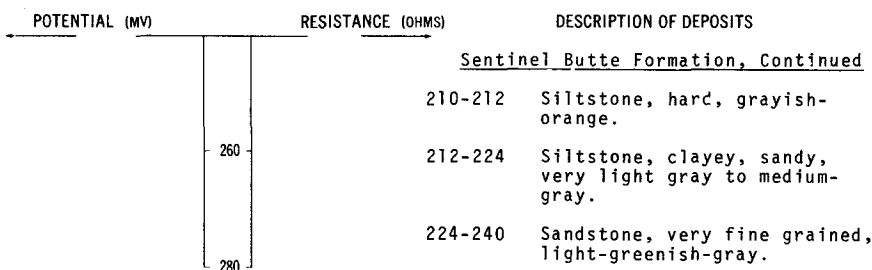
NDSWC 4622, Continued

LOCATION: 144-092-31DDC

DATE DRILLED: December 1973

ALTITUDE: 2168
(FT, MSL)

DEPTH: 240
(FT)



144-092-32DDD
NDSWC 4715

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
Alluvium	and glacial drift, undifferentiated:		
	Silt, sandy, moderate-yellowish-brown-----	6	6
	Sand, fine to medium, clayey, silty, subangular to subrounded-----	22	28
Sentinel Butte Formation:	Lignite, hard, black-----	2	30
	Sand, fine- to medium-grained, lignitic, angular to subrounded-----	3	33
	Lignite, hard, black-----	5	38
	Siltstone, medium-dark-gray-----	2	40

144-092-34BDD
(Log from K. J. Thompson)

Altitude:

Sand-----	15	15
Clay-----	53	68
Coal, dry-----	5	73
Clay-----	1.5	74.5
Coal-----	2.5	77
Clay-----	39	116
Coal (water)-----	7	123
Clay-----	12	135

144-093-08ABB
(Log from K. J. Thompson)

Altitude:

Sand-----	28	28
Rock-----	2	30
Sand-----	10	40
Clay-----	10	50
Coal (dry)-----	4	54
Clay-----	35	89
Rock-----	1	90
Clay-----	21	111
Coal (water)-----	20	131
Clay-----	3	134
Coal (?)-----	1	135
Clay-----	5	140

144-093-11ABC
(Log from K. J. Thompson)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Topsoil and clay-----	18	18
	Coal slack (dry)-----	3	21
	Clay-----	38	59
	Coal (seep)-----	6	65
	Clay-----	40	105
	Coal (dry)-----	2	107
	Clay-----	10	117
	Rock-----	1	118
	Clay-----	29	147
	Coal (water)-----	9	156
	Clay-----	2	158

144-093-14BCC
(Log from Sailer Drilling)

Altitude:

	Topsoil-----	1.5	1.5
	Soil, sandy-----	38.5	40
	Clay, sandy-----	8	48
	Sand, gray-----	72	120
	Sand, brown-----	6	126
	Sand, clayey-----	4	130
	Clay-----	4	134
	Coal-----	6	140

144-093-14CBB1
(Log from Ray Mohl)

Altitude:

	Clay, sandy, gray-----	40	40
	Clay, sandy, gray-----	34	74
	Sandstone-----	1	75
	Sand, hard-----	42	117
	Sand rock-----	1	118
	Sand, hard-----	3	121
	Clay, blue-----	9	130
	Sand rock-----	.7	130.7
	Sand, blue-----	2.3	133
	Sand, hard, blue-----	20	153
	Sand, soft (water)-----	2	155

144-093-15ADB
(Log from R. J. Thompson)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Topsoil and clay-----	13	13
	Sand-----	78	91
	Coal slack and sand-----	5	96
	Coal-----	2	98
	Clay-----	7	105

144-093-16CBD
(Log from K. J. Thompson)

Altitude:

Topsoil and sand-----	38	38
Quicksand-----	17	55
Sand and gravel (seep)-----	38	93
Sand and gravel (water)-----	2	95
Gravel-----	--	--

NDSWC 4724

LOCATION: 144-093-17ADA

DATE DRILLED: June 1974

ALTITUDE: 2223

DEPTH: 120

(FT, MSL)

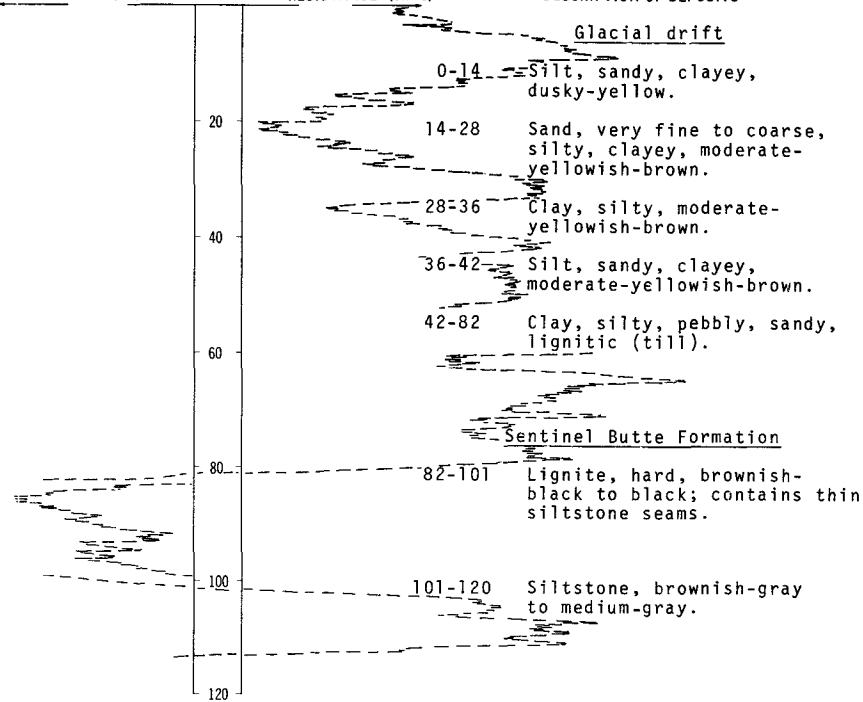
(FT)

Gamma log-----
(T.C. 4)

POTENTIAL (MV)

RESISTANCE (OHMS)

DESCRIPTION OF DEPOSITS

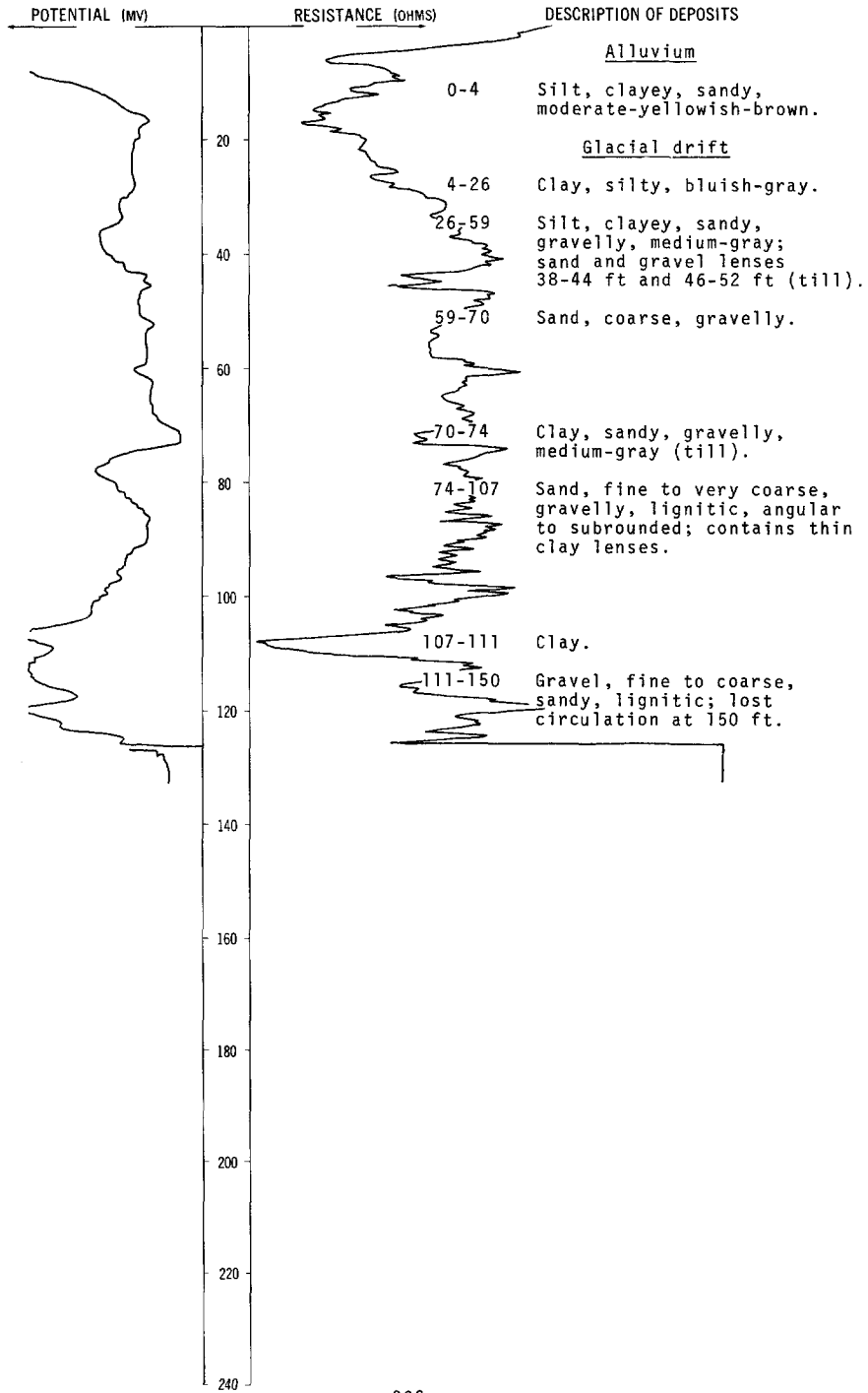


LOCATION: 144-093-17ADD

DATE DRILLED: June 1974

ALTITUDE: 2220
(FT, MSL)

DEPTH: 150
(FT)



144-093-17DAA
NDSWC 8194

Altitude: 2198 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Glacial drift:			
	Topsoil, silty, clayey, grayish-black-----	1	1
	Clay, silty, sandy, pebbly, moderate-yellowish-brown; scattered cobbles (till)-----	33	34
	Clay, silty, sandy, pebbly, olive-gray (till)-----	17	51
	Clay, silty, sandy, pebbly, olive-gray; numerous thin sand and gravel lenses (till)-----	26	77
	Gravel, fine to very coarse, sandy, angular to subrounded-----	13	90
	Clay, sandy, silty, gravelly, olive-gray---	32	122
	Sand, fine to very coarse, gravelly, angular to subrounded-----	4	126
	Clay, silty, sandy, pebbly, lignitic, olive-gray; numerous sand lenses (till)--	20	146
	Gravel, fine to very coarse, sandy, angular to subrounded-----	30	176
	Cobbles, boulders (bedrock erratics), and gravel-----	8	184
	Clay, sandy, silty, medium-gray-----	8	192
Sentinel Butte Formation:			
	Shale, noncalcareous, medium-light-gray----	8	200

LOCATION: 144-093-17DDA

DATE DRILLED: June 1974

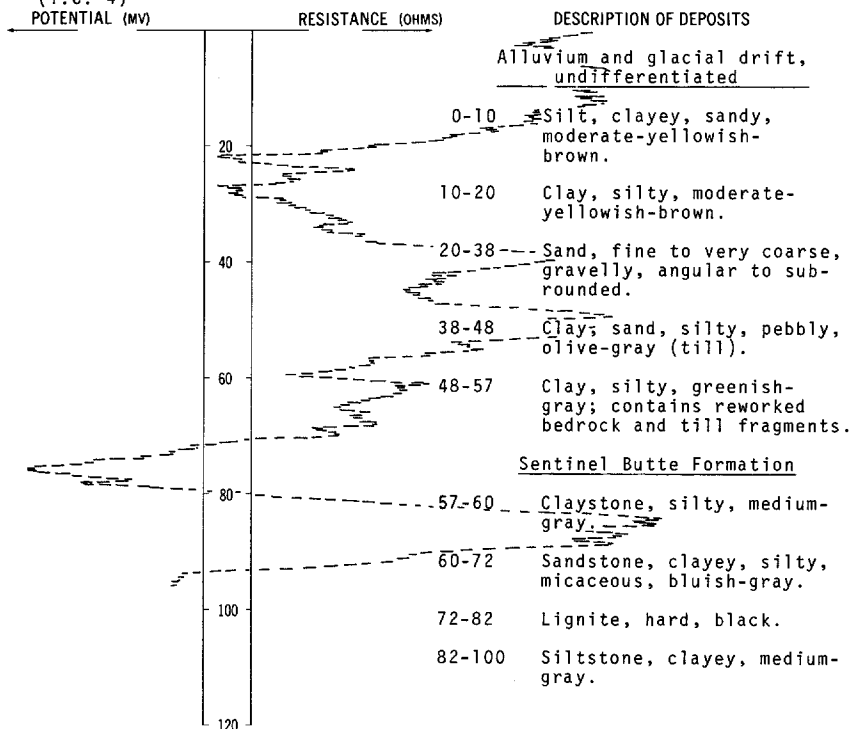
ALTITUDE: 2195

DEPTH: 100

(FT, MSL)

(FT)

Gamma Log ---
(T.C. 4)



144-093-25ADD
(Log from Sailer Drilling)

Altitude:

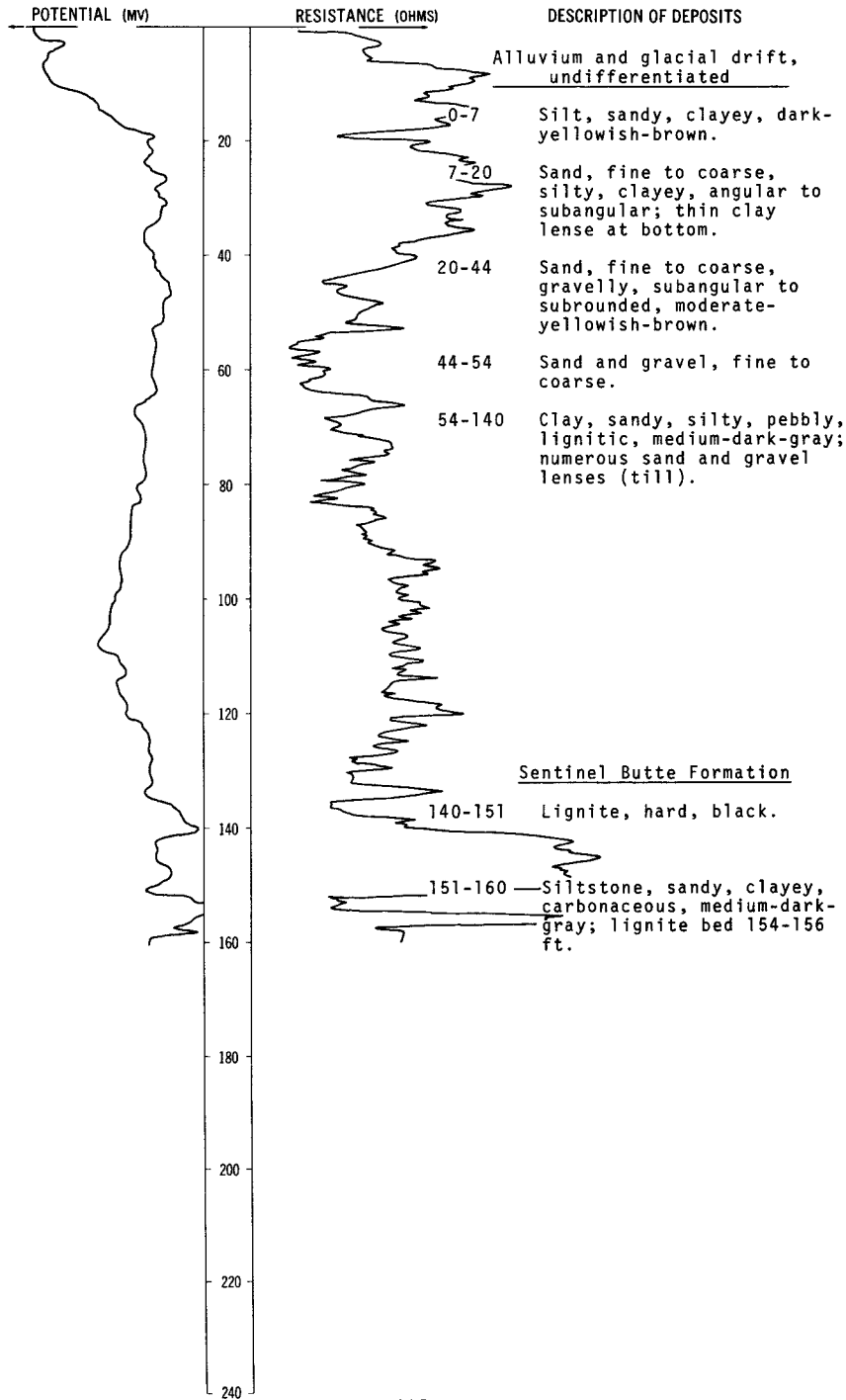
Geologic source	Material	Thickness (feet)	Depth (feet)
	Topsoil and gravel	15	15
	Clay	10	25
	Coal	3	28
	Clay	59	87
	Coal	14	101

LOCATION: 144-093-26BCC

DATE DRILLED: June 1974

ALTITUDE: 2241
(FT, MSL)

DEPTH: 160
(FT)



LOCATION: 144-093-26CBC

DATE DRILLED: November 1974

ALTITUDE: 2271

DEPTH: 180

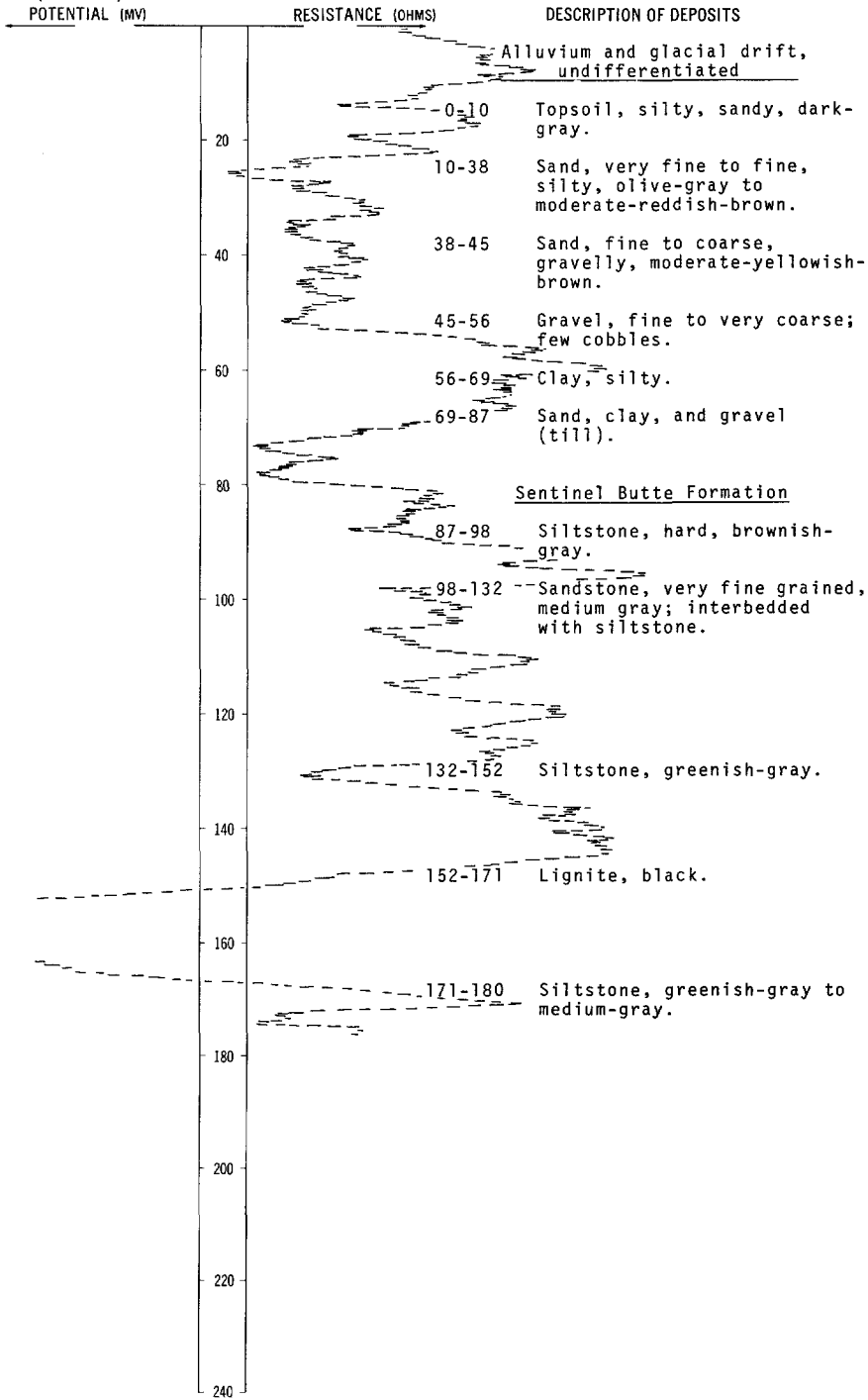
(FT, MSL)

(FT)

Gamma log-----

(T.C. 4)

POTENTIAL (MV)

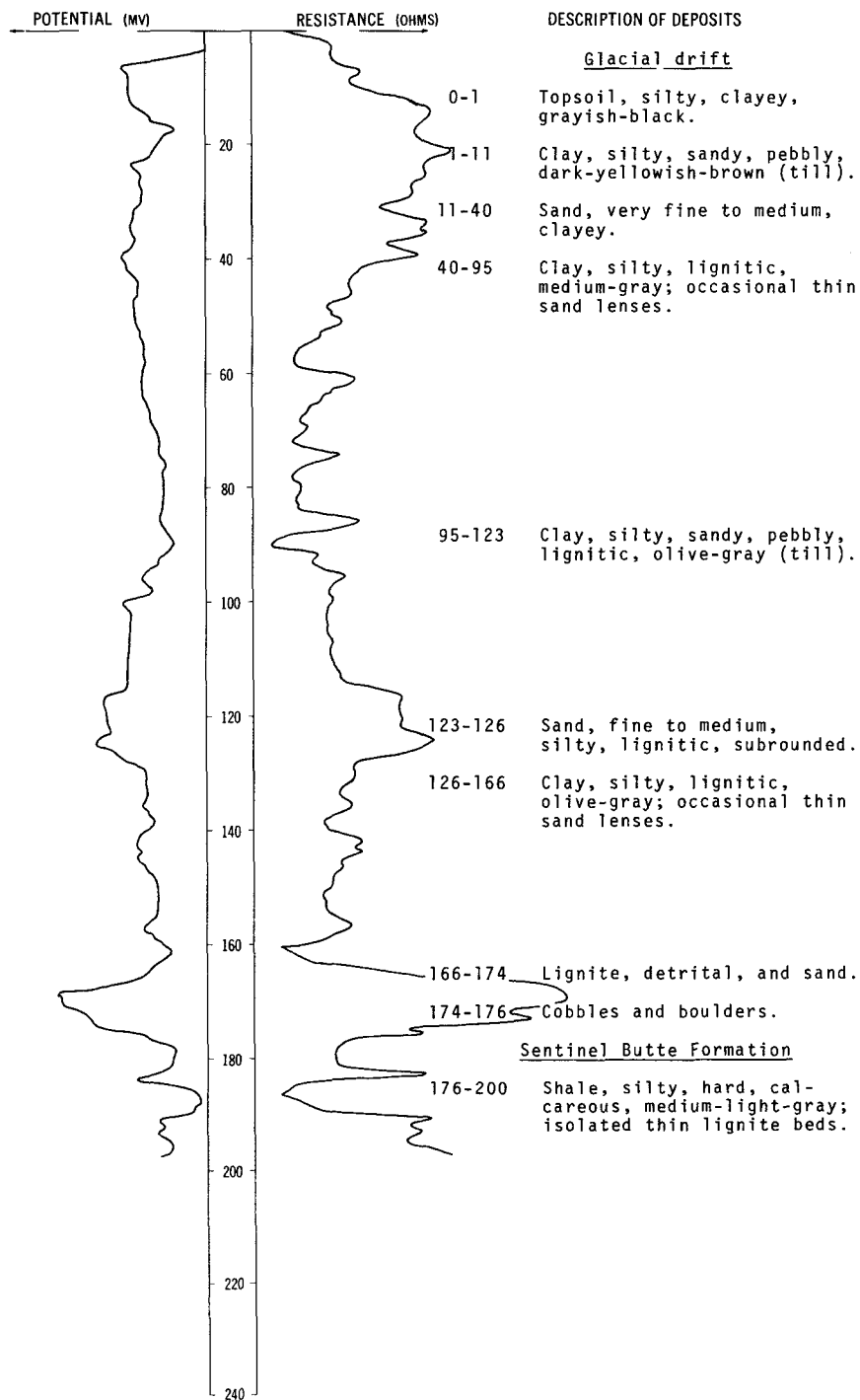


LOCATION: 144-093-26DDA

DATE DRILLED: November 1971

ALTITUDE:
(FT, MSL)

DEPTH: 200
(FT)



144-093-29ADC
(Log from Ray Mohl)

Altitude:

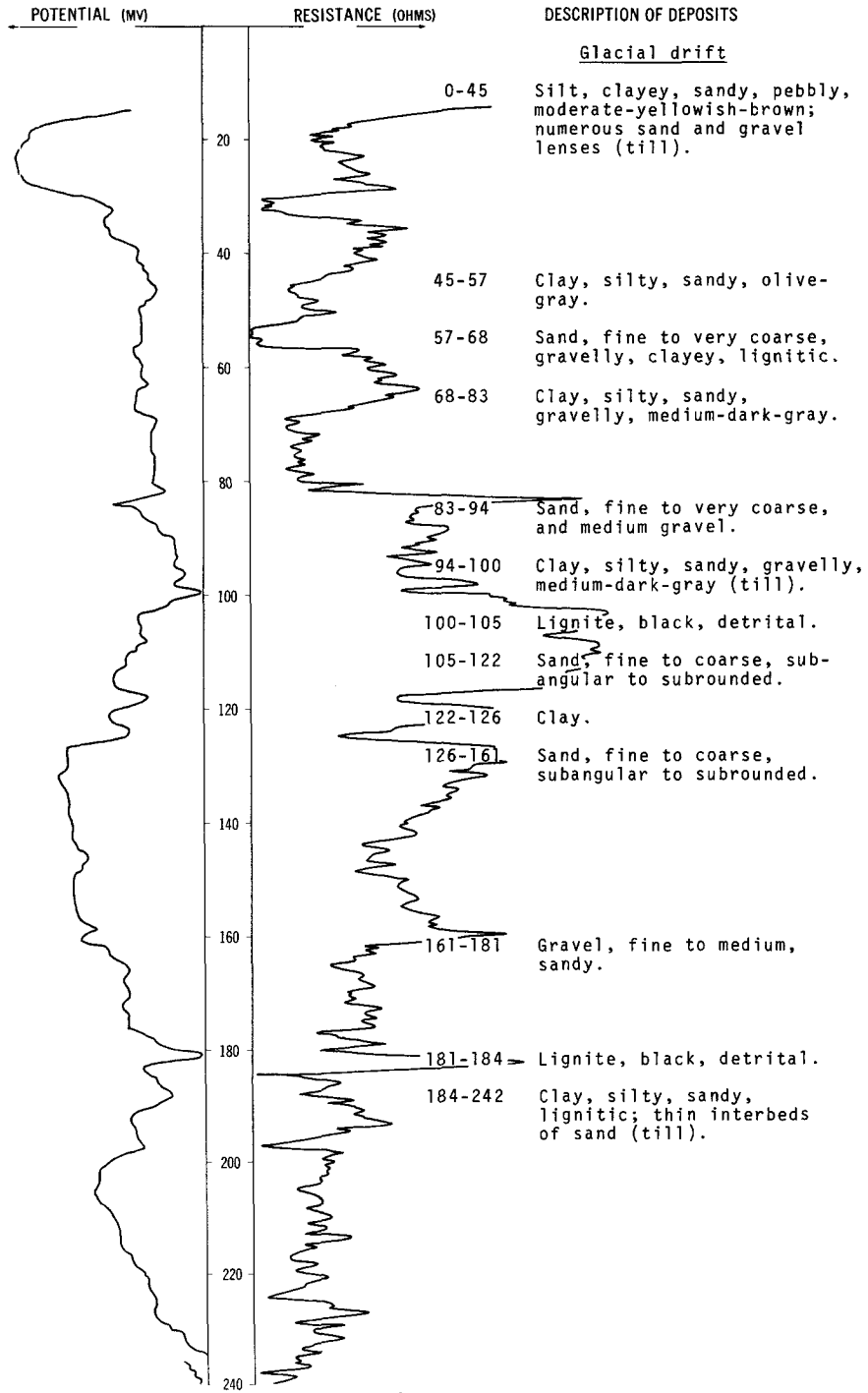
<u>Geologic</u> <u>source</u>	<u>Material</u>	<u>Thickness</u> <u>(feet)</u>	<u>Depth</u> <u>(feet)</u>
	Clay, sandy-----	18	18
	Clay, yellow-----	21	39
	Clay, gray-----	54	93
	Coal-----	7	100

LOCATION: 144-093-29ADD

DATE DRILLED: June 1974

ALTITUDE: 2252
(FT, MSL)

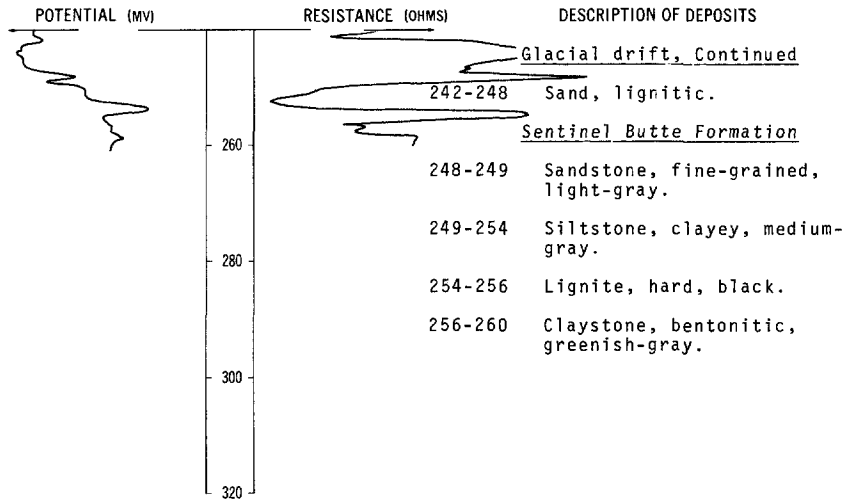
DEPTH: 260
(FT)



NDSWC 4721, Continued

LOCATION: 144-093-29ADD
 ALTITUDE: 2252
 (FT, MSL)

DATE DRILLED: June 1974
 DEPTH: 260
 (FT)



144-093-29DAA
 NDSWC 8195

Altitude: 2216 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Glacial drift:			
	Topsoil, silty, clayey, grayish-black-----	1	1
	Clay, silty, sandy, gravelly, moderate-yellowish-brown (till)-----	39	40
	Clay, silty, sandy, moderate-yellowish-brown; numerous lignite fragments and carbonaceous laminae-----	14	54
	Clay, silty, sandy, pebbly, moderate-yellowish-brown (till)-----	14	68
	Clay, silty, sandy, pebbly, olive-gray; isolated gravel lenses (till)-----	56	124
	Gravel, fine to coarse, cobbles, and boulders; abandoned hole due to loss of circulation-----	16	140

144-094-01BCA
(Log from K. J. Thompson)

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Topsoil and clay-----	48	48
	Coal slack, seep-----	17	65
	Gravel-----	2	67
	Sand-----	4	71
	Gravel-----	2	73
	Sand-----	4	77
	Gravel-----	1	78
	Sand-----	1	79
	Gravel-----	2	81
	Clay-----	3	84
	Coal-----	5	89
	Sand-----	15	104
	Rock-----	1	105
	Clay-----	1	106
	Rock-----	2	108
	Clay-----	10	118
	Clay, blue-----	34	152
	Coal streak-----	11	163
	Coal (water)-----	7	170
	Clay-----	5	175

144-094-01BCB
(Log from K. J. Thompson)

Altitude:

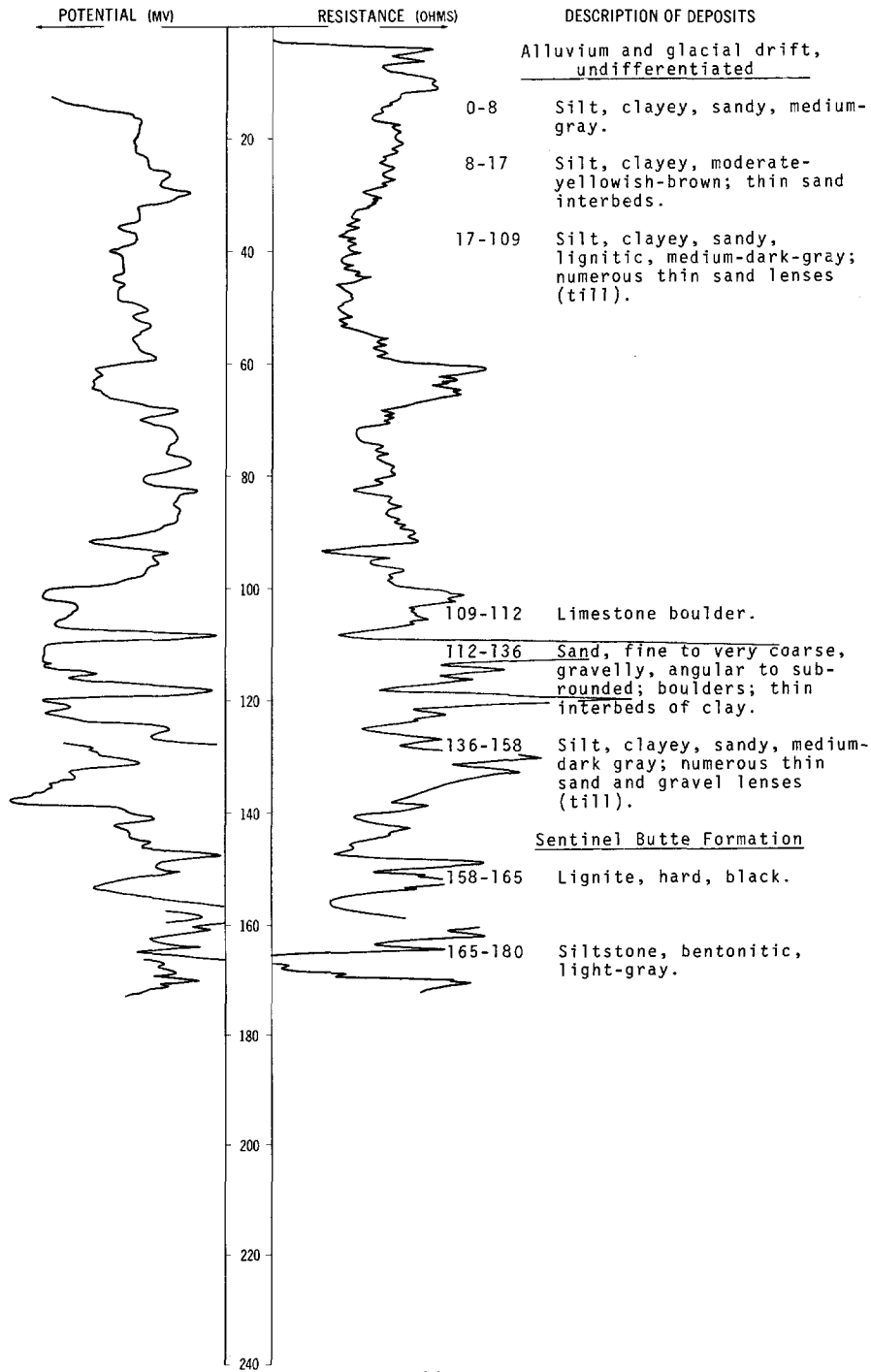
	Clay-----	20	20
	Coal, wet-----	15	35
	Clay-----	35	70
	Coal, dry-----	4	74
	Clay-----	8	82
	Sand-----	6	88
	Clay-----	6	94
	Rock-----	--	--

LOCATION: 144-094-01BCC

DATE DRILLED: June 1974

ALTITUDE:
(FT, MSL)

DEPTH: 180
(FT)

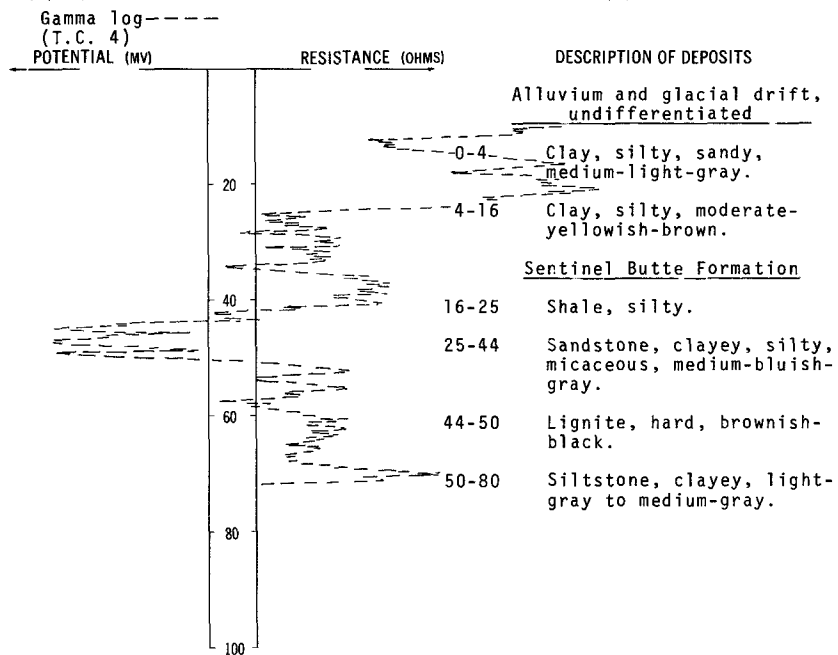


LOCATION: 144-094-01CBC

DATE DRILLED: June 1974

ALTITUDE:
(FT, MSL)

DEPTH: 80
(FT)



144-094-01DDD
NDSWC 8193

Altitude:

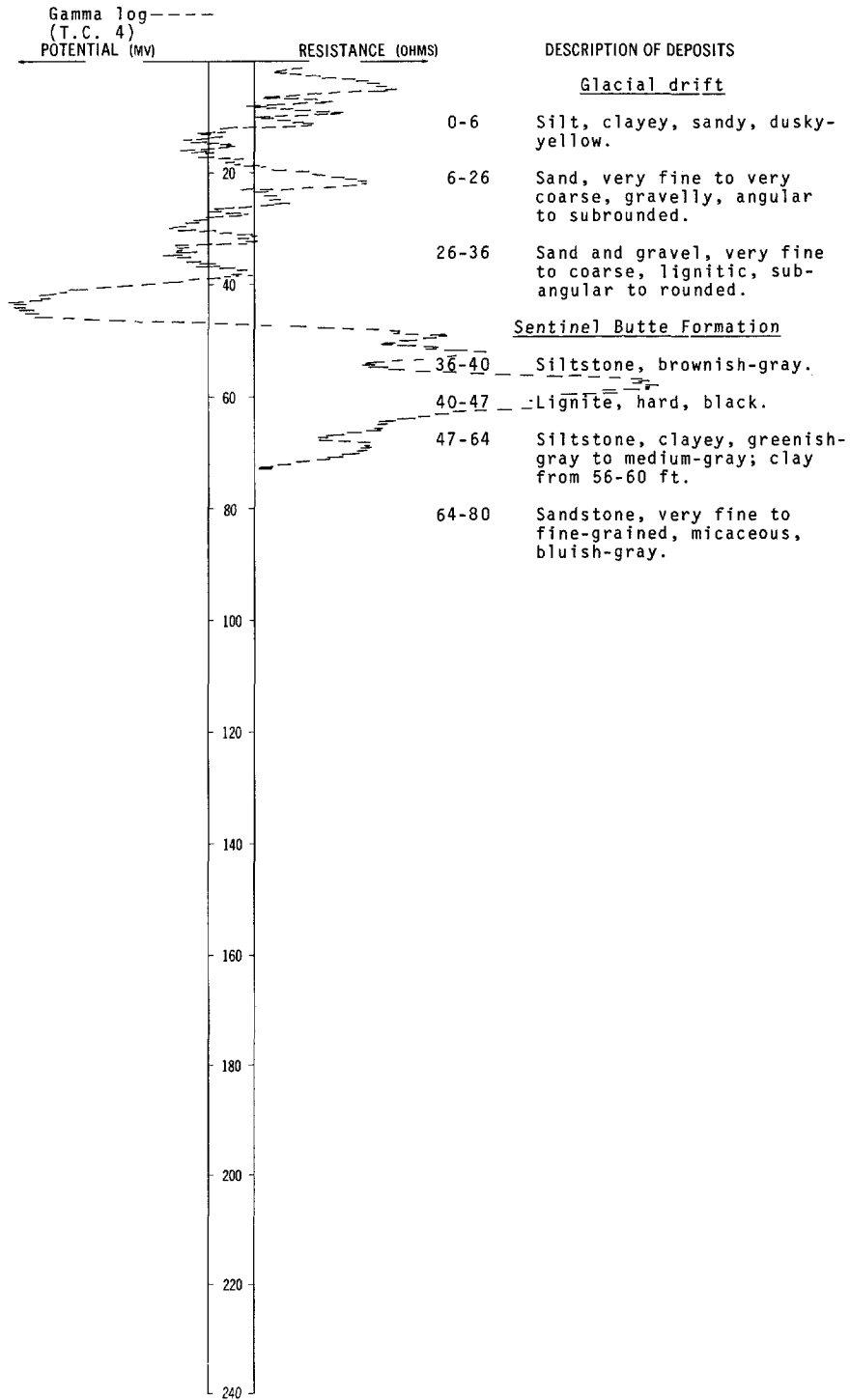
Geologic source	Material	Thickness (feet)	Depth (feet)
<u>Sentinel Butte Formation:</u>			
	Topsoil, silty, clayey, grayish-black-----	1	1
	Shale, silty, sandy, yellowish-gray; isolated thin lignite seams-----	31	32
	Shale, silty, hard, noncalcareous, medium-gray; isolated thin lignite seams-----	28	60

LOCATION: 144-094-04ABB

DATE DRILLED: June 1974

ALTITUDE: 2191
(FT, MSL)

DEPTH: 80
(FT)

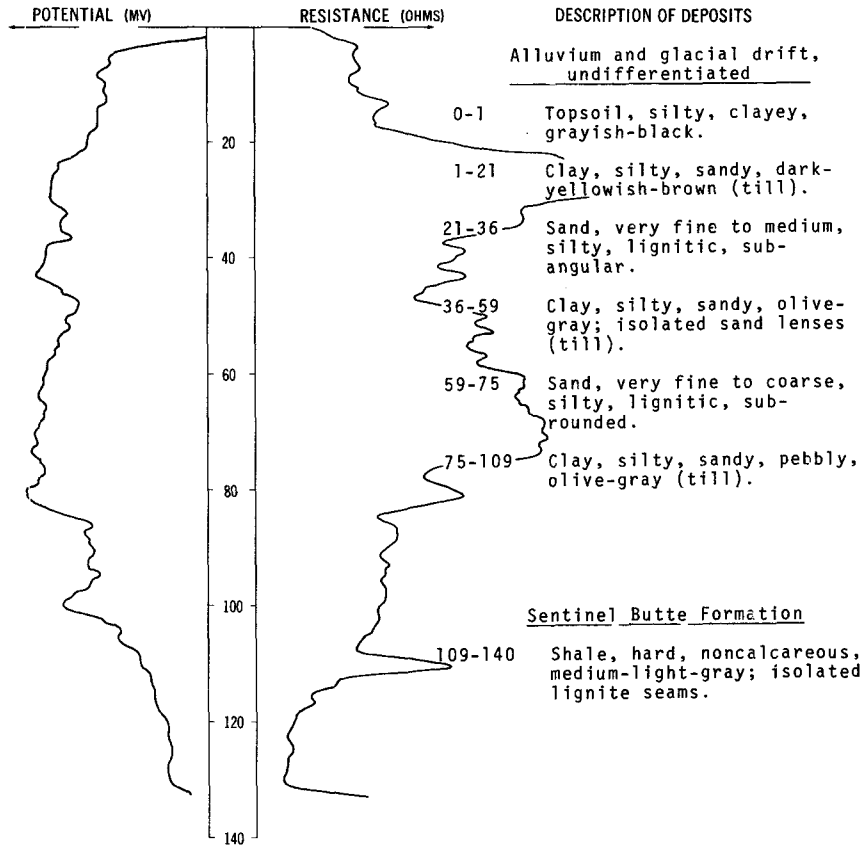


LOCATION: 144-094-06DAA

DATE DRILLED: October 1971

ALTITUDE: 2187
(FT, MSL)

DEPTH: 140
(FT)



144-094-07DAA1
(Log from K. V. Thompson)

Altitude: 2270 ft

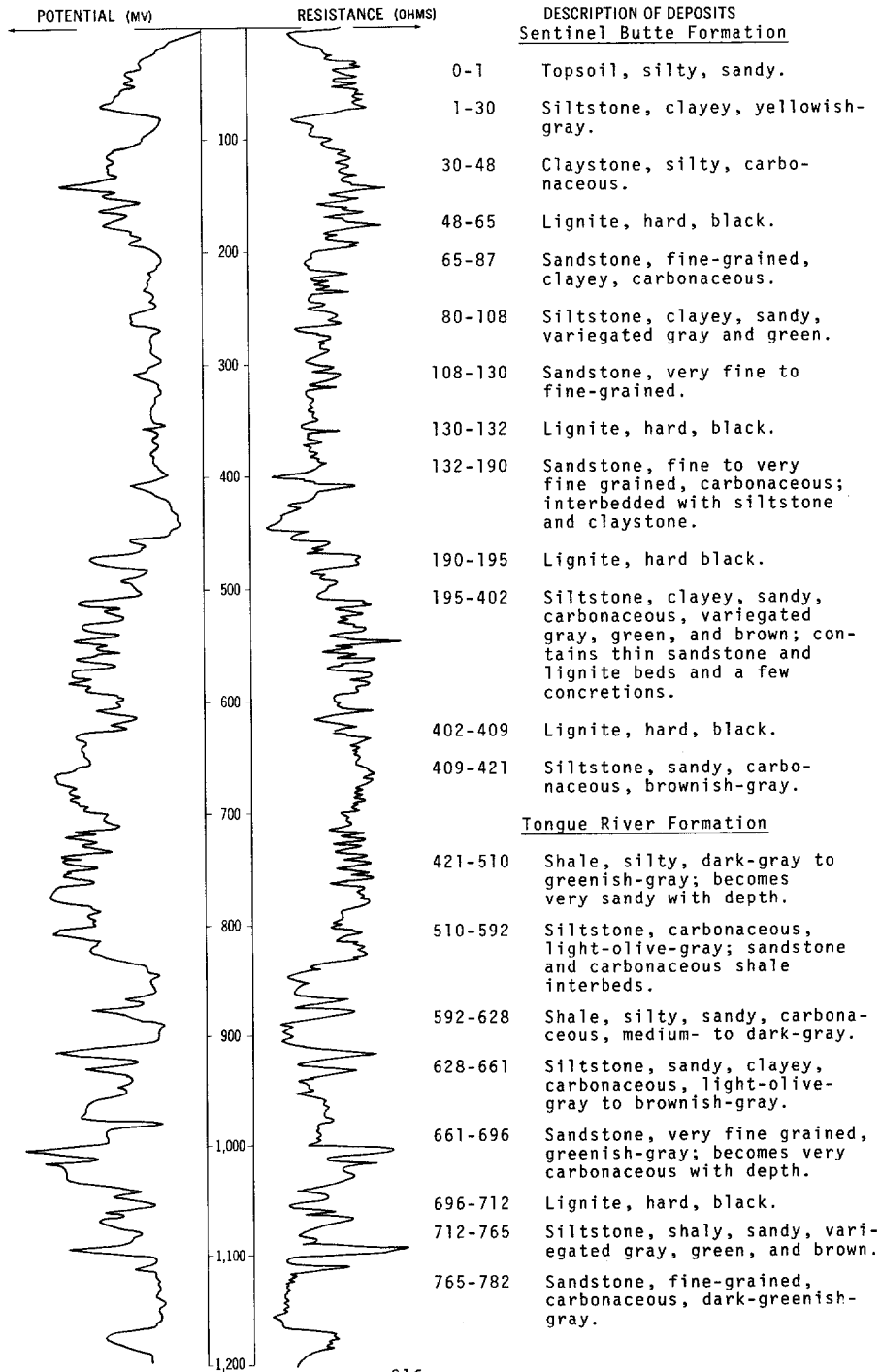
Geologic source	Material	Thickness (feet)	Depth (feet)
	Topsoil and clay	35	35
	Coal (dry)	4	39
	Clay	1	40
	Coal (dry)	4	44
	Clay	11	55
	Coal (dry)	16	71
	Clay	9	80
	Coal (dry)	1	81
	Clay	19	100
	Clay, sandy	8	108
	Rock	2	110
	Clay, sandy	4	114
	Sand (water)	10	124
	Sand (soft)	6	130

LOCATION: 144-094-07DAA2

DATE DRILLED: October 1973

ALTITUDE: 2273
(FT, MSL)

DEPTH: 1200
(FT)



NDSWC 4599, Continued

LOCATION: 144-094-07DAA2

DATE DRILLED: October 1973

ALTITUDE: 2273
(FT, MSL)

DEPTH: 1200
(FT)

POTENTIAL (mv)	RESISTANCE (OHMS)	DESCRIPTION OF DEPOSITS
		<u>Tongue River Formation, Continued</u>
	782-803	Siltstone, clayey, sandy, medium-gray.
-1,300	803-815	Sandstone, very fine grained, carbonaceous, dark-greenish-gray; shale interbeds.
		<u>Cannonball-Ludlow Formations</u>
-1,400	815-833	Lignite, hard, black.
	833-912	Shale, silty, medium-gray; thin sandstone interbeds.
-1,500	912-957	Siltstone, sandy, carbonaceous, brownish-gray; thin sandstone interbeds.
	957-1004	Sandstone, fine to medium-grained, grayish-green to dark-green.
-1,600	1004-1041	Sandstone, very fine grained, dark-greenish-gray; few indurated beds.
-1,700	1041-1142	Siltstone, clayey, sandy, variegated gray and green; thin sandstone interbeds.
	1142-1169	Siltstone, clayey, medium-gray to greenish-gray.
-1,800		<u>Hell Creek Formation</u>
	1169-1200	Sandstone, very fine to fine-grained, carbonaceous, greenish-gray.
-1,900		
-2,000		
-2,100		
-2,200		
-2,300		
-2,400		

144-094-10DAA
(Log from K. V. Thompson)

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Topsoil, clay, and sand-----	20	20
	Gravel and sand-----	7	27
	Sand (dry)-----	19	46
	Quicksand-----	2	48
	Coal-----	2	50
	Clay-----	2	52
	Coal-----	18	70
	Clay-----	5	75

144-094-10DDD
(Log from K. J. Thompson)

Altitude:

	Sand, clay and coal streaks-----	58	58
	Coal (seep)-----	17	75
	Clay-----	41	116
	Coal (dry)-----	5	121
	Clay-----	21	142
	Coal (water)-----	4	146
	Clay-----	28	174
	Clay, sandy-----	--	--

144-094-11BAA
(Log from K. J. Thompson)

Altitude:

	Clay and coal slack (seep)-----	22	22
	Coal (dry)-----	15	37
	Clay-----	30	67
	Coal (dry)-----	5	72
	Clay-----	41	113
	Rock-----	3	116
	Sand-----	3	119
	Rock-----	1	120
	Sand-----	8	128
	Clay-----	--	--

144-094-12DBB
(Log from K. J. Thompson)

Altitude:

	Topsoil-----	24	24
	Coal-----	5	29
	Clay-----	1	30

LOCATION: 144-094-13CCC

DATE DRILLED: November 1974

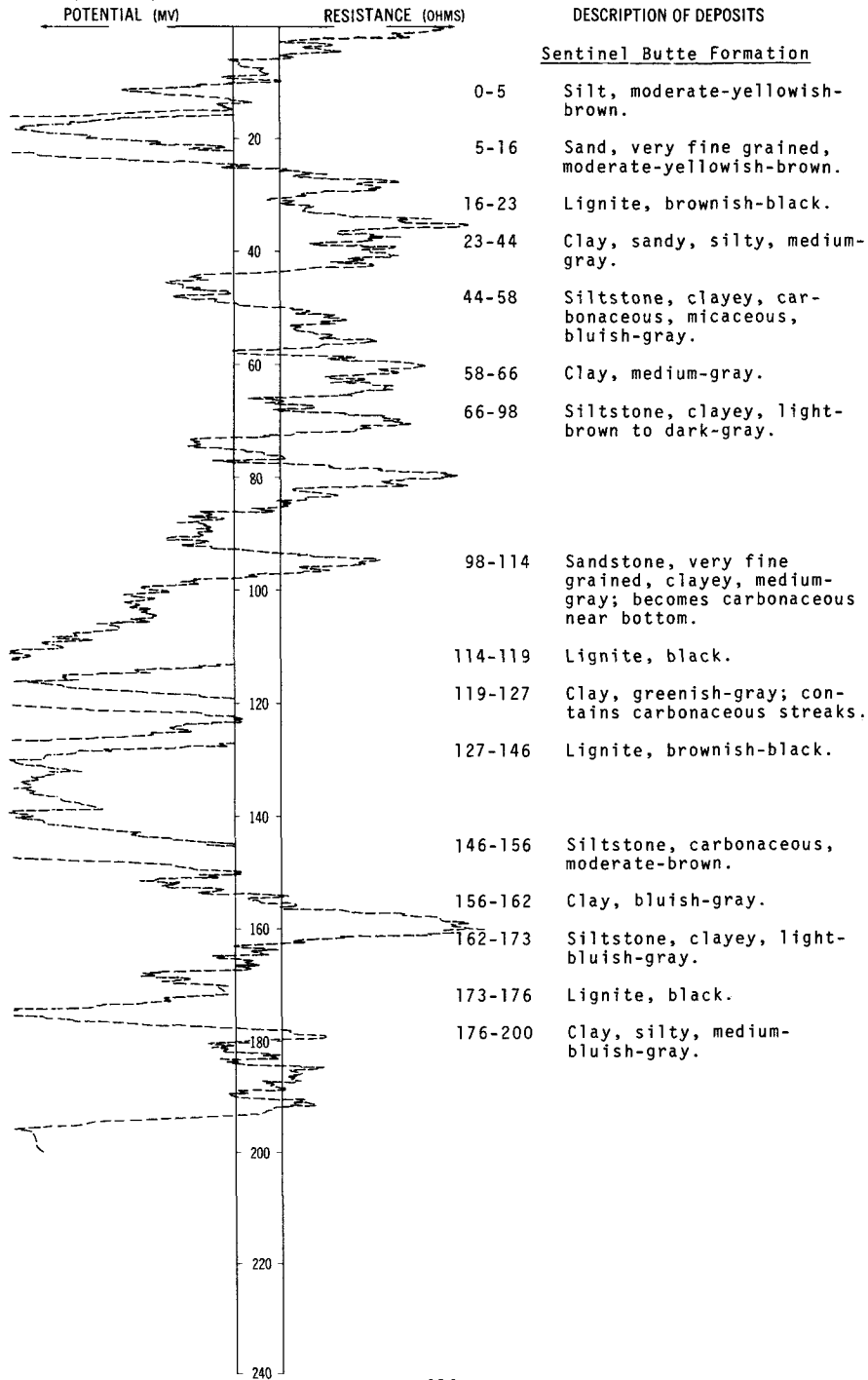
ALTITUDE: 2299

DEPTH: 200

(FT, MSL)

(FT)

Gamma log
(T.C. 4)



144-094-16DDD
NDSWC 8192

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Topsoil, silty, sandy, brownish-black-----	1	1
	Clay, silty, sandy, pebbly, moderate-yellowish-brown (till)-----	4	5
Sentinel Butte Formation:			
	Shale, hard, noncalcareous, yellowish-gray; isolated thin lignite seams-----	31	36
	Shale, silty, sandy, hard, noncalcareous, moderate-yellowish-brown-----	24	60

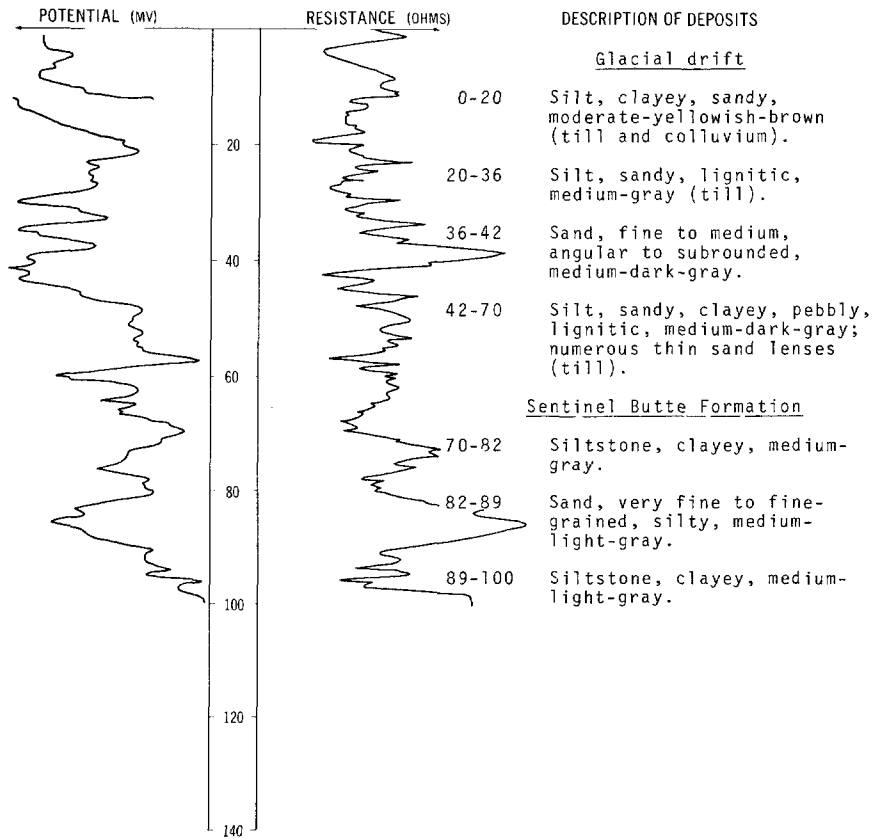
NDSWC 4728

LOCATION: 144-094-218BB

DATE DRILLED: June 1974

ALTITUDE:
(FT, MSL)

DEPTH: 100
(FT)



144-094-24BDB
(Log from K. J. Thompson)

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Topsoil and sand-----	15	15
	Rock-----	1	16
	Clay-----	14	30
	Coal (dry)-----	2	32
	Clay-----	10	42
	Coal (dry)-----	5	47
	Clay-----	8	55
	Rock-----	2	57
	Clay-----	6	63
	Coal-----	3	66
	Clay-----	1	67
	Coal (seep)-----	5	72
	Clay-----	5	131
	Coal (seep)-----	4	135
	Clay-----	84	219
	Coal (dry)-----	3	222
	Sand (water)-----	13	235
	Rock-----	.25	235.25
	Sand-----	5.75	241
	Coal-----	4	245
	Clay-----	7	252

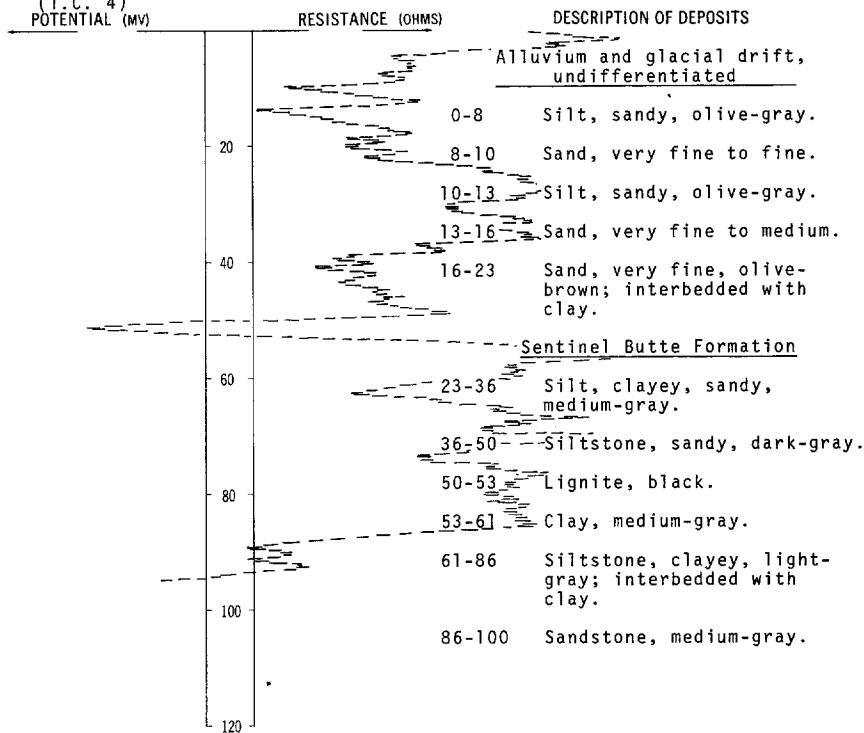
LOCATION: 144-094-29AAA

DATE DRILLED: November 1974

ALTITUDE: 2213
(FT, MSL)

DEPTH: 100
(FT)

Gamma log -----
(T.C. 4)
POTENTIAL (MV)



144-094-29BDC
(Log by K. J. Thompson)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Topsoil, sandy-----	46	46
	Coal (water)-----	20	66
	Clay-----	16	82

144-094-30CAC1
(Log from K. J. Thompson)

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Scoria-----	6	6
	Clay-----	14	20
	Coal slack, dry-----	5	25
	Clay-----	19	44
	Sand, dry-----	5	49
	Coal, dry-----	4	53
	Clay-----	7	60
	Rock-----	1	61
	Clay-----	82.5	143.5
	Coal (water)-----	1.5	145
	Clay-----	5	150

144-094-30CAC2
(Log from K. J. Thompson)

Altitude:

	Topsoil and clay-----	20	20
	Coal, dry-----	4	24
	Clay, sandy, wet-----	14	38
	Clay, black-----	6	44
	Clay, blue-----	39	83
	Clay, black-----	5	88
	Clay-----	26	114
	Coal and clay streaks-----	3	117
	Clay-----	8	125

144-094-31DDD
(Log from K. J. Thompson)

Altitude:

	Clay-----	8	8
	Sand and scoria (seep)-----	22	30
	Clay-----	24.5	54.5
	Coal (water)-----	1.5	56
	Clay-----	4	60

144-094-32CCC
(Log from K. J. Thompson)

Altitude:

	Clay-----	10	10
	Clay, sandy-----	12	22
	Coal-----	.5	22.5
	Clay-----	30.5	53
	Coal (water)-----	3	56
	Clay-----	4	60

144-094-34BAB 2
(Log from R. J. Thompson)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Topsoil and clay-----	54	54
	Coal-----	16	70
	Clay, sandy-----	24	94
	Rock-----	1	95
	Clay-----	2	97
	Coal-----	3	100
	Clay-----	5	105

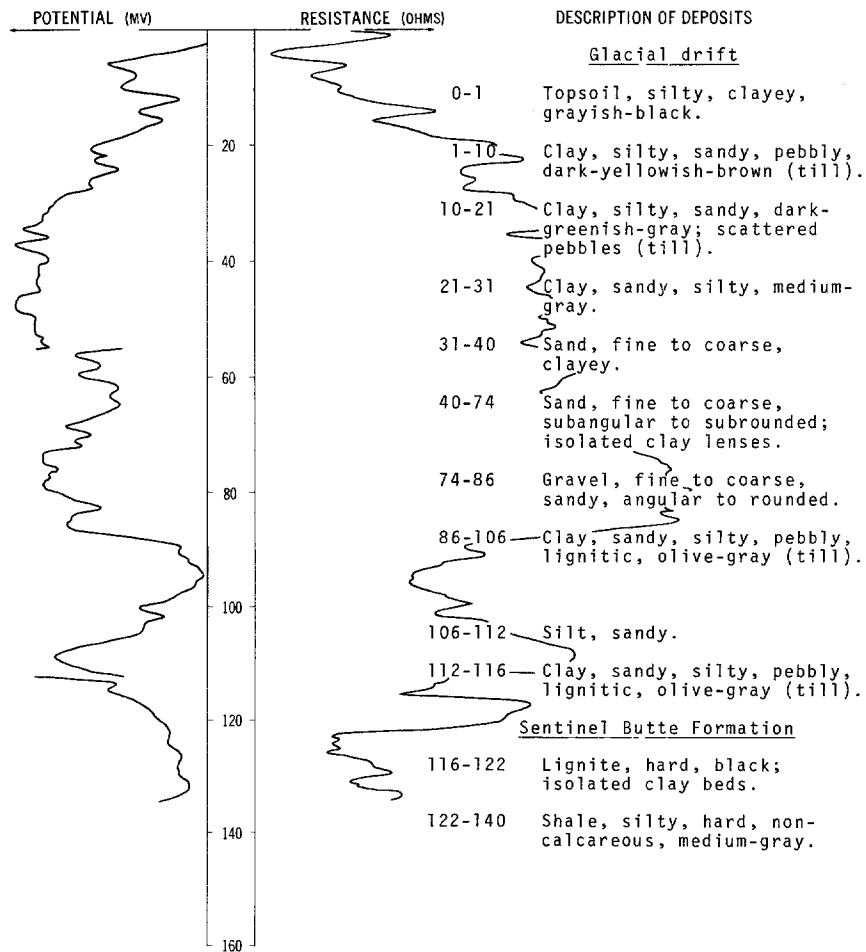
NDSWC 8206

LOCATION: 144-095-03AAD

DATE DRILLED: November 1971

ALTITUDE: 2203
(FT, MSL)

DEPTH: 140
(FT)



144-095-03ADD
NDSWC 4730

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Alluvium	and glacial drift, undifferentiated:		
	Silt, clayey, sandy, moderate-yellowish-brown-----	8	8
	Clay, silty, pebbly, moderate-yellowish-brown-----	15	23
	Sand, very fine to coarse, lignitic, subangular; numerous thin clay lenses----	7	30
	Clay, sandy, silty, pebbly, olive-gray (till)-----	7	37
Sentinel	Butte Formation:		
	Siltstone, clayey, medium-dark-gray; contains carbonaceous inclusions-----	23	60

144-095-03DAA
NDSWC 4729

Altitude:

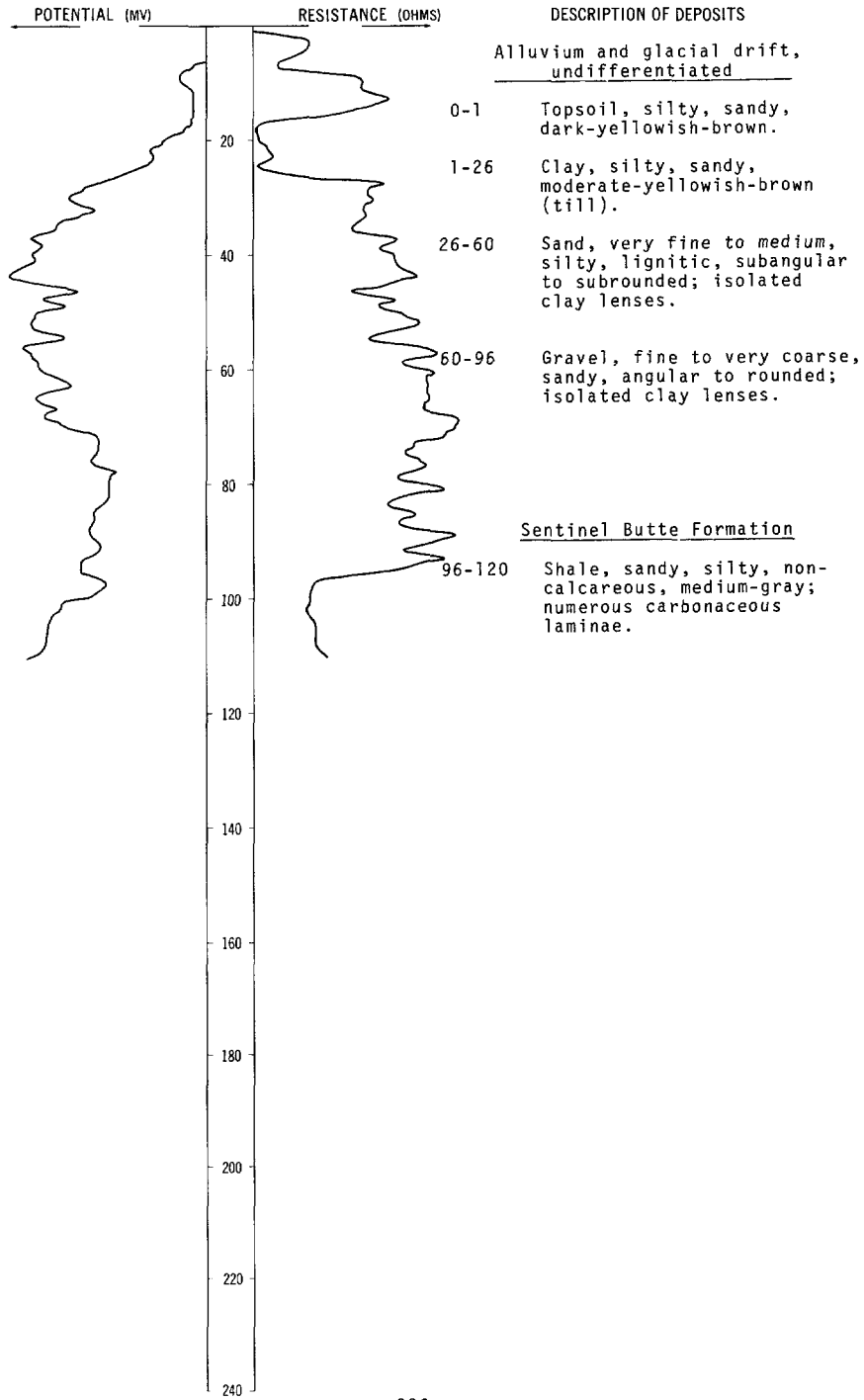
Alluvium:	Silt, clayey, sandy, dusky-yellow-----	10	10
Sentinel	Butte Formation:		
	Siltstone, moderate-yellowish-brown-----	10	20
	Siltstone, clayey, medium-dark-gray; contains carbonaceous inclusions-----	3	23
	Lignite, hard, black-----	8	31
	Claystone, sandy, dark-greenish-gray-----	6	37
	Lignite, black-----	2	39
	Siltstone, medium-gray-----	1	40

LOCATION: 144-095-05DCD

DATE DRILLED: October 1971

ALTITUDE: 2246
(FT, MSL)

DEPTH: 120
(FT)



144-095-10AAD
NDSWC 4474

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Alluvium	and glacial drift, undifferentiated:		
	Topsoil, silty, black-----	1	1
	Clay, silty, dark-brown-----	3	4
	Clay, silty, hard, variegated yellow, gray, and green-----	11	15
	Sand, clayey, silty, pebbly, lignitic, yellowish-brown-----	11	26
	Sand, clayey, silty, pebbly, lignitic, gray-----	13	39
Sentinel	Butte Formation:		
	Shale, silty, hard, medium-gray-----	11	50
	Lignite, fractured, black-----	5	55
	Shale, silty, hard, medium-gray-----	6	61
	Shale, silty, hard, greenish-yellow-----	9	70
	Siltstone, sandy, carbonaceous, brownish- gray-----	10	80

144-095-10BBB
NDSWC 4782

Altitude:

Glacial drift:			
	Clay, silty, olive-brown to olive-gray-----	25	25
	Sand, fine to coarse, clayey-----	15	40

LOCATION: 144-095-10CBC

DATE DRILLED: November 1974

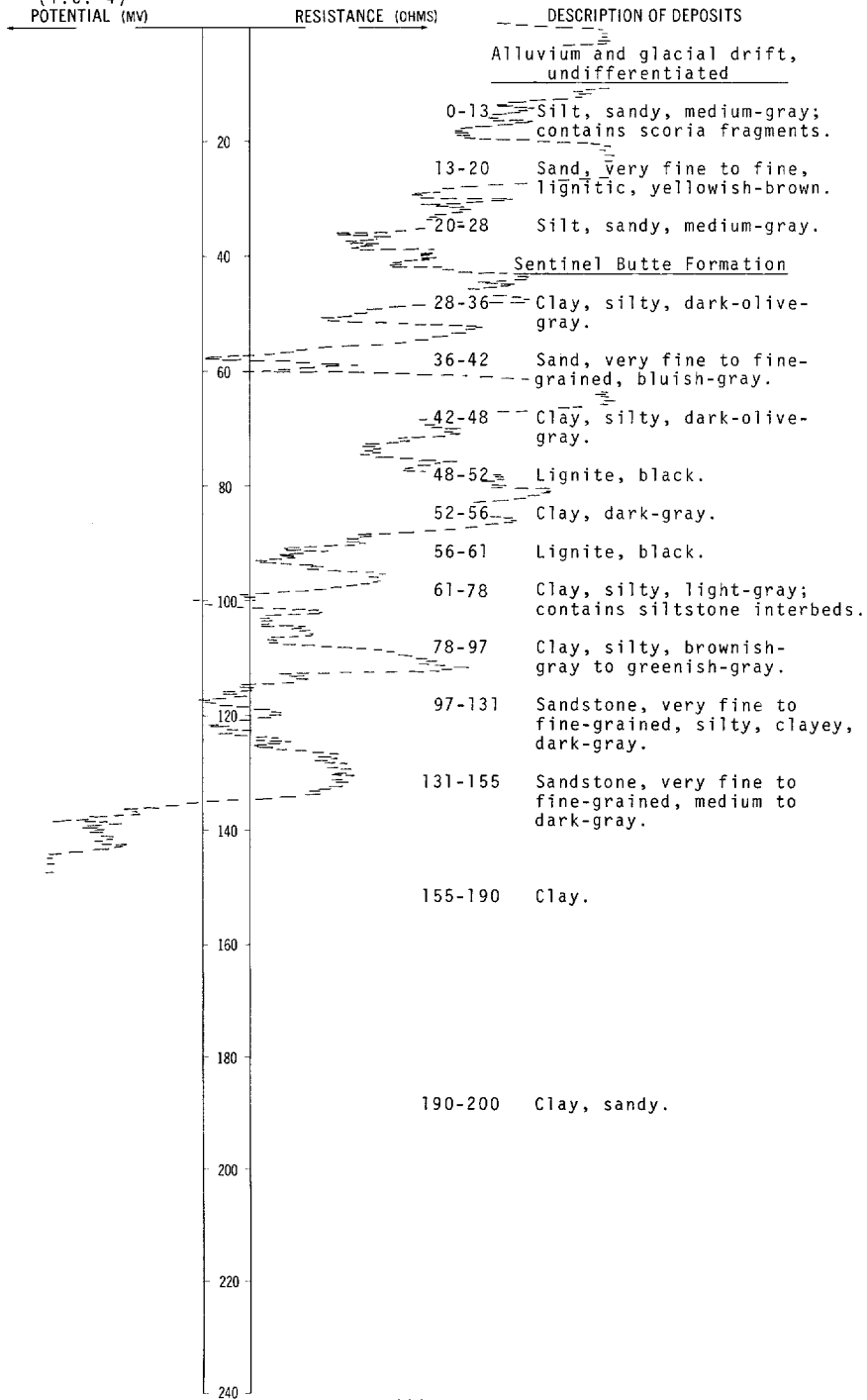
ALTITUDE: 2243

DEPTH: 200

(FT, MSL)

(FT)

Gamma log
(T.C. 4)



144-095-26AAA
NDSWC 8207

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
Glacial drift:			
	Topsoil, silty, clayey, brownish-black-----	1	1
	Clay, silty, sandy, pebbly, moderate-yellowish-brown (till)-----	20	21
	Sand, very fine to medium, silty, lignitic, subangular-----	27	48
	Clay, sandy, silty, gravelly, olive-gray (till)-----	7	55
Sentinel Butte Formation:			
	Shale, silty, noncalcareous, medium-gray---	25	80

144-095-26ABB3
(Log from K. J. Thompson)

Altitude:

Topsoil and clay-----	6	6
Clay-----	14	20
Coal slack, water-----	3	23
Clay-----	3	26
Coal, water-----	5	31
Clay-----	9	40

144-095-26ABB4
NDSWC 8208

Altitude:

Alluvium and glacial drift, undifferentiated:			
	Topsoil, silty, clayey, grayish-black-----	1	1
	Clay, silty, sandy, moderate-yellowish-brown (till)-----	25	26
	Gravel, fine to coarse, sandy, angular to subrounded; isolated clay lenses-----	14	40
	Sand, fine to coarse, lignitic, subangular to subrounded; numerous thin clay lenses-----	42	82
	Clay, sandy, silty, olive-gray; numerous gravel lenses (till)-----	18	100
Sentinel Butte Formation:			
	Shale, silty, noncalcareous, medium-gray; isolated thin lignite seams-----	20	120

LOCATION: 144-095-348AA

DATE DRILLED: November 1974

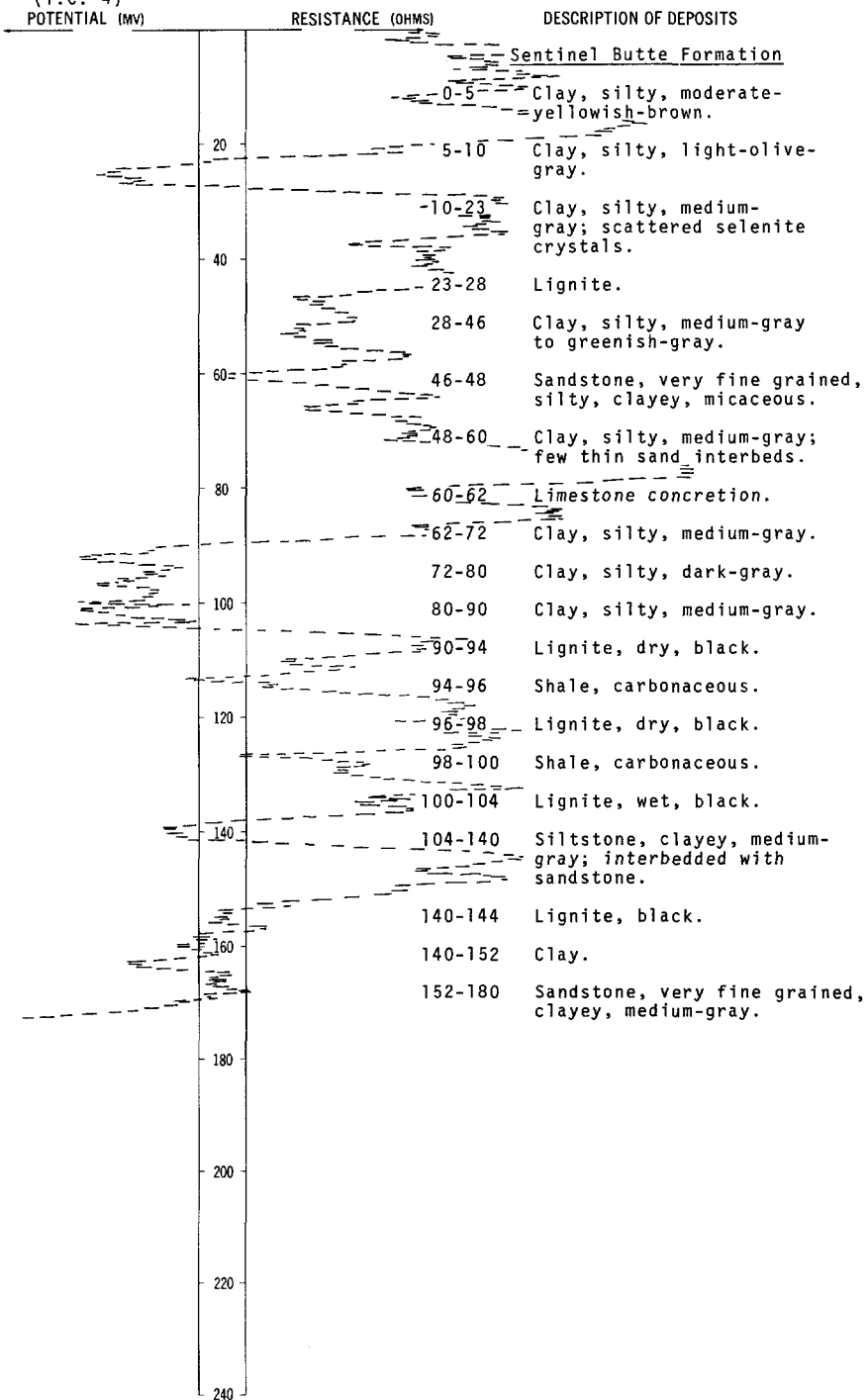
ALTITUDE: 2236

DEPTH: 180

(FT, MSL)

(FT)

Gamma log -----
(T.C. 4)



144-095-35ACB1
(Log from Mann Drilling Co.)

Altitude:

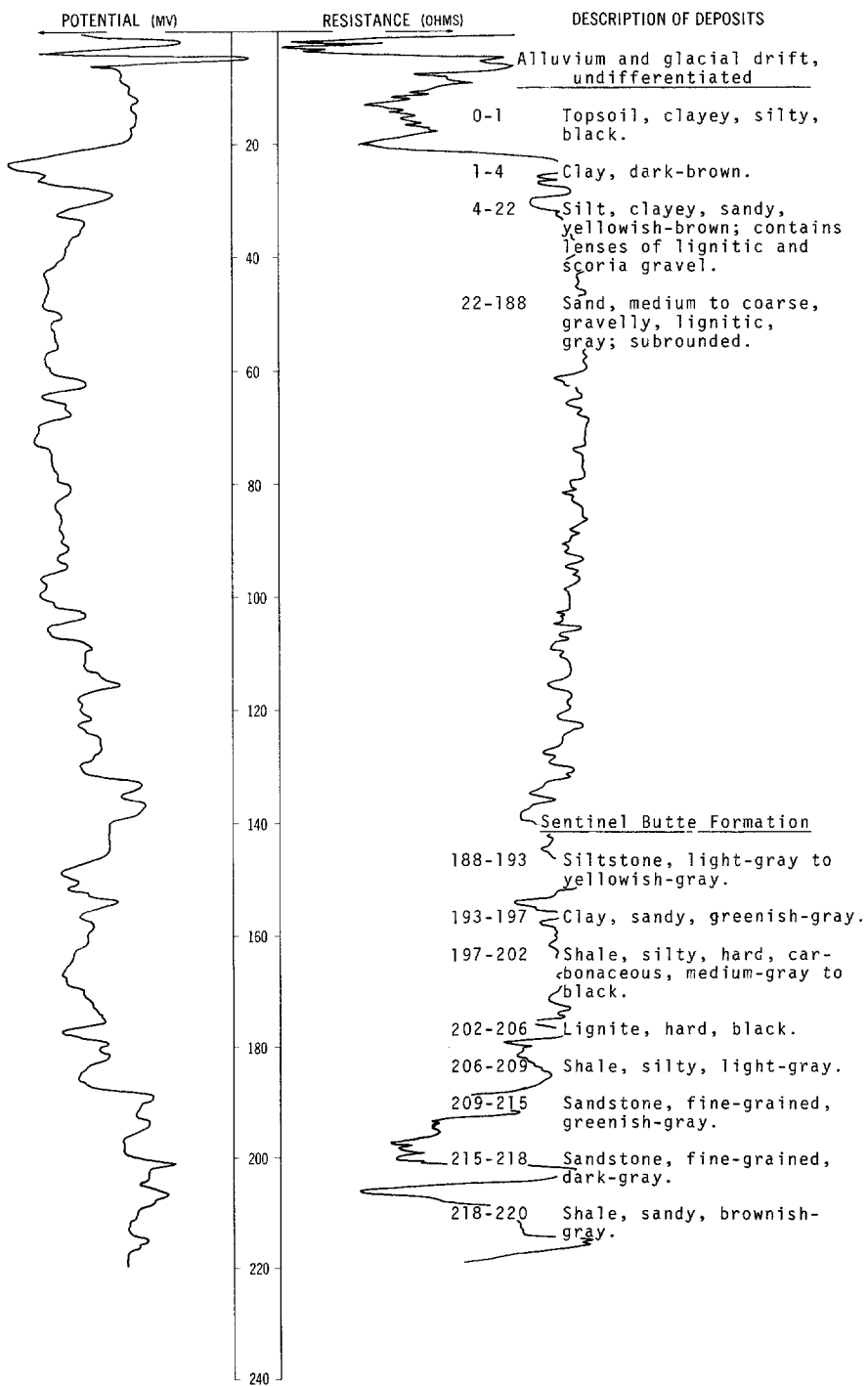
<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Clay, silty, brown-----	24	24
	Clay, gray-----	12	36
	Lignite-----	4	40
	Clay, gray-----	54	94
	Lignite-----	2	96
	Clay, gray-----	72	168
	Sandstone-----	4	172
	Clay, gray-----	137	309
	Silt-----	9	318
	Lignite-----	6	324
	Clay, gray-----	17	341
	Sand-----	39	380

LOCATION: 144-095-36AAA

DATE DRILLED: August 1972

ALTITUDE: 2144
(FT, MSL)

DEPTH: 220
(FT)

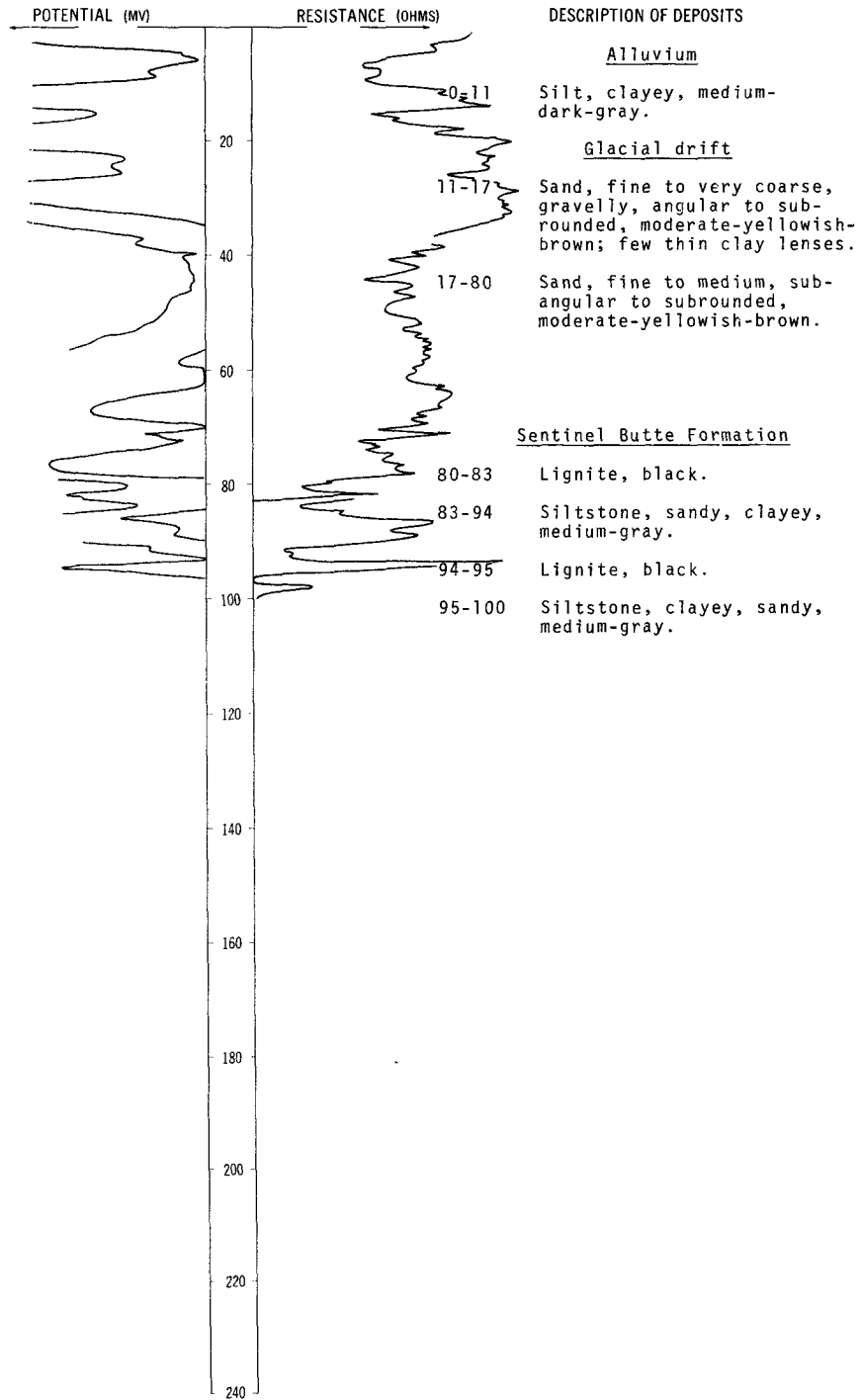


LOCATION: 144-096-01DDC

DATE DRILLED: June 1974

ALTITUDE: 2278
(FT, MSL)

DEPTH: 100
(FT)



144-096-07AAA
(Log from K. J. Thompson)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Topsoil, sandy-----	3	3
	Clay-----	47	50
	Sand, blue (water)-----	16	66
	Coal-----	2	68
	Clay-----	7	75

144-096-12ACC
(Log from K. J. Thompson)

Altitude:

	Topsoil, clay and sand (dry)-----	32	32
	Coal (dry)-----	4	36
	Clay-----	33	69
	Coal (dry)-----	1	70
	Clay-----	37	107
	Sand (dry)-----	8	115
	Sand (water)-----	35	150
	Clay-----	2	152

144-096-30DCA1
(Log from K. J. Thompson)

Altitude:

	Topsoil, sandy-----	8	8
	Clay-----	51	59
	Coal (dry)-----	1	60
	Clay-----	12	72
	Coal (water)-----	2	74
	Clay-----	3	77
	Coal-----	3	80
	Clay-----	5	85

144-096-30DDC
NDSWC 4680

Altitude:

Colluvium and alluvium:

	Clay, silty, sandy, moderate-yellowish-brown-----	3	3
	Sand, very fine to very coarse, silty, clayey, subangular to subrounded-----	7	10
	Gravel, fine to coarse, sandy, angular-----	3	13
	Lignite, detrital-----	5	18

Sentinel Butte Formation:

	Siltstone, sandy, medium-gray-----	1	19
	Lignite, hard, brownish-black-----	6	25
	Claystone, sandy, brownish-gray-----	2	27
	Lignite, hard, black; contains thin shale beds-----	12	39
	Claystone, silty, brownish-gray-----	1	40

144-096-35CCC
NDSWC 8204

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Alluvium:	Topsoil, silty, sandy, brownish-black-----	1	1
	Sand, very fine to medium, clayey, lignitic, subangular to subrounded-----	8	9
Sentinel Butte Formation:	Shale, silty, calcareous, medium-light-gray; numerous thin lignite seams-----	21	30
	Shale, hard, noncalcareous, brownish-gray--	10	40

144-097-08DBD
(Log from K. J. Thompson)

Altitude:

Topsoil, sandy-----	4	4
Rock-----	2	6
Sand-----	44	50
Clay, black, coal streaks-----	7	57
Clay-----	7	64
Coal (water)-----	3.5	67.5
Clay-----	1.5	69
Coal-----	.5	69.5
Clay-----	5.5	75

144-097-12CCC2
(Log from K. J. Thompson)

Altitude:

Topsoil and clay-----	8	8
Sand (seep)-----	26	34
Clay-----	10	44
Coal (dry)-----	3	47
Clay-----	8	55
Coal (dry)-----	2	57
Clay-----	33	90
Coal (dry)-----	3	93
Clay-----	5	98
Sand (water)-----	9	107
Coal-----	1	108
Clay-----	9	117
Coal (dry)-----	1	118
Clay-----	25	143
Coal (dry)-----	2	145
Clay-----	7	152
Coal (water)-----	7	159
Clay-----	1	160

144-097-13BBC
NDSWC 8236

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
Alluvium:	Topsoil, silty, sandy, brownish-black-----	1	1
	Clay, silty, sandy, dark-yellowish-brown---	4	5
	Sand, fine to medium, silty, clayey, subangular to subrounded-----	3	8
Sentinel Butte Formation:	Shale, silty, noncalcareous, medium-gray; thin sand and lignite beds-----	32	40

144-097-14AAB
(Log from K. J. Thompson)

Altitude:

Topsoil and clay-----	45	45
Coal, dry-----	2	47
Rock-----	1	48
Coal (water)-----	7	55
Clay-----	10	65

144-097-14ABD1
(Log from K. J. Thompson)

Altitude:

Topsoil and clay-----	31	31
Coal (dry)-----	2	33
Clay-----	2	35
Coal (water)-----	3	38
Clay-----	16	54
Rock-----	1	55
Clay and coal, interbedded-----	17	72
Sand-----	18	90
Coal and clay, interbedded-----	3	93

144-097-14ABD2
(Log from K. J. Thompson)

Altitude:

Topsoil and clay-----	24	24
Coal slack (dry)-----	1	25
Clay-----	13	38
Coal (dry)-----	2	40
Clay-----	5	45
Coal (water)-----	2	47
Clay-----	3	50

144-097-24DAB
(Log from K. J. Thompson)

Altitude:

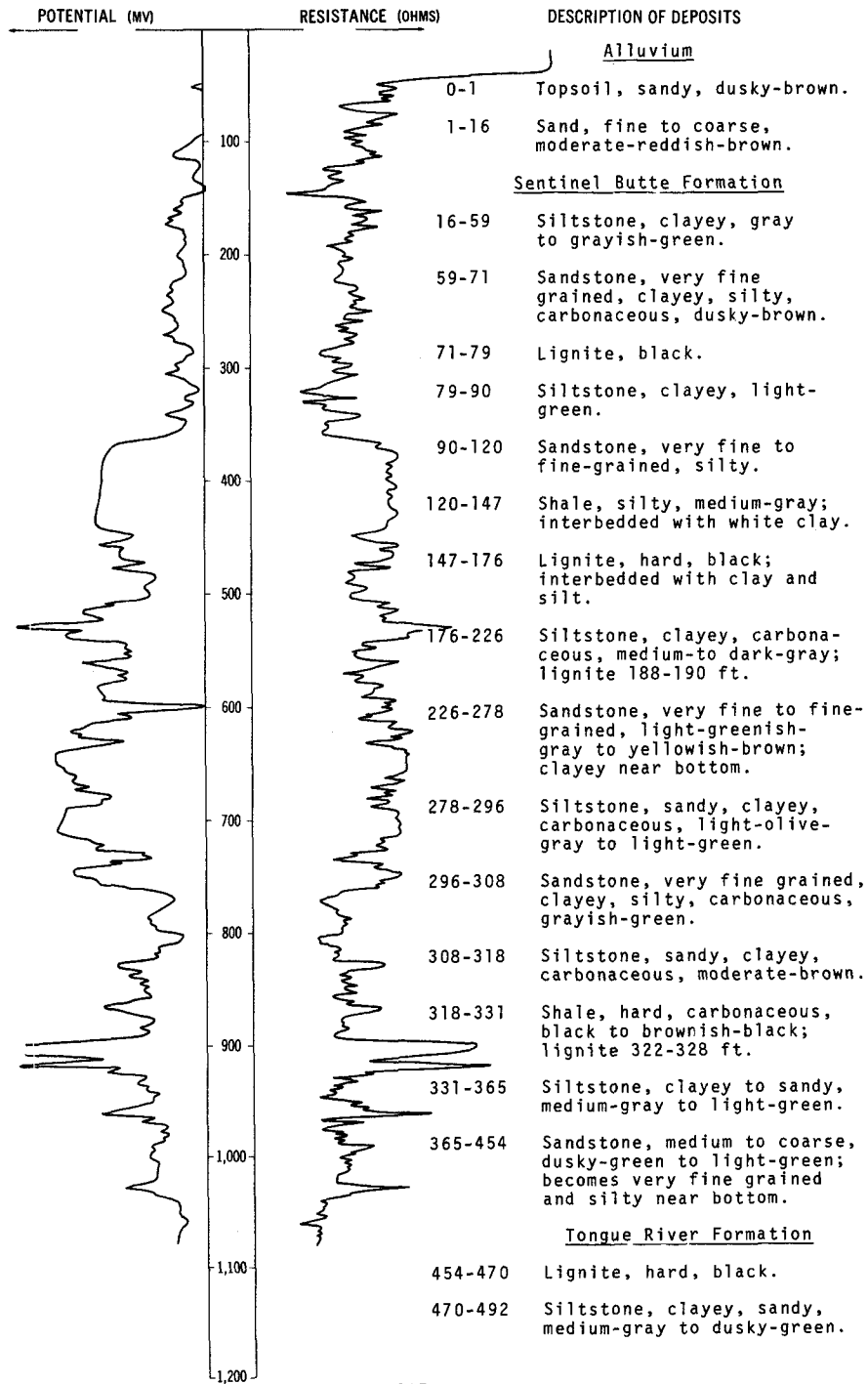
Topsoil, sandy-----	21	21
Rock, black-----	.5	21.5
Clay-----	31.5	53
Coal (water)-----	8	61
Clay-----	4	65

LOCATION: 144-097-26CBD1,2

DATE DRILLED: October 1973

ALTITUDE: 2265
(FT, MSL)

DEPTH: 1180
(FT)



NDSWC 4598 and 4598A, Continued

LOCATION: 144-097-26CBD1,2
 ALTITUDE: 2265
 (FT, MSL)

DATE DRILLED: October 1973
 DEPTH: 1180
 (FT)

POTENTIAL (MV)	RESISTANCE (OHMS)	DESCRIPTION OF DEPOSITS
		<u>Tongue River Formation, Continued</u>
	492-489	Sandstone, very fine grained, silty, carbonaceous, light-olive-gray.
1,300	498-507	Claystone, hard, carbonaceous, dusky-brown.
	507-544	Sandstone, very fine to fine-grained, carbonaceous, grayish-green; lignite from 520-525 ft.
1,400		
	544-572	Siltstone, sandy, variegated green and gray; interbedded with claystone.
1,500		
	572-593	Sandstone, very fine grained, silty, carbonaceous, light-olive-gray.
	593-597	Lignite, hard, black.
1,600		
	597-614	Siltstone, clayey, sandy, light-gray.
	614-762	Sandstone, very fine to fine-grained, carbonaceous, light-olive-gray; interbedded with lignite and shale from 676 to 688 ft.
1,700		
		<u>Cannonball-Ludlow Formations, undifferentiated</u>
1,800		
	762-897	Siltstone, clayey, sandy, carbonaceous, variegated gray, green, and brown; few claystone interbeds near top.
1,900		
	897-928	Sandstone, very fine grained, clayey to indurated.
2,000		
	928-998	Siltstone, clayey, variegated gray, green, and brown; interbedded with clay and shale.
2,100		
	998-1038	Siltstone, clayey; interbedded with sandstone.
	1038-1080	Claystone, silty, sandy, hard, dark-gray to grayish-brown.
2,200		
	1080-1180	No samples.
2,300		
2,400		

144-097-26CCA
NDSWC 8237

Altitude: 2261 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Alluvium:			
	Topsoil, silty, clayey, sandy, brownish-black-----	1	1
	Clay, silty, sandy, moderate-yellowish-brown-----	5	6
	Sand, very fine to coarse, silty, lignitic, subangular to subrounded-----	9	15
Sentinel Butte Formation:			
	Siltstone, hard, calcareous, medium-light-gray-----	25	40

144-097-31BBB1
(Log from K. J. Thompson)

Altitude:

	Topsoil and clay-----	30	30
	Quicksand, wet-----	10	40
	Clay-----	10	50
	Coal-----	1	51
	Coal slack-----	1	52
	Coal-----	1	53
	Clay-----	7	60

145-091-01BBB
NDSWC 8219

Altitude: 2038 ft

Alluvium and glacial drift, undifferentiated:			
	Topsoil, silty, sandy, clayey, brownish-black-----	1	1
	Clay, sandy, moderate-yellowish-brown-----	16	17
	Silt, clayey, sandy, moderate-yellowish-brown-----	11	28
	Clay, silty, sandy, moderate-yellowish-brown-----	32	60
	Sand, very fine to fine, silty, clayey, lignitic, subrounded-----	18	78
	Clay, silty, sandy, olive-gray-----	22	100
Sentinel Butte Formation:			
	Shale, silty, hard, noncalcareous, medium-gray; isolated thin lignite seams-----	20	120

Altitude: 2049 ft

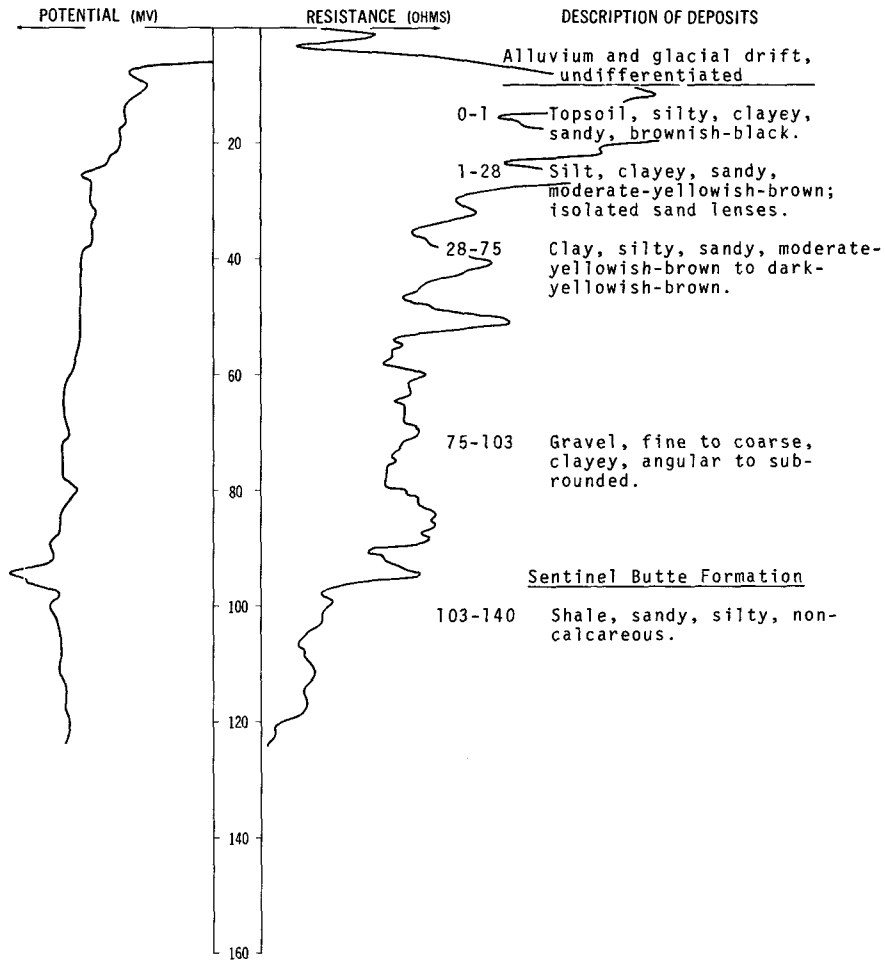
<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Alluvium	and glacial drift, undifferentiated:		
	Topsoil, sandy, silty, brownish-black-----	1	1
	Clay, silty, sandy, moderate-yellowish-brown-----	79	80
	Clay, silty, sandy, olive-gray; numerous thin sand lenses-----	18	98
	Sand, very fine to medium, clayey, silty, lignitic-----	20	118
	Clay, silty, sandy, olive-gray; isolated thin sand lenses-----	95	213
	Clay, silty, sandy, gravelly, olive-gray to medium-gray; numerous lignite and gravel lenses (till)-----	56	269
	Gravel, fine to coarse, sandy, silty, angular to subrounded; numerous clay lenses-----	22	291
Sentinel Butte Formation:			
Shale, silty, hard, noncalcareous, medium-gray-----	9	300	

LOCATION: 145-091-01CBB

DATE DRILLED: October 1971

ALTITUDE: 2052
(FT, MSL)

DEPTH: 140
(FT)



145-091-05DDD1
NDSWC 8223

Altitude: 2195 ft

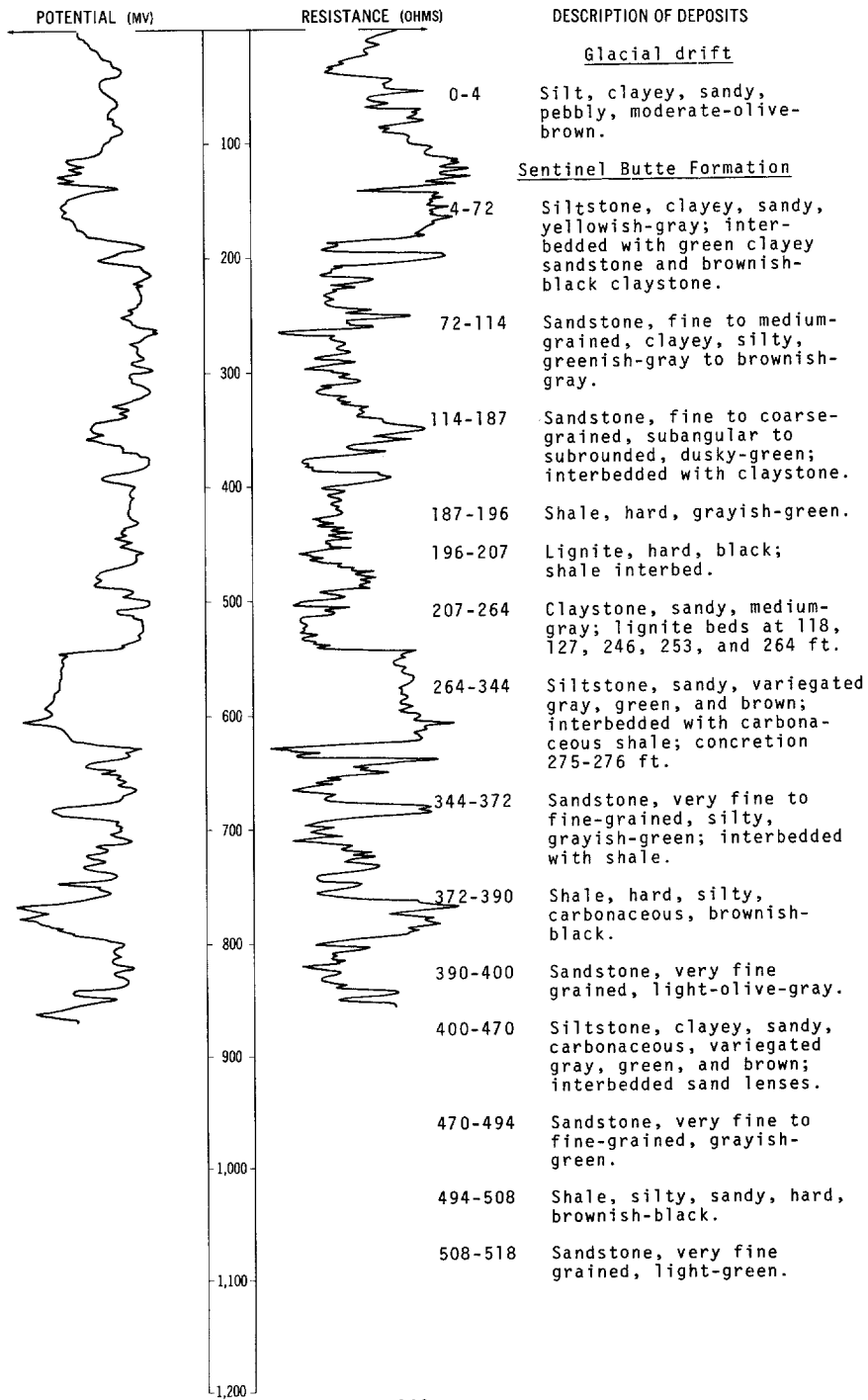
<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Glacial drift:			
	Topsoil, silty, clayey, brownish-black-----	1	1
	Clay, silty, sandy, pebbly, moderate-yellowish-brown (till)-----	23	24
Sentinel Butte Formation:			
	Shale, silty, calcareous, dusky-yellow-----	6	30
	Shale, silty, hard, noncalcareous, light-brownish-gray-----	10	40
	Shale, silty, sandy, calcareous, light-olive-gray-----	20	60

LOCATION: 145-091-05DDD2,3

DATE DRILLED: November 1973

ALTITUDE: 2195
(FT, MSL)

DEPTH: 880, 180
(FT)



NDSWC 4604 and 4604A, Continued

LOCATION: 145-091-05DDD2,3

DATE DRILLED: November 1973

ALTITUDE: 2195
(FT, MSL)

DEPTH: 880, 180
(FT)

POTENTIAL (MV)	RESISTANCE (OHMS)	DESCRIPTION OF DEPOSITS
		<u>Sentinel Butte Formation, Continued</u>
		518-545 Siltstone, clayey, sandy, gray, green, and brown.
1,300		545-625 Sandstone, fine- to medium-grained, dusky green; indurated zones at 546, 595, and 608 ft.
1,400		625-641 Shale, silty, carbonaceous, brownish-black.
		<u>Tongue River Formation</u>
		641-646 Lignite, hard, black.
1,500		646-665 Sandstone, very fine grained, brownish-black; interbedded with shale.
		665-683 Shale, hard, carbonaceous, dusky-brown.
1,600		683-695 Sandstone, very fine grained, silty, dark-greenish-gray.
		695-765 Shale, sandy, variegated gray, green, and brown; interbedded with siltstone.
1,700		765-799 Siltstone, clayey, sandy, white, gray, and green.
		799-880 Claystone, variegated gray, green, and brown; interbedded with siltstone and very fine grained sandstone.
1,800		
1,900		
2,000		
2,100		
2,200		
2,300		
2,400		

145-091-10CDD1
(Log from Ray Mohl)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand and gravel-----	10	10
	Clay, soft, blue-----	4	14
	Clay, soft, blue; with trace of rock at 14 ft-----	58	72
	Rock-----	1	73
	Clay, gray-----	16	89
	Clay, gray and red-----	19	108
	Clay, gray with trace of clay, red-----	6	114
	Clay, sandy, gray-----	5	119
	Sandstone layer-----	1	120
	Clay, sandy, and sand, coarse; water-----	11	131
	Sand, soft; water-----	1	132
	Clay, sandy, coarse-----	28	160
	Clay, sandy, gray-----	44	204
	Rock, sandy-----	2	206
	Clay, sandy-----	4	210

145-091-11CDD2
(Log from K. J. Thompson)

Altitude:

	Topsoil and clay-----	75	75
	Clay-----	48	123
	Rock-----	2.5	125.5
	Clay-----	14.5	140
	Sand, blue-----	6	146
	Rock-----	1	147
	Clay-----	11	158
	Rock-----	2.5	160.5
	Clay-----	4.5	165
	Sand, blue (water)-----	20	185
	Clay-----	1	186
	Rock-----	--	--

145-091-17DCC
NDSWC 8215

Altitude: 2184 ft

Glacial drift:

	Topsoil, silty, sandy, brownish-black-----	1	1
	Clay, silty, sandy, pebbly, moderate- yellowish-brown (till)-----	54	55

Sentinel Butte Formation:

	Sandstone, fine-grained, hard, micaceous, calcareous, medium-bluish-gray; isolated thin lignite seams-----	2	57
	Sandstone, fine-grained, clayey, silty, lignitic, micaceous-----	15	72
	Shale, silty, hard, noncalcareous, medium- dark-gray; thin carbonaceous laminae-----	8	80

145-091-19CCD
NDSWC 8209

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Alluvium and glacial drift, undifferentiated:			
	Topsoil, sandy, silty, clayey, brownish-black-----	1	1
	Clay, silty, sandy, dark-yellowish-brown---	11	12
	Sand, fine to coarse, gravelly, clayey, subangular to subrounded-----	6	18
Sentinel Butte Formation:			
	Shale, hard, noncalcareous, medium-gray; thin carbonaceous laminae-----	22	40

145-091-27BBD
(Log from Opp Well Drilling)

Altitude:

	Sand, dark-----	2	2
	Clay, yellow-----	13	15
	Clay, blue-----	9	24
	Coal (water)-----	5	29
	Clay, blue-----	5	34

145-091-30BBD
NDSWC 72-3

Altitude: 2050 ft

Alluvium and glacial drift, undifferentiated:			
	Topsoil, sandy, dark-brown-----	1	1
	Gravel, sandy, oxidized; subrounded-----	14	15
	Gravel, sandy, subrounded-----	21	36
Sentinel Butte Formation:			
	Shale, silty, sandy, hard, medium-gray-----	4	40

145-091-30BDD
NDSWC 8242

Altitude: 2041 ft

Alluvium and glacial drift, undifferentiated:			
	Topsoil, silty, sandy, clayey, grayish-black-----	1	1
	Clay, silty, dark-yellowish-brown-----	19	20
	Gravel, fine to coarse, sandy, angular to well rounded-----	9	29
Sentinel Butte Formation:			
	Shale, silty, calcareous, medium-light-gray	11	40

145-091-30CAA
NDSWC 8243

Altitude: 2040 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Alluvium	and glacial drift, undifferentiated:		
	Topsoil, silty, sandy, clayey, grayish-black-----	1	1
	Clay, silty, dark-yellowish-brown-----	8	9
	Sand, very fine to medium, clayey, sub-angular to subrounded-----	5	14
	Gravel, fine to coarse, sandy, angular to subrounded-----	6	20
	Sand, very fine to medium, clayey, subangular to subrounded-----	16	36
Sentinel Butte Formation:			
	Claystone, bluish-gray-----	24	60

145-091-30CAD
NDSWC 8244

Altitude: 2039 ft

Alluvium	and glacial drift, undifferentiated:		
	Topsoil, silty, clayey, grayish-black-----	1	1
	Clay, silty, sandy, moderate-yellowish-brown-----	11	12
	Clay, silty, olive-gray; occasional thin sand lens-----	7	19
	Gravel, fine to coarse, sandy, clayey, angular to rounded-----	2	21
Sentinel Butte Formation:			
	Shale, silty, hard, calcareous-----	19	40

145-091-30DCC
NDSWC 8210

Altitude: 2038 ft

Sentinel Butte Formation:			
	Topsoil, silty, clayey, grayish-black-----	1	1
	Shale, hard, noncalcareous, moderate-yellowish-brown; few thin lignite seams--	31	32
	Shale, noncalcareous, medium-gray; few thin lignite seams-----	8	40

145-091-33ADD
NDSWC 8245

Altitude:

Alluvium(?):			
	Topsoil, silty, clayey, grayish-black-----	1	1
	Clay, silty, sandy, dark-yellowish-brown---	13	14
Sentinel Butte Formation:			
	Shale, silty, hard, calcareous, medium-gray-----	26	40

145-091-34CBC
NDSWC 8246

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Alluvium:	Topsoil, silty, clayey, grayish-black-----	1	1
	Clay, silty, sandy, dark-yellowish-brown---	8	9
Sentinel Butte Formation:	Shale, silty, hard, yellowish-gray-----	11	20
	Siltstone, hard, noncalcareous, medium-gray-----	20	40

145-091-34CDA1
(Log from K. J. Thompson)

Altitude:

Topsoil, sand and gravel (seep)-----	31	31
Coal (water)-----	9	40
Clay-----	5	45

145-091-34CDA2
(Log from K. J. Thompson)

Altitude:

Topsoil, clay, sandy-----	37	37
Coal-----	7	44
Clay-----	6	50
Clay, sandy-----	10	60
Clay, soft-----	9	69
Coal (water)-----	3	72
Clay-----	8	80

145-091-35BBB
(Log from R. J. Thompson)

Altitude:

Sandstone-----	4	4
Clay-----	55	59
Coal-----	2	61
Clay-----	8	69
Coal-----	1	70
Clay-----	18	88
Rock-----	1	89
Coal-----	2	91
Clay-----	19	110
Coal-----	6	116
Clay-----	22	138
Clay, sandy-----	5	143
Coal-----	1	144
Clay-----	24	168
Coal-----	1	169
Sand-----	7	176
Coal-----	3	179
Clay-----	3	182
Coal-----	1	183
Clay-----	2	185

145-092-06CCD
(Log from K. J. Thompson)

Altitude:

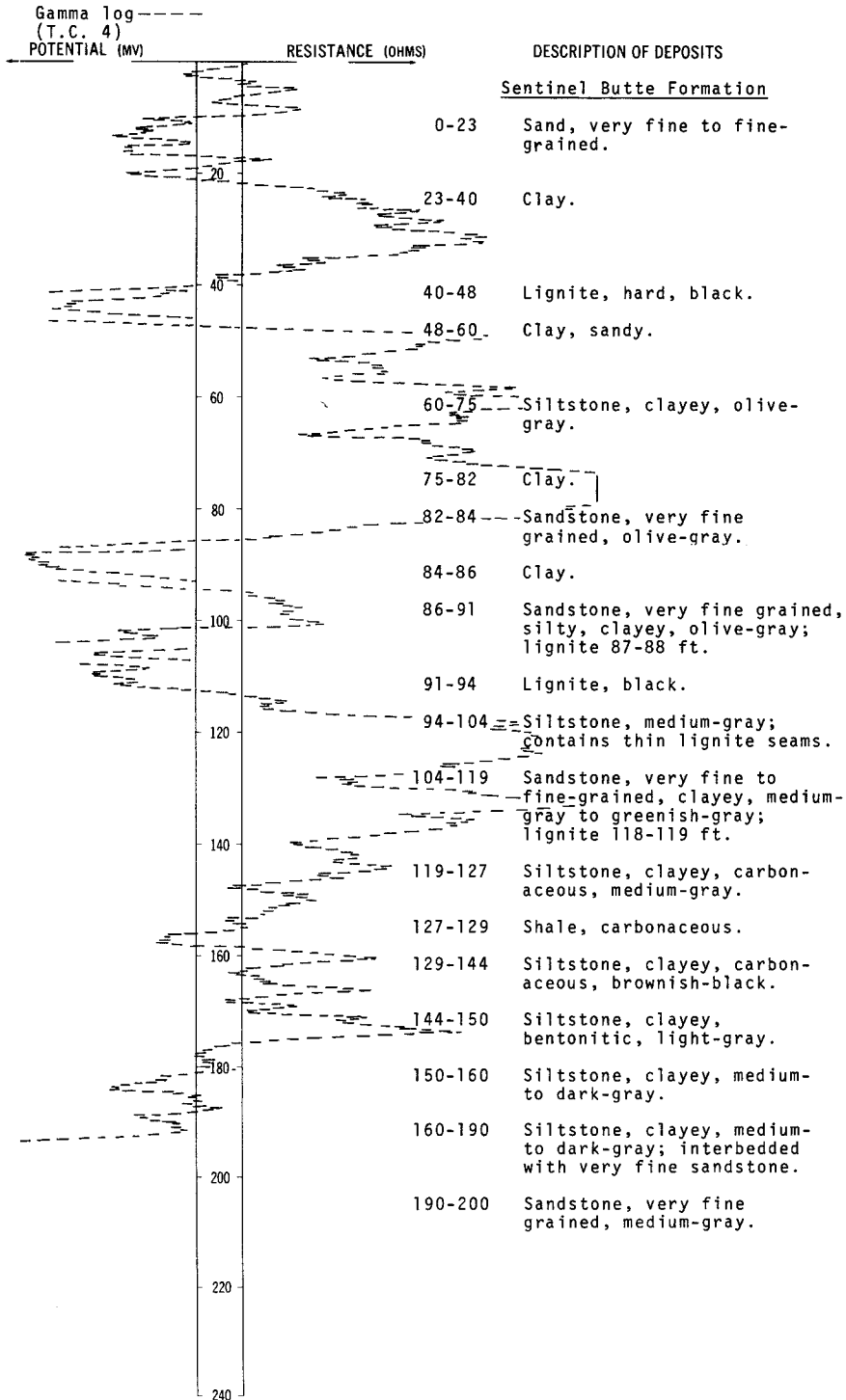
<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Topsoil and clay-----	27	27
	Rock-----	.5	27.5
	Clay-----	17.5	45
	Coal (water)-----	10	55
	Clay-----	4	59

LOCATION: 145-092-06DDD

DATE DRILLED: November 1974

ALTITUDE: 2230
(FT, MSL)

DEPTH: 200
(FT)



145-092-08ABA
NDSWC 4711

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Alluvium:	Silt, clayey, sandy, moderate-yellowish-brown-----	8	8
Sentinel Butte Formation:	Silt, clayey, medium-gray-----	13	21
	Siltstone, clayey, medium-dark-gray-----	14	35
	Lignite, hard, black-----	2	37
	Siltstone, clayey, medium-dark-gray-----	18	55
	Siltstone, clayey, carbonaceous, dark-gray-----	3	58
	Lignite, hard, black-----	2	60

145-092-12DCC2
(Log from K. J. Thompson)

Altitude:

Topsoil, sandy-----	16	16
Gravel-----	1	17
Clay-----	8	25
Rock-----	1	26
Clay-----	15	41
Coal (dry)-----	1	42
Clay-----	15	57
Coal (dry)-----	2	59
Clay-----	6	65
Coal (dry)-----	1	66
Clay-----	27	93
Coal (water)-----	9	102

LOCATION: 145-092-15AAA

DATE DRILLED: November 1974

ALTITUDE: 2155

DEPTH: 240

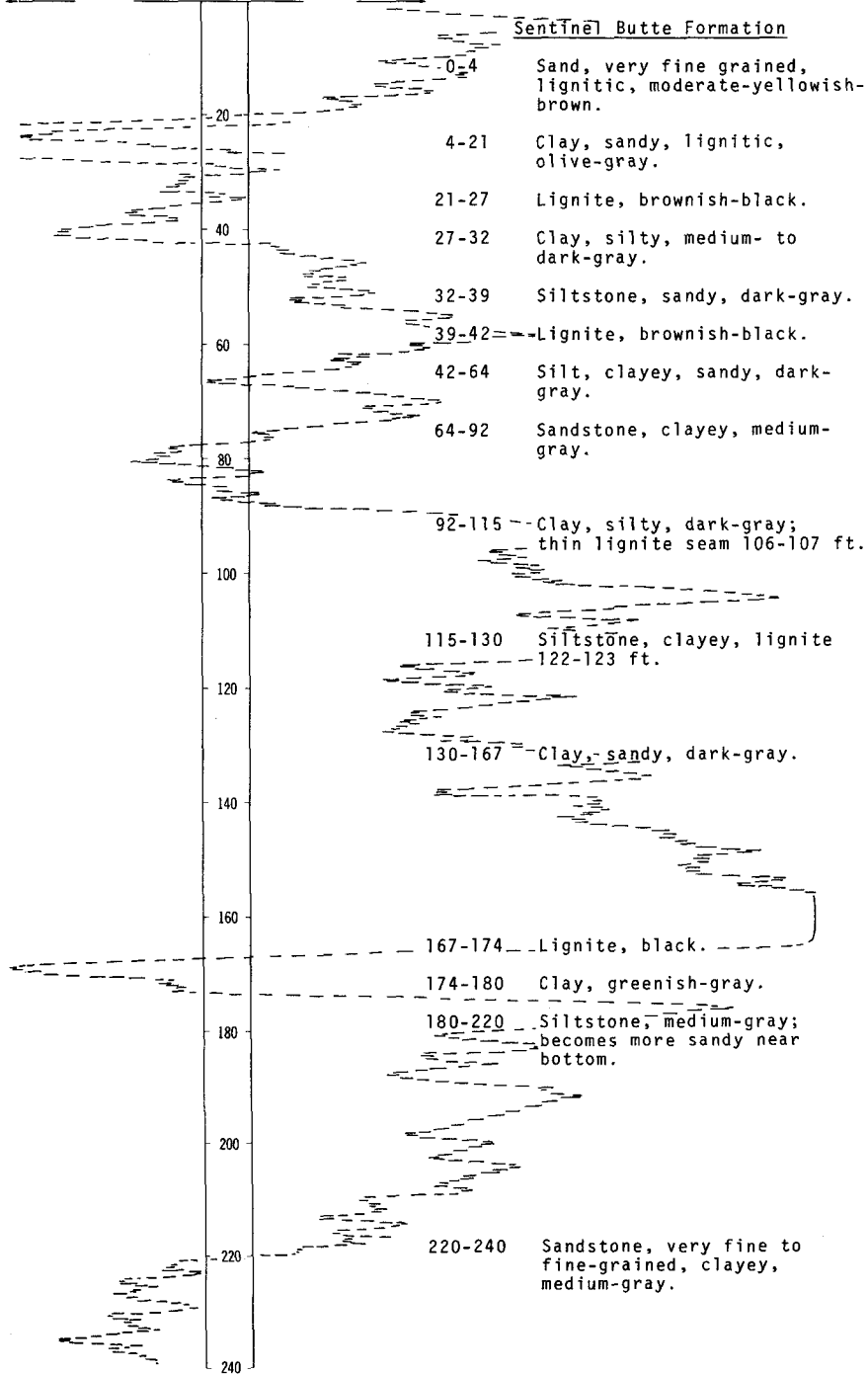
(FT, MSL)

(FT)

Gamma log
(T.C. 4)
POTENTIAL (MV)

RESISTANCE (OHMS)

DESCRIPTION OF DEPOSITS



145-092-17CDB
(Log from K. J. Thompson)

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Topsoil and gravel-----	4	4
	Sand-----	29	33
	Coal (water)-----	4	37
	Clay-----	7	44
	Coal(?)-----	2	46

145-092-19CAC
(Log from K. J. Thompson)

Altitude:

	Topsoil and clay-----	10	10
	Scoria (dry)-----	10	20
	Clay-----	8	28
	Coal slack (water)-----	2	30
	Clay-----	29	59
	Coal (water)-----	4	63
	Clay-----	2	65

145-092-19CDD
(Log from E. A. Bodin)

Altitude: 2095 ft

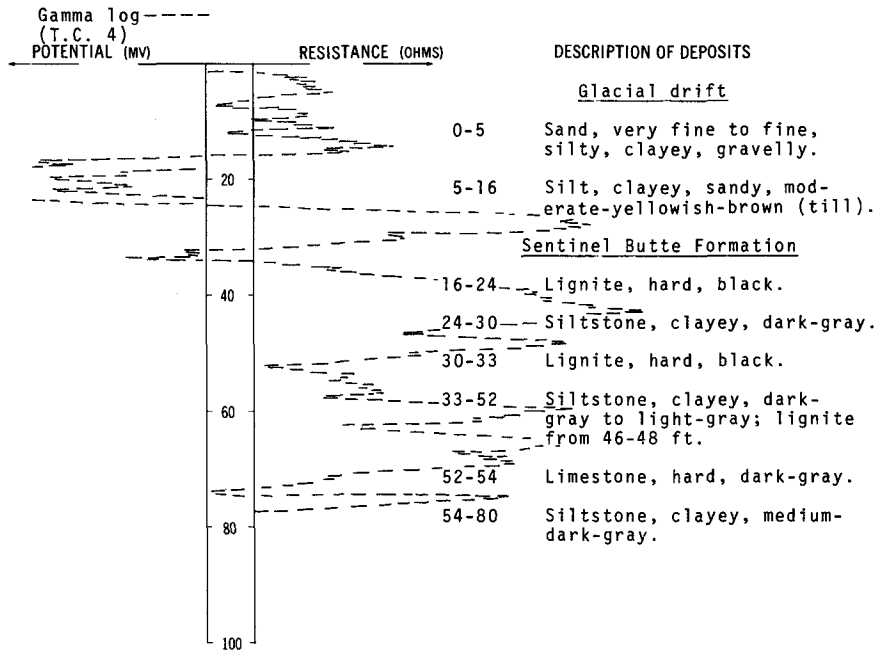
	Clay, sandy-----	21	21
	Clay, yellow-----	2	23
	Quicksand-----	1	24
	Clay, sandy-----	6	30
	Coal-----	1	31
	Shale-----	11	42
	Sand-----	4	46
	Shale-----	20	66
	Sandstone, dry-----	25	91
	Shale-----	11	102
	Coal-----	10	112

LOCATION: 145-092-20BBB

DATE DRILLED: June 1974

ALTITUDE:
(FT, MSL)

DEPTH: 80
(FT)



145-092-22ACC
(Log from K. J. Thompson)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Topsoil and clay	13	13
	Sand, wet	3	16
	Gravel, wet	2	18
	Clay	3.5	21.5
	Rock	1.5	23
	Clay	13	36
	Coal, dry	2	38
	Clay	12	50
	Coal, dry	1.5	51.5
	Clay	5.5	57
	Coal, dry	2	59
	Clay	3	62
	Clay, sandy (seep)	10	72
	Clay	2	74
	Coal, dry	1	75
	Clay	2	77
	Coal	1	78
	Clay	4.5	82.5
	Coal (water)	7.5	90
	Clay	10	100

145-092-22ADD
(Log from K. J. Thompson)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Topsoil, sandy-----	18	18
	Gravel-----	1	19
	Clay-----	19	38
	Coal-----	1	39
	Clay-----	12	51
	Coal-----	2	53
	Clay-----	5	58
	Coal-----	1	59
	Clay-----	25	84
	Coal (water)-----	11	95
	Clay-----	5	100

145-092-22DAA1
(Log from K. J. Thompson)

Altitude:

	Topsoil, sandy-----	15	15
	Gravel-----	1	16
	Clay-----	11	27
	Rock-----	1	28
	Clay-----	2	30
	Coal (dry)-----	1	31
	Clay-----	12	43
	Coal (dry)-----	2	45
	Clay-----	5	50
	Coal (dry)-----	1	51
	Clay-----	25	76
	Rock-----	1	77
	Clay-----	6	83
	Coal (water)-----	9	92
	Clay-----	36	128
	Rock-----	3	131
	Clay, sandy (dry)-----	21	152
	Coal (dry)-----	2	154
	Clay-----	6	160

145-092-22DAA2
NDSWC 8211

Altitude:

Alluvium:

	Topsoil, sandy, silty, brownish-black-----	1	1
	Sand, fine to medium, silty, clayey, subangular-----	3	4

Sentinel Butte Formation:

	Shale, moderate-yellowish-brown; few thin lignite seams-----	14	18
	Shale, silty, noncalcareous, medium-gray; few thin lignite seams and carbonaceous laminae-----	22	40

145-092-22DAA3
NDSWC 8247

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Alluvium and glacial drift, undifferentiated:			
	Topsoil, silty, clayey, grayish-black-----	1	1
	Clay, silty, sandy, dark-yellowish-brown---	9	10
	Sand, fine to coarse, gravelly, lignitic, subangular-----	3	13
Sentinel Butte Formation:			
	Shale, silty, calcareous, medium-gray-----	27	40

145-092-23BCC
NDSWC 8248

Altitude:

Alluvium and glacial drift, undifferentiated:			
	Topsoil, silty, clayey, grayish-black-----	1	1
	Clay, silty, sandy, dark-yellowish-brown---	11	12
	Gravel, fine to coarse, sandy, angular to rounded-----	2	14
Sentinel Butte Formation:			
	Shale, silty, hard, calcareous, medium-light-gray-----	26	40

145-092-23DAA
NDSWC 8241

Altitude:

Alluvium and glacial drift, undifferentiated:			
	Topsoil, sandy, silty, clayey, grayish-black-----	1	1
	Clay, silty, sandy, moderate-yellowish-brown-----	13	14
	Gravel, fine to coarse, angular to sub-rounded-----	1	15
Sentinel Butte Formation:			
	Shale, silty, hard, calcareous, medium-gray; few thin lignite seams-----	25	40

145-092-23DAD
NDSWC 8240

Altitude:

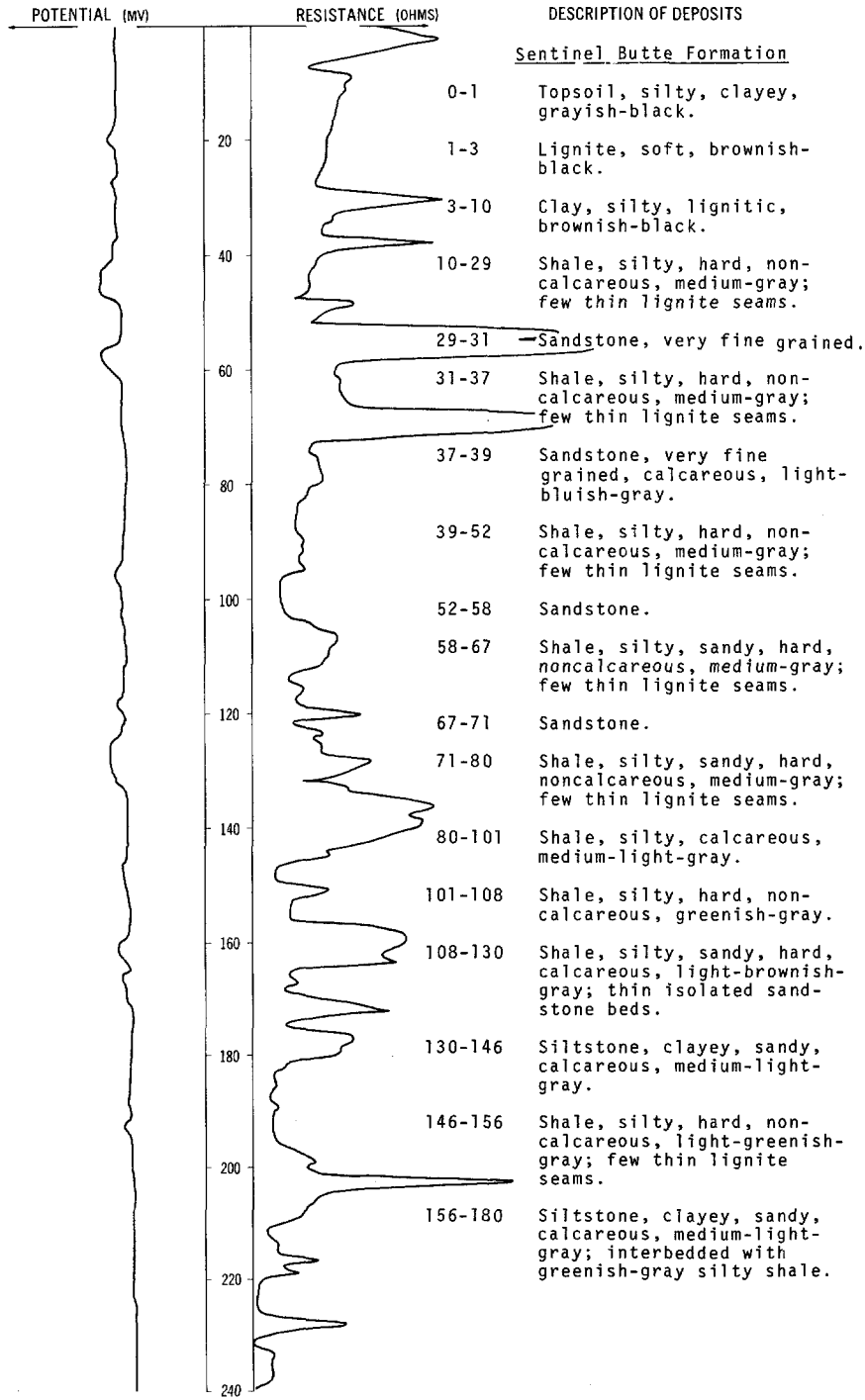
Alluvium and glacial drift, undifferentiated:			
	Topsoil, silty, sandy, clayey, grayish-black-----	1	1
	Clay, silty, sandy, moderate-yellowish-brown-----	7	8
	Sand, very fine to medium, lignitic, angular to subrounded-----	4	12
	Gravel, fine to coarse, sandy, angular to rounded-----	4	16
Sentinel Butte Formation:			
	Shale, silty, hard, calcareous, medium-light-gray; few thin lignite seams-----	24	40

LOCATION: 145-092-24BBC

DATE DRILLED: October 1971

ALTITUDE: 2115
(FT, MSL)

DEPTH: 700
(FT)

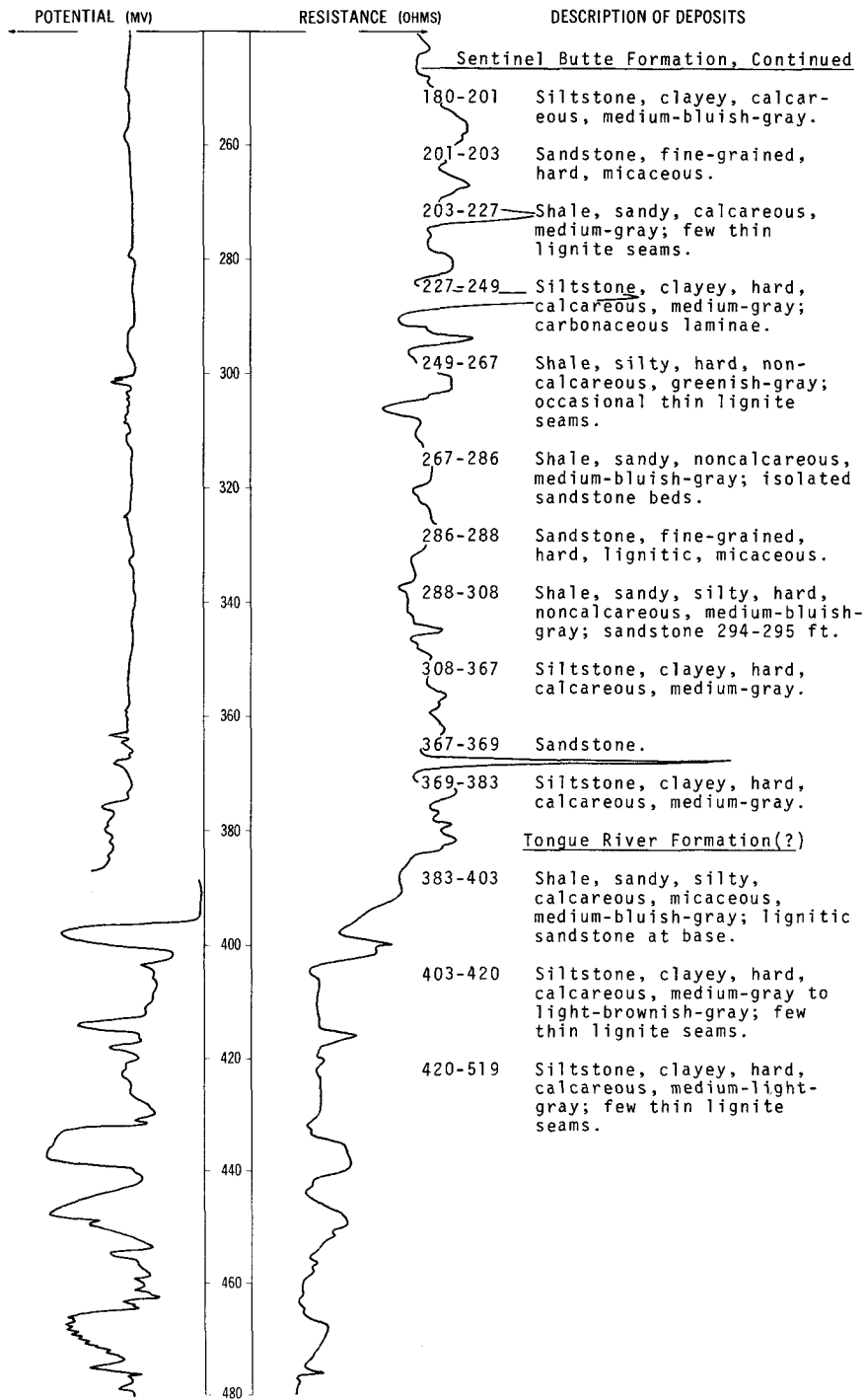


LOCATION: 145-092-24BBC

DATE DRILLED: October 1971

ALTITUDE: 2115
(FT, MSL)

DEPTH: 700
(FT)



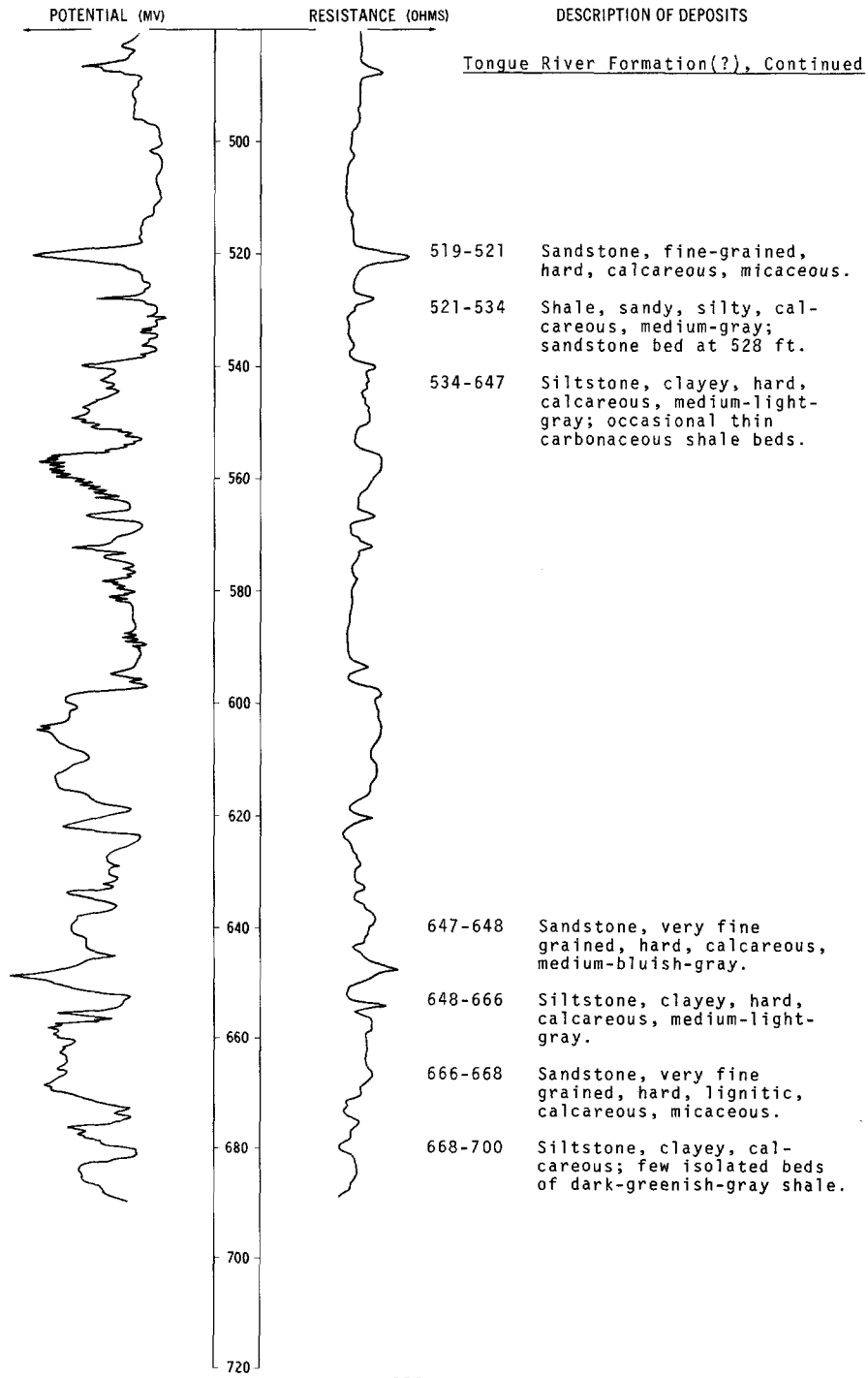
NDSWC 8222, Continued

LOCATION: 145-092-24BBC

DATE DRILLED: October 1971

ALTITUDE: 2115
(FT, MSL)

DEPTH: 700
(FT)



145-092-24BCA2
(Log from K. J. Thompson)

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Sand-----	15	15
	Clay-----	18	33
	Rock-----	1	34
	Clay-----	3	37
	Coal (dry)-----	15	52
	Clay-----	17	69
	Coal (dry)-----	2	71
	Clay-----	11	82
	Coal, seep-----	5	87
	Clay-----	2	89
	Coal (dry)-----	3	92
	Clay-----	2	94
	Coal (dry)-----	1	95
	Clay-----	10	105
	Coal (water)-----	4	109
	Clay-----	11	120
	Rock-----	1	121
	Clay-----	4	125
	Coal-----	1	126
	Clay-----	9	135

145-092-24CCB
NDSWC 8239

Altitude: 2045 ft

Alluvium and glacial drift, undifferentiated:			
	Topsoil, silty, clayey, sandy, grayish-black-----	1	1
	Clay, silty, sandy, moderate-yellowish-brown; few thin sand and gravel lenses---	8	9
	Sand, very fine to medium, clayey, silty, subangular to subrounded-----	6	15
	Clay, silty, sandy, medium-dark-gray-----	10	25
	Gravel, fine to coarse, angular to rounded-----	5	30
Sentinel Butte Formation:			
	Shale, silty, calcareous, medium-light-gray-----	10	40

145-092-24CCC
NDSWC 8238

Altitude: 2044 ft

Alluvium and glacial drift, undifferentiated:			
	Topsoil, silty, clayey, grayish-black-----	1	1
	Sand, very fine to medium, silty, lignitic, subangular to subrounded-----	15	16
	Clay, silty, sandy, medium-dark-gray; few thin sand lenses-----	8	24
Sentinel Butte Formation:			
	Shale, silty, hard, calcareous, medium-gray-----	16	40

145-092-24CCD
NDSWC 8212

Altitude: 2046 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Alluvium	and glacial drift, undifferentiated:		
	Topsoil, silty, clayey, grayish-black-----	1	1
	Clay, silty, sandy, dark-yellowish-brown---	9	10
	Gravel, fine to coarse, sandy, clayey, angular to subrounded-----	2	12
	Clay, silty, medium-gray-----	28	40
	Sand, very fine to medium, clayey, lignitic, subangular; gravel 45 to 46 ft-	6	46
Sentinel Butte Formation:	Shale, silty, hard, noncalcareous, medium- gray-----	14	60

145-092-24CDD1
(Log from Layne Minnesota Co.)

Altitude: 2046 ft

Topsoil-----	15	15
Sand, fine, some shale (or clay)-----	8	23
Sand, fine, with shale (or clay)-----	4	27
Shale (clay) and fine sand-----	5	32
Shale (clay), sand, fine, and coal (detrital)-----	5	37
Sand, fine, gravel, and shale (clay)-----	4	41
Clay-----	2	43

145-092-24CDD2
NDSWC 8249

Altitude: 2046 ft

Alluvium	and glacial drift, undifferentiated:		
	Clay, silty, sandy, dark-yellowish-brown---	13	13
	Sand, very fine to coarse, gravelly, subangular to subrounded-----	27	40
	Silt, sandy, clayey, medium-dark-gray-----	5	45
Sentinel Butte Formation:	Shale, silty, hard, calcareous, medium- light-gray-----	15	60

145-092-25AAC
NDSWC 72-1

Altitude: 2056 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
Alluvium and glacial drift, undifferentiated:			
	Landfill-----	2	2
	Sand, medium to coarse, gravelly, sub-rounded, oxidized-----	6	8
Sentinel Butte Formation:			
	Shale, silty, hard, yellowish-gray-----	4	12
	Siltstone, sandy-----	4	16
	Shale, silty, sandy, medium-gray-----	16	32
	Shale, hard, dark-grayish-green-----	13	45
	Shale, silty, sandy, carbonaceous, dark-greenish-gray to black-----	8	53
	Shale, carbonaceous, black; interbedded with thin seams of lignite-----	7	60
	Sandstone, fine-grained, greenish-gray-----	5	65
	Sandstone, very fine grained, clayey, light-greenish-gray-----	3	68
	Sandstone, very fine to fine-grained, carbonaceous, light-olive-gray-----	8	76
	Sandstone, very fine to fine-grained, clayey, light-olive-gray-----	6	82
	Siltstone, sandy, greenish-gray; interbedded with thin carbonaceous shale-----	9	91
	Lignite, hard, black-----	4	95
	Shale, silty, hard, medium-dark-gray-----	5	100

145-092-25AAD
NDSWC 72-2

Altitude:

Colluvium:			
	Roadfill-----	2	2
	Sand, medium to coarse, brown; scattered pebbles-----	5	7
Sentinel Butte Formation:			
	Shale, silty, hard, yellowish-gray-----	6	13
	Siltstone, clayey, sandy, lignitic, carbonaceous, medium-gray to greenish-gray-----	25	38
	Sandstone, clayey, silty, carbonaceous, brownish-black to black-----	8	46
	Siltstone, gray to green; interbedded with clayey sandstone, shale, and lignite-----	54	100

Altitude: 2047 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Alluvium	and glacial drift, undifferentiated:		
	Topsoil, silty, clayey, grayish-black-----	1	1
	Clay, silty, olive-gray-----	1	14
	Gravel, fine to coarse, sandy, angular to rounded-----	3	17
Sentinel Butte Formation:	Shale, silty, hard, calcareous, medium-		
	light-gray-----	23	40

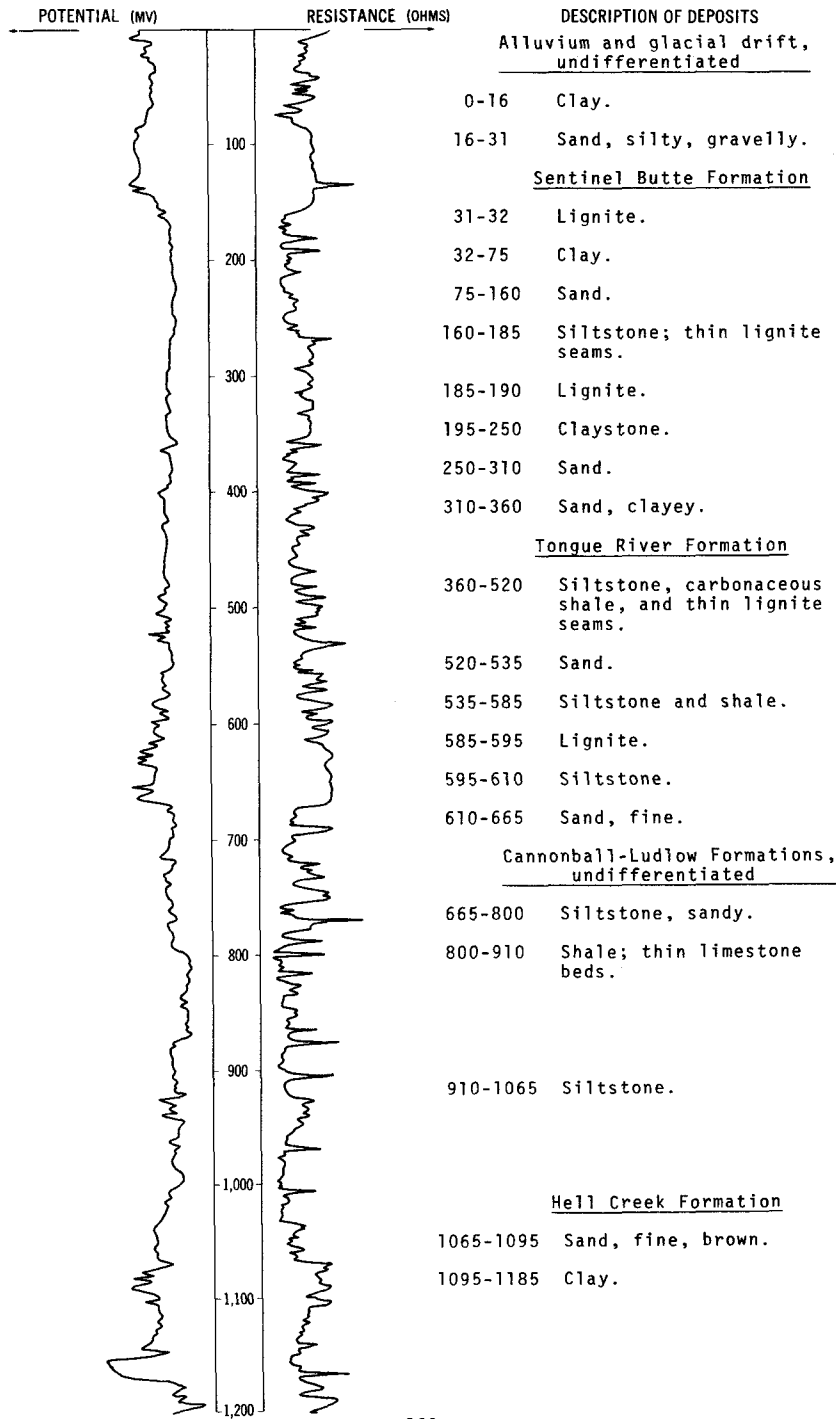
CITY OF HALLIDAY

LOCATION: 145-092-25ABB

DATE DRILLED: June 1974

ALTITUDE: 2046
(FT, MSL)

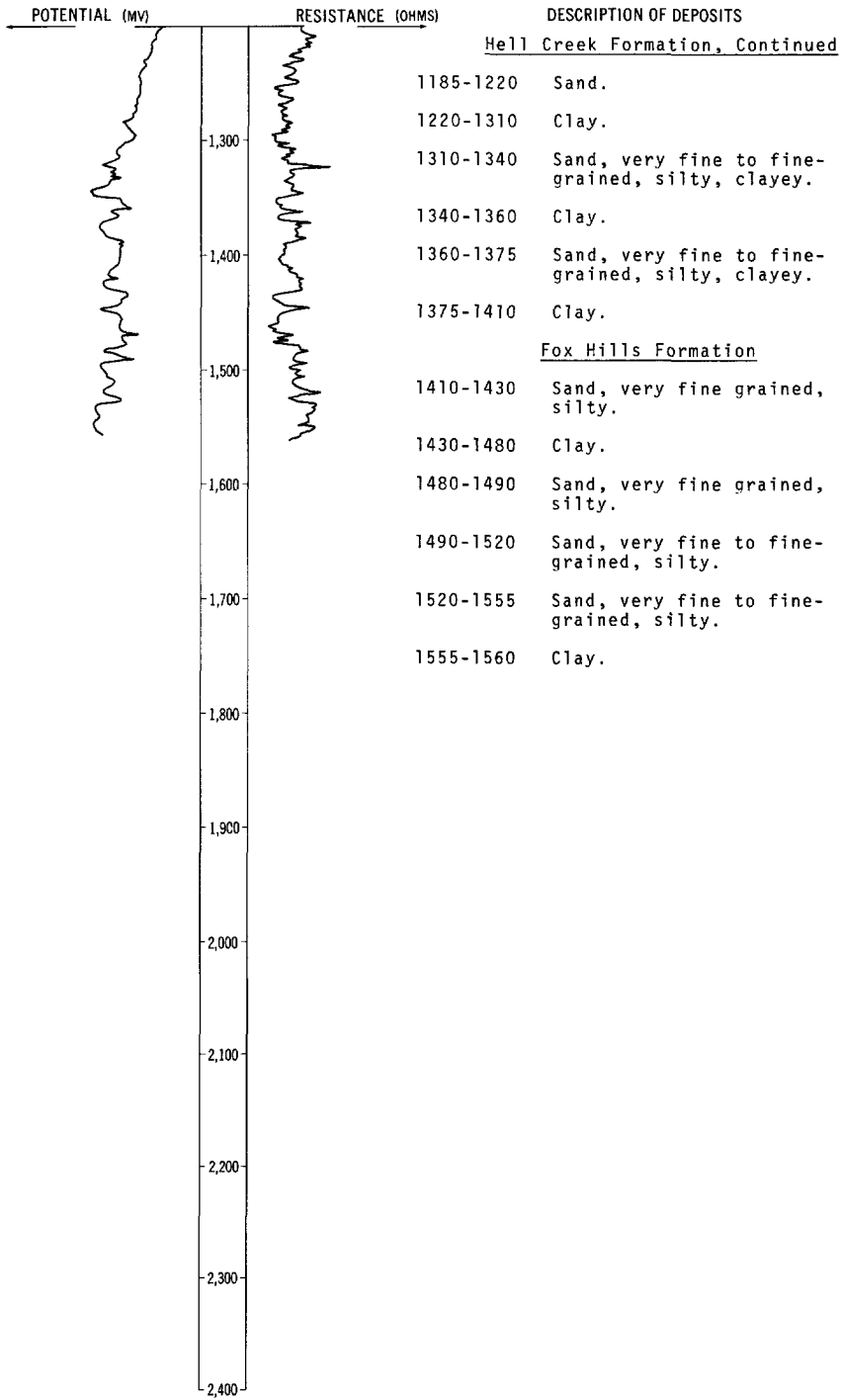
DEPTH: 1560
(FT)



CITY OF HALLIDAY, Continued

LOCATION: 145-092-25ABB
 ALTITUDE: 2046
 (FT, MSL)

DATE DRILLED: June 1974
 DEPTH: 1560
 (FT)



145-092-25ABC
NDSWC 8250

Altitude: 2044 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Alluvium	and glacial drift, undifferentiated:		
	Topsoil, silty, clayey, black-----	1	1
	Clay, silty, sandy, dark-yellowish-brown---	8	9
	Gravel, fine to coarse, sandy, angular to subrounded-----	1	10
	Clay, silty, moderate-yellowish-brown-----	5	15
	Clay, silty, medium-dark-gray-----	6	21
	Sand, fine to medium, clayey, silty, subangular-----	9	30
Sentinel Butte Formation:			
	Shale, silty, noncalcareous, brownish-gray-	10	40

145-092-25ADC1
(Log from E. A. Bodin)

Altitude:

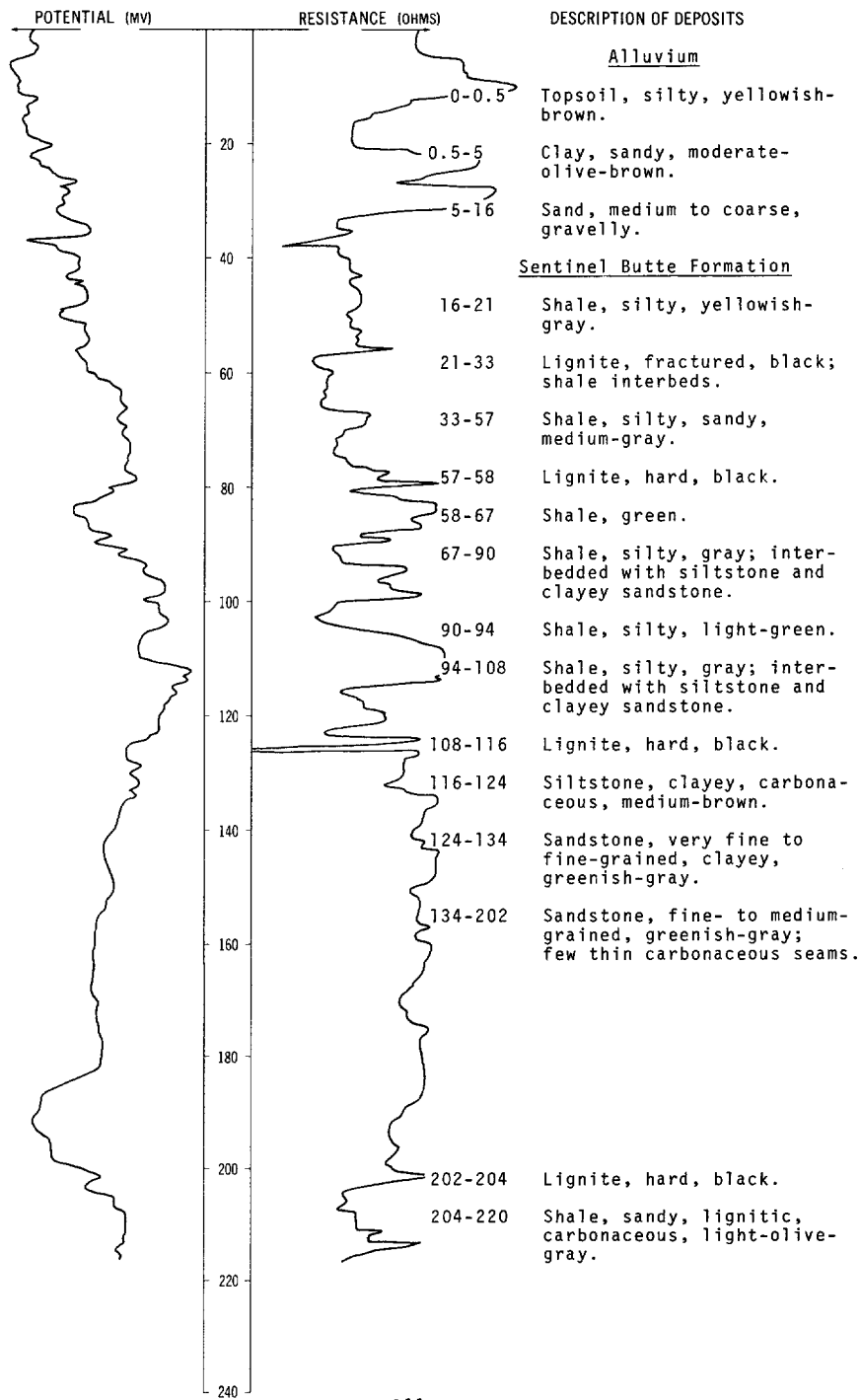
Topsoil-----	2	2
Clay, sandy-----	10	12
Clay, yellow-----	11	23
Shale, sticky, gray-----	25	48
Coal slack (water-bearing)-----	1	49
Shale, gray-----	18.5	67.5
Sand, fine, white (water-bearing)-----	1.5	69
Shale, gray-----	1	70

LOCATION: 145-092-25ADC2

DATE DRILLED: August 1972

ALTITUDE: 2086
(FT, MSL)

DEPTH: 220
(FT)



145-092-25BAA2
NDSWC 8251

Altitude: 2047 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
Alluvium and glacial drift, undifferentiated:			
	Topsoil, silty, clayey, grayish-black-----	1	1
	Clay, silty, sandy, dark-yellowish-brown---	7	8
	Sand, fine to medium, silty, clayey, subangular to subrounded-----	4	12
	Clay, silty, medium-dark-gray-----	11	23
	Sand, fine to medium, clayey, subangular to subrounded-----	6	29
	Clay, silty, medium-gray-----	3	32
	Gravel, fine to coarse, sandy, angular to rounded-----	5	37
Sentinel Butte Formation:			
	Shale, silty, hard, noncalcareous, medium-light-gray-----	3	40
	Sandstone, fine, hard, medium-bluish-gray--	2	42
	Shale, silty, hard, calcareous, medium-gray-----	18	60

145-092-25DAA
(Log from K. J. Thompson)

Altitude:

Topsoil and clay-----	28	28
Coal (dry)-----	3	31
Clay-----	1	32
Coal (seep)-----	5	37
Clay-----	47	84
Coal (dry)-----	1	85
Clay-----	2	87
Sand (water)-----	5	92
Clay-----	6	98

145-092-25DAB
(Log from K. J. Thompson)

Altitude:

Topsoil and sand-----	9	9
Rock-----	2	11
Sand-----	7	18
Coal slack-----	2	20
Clay-----	21	41
Coal (dry)-----	5	46
Clay-----	1	47
Coal (dry)-----	2	49
Clay-----	26	75
Coal (seep)-----	1	76
Clay-----	23	99
Coal (dry)-----	1	100
Clay-----	3	103
Sand (water)-----	4	107
Clay, sandy-----	11	118
Coal (dry)-----	1	119
Clay-----	8	127
Coal (dry)-----	4	131
Clay-----	8	139
Sand, blue (water)-----	21	160
Rock-----	.25	160.25
Sand-----	14.75	175

145-092-26CCC1
(Log from K. J. Thompson)

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Topsoil and clay-----	14	14
	Rock-----	2	16
	Clay-----	44	60
	Coal (dry)-----	3	63
	Clay-----	4	67
	Coal (seep)-----	4	71
	Clay-----	14	85
	Coal (dry)-----	1	86
	Clay-----	38	124
	Coal (dry)-----	2	126
	Clay-----	4	130
	Coal (dry)-----	2	132
	Clay-----	8	140
	Sand, coal chunks (water)-----	11	151
	Coal (dry)-----	8	159
	Clay-----	60	219
	Coal (dry)-----	2	221
	Clay-----	27	248
	Coal (dry)-----	3	251
	Clay-----	17	268
	Rock-----	2	270
	Clay-----	29	299

145-092-26CCC2
(Log from K. J. Thompson)

Altitude:

	Topsoil-----	43	43
	Rock-----	2	45
	Clay-----	15	60
	Coal (water)-----	4	64
	Clay-----	4	68
	Coal (water)-----	4	72
	Clay-----	3	75

145-092-29CAA
(Log from K. J. Thompson)

Altitude:

	Topsoil and clay-----	33	33
	Coal (water)-----	16	49
	Clay-----	6	55

LOCATION: 145-092-31DDD

DATE DRILLED: November 1974

ALTITUDE: 2239

DEPTH: 160

(FT, MSL)

(FT)

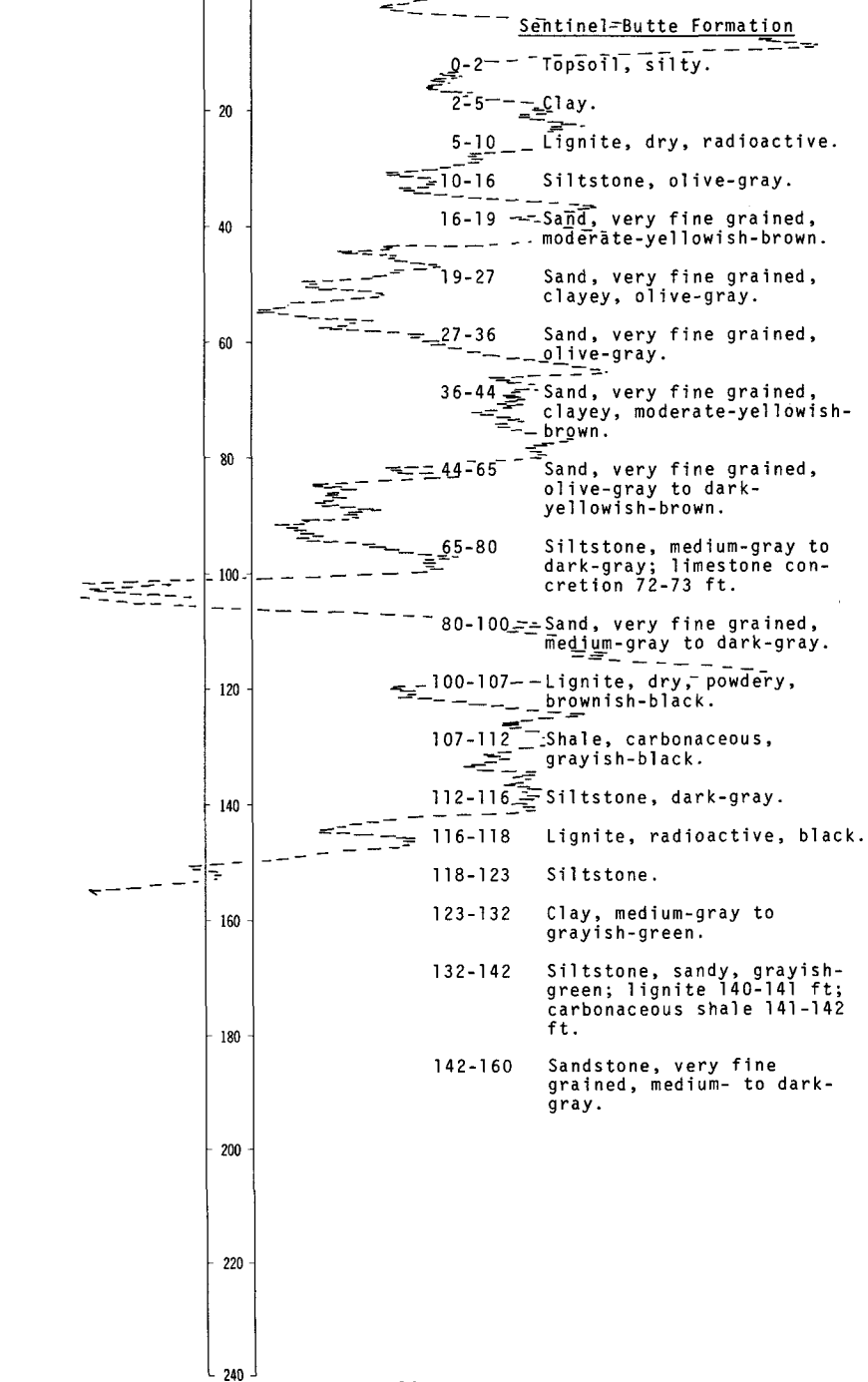
Gamma log -----

(T.C. 4)

POTENTIAL (MV)

RESISTANCE (OHMS)

DESCRIPTION OF DEPOSITS



145-092-32CDD
(Log from K. J. Thompson)

Altitude: 2242 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Topsoil and clay-----	3	3
	Rock-----	2	5
	Sand-----	37	42
	Coal-----	8	50
	Sand, wet-----	18.5	68.5
	Rock-----	3	71.5
	Sand, gray-----	19.5	91
	Coal (water)-----	1.5	92.5
	Clay-----	7.5	100

NDSWC 4776

LOCATION: 145-093-04DDD

DATE DRILLED: November 1974

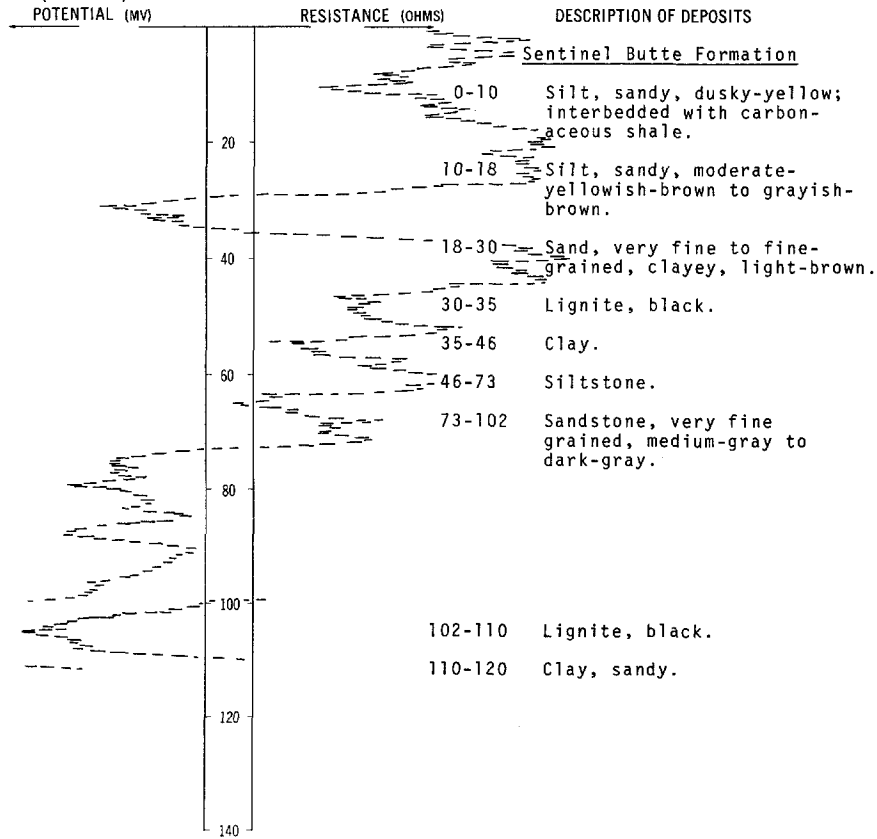
ALTITUDE: 2217

DEPTH: 120

(FT, MSL)

(FT)

Gamma log-----
(T.C. 4)



145-093-07CCC
NDSWC 8188

Altitude: 2242 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel	Butte Formation:		
	Topsoil, silty, clayey, boulders-----	1	1
	Sandstone, fine, silty, subangular-----	57	58
	Shale, silty, hard, noncalcareous, medium-light-gray-----	22	80

145-093-10AAC1
(Log from K. J. Thompson)

Altitude:

Clay-----	15	15
Coal (dry)-----	1	16
Clay-----	5	21
Coal (water)-----	8	29
Clay-----	26	55
Rock-----	4	59
Clay, sandy-----	11	70
Sand (water)-----	14	84
Coal (water)-----	7	91

145-093-10CBD1
(Log from K. J. Thompson)

Altitude:

Sand (little water)-----	33	33
Coal (dry)-----	2	35
Clay-----	2	37
Coal (dry)-----	2	39
Clay-----	20	59
Coal (seep)-----	6	65
Clay-----	63	128
Sand (water)-----	8	136
Coal (some water)-----	12	148
Clay-----	2	150

145-093-10CCC
(Log from K. J. Thompson)

Altitude:

Topsoil and clay-----	53	53
Coal (seep)-----	2	55
Clay-----	18	73
Coal (dry)-----	7	80
Clay-----	36	116
Rock-----	8	124
Clay-----	14	138
Sand-----	23	161
Coal (seep)-----	13	174
Clay-----	1	175

145-093-14ADA2
(Log from K. J. Thompson)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand-----	30	30
	Clay-----	19	49
	Coal (dry)-----	1	50
	Clay-----	2	52
	Coal (dry)-----	1	53
	Clay-----	2	55
	Coal (dry)-----	9	64
	Clay-----	16	80
	Clay, sandy-----	38	118
	Clay-----	3	121
	Coal (water)-----	11	132
	Clay-----	8	140

145-093-15DDD
NDSWC 8230

Altitude:

	Topsoil, silty, clayey, grayish-black-----	1	1
	Clay, silty, sandy, pebbly, moderate-yellowish-brown (till)-----	13	14
Sentinel Butte Formation:			
	Shale, sandy, silty, moderate-yellowish-brown-----	2	16
	Sandstone, fine, yellowish-gray-----	5	21
	Shale, sandy, noncalcareous, moderate-yellowish-brown-----	39	60

145-093-17CBB
(Log from Julius Benz)

Altitude: 2226

	Sand-----	97	97
	Coal-----	15	112
	Clay, gray-----	8	120

145-093-17CCB
(Log from Julius Benz)

Altitude: 2233

	Clay, yellow-----	24	24
	Sand-----	46	70

145-093-20CCC
(Log from K. J. Thompson)

Altitude:

	Topsoil and sand-----	12	12
	Rock-----	3	15
	Sand (dry)-----	37	52
	Clay-----	5	57
	Coal (water)-----	15	72
	Clay-----	--	--

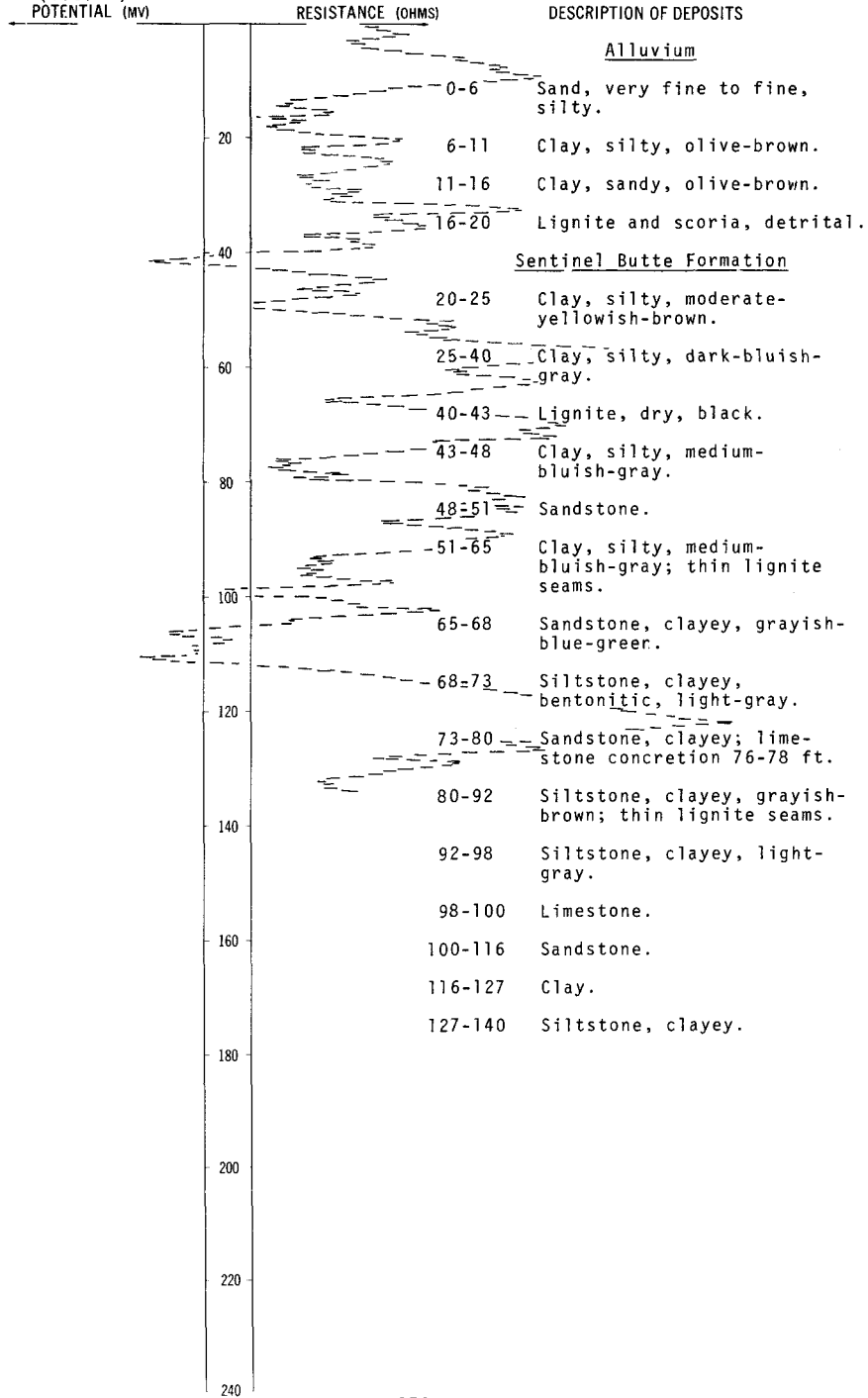
LOCATION: 145-093-24ADD

DATE DRILLED: November 1974

ALTITUDE: 2123
(FT, MSL)

DEPTH: 140
(FT)

Gamma log -----
(T.C. 4)
POTENTIAL (MV)



145-093-26BAD
(Log from K. J. Thompson)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Topsoil and clay-----	16	16
	Coal (seep)-----	.5	16.5
	Clay-----	27	43.5
	Coal (dry)-----	5.5	49
	Clay, sandy-----	14	63
	Rock-----	3	66
	Clay, sandy-----	19	85
	Clay-----	31	116
	Coal (water)-----	12	128
	Clay-----	7	135

145-093-26CCB
(Log from R. J. Thompson)

Altitude: 2185 ft

	Topsoil and sand-----	41	41
	Coal-----	2	43
	Clay-----	39	82
	Rock-----	2	84
	Clay-----	19	103
	Coal-----	3	106
	Clay-----	12	118
	Sand-----	19	137
	Clay-----	47	184
	Coal-----	11	195
	Clay-----	24	219
	Coal-----	7	226
	Clay-----	4	230

145-093-27DBC
(Log from K. J. Thompson)

Altitude: 2135 ft

	Topsoil, clay, sandy-----	48	48
	Coal slack-----	1	49
	Coal (dry)-----	7	56
	Clay-----	53	109
	Sand (water)-----	6	115
	Clay-----	11	126
	Coal (water)-----	8	134
	Clay-----	4	138

145-093-29BCA
(Log from K. J. Thompson)

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Topsoil, clay, sandy-----	12	12
	Quicksand-----	9	21
	Coal (water)-----	14	35
	Clay-----	25	60
	Coal (water)-----	9	69
	Clay-----	6	75

145-093-29CDB1
(Log from K. J. Thompson)

Altitude:

	Topsoil and clay-----	20	20
	Coal-----	7	27
	Clay-----	25	46
	Coal (seep)-----	10	56
	Clay-----	11	67
	Sand (water)-----	6	73
	Rock-----	2.5	75.5
	Clay-----	30.5	106
	Coal-----	9	115
	Clay-----	21	136
	Coal-----	6	142
	Clay, sandy-----	26	168
	Clay-----	--	--

145-093-29CDB2
(Log from K. J. Thompson)

Altitude:

	Topsoil and clay-----	20	20
	Coal slack (dry)-----	17	37
	Clay-----	28	65
	Coal (water)-----	2	67
	Clay-----	3	70

145-093-30CDD1
(Log from K. J. Thompson)

Altitude: 2142 ft

	Clay-----	18	18
	Coal-----	14	32
	Clay-----	33	65
	Coal-----	7	72
	Clay and sand-----	45	117
	Coal (water)-----	10	127
	Clay-----	3	130

145-093-30CDD2
(Log from K. J. Thompson)

Altitude: 2142 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Topsoil, sand, and clay-----	19	19
	Coal (water)-----	15	34
	Clay-----	30	64
	Coal (dry)-----	2	66
	Clay-----	1	67
	Coal (some water)-----	5	72
	Clay-----	18	90
	Sand (water)-----	8	98
	Clay-----	1	99
	Coal (dry)-----	1	100
	Clay-----	17	117
	Coal (dry)-----	10	127
	Clay-----	20	147
	Coal (seep)-----	5	152
	Clay-----	18	170
	Sand (some water)-----	41	211
	Coal (dry)-----	1	212
	Coal and sand (dry)-----	35	247
	Rock-----	1	248
	Clay-----	7	255

145-093-32ADD
(Log from K. J. Thompson)

Altitude: 2190 ft

	Topsoil and clay-----	59	59
	Coal (water)-----	20	79
	Clay-----	3	82

LOCATION: 145-093-33BAA

DATE DRILLED: November 1974

ALTITUDE: 2185

DEPTH: 120

(FT, MSL)

(FT)

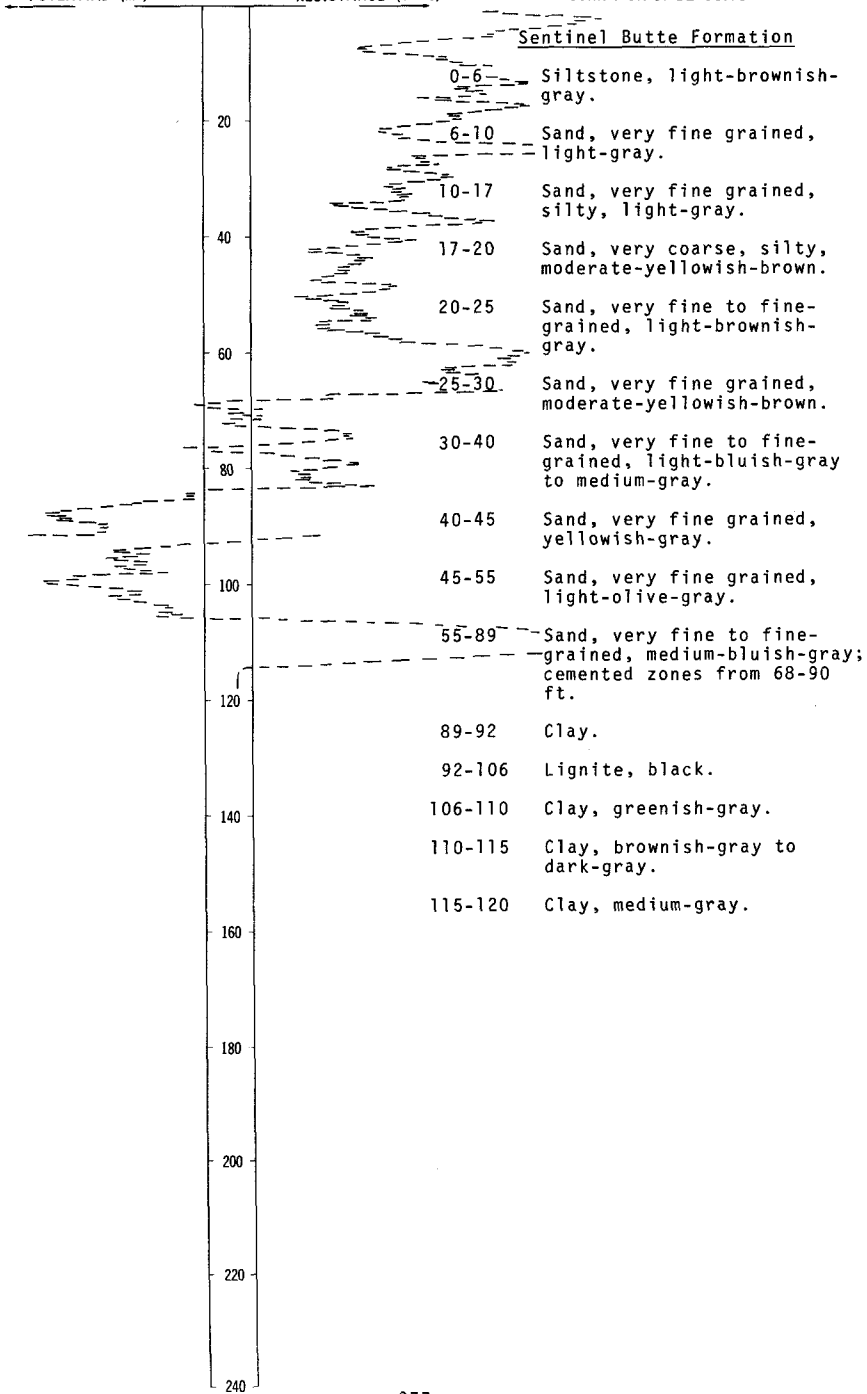
Gamma log -----

(T.C. 4)

POTENTIAL (MV)

RESISTANCE (OHMS)

DESCRIPTION OF DEPOSITS



LOCATION: 145-093-36BBB

DATE DRILLED: November 1974

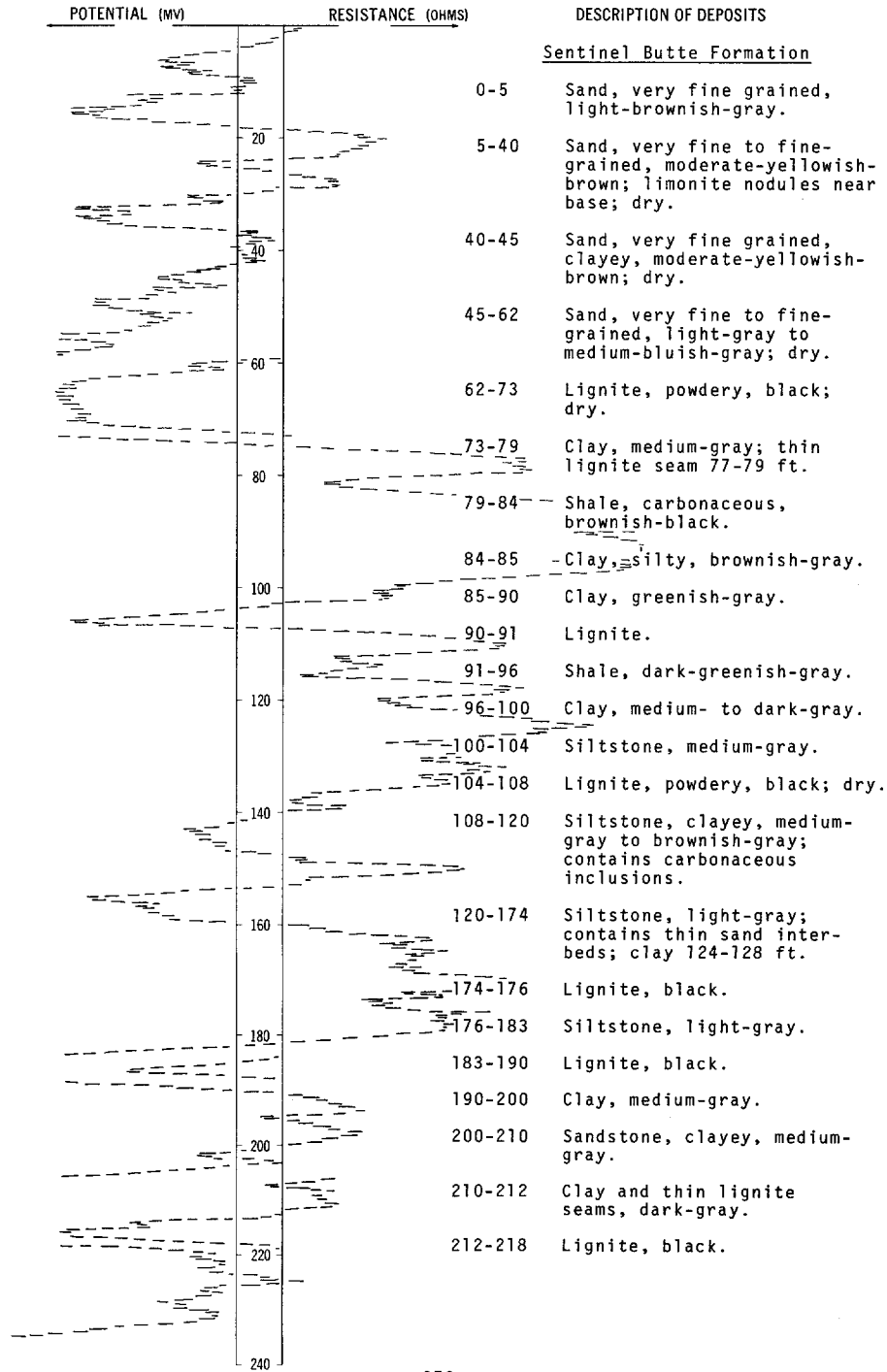
ALTITUDE: 2207

DEPTH: 240

(FT. MSL)

(FT)

Gamma Log
(T.C. 4)



NDSWC 4789, Continued

LOCATION: 145-093-36BBB

DATE DRILLED: November 1974

ALTITUDE: 2207
(FT, MSL)

DEPTH: 240
(FT)

POTENTIAL (MV)	RESISTANCE (OHMS)	DESCRIPTION OF DEPOSITS
		<u>Sentinel Butte Formation, Continued</u>
		218-220 Clay, greenish-gray.
		220-221 Lignite, black.
		221-240 Clay and siltstone, interbedded.
	260	
	280	

145-094-02CBB
(Log from K. J. Thompson)

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	No log-----	106	106
	Gravel and sand (water)-----	4	110
	Clay-----	11	121
	Coal (water)-----	7	128
	Clay-----	7	135

LOCATION: 145-094-06CCC1,2

DATE DRILLED: November 1974

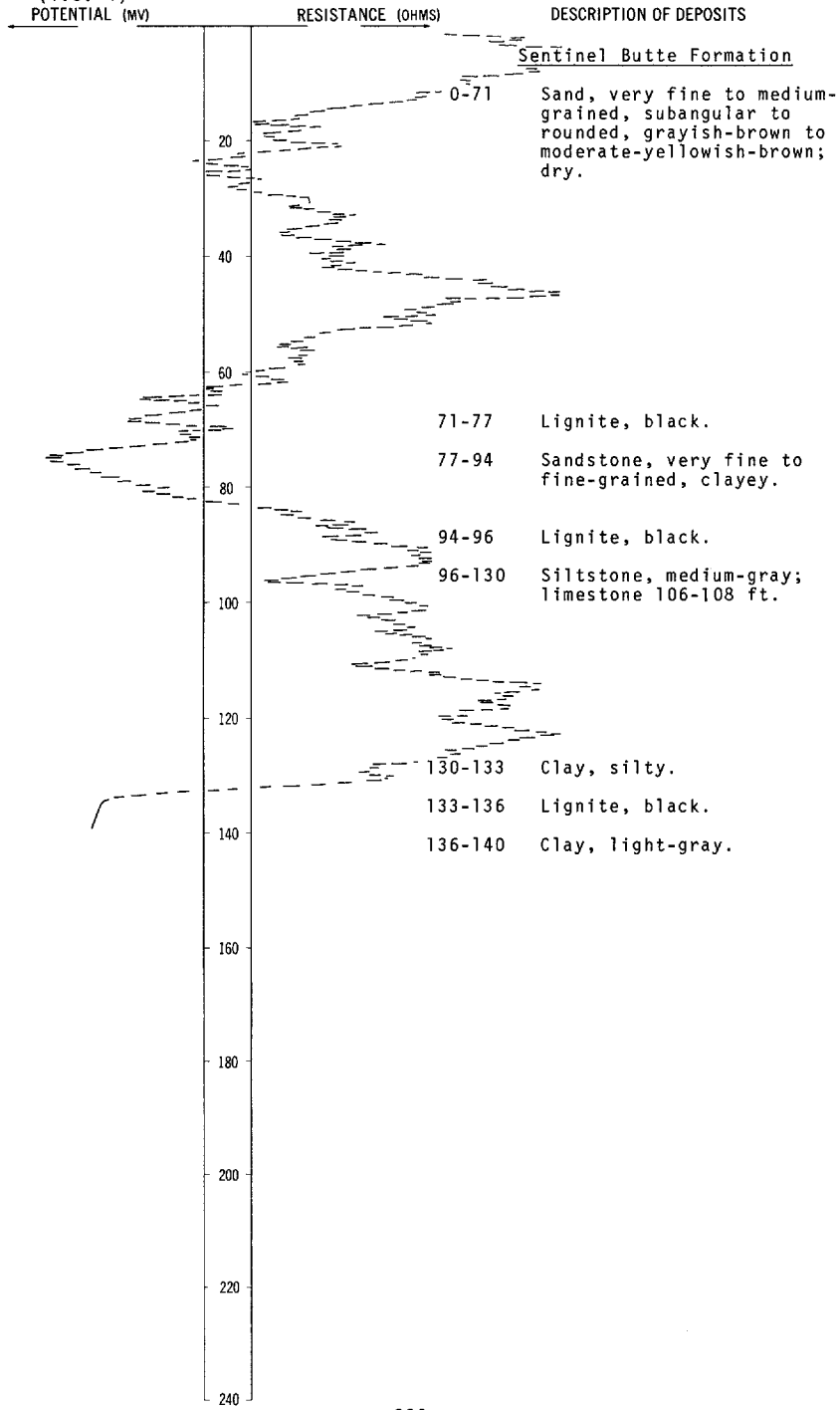
ALTITUDE: 2280

DEPTH: 140

(FT. MSL)

(FT)

Gamma log ----
(T.C. 4)



LOCATION: 145-094-10AAA

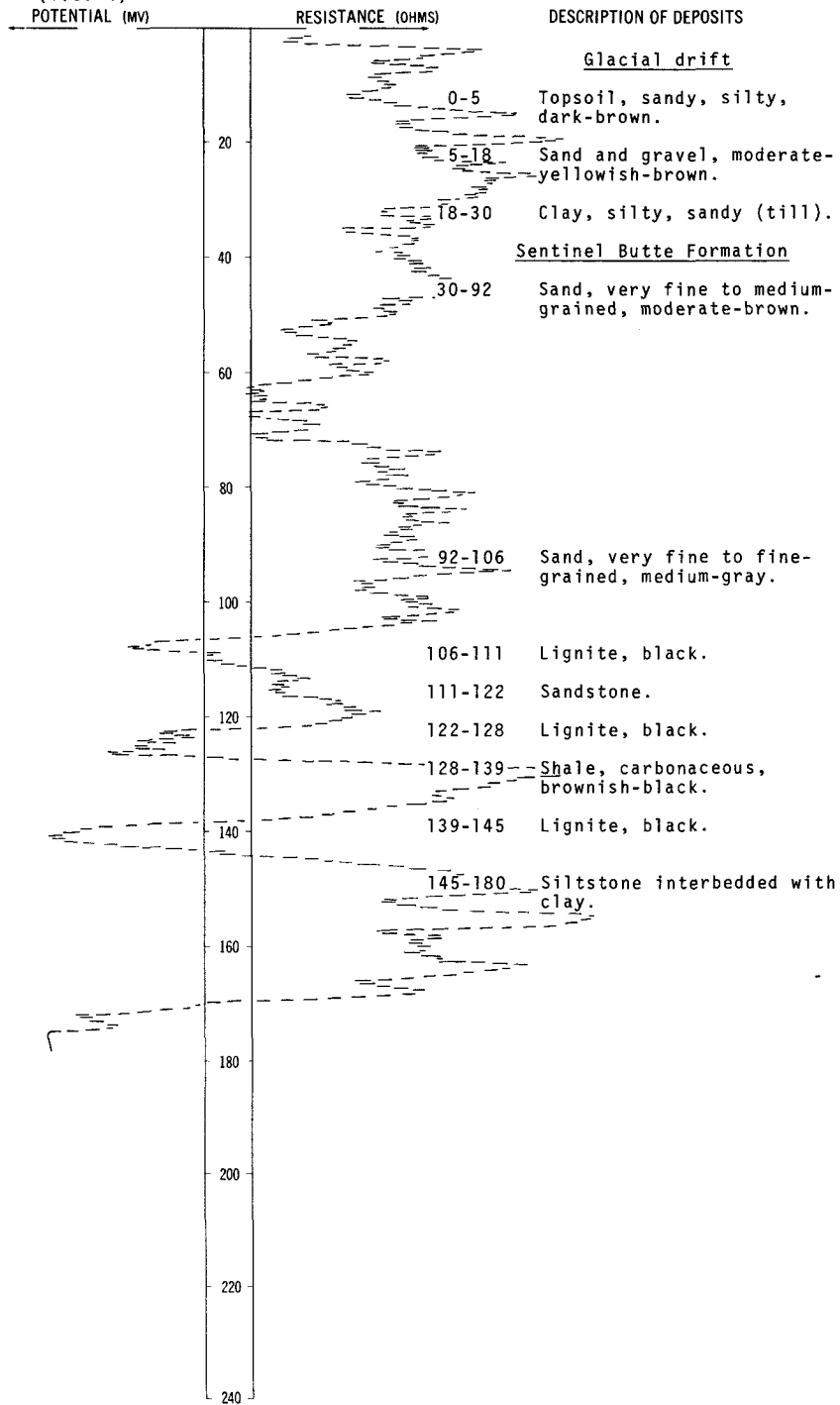
DATE DRILLED: November 1974

ALTITUDE: 2294

DEPTH: 180

(FT, MSL)
Gamma log -----
(T.C. 4)

(FT)



145-094-10ABB1
(Log from K. J. Thompson)

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Topsoil and sand-----	25	25
	Sand (some water)-----	11	36
	Clay-----	14	50
	Coal (dry)-----	4	54
	Clay-----	10	64
	Coal (dry)-----	2	66
	Clay-----	54	120
	Coal (dry)-----	4	124
	Clay-----	1	125
	Coal (dry)-----	4	129
	Clay-----	22	151
	Coal (dry)-----	7	158
	Clay-----	27	185
	Coal (dry)-----	2	187
	Clay-----	9	196
	Coal (seep)-----	5	201
	Clay-----	20	221
	Rock-----	.25	221.25
	Clay-----	7.75	229
	Sand (water)-----	29	258
	Clay-----	7	265
	Clay, sandy-----	10	275
	Coal (water)-----	10	285
	Clay-----	15	300

145-094-10CCB
(Log from K. J. Thompson)

Altitude:

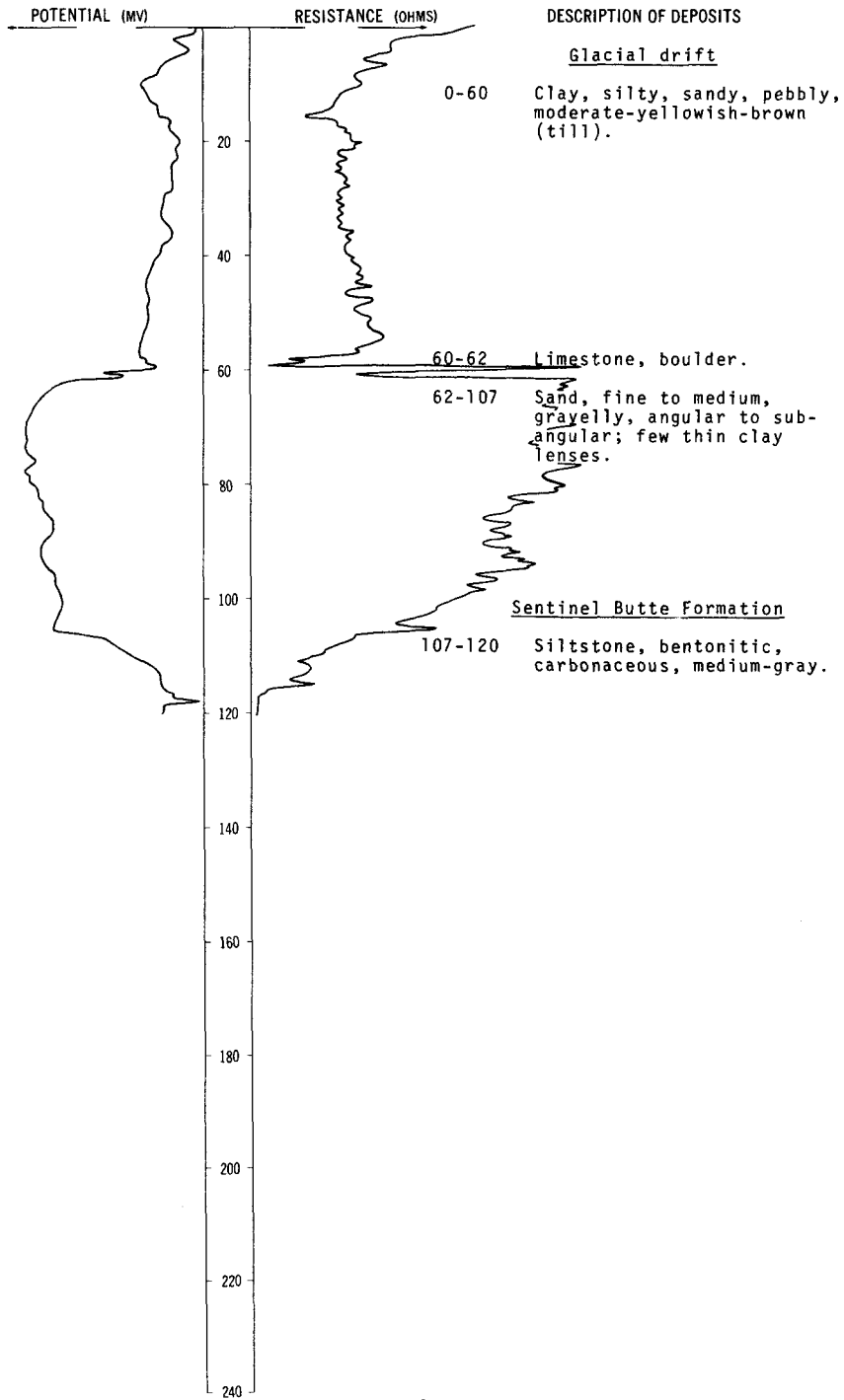
	Sand-----	22	22
	Rock-----	2	24
	Sand, red (dry)-----	47	71
	Coal (dry)-----	4	75
	Clay-----	22	97
	Rock-----	1	98
	Clay-----	2	100
	Coal (dry)-----	1	101
	Clay-----	8	109
	Coal (dry)-----	3	112
	Clay-----	2	114
	Coal (dry)-----	2	116
	Clay-----	39	155
	Coal (dry)-----	7	162
	Clay-----	15	177
	Coal (dry)-----	7	184
	Clay and sand (dry)-----	60	244
	Coal (water)-----	4	248
	Clay-----	14	262

LOCATION: 145-094-12BAA

DATE DRILLED: July 1974

ALTITUDE: 2260
(FT, MSL)

DEPTH: 120
(FT)



145-094-12DDD1
(Log from K. J. Thompson)

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Topsoil, sandy-----	44	44
	Rock-----	2	46
	Missing-----	64	110
	Coal (seep)-----	11	121
	Clay-----	37	158
	Rock-----	1	159
	Clay-----	8	167
	Coal (dry)-----	8	175
	Clay, sandy (some water)-----	15	190
	Sand-----	58	248
	Clay-----	2	250
	Coal (seep)-----	11	261
	Clay-----	15	276
	Coal (water)-----	8	284
	Clay-----	6	290

145-094-14AAA
NDSWC 8187

Altitude:

Glacial drift:			
	Topsoil, silty, sandy, grayish-black-----	7	7
	Clay, silty, sandy, pebbly, dark-yellowish-brown (till)-----	9	10
Sentinel Butte Formation:			
	Shale, silty, noncalcareous, light-gray---	10	20
	Shale, noncalcareous, medium-gray; few thin lignite seams-----	20	40

145-094-14ACA
(Log from R. J. Thompson)

Altitude:

	Topsoil and clay-----	15	15
	Coal slack-----	3	18
	Clay-----	56	74
	Coal-----	16	90
	Clay-----	2	92

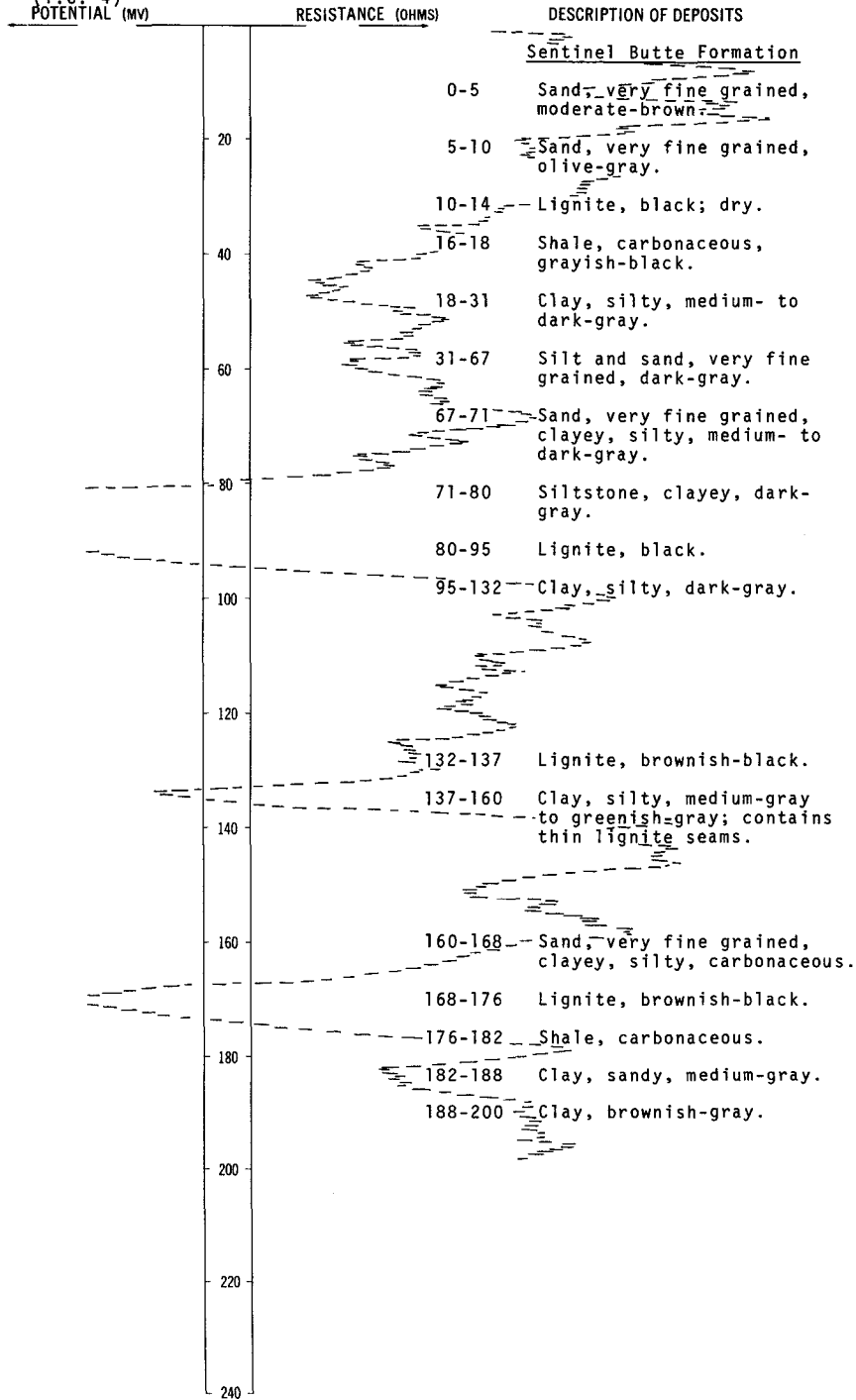
LOCATION: 145-094-15DDD1,2

DATE DRILLED: November 1974

ALTITUDE: 2239
(FT, MSL)

DEPTH: 200, 100
(FT)

Gamma log ----
(T.C. 4)
POTENTIAL (MV)



145-094-18BBA
(Log from K. J. Thompson)

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Sand, red (dry)-----	15	15
	Rock-----	1	16
	Sand, red-----	63	79
	Coal (water)-----	4	83
	Clay-----	7	90

LOCATION: 145-094-19CCC

DATE DRILLED: November 1974

ALTITUDE: 2270

DEPTH: 180

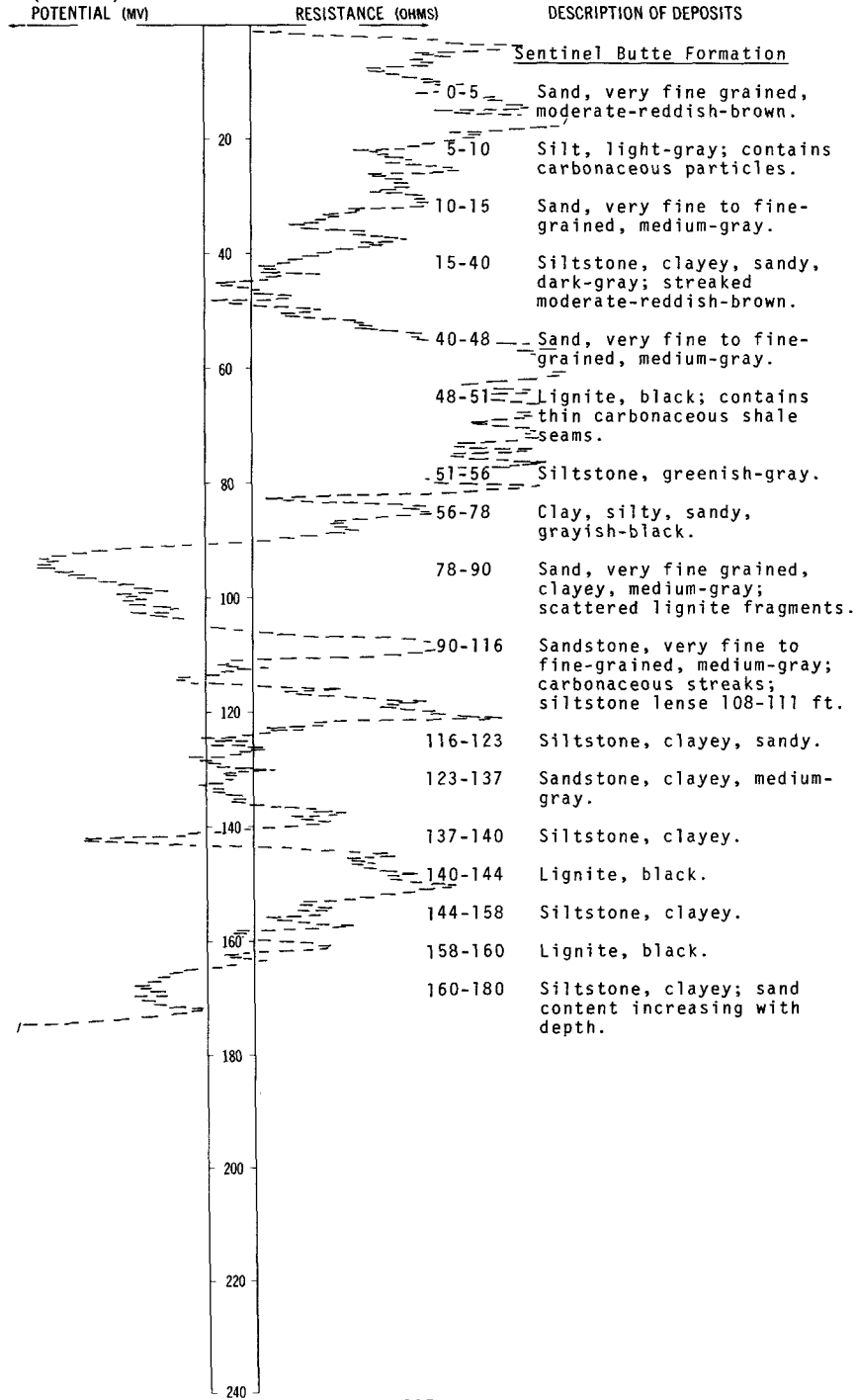
(FT, MSL)

(FT)

Gamma log -----

(T.C. 4)

POTENTIAL (MV)

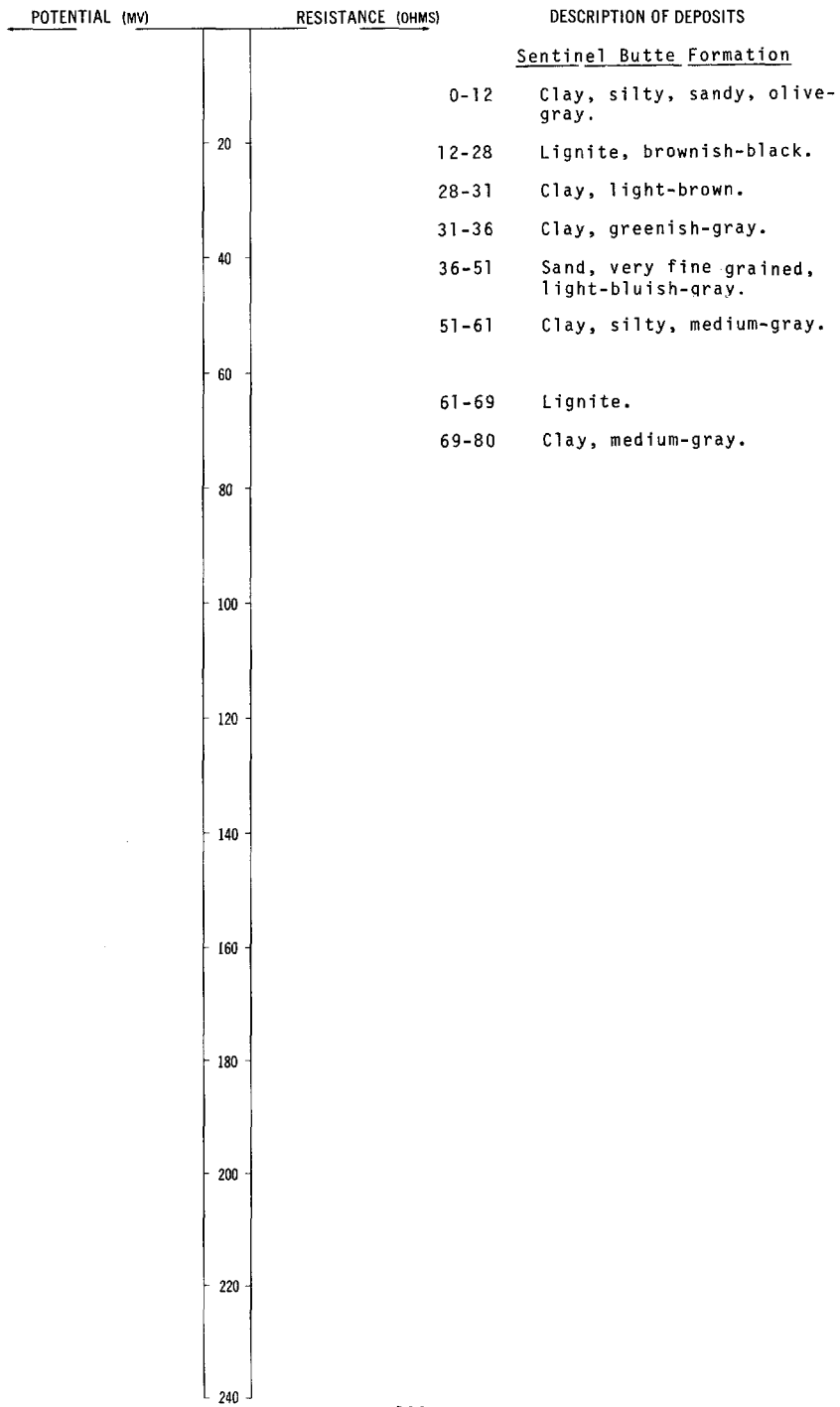


LOCATION: 145-094-23DDD

DATE DRILLED: November 1974

ALTITUDE: 2177
(FT, MSL)

DEPTH: 80
(FT)



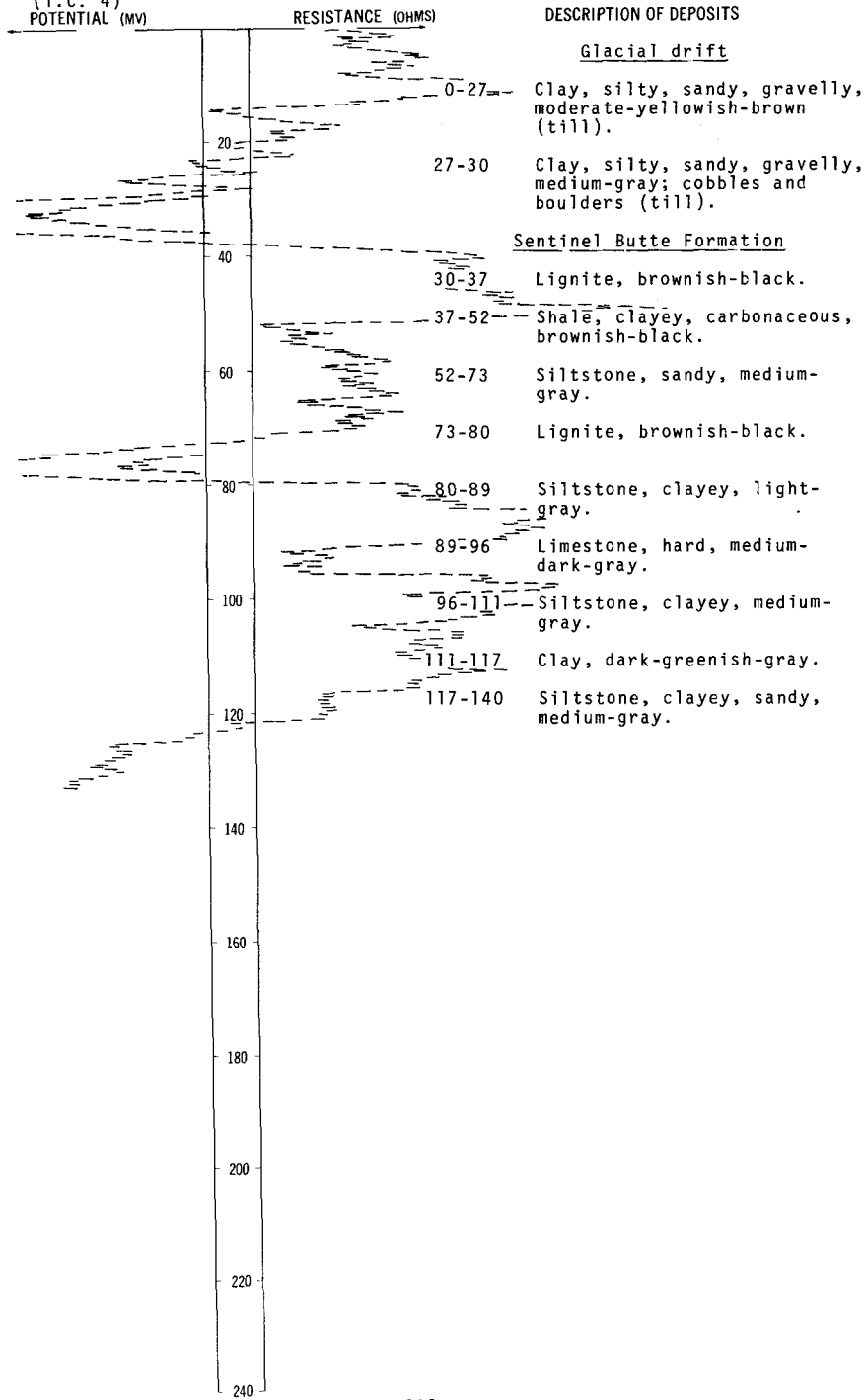
LOCATION: 145-094-24CDD

DATE DRILLED: July 1974

ALTITUDE: 2177
(FT, MSL)

DEPTH: 140
(FT)

Gamma log
(T.C. 4)
POTENTIAL (MV)



145-094-25DDA
(Log from K. J. Thompson)

Altitude: 2165 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay, sandy (seep)-----	31.5	31.5
	Coal (dry)-----	18.5	50
	Clay-----	29	79
	Coal (seep)-----	8.5	87.5
	Clay-----	24	111.5
	Rock-----	.5	112
	Quicksand (some water)-----	8	120
	Clay-----	14	134
	Coal (seep)-----	8	142
	Clay-----	17	159
	Coal (water)-----	5	164
	Clay-----	18	182
	Rock-----	1	183
	Clay-----	22	205

NDSWC 4794A,B,C,D,F,G

LOCATION: 145-094-26AAA1,2,3,4,5,6,7

DATE DRILLED: November 1974

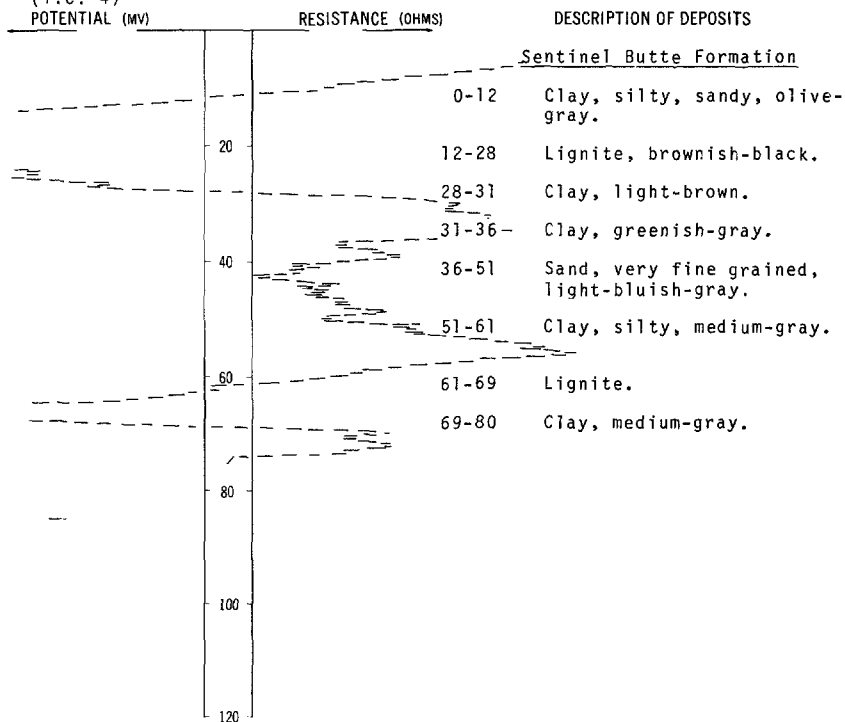
ALTITUDE: 2180

DEPTH: 80

(FT, MSL)

(FT)

Gamma log ----
(T.C. 4)



145-094-26ABB
(Log from K. J. Thompson)

Altitude: 2195 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Topsoil, clay, sandy-----	18	18
	Coal (water)-----	16	34
	Clay-----	43	77
	Coal (dry)-----	2	79
	Clay-----	2	81
	Coal (water)-----	5	86
	Clay-----	14	100

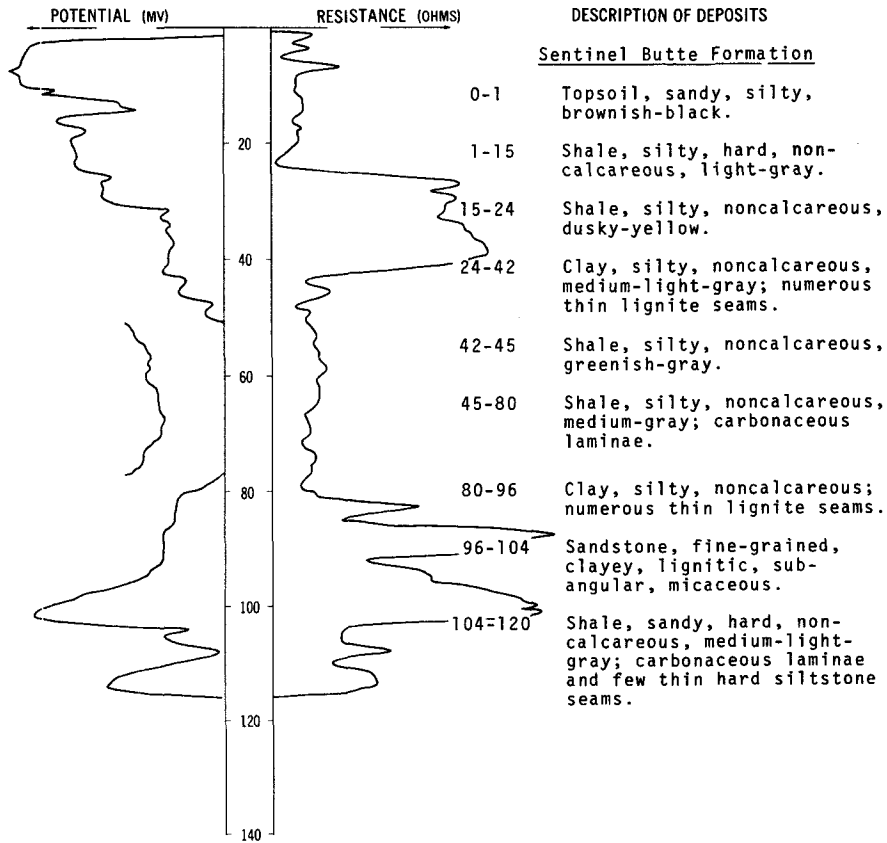
NDSWC 8189

LOCATION: 145-094-26BAA

DATE DRILLED: October 1971

ALTITUDE: 2205
(FT, MSL)

DEPTH: 120
(FT)



145-094-26BBB
(Log from K. J. Thompson)

Altitude: 2200 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay-----	91	91
	Coal (water)-----	9	100
	Clay-----	2	102

145-094-26BDD
(Log from K. J. Thompson)

Altitude: 2173 ft

	Clay, some streaks of rocks-----	17	17
	Coal-----	12	29
	Clay-----	15	44
	Coal-----	2	46
	Clay-----	5	51
	Rock-----	1	52
	Clay-----	19	71
	Coal-----	5	76
	Clay-----	6	82
	Sand-----	8	90
	Clay-----	12	102
	Coal (water-bearing)-----	11	113
	Clay-----	1	114

145-094-26CAA
NDSWC 4793

Altitude: 2168 ft

Alluvium and glacial drift, undifferentiated:			
	Topsoil, silty, gray-----	1	1
	Sand, very fine to fine-----	4	5
	Sand and gravel, clayey-----	10	15
Sentinel Butte Formation:			
	Lignite, black-----	4	19
	Siltstone-----	11	30

145-094-27ABC
NDSWC 4732

Altitude: 2178 ft

Alluvium and glacial drift, undifferentiated:			
	Sand, very fine to coarse, silty, lignitic; upper 10 ft oxidized-----	30	30
	Gravel, fine to coarse, sandy, angular to well rounded-----	2	32
Sentinel Butte Formation:			
	Siltstone, medium-gray; contains carbonaceous inclusions-----	8	40

145-094-27ACC
(Log from K. J. Thompson)

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Topsoil and clay-----	24	24
	Coal-----	2	26
	Clay-----	24	50
	Coal-----	7	57
	Clay-----	9	66
	Rock-----	2	68
	Clay-----	7	75
	Coal-----	2	77
	Clay-----	14	91
	Coal-----	10	101
	Clay-----	44	145
	Coal (water)-----	6	151
	Clay-----	3	154
	Coal (dry)-----	1	155
	Clay-----	26	181
	Rock-----	2	183
	Clay-----	10	193
	Coal (dry)-----	1	194
	Clay-----	5	199
	Coal (dry)-----	1	200
	Clay-----	17	217
	Rock-----	5	222
	Clay-----	22	244
	Rock-----	1	245
	Clay-----	25	270

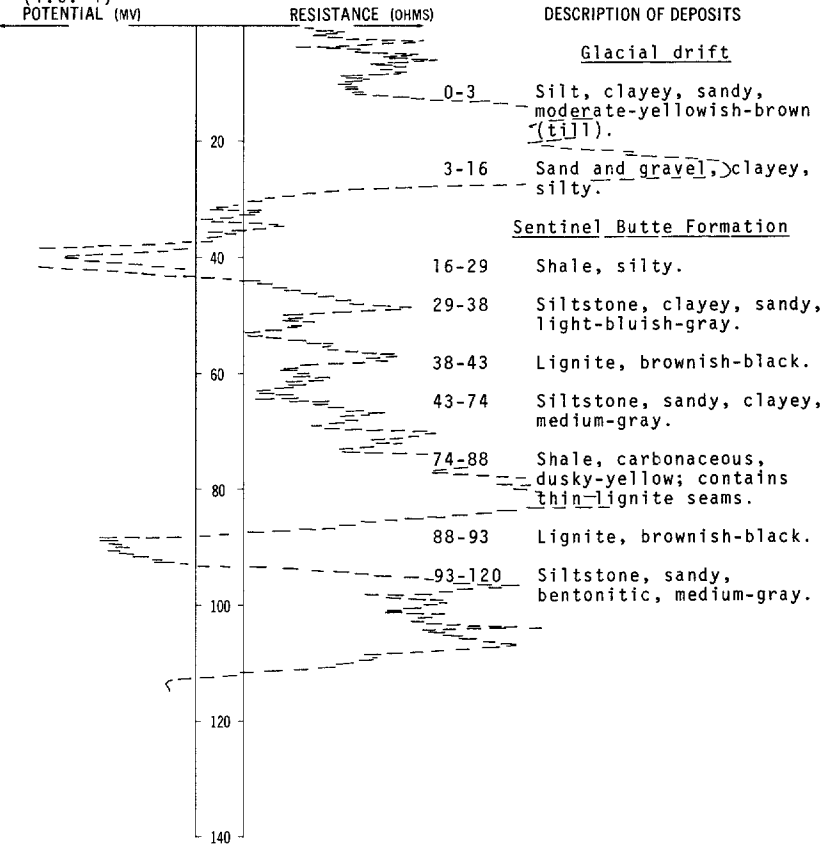
LOCATION: 145-094-27CAA

DATE DRILLED: June 1974

ALTITUDE: 2176
(FT, MSL)

DEPTH: 120
(FT)

Gamma log ----
(T.C. 4)
POTENTIAL (MV)



145-094-28ADB
(Log from K. J. Thompson)

Altitude: 2208 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Topsoil and clay-----	12	12
	Coal slack (dry)-----	6	18
	Clay-----	13	31
	Coal (water)-----	7	38
	Clay-----	5	43
	Coal (dry)-----	1	44
	Clay-----	39	83
	Coal (dry)-----	5	88
	Clay-----	20	108
	Sand-----	19	127
	Coal (water)-----	10	137
	Clay-----	3	140

LOCATION: 145-094-29AAA

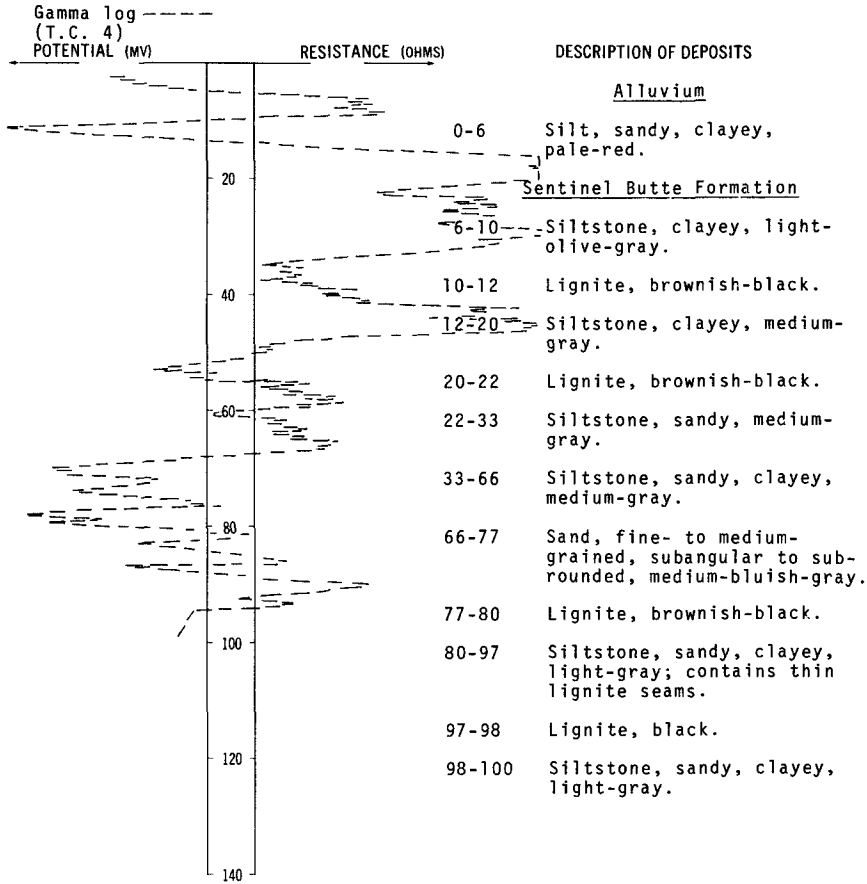
DATE DRILLED: June 1974

ALTITUDE: 2190

DEPTH: 100

(FT, MSL)

(FT)



145-094-32DCC
(Log from K. J. Thompson)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay-----	22	22
	Coal (water)-----	6	28
	Clay-----	10	38

145-094-34BAB
(Log from K. J. Thompson)

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Topsoil and sand-----	26	26
	Coal slack (dry)-----	5	31
	Clay-----	3	34
	Coal slack (dry)-----	7	41
	Clay-----	8	49
	Coal (dry)-----	9	58
	Clay-----	39	97
	Coal (dry)-----	4	101
	Clay-----	5	106
	Sand (seep)-----	18	124
	Coal (dry)-----	1	125
	Clay-----	17	142
	Coal (dry)-----	1	143
	Cavity-----	1	144
	Coal (water)-----	7	151
	Clay-----	1	152

145-094-35BAA
NDSWC 8190

Altitude: 2168 ft

Glacial drift:

	Topsoil, silty, sandy, brownish-black-----	1	1
	Clay, silty, sandy, pebbly, moderate-yellowish-brown (till)-----	14	15
	Clay, silty, sandy, pebbly, olive-gray (till)-----	21	36
	Gravel, fine to very coarse, sandy, cobbles, boulders-----	9	45
Sentinel Butte Formation:	Shale, silty, sandy, noncalcareous, medium-gray; few thin lignite seams-----	45	60

145-095-04ABB
(Log from K. J. Thompson)

Altitude:

	Topsoil and clay-----	22	22
	Rock-----	1	23
	Clay-----	6	29
	Coal (wet)-----	1	30
	Clay-----	11	41
	Coal and gravel (water)-----	2	43
	Clay-----	2	45

145-095-048DB1
(Log from K. J. Thompson)

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Topsoil, clay, and sand-----	38	38
	Coal (water)-----	4	42
	Clay-----	3	45

145-095-060002
NDSWC 4739

Altitude:

Alluvium:

	Sand, fine to medium, clayey, silty, grayish-brown-----	10	10
	Silt, sandy, clayey, dark-yellowish-orange-	5	15

Sentinel Butte Formation:

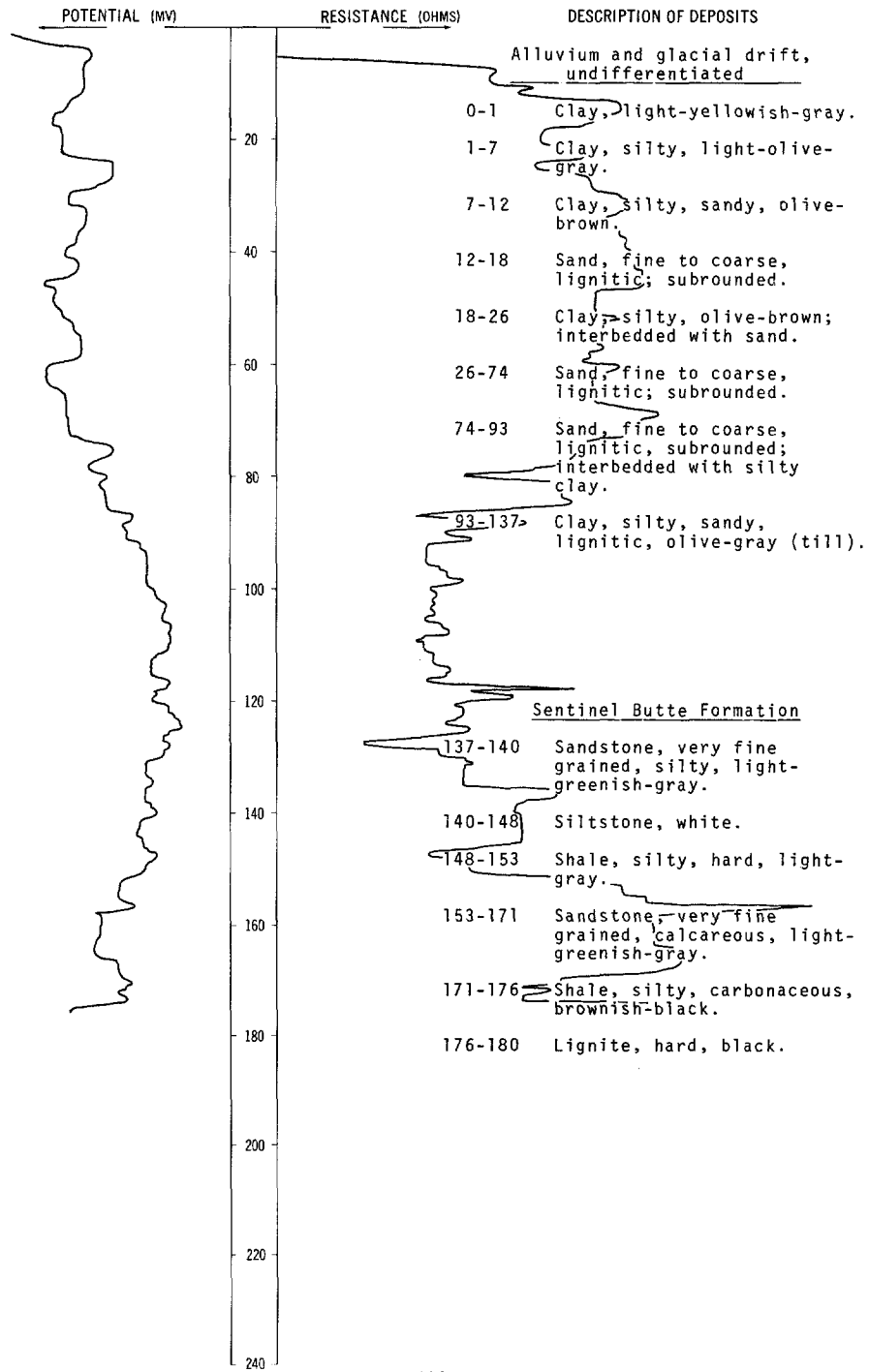
	Sand, medium, subangular, light-gray-----	5	20
	Claystone, silty, sandy, medium-gray; thin lignite seams-----	9	29
	Siltstone, clayey, medium-dark-gray-----	31	60

LOCATION: 145-095-09AAB

DATE DRILLED: September 1972

ALTITUDE: 2250
(FT, MSL)

DEPTH: 180
(FT)



145-095-12BCC
(Log from R. J. Thompson)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Topsoil and sand-----	60	60
	Sand, green-----	19	79
	Clay-----	1	80

145-095-13CBB
NDSWC 4477

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
Alluvium:	Topsoil, silty, yellowish-brown-----	1	1
	Clay, silty, yellowish-gray-----	6	7
	Sand, medium to coarse, brown; subangular to subrounded-----	5	12

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:	Sandstone, very fine to medium-grained, greenish-gray; interbedded with shale and lignite-----	37	49
	Shale, silty, light-olive-gray-----	12	61
	Lignite, black; interbedded with sandstone, limestone, and shale-----	27	88
	Shale, hard, medium-dark-gray-----	8	96
	Sandstone, fine-grained, clayey, greenish-gray-----	4	100

145-095-14CDD
(Log from K. J. Thompson)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand-----	28	28
	Rock (seep)-----	2	30
	Sand, red (dry)-----	3	33
	Sand, blue (water)-----	19	52
	Sand, hard-----	17	69
	Coal-----	1	70
	Sand-----	4	74
	Clay-----	2	76

145-095-21CBB
NDSWC 8235

Altitude: 2280 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
Alluvium:	Topsoil, silty, clayey, grayish-black-----	1	1
	Clay, silty, sandy, moderate-yellowish-brown-----	11	12

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel Butte Formation:	Shale, silty, medium-yellowish-brown-----	18	30
	Shale, silty, sandy, noncalcareous, medium-gray-----	18	48
	Siltstone, clayey, noncalcareous, medium-light-gray; few thin lignite seams-----	12	60

145-095-22BAA
(Log from K. J. Thompson)

Altitude:

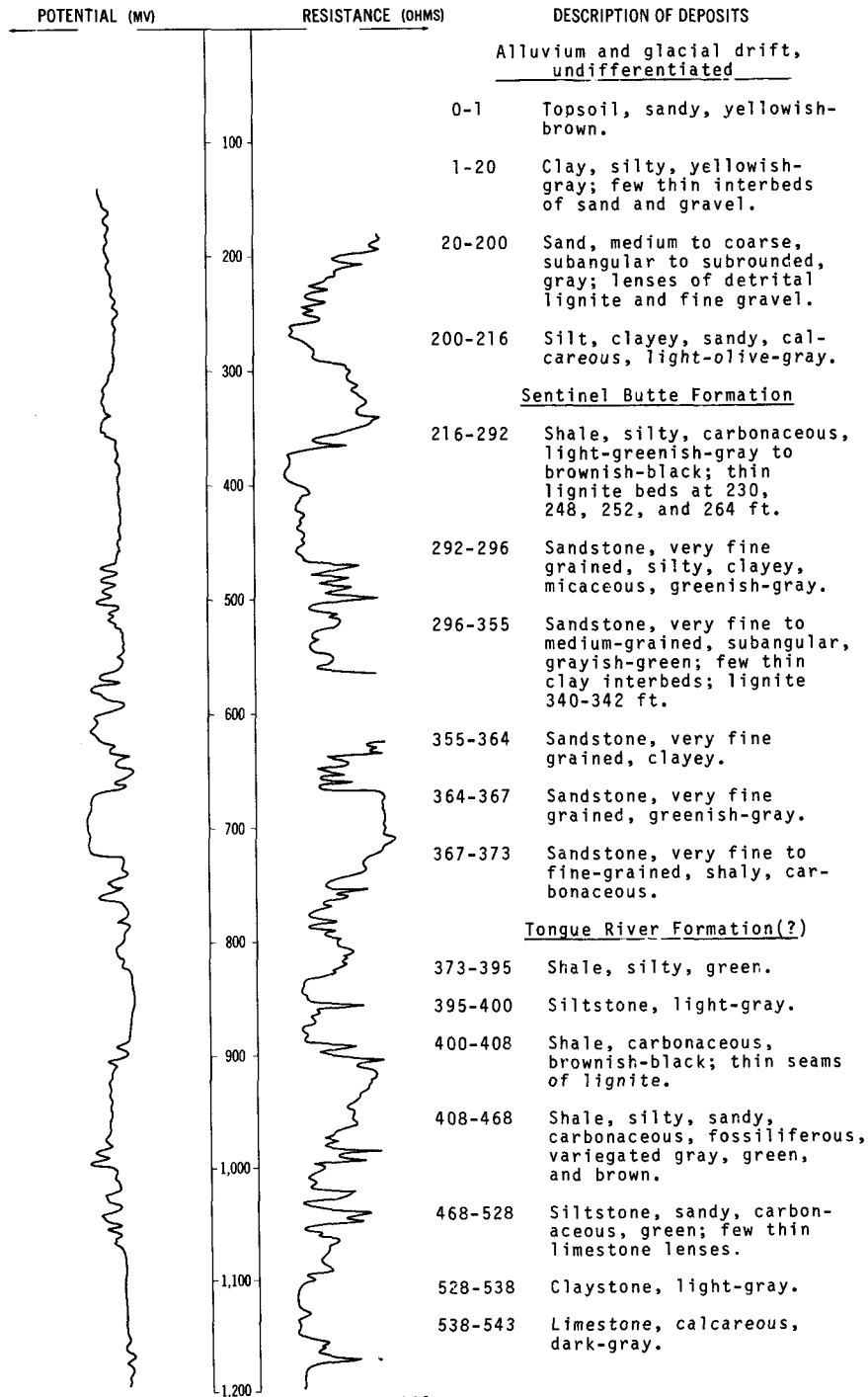
<u>Geologic</u> <u>source</u>	<u>Material</u>	<u>Thickness</u> <u>(feet)</u>	<u>Depth</u> <u>(feet)</u>
	Clay-----	39	39
	Coal (dry)-----	2	41
	Clay-----	6	47
	Coal (seep)-----	2	49
	Clay-----	2	51
	Coal (dry)-----	1	52
	Clay-----	33	85
	Coal (dry)-----	3	88
	Clay-----	22	110
	Sand (water)-----	57	167

LOCATION: 145-095-22DAD1

DATE DRILLED: August 1972

ALTITUDE: 2235
(FT, MSL)

DEPTH: 1950
(FT)



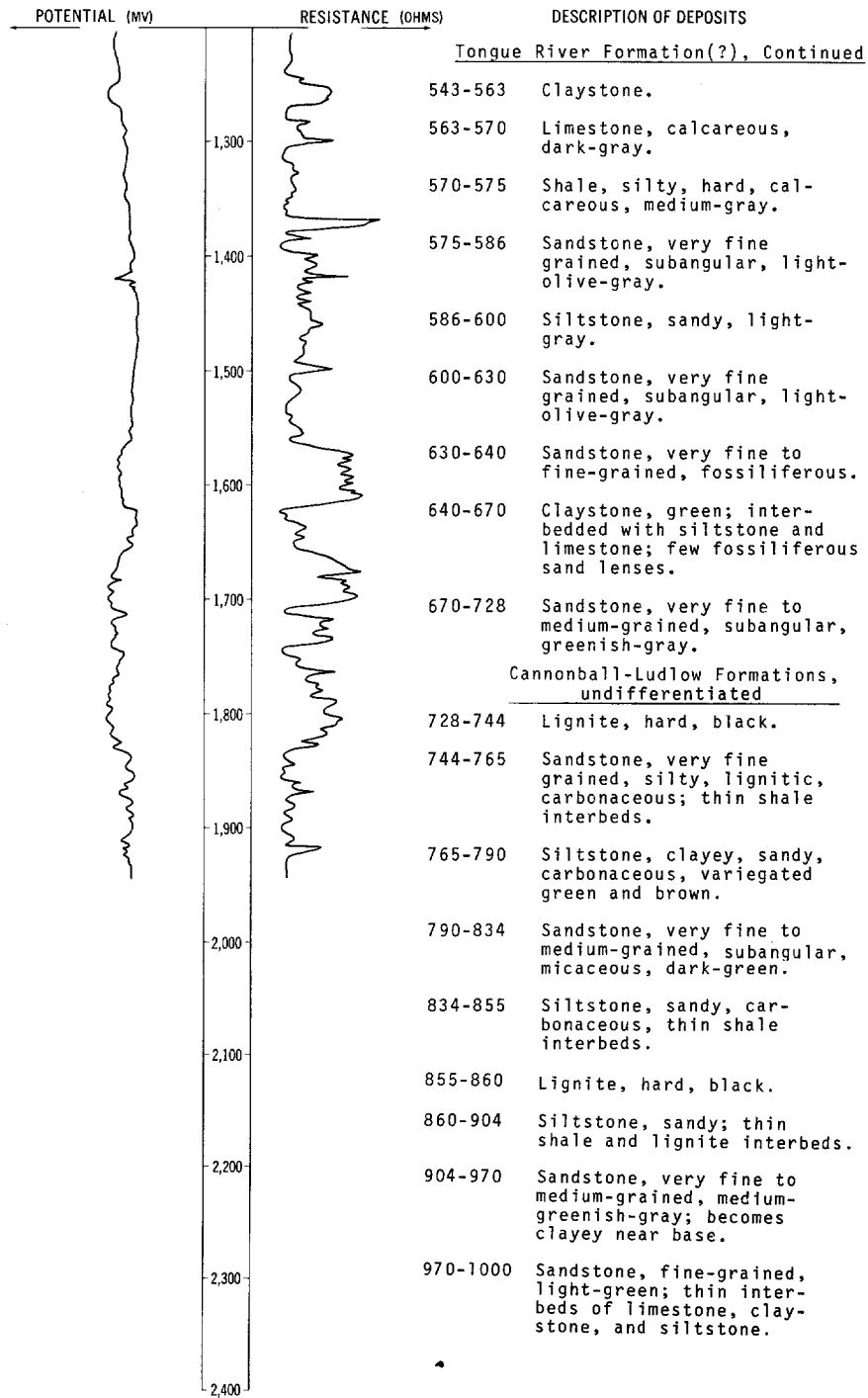
NDSWC 4468, Continued

LOCATION: 145-095-22DAD1

DATE DRILLED: August 1972

ALTITUDE: 2235
(FT, MSL)

DEPTH: 1950
(FT)



LOCATION: 145-095-22DAD1

DATE DRILLED: August 1972

ALTITUDE: 2235
(FT, MSL)

DEPTH: 1950
(FT)

POTENTIAL (MV)	RESISTANCE (OHMS)	DESCRIPTION OF DEPOSITS
		<u>Cannonball-Ludlow Formations, undifferentiated, Continued</u>
	1000-1023	Shale, silty, hard, variegated gray and green.
1,300	1023-1033	Sandstone, fine-grained, lignitic, green.
	1033-1042	Shale, carbonaceous, brownish-black.
1,400	1042-1058	Sandstone, fine-grained, greenish-gray.
	1058-1068	Shale, carbonaceous, brownish-black.
1,500	1068-1110	Siltstone, sandy, variegated gray, green, and brown.
	1110-1160	Shale, carbonaceous, green to gray; thin limestone bed at 1136 ft.
1,600		<u>Hell Creek Formation</u>
	1160-1181	Sandstone, very fine to fine-grained, micaceous, fossiliferous, light-greenish-gray; some pyrite.
1,700	1181-1250	Claystone, silty, carbonaceous, brown to green; thin limestone bed at base.
1,800	1250-1270	Sandstone, fine to medium-grained, silty, carbonaceous, fossiliferous, grayish-green.
1,900	1270-1303	Siltstone, clayey, sandy, carbonaceous, variegated gray, green, and brown; thin sandstone interbeds.
2,000	1303-1320	Shale, silty, sandy, carbonaceous, micaceous, brownish-black.
	1320-1368	Siltstone, clayey, sandy, variegated green and brown; numerous thin sandstone lenses.
2,100	1368-1386	Sandstone, very fine to fine-grained, clayey, dark-greenish-gray; few shale interbeds.
2,200	1386-1445	Shale, carbonaceous, variegated gray, green, and brown; thin interbeds of siltstone and sandstone.
2,300	1445-1494	Siltstone, sandy, carbonaceous, light-greenish-gray.
2,400		

NDSWC 4468, Continued

LOCATION: 145-095-220AD1

DATE DRILLED: August 1972

ALTITUDE: 2235
(FT, MSL)

DEPTH: 1950
(FT)

POTENTIAL (MV)	RESISTANCE (OHMS)	DESCRIPTION OF DEPOSITS
		<u>Hell Creek Formation, Continued</u>
		1494-1505 Sandstone, very fine-grained.
1,300		1505-1570 Siltstone, clayey, sandy, light-gray to greenish-gray.
		<u>Fox Hills Formation</u>
1,400		1570-1622 Sandstone, fine to medium-grained, subangular to subrounded, dark-green.
1,500		1622-1665 Shale, black; interbedded with lignitic and carbonaceous sandstone.
		1665-1710 Sandstone, very fine to medium-grained, subangular to subrounded, dark-green.
1,600		1710-1718 Shale, black.
		1718-1745 Siltstone, sandy, dark-green.
1,700		1745-1762 Shale, black.
		1762-1832 Sandstone, very fine to medium-grained, subangular to subrounded, dark-green.
1,800		<u>Pierre Formation</u>
		1832-1925 Shale, sandy, brownish-black; interbedded with siltstone and sandstone.
1,900		1925-1950 Shale, sandy, brownish-black.
2,000		
2,100		
2,200		
2,300		
2,400		

NOTE: Dual induction laterolog, bulk density, and gamma-gamma logs available.

145-095-22DAD2
NDSWC 4468B

Altitude: 2237 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
Alluvium and glacial drift, undifferentiated:			
	Topsoil, sandy, yellowish-brown-----	0.5	0.5
	Clay, silty, yellowish-gray; few thin interbeds of sand and gravel-----	19.5	20
	Sand, medium to coarse, gray; few thin interbeds of detrital lignite and gravel-----	140	160

145-095-22DAD3
NDSWC 4468A

Altitude: 2237 ft

Alluvium and glacial drift, undifferentiated:			
	Topsoil, sandy, yellowish-brown-----	0.5	0.5
	Clay, silty, yellowish-gray; few thin interbeds of sand and gravel-----	19.5	20
Glacial drift:			
	Sand, medium to coarse, gray; few thin interbeds of detrital lignite and gravel-----	34	54

145-095-23AAD
(Log from K. J. Thompson)

Altitude:

Topsoil, sandy-----	5	5
Sand (seep)-----	7	12
Coal slack-----	1	13
Clay-----	25	38
Sand, blue (water)-----	22	60

145-095-23ABB
(Log from Layne Minnesota Co.)

Altitude: 2241 ft

Clay-----	11	11
Sand, fine-----	11	22
Clay-----	3	25
Sand, fine-----	5	30
Sand and coal-----	15	45
Sand, coarse, some coal-----	15	60
Sand, coarse, some coal-----	5	65
	3.6	68.6
Sandstone, boulders, hard-----	1.4	70
Sandstone, boulders, hard, and fine sand---	1.6	71.6
Gravel, sand, and coal-----	5	76.6
Sandstone, hard-----	--	--

145-095-23BAA1
(Log from K. J. Thompson)

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Topsoil and sand, red, hard-----	10	10
	Sandstone, hard-----	2	12
	Sandstone, red-----	1	13
	Sandstone, hard-----	2	15
	Sandstone, soft-----	8	23
	Sand, red (dry)-----	21	44
	Sand, red, little water-----	7	51
	Lignite-----	2.5	53.5
	Clay, blue-----	4.5	58
	Lignite(?)-----	2	60
	Clay, sandy-----	2	62

145-095-23BAC
(Log from K. J. Thompson)

Altitude:

	Topsoil and gravel-----	4	4
	Sandstone, hard-----	2	6
	Sandstone, soft-----	23	29
	Sandstone, hard-----	2	31
	Sand, hard, red-----	7	38
	Coal slack-----	4	42
	Lignite-----	2.5	44.5
	Clay, blue-----	1	45.5
	Clay, green-----	1.5	47
	Clay, sandy, green-----	9	56
	Clay, hard, green-----	2	58

145-095-23BCA
(Log from K. J. Thompson)

Altitude:

	Topsoil, sandy-----	9	9
	Rock-----	2	11
	Clay-----	26	37
	Coal (seep)-----	1	38
	Clay-----	11	49
	Coal (dry)-----	1	50
	Clay-----	10	60
	Sand (dry)-----	20	80
	Sand (water)-----	20	100
	Clay, sandy (dry)-----	12	112
	Clay-----	3	115
	Coal (water)-----	3	118
	Clay-----	4	122

145-095-23CA1
(Log from K. J. Thompson)

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Sand-----	9	9
	Rock-----	2	11
	Clay-----	26	37
	Coal (seep)-----	1	38
	Clay-----	11	49
	Coal (dry)-----	1	50
	Clay-----	10	60
	Sand (dry)-----	20	80
	Sand (water)-----	20	100
	Clay, sandy-----	12	112
	Clay-----	3	115
	Coal (water)-----	3	118
	Clay-----	4	122

145-095-23CA2
(Log from K. J. Thompson)

Altitude:

	Sand-----	27	27
	Rock-----	.25	27.25
	Coal slack-----	3.75	31
	Sand-----	8	39
	Rock-----	.5	39.5
	Clay-----	23.5	63
	Sand-----	4	67
	Rock-----	3	70
	Sand (water)-----	44	114
	Coal (water)-----	3	117
	Clay-----	8	125

145-095-26BAA
(Log from K. J. Thompson)

Altitude: 2224 ft

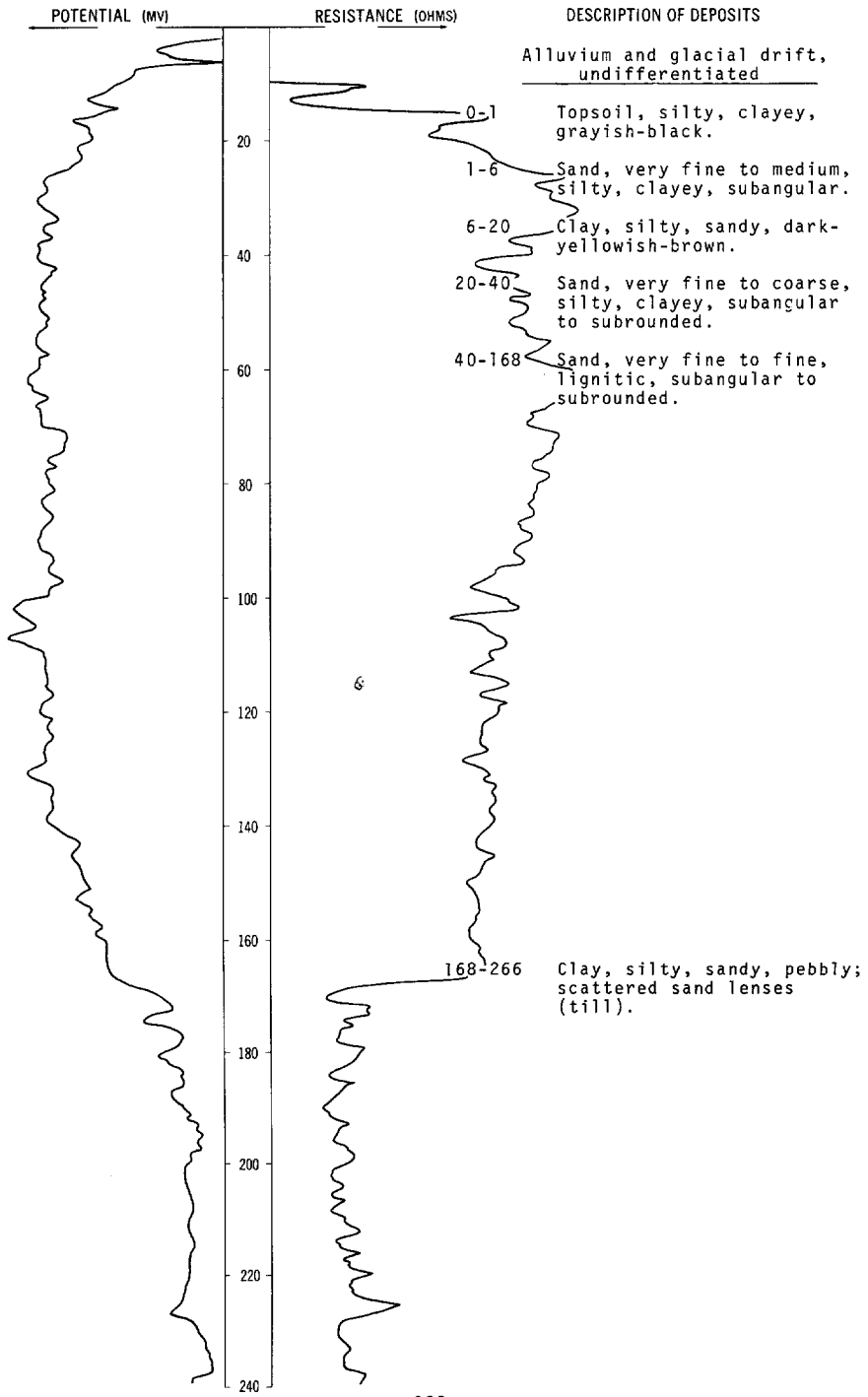
	Sand-----	50	50
	Sand, loose-----	5	55
	Sand, blue (water)-----	10	65
	Sand, fine-----	5	70
	Clay-----	4	74

LOCATION: 145-095-29AAA

DATE DRILLED: November 1971

ALTITUDE: 2275
(FT, MSL)

DEPTH: 280
(FT)



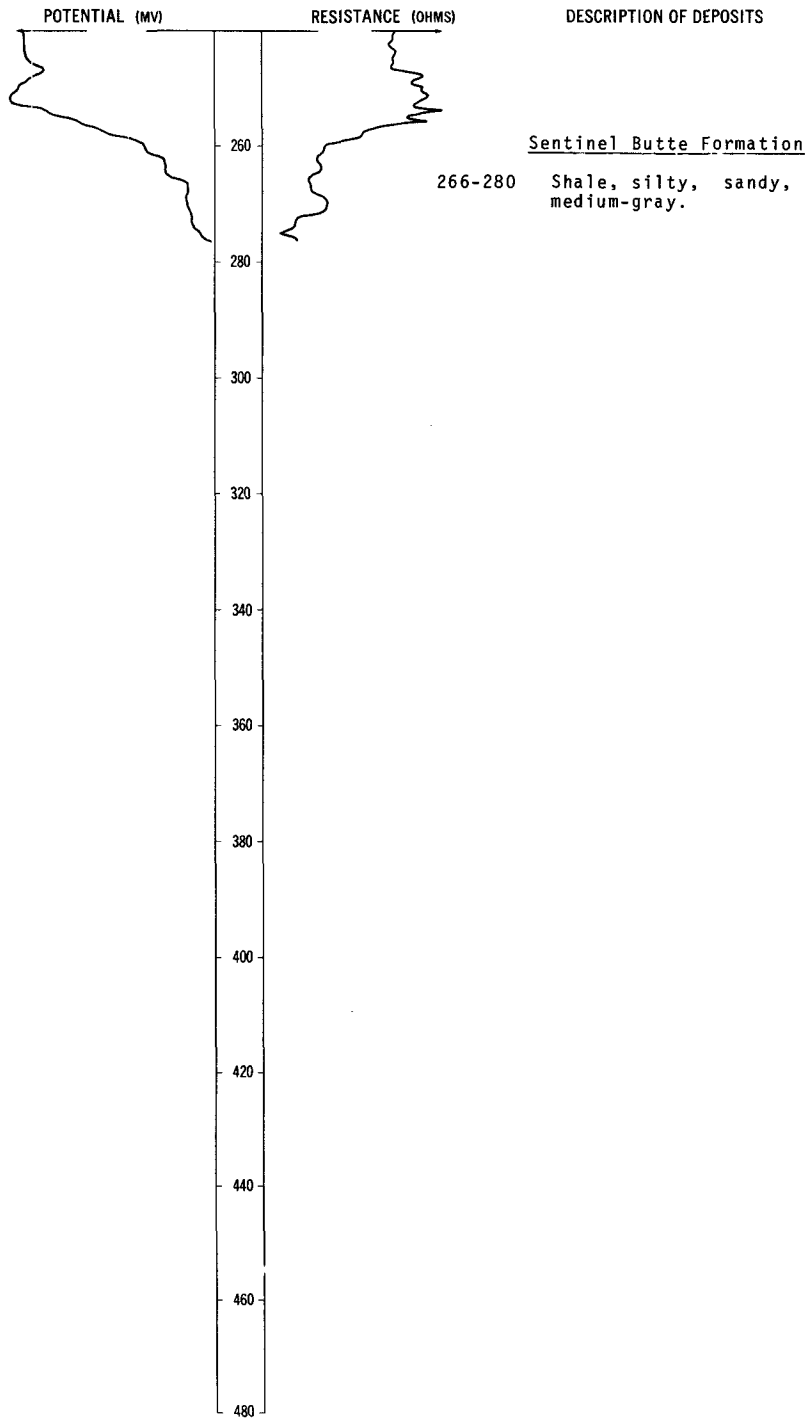
NDSWC 8232, Continued

LOCATION: 145-095-29AAA

DATE DRILLED: November 1971

ALTITUDE: 2275
(FT, MSL)

DEPTH: 280
(FT)

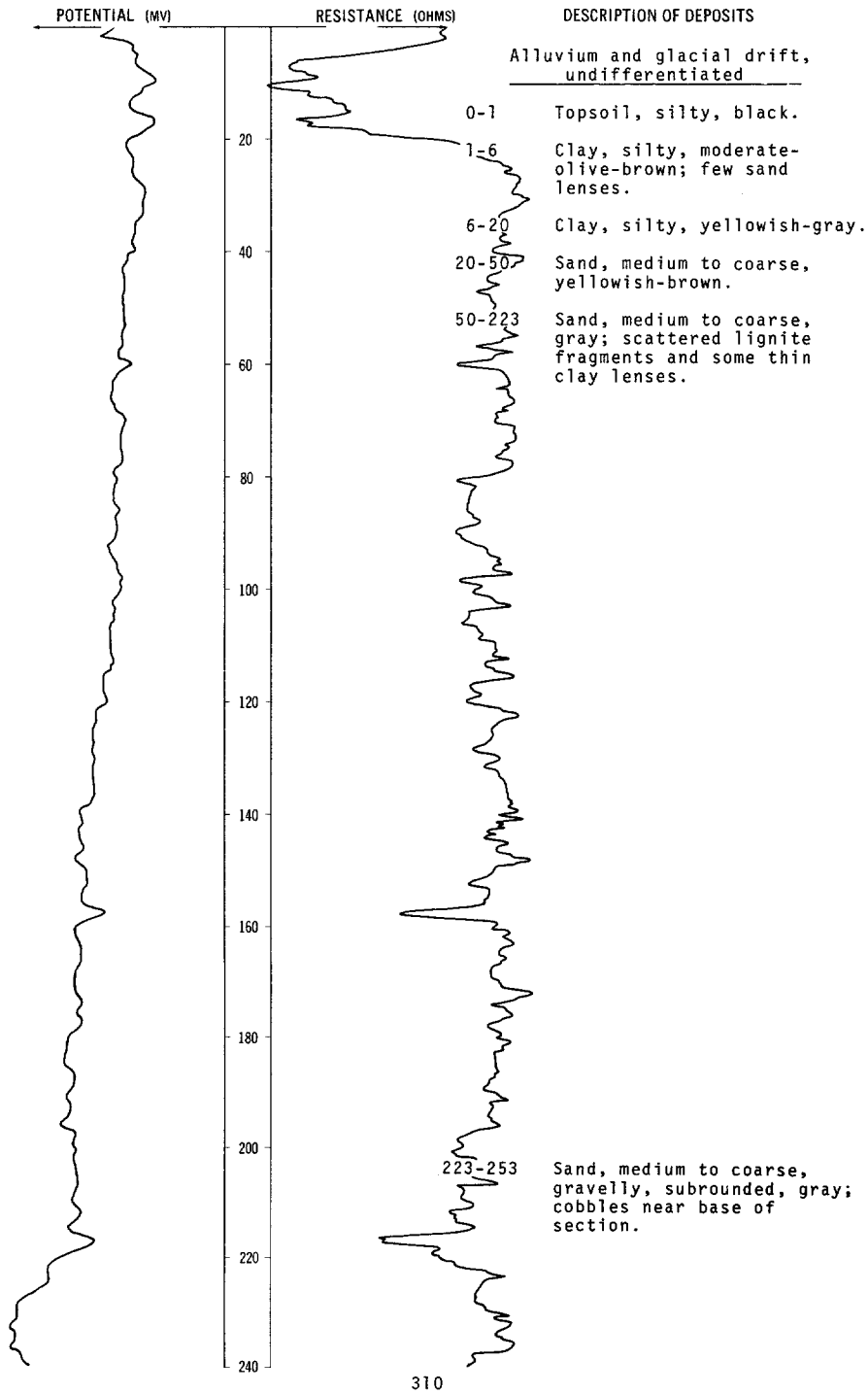


LOCATION: 145-095-29ADA1

DATE DRILLED: August 1972

ALTITUDE: 2268
(FT, MSL)

DEPTH: 280
(FT)

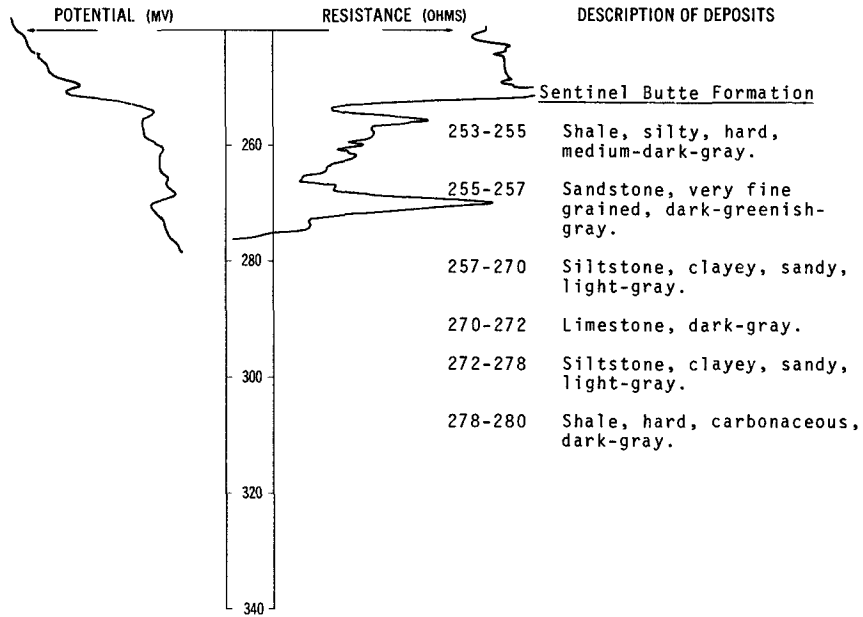


LOCATION: 145-095-29ADA1

DATE DRILLED: August 1972

ALTITUDE: 2268
(FT, MSL)

DEPTH: 280
(FT)



145-095-29ADA2
NDSWC 8623

Altitude: 2268 ft

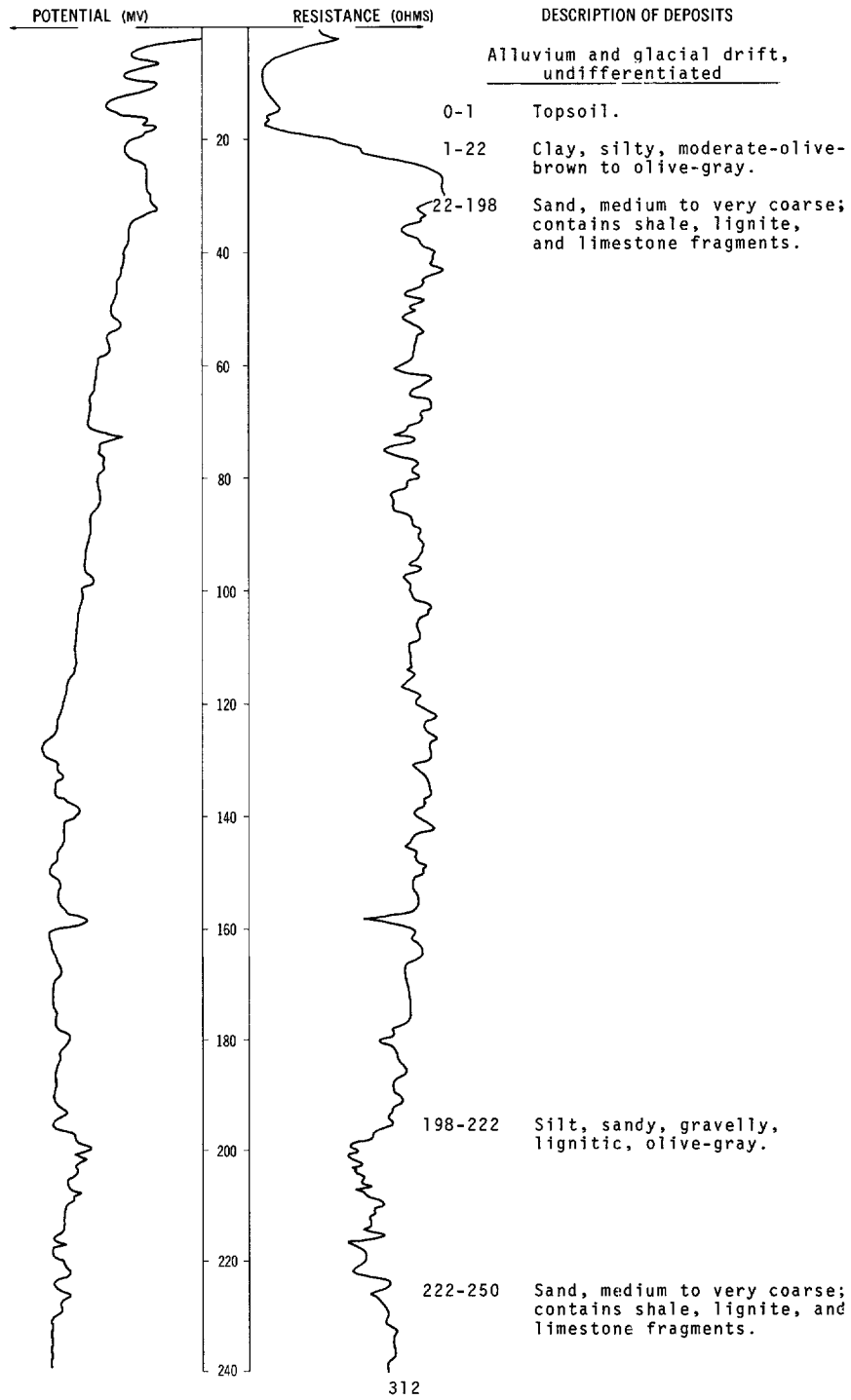
<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Alluvium	and glacial drift, undifferentiated:		
	Sand, fine to medium-----	12	12
	Silt, clayey, light-olive-brown to olive-gray-----	9	21
	Sand, medium, lignitic, gravelly-----	19	40
	Sand, medium to coarse, gravelly-----	40	80

LOCATION: 145-095-29ADA3

DATE DRILLED: April 1973

ALTITUDE: 2268
(FT. MSL)

DEPTH: 260
(FT)



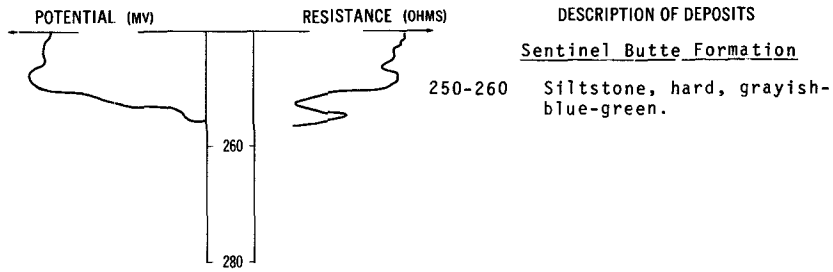
NDSWC 8624, Continued

LOCATION: 145-095-29ADA3

DATE DRILLED: April 1973

ALTITUDE: 2268
(FT, MSL)

DEPTH: 260
(FT)



145-095-29ADA4
NDSWC 8624A

Altitude: 2268 ft

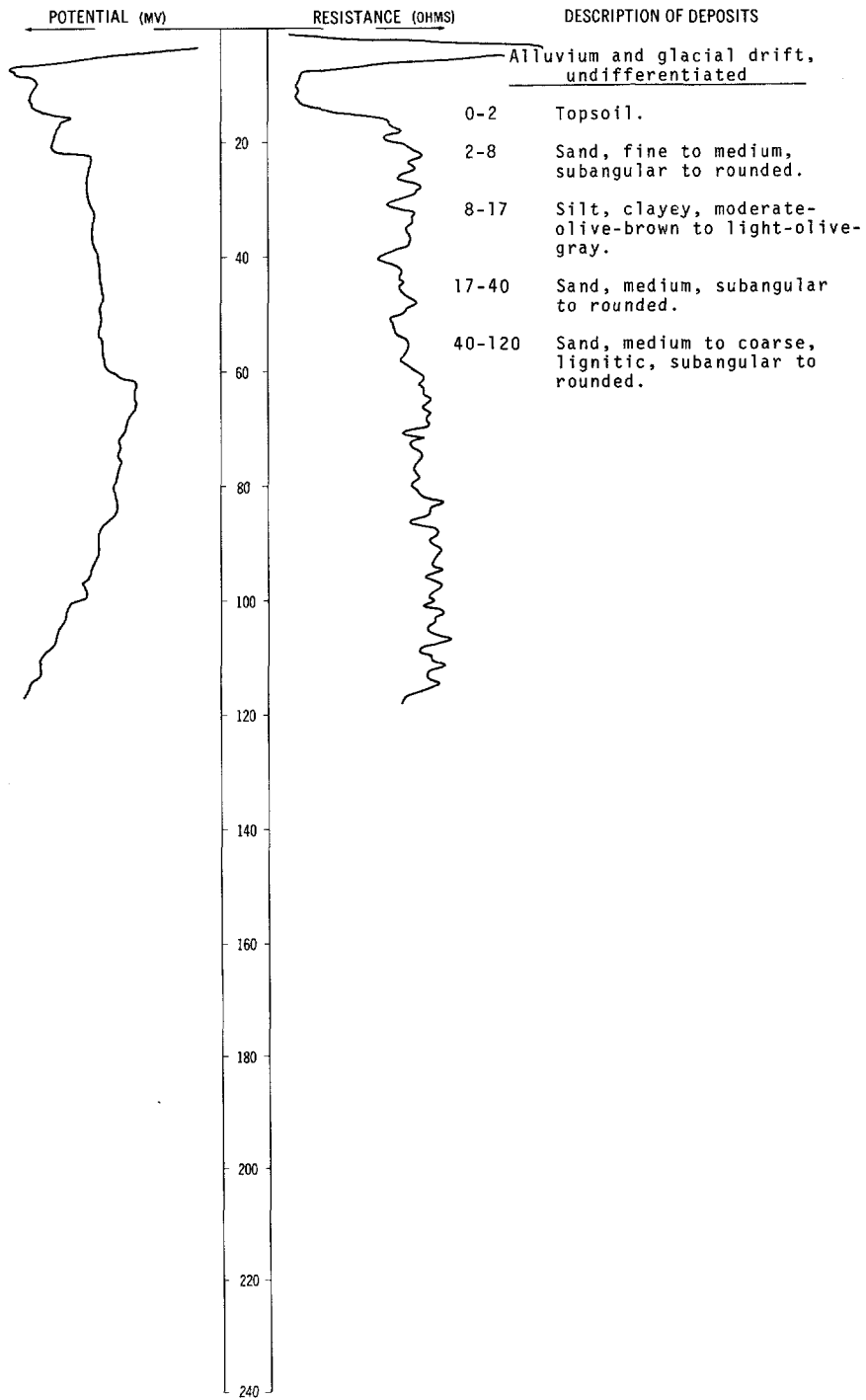
<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Alluvium and glacial drift, undifferentiated:			
	Topsoil, silty, black-----	1	1
	Clay, silty, yellowish-brown-----	19	20
	Clay, silty, olive-gray-----	2	22
	Sand, fine to medium, lignitic-----	18	40

LOCATION: 145-095-29ADD1

DATE DRILLED: April 1973

ALTITUDE: 2263
(FT, MSL)

DEPTH: 120
(FT)



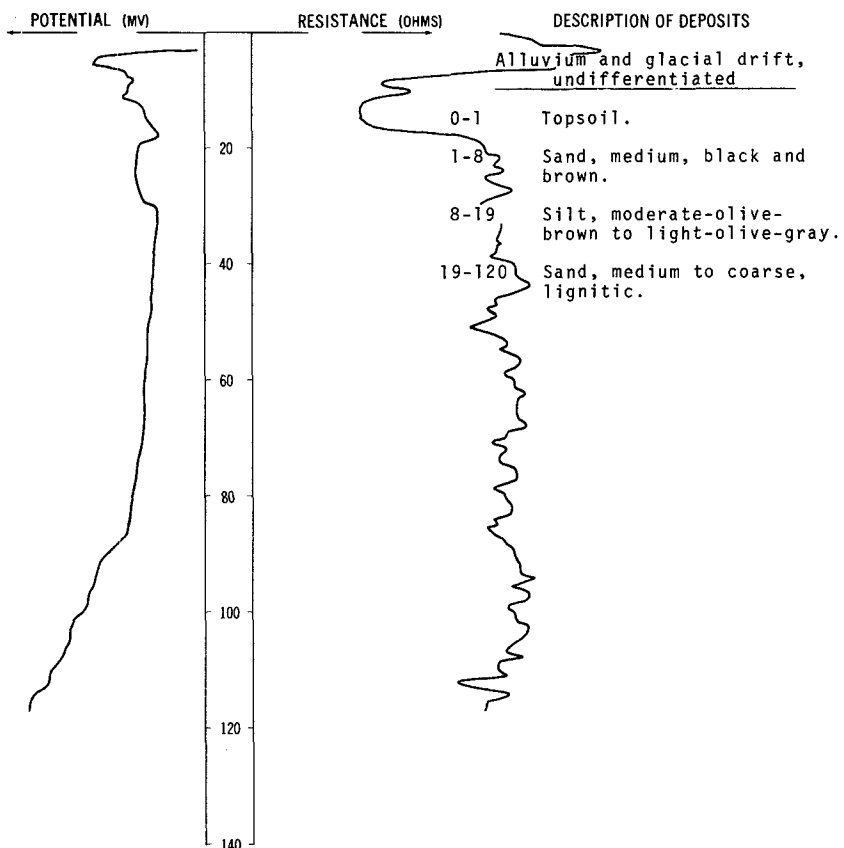
NDSWC 8622

LOCATION: 145-095-29ADD2

DATE DRILLED: April 1973

ALTITUDE: 2265
(FT, MSL)

DEPTH: 120
(FT)



145-095-29ADD3
NDSWC Production Well

Altitude: 2266 ft

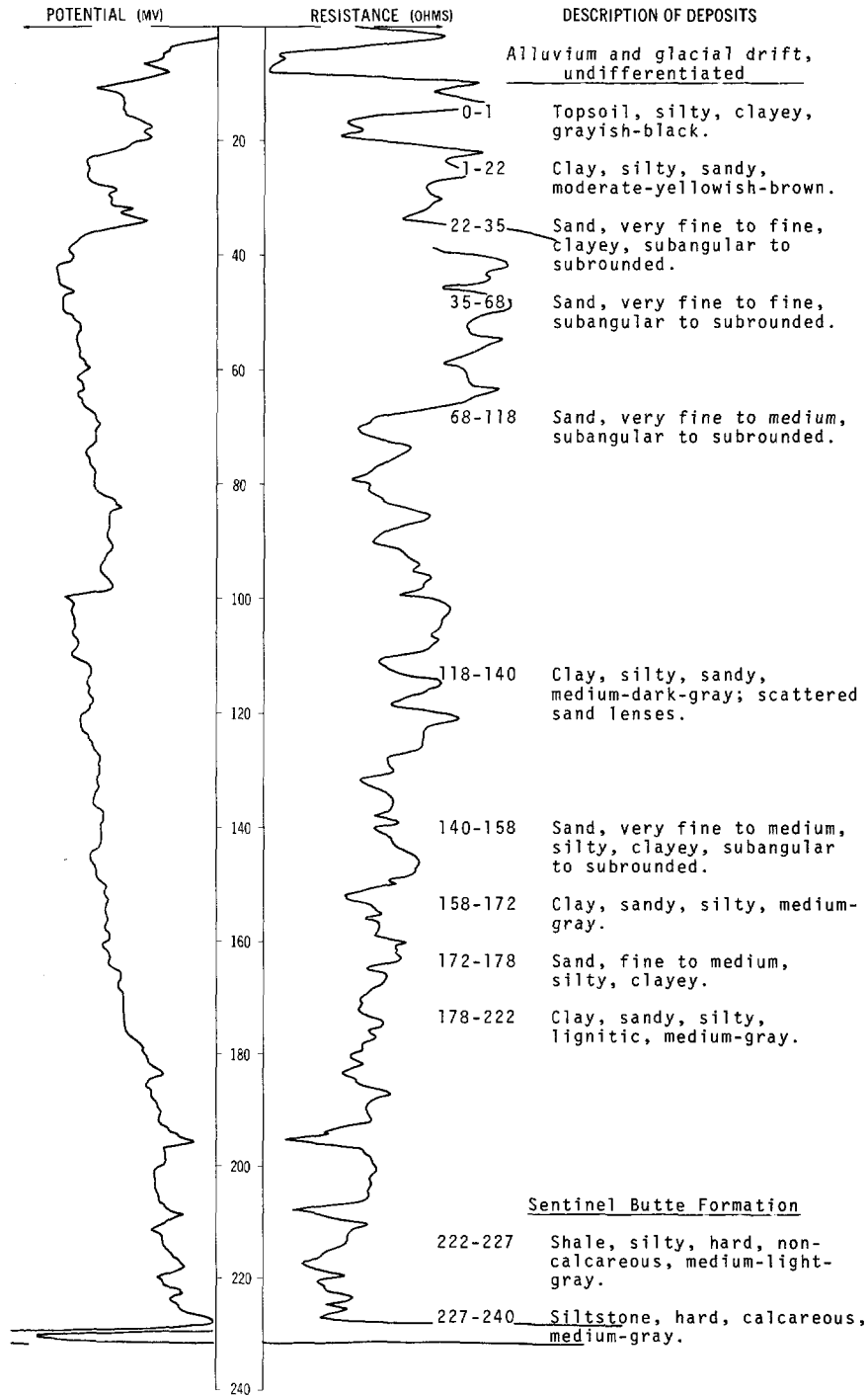
Geologic source	Material	Thickness (feet)	Depth (feet)
Alluvium and glacial drift, undifferentiated:			
	Clay, silty-----	18	18
	Sand, medium-----	92	110

LOCATION: 145-095-290AA1

DATE DRILLED: November 1971

ALTITUDE: 2268
(FT, MSL)

DEPTH: 240
(FT)



145-095-29DAA2
NDSWC 8618

Altitude: 2262 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
Alluvium	and glacial drift, undifferentiated:		
	Topsoil, clayey-----	3	3
	Sand, fine to medium, subangular-----	7	10
	Silt, clayey, sandy, moderate-olive-brown to light-olive-gray-----	8	18
	Sand, medium, subangular to rounded-----	27	45
	Sand, fine to medium, lignitic, subangular to rounded-----	35	80

145-095-29DAA3
NDSWC 8621

Altitude: 2268 ft

Alluvium	and glacial drift, undifferentiated:		
	Topsoil, silty, black-----	1	1
	Clay, sandy, silty, yellowish-brown-----	21	22
	Sand, fine to medium, clayey, lignitic-----	18	40
	Sand, fine to coarse, clayey, lignitic-----	40	80

145-095-29DBB
NDSWC 8620

Altitude: 2296 ft

Colluvium:			
	Topsoil-----	1	1
	Silt, calcareous, light-olive-brown-----	7	8
Sentinel Butte Formation:			
	Silt, noncalcareous, light-olive-brown to light-olive-gray; thin lignite seams-----	7	15
	Clay, silty-----	12	27
	Clay, silty, lignitic, brown; few sand lenses-----	8	35
	Sand, very fine to fine grained, clayey, medium-bluish-gray-----	19	54
	Silt, hard, medium-gray; lignite 63-65 ft--	26	80
	Silt, hard, grayish-green-----	9	89
	Limestone-----	2	91
	Sandstone, very fine grained, silty, lignitic, medium-dark-gray-----	29	120

145-095-29DDD
NDSWC 8234

Altitude 2273 ft

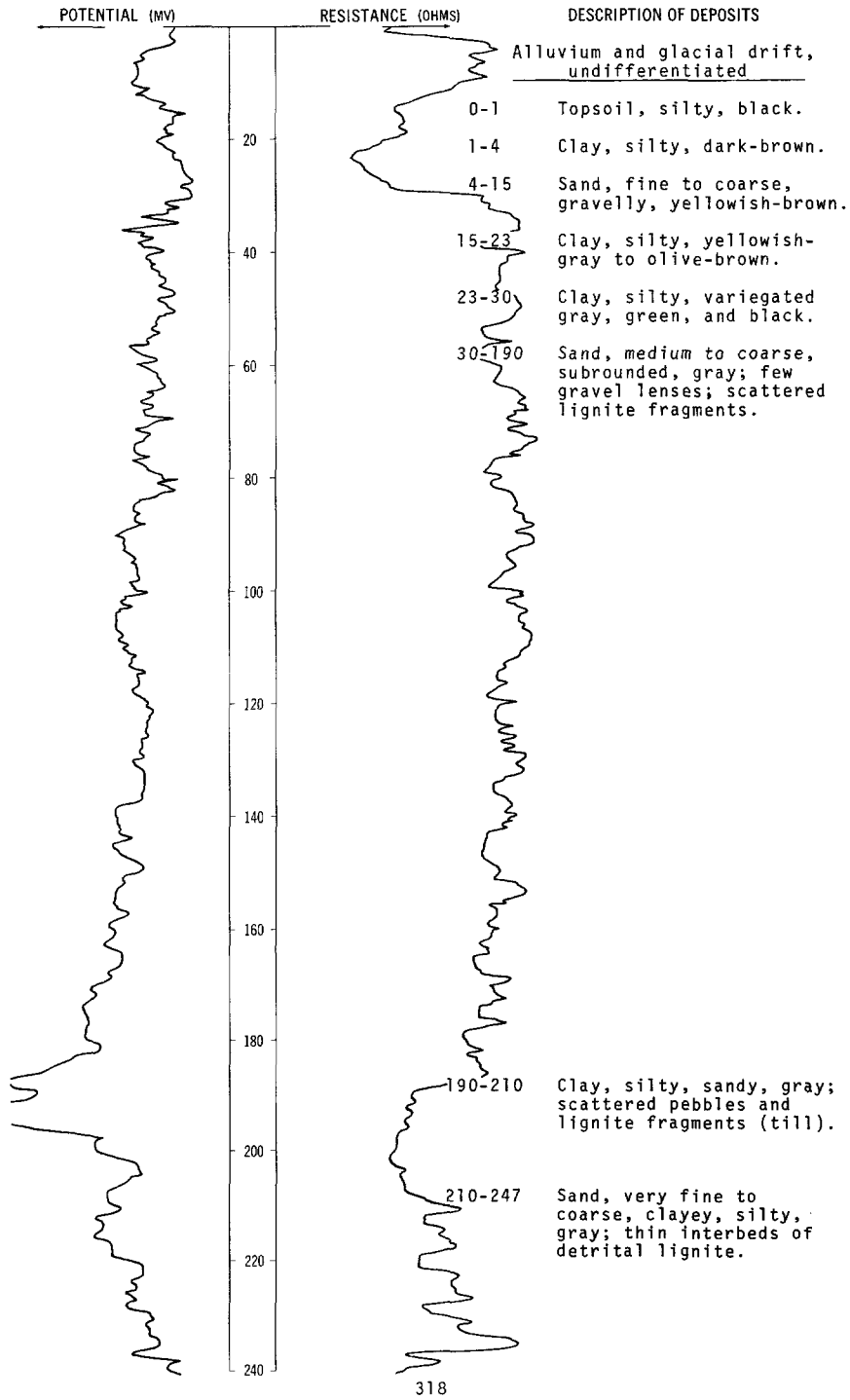
Alluvium	and glacial drift, undifferentiated:		
	Topsoil, silty, sandy, grayish-black-----	1	1
	Clay, silty, sandy, moderate-yellowish-brown-----	13	14
	Gravel, fine to coarse, sandy, clayey, angular to subrounded-----	6	20
	Sand, very fine to medium, silty-----	26	46
	Clay, silty, sandy, pebbly, lignitic, olive-gray (till)-----	46	92
Sentinel Butte Formation:			
	Shale, silty, hard, noncalcareous, greenish-gray; few thin lignite seams----	28	120

LOCATION: 145-095-34DCC

DATE DRILLED: August 1972

ALTITUDE: 2241
(FT, MSL)

DEPTH: 280
(FT)



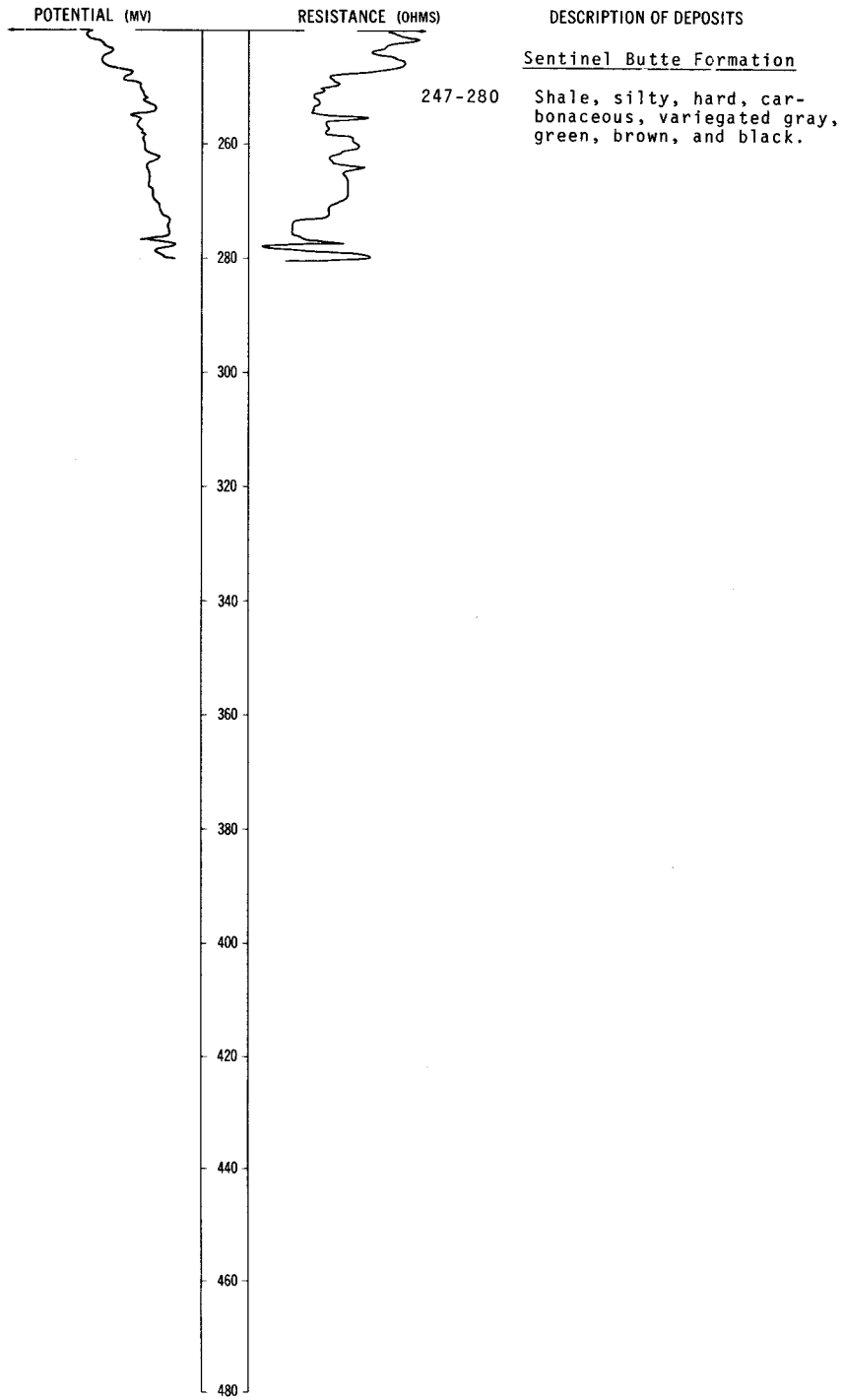
NDSWC 4475, Continued

LOCATION: 145-095-34DCC

DATE DRILLED: August 1972

ALTITUDE: 2241
(FT, MSL)

DEPTH: 280
(FT)



145-096-08DDB
(Log from K. J. Thompson)

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Topsoil, sandy-----	18	18
	Rock-----	2.5	20.5
	Sand-----	11.5	32
	Rock-----	3	35
	Sand, dry-----	.5	35.5
	Rock-----	2	37.5
	Sand, dry-----	22.5	60
	Rock-----	2	62
	Sand, dry-----	2	64
	Rock-----	2	66
	Sand, dry-----	10	76
	Sand, water-----	6	82
	Coal, water-----	4	86
	Clay-----	2	88

145-096-09BDD
(Log from K. J. Thompson)

Altitude:

	Topsoil-----	2	2
	Gravel, limestone-----	5	7
	Clay-----	15	22
	Sand, dry, red-----	67	89
	Rock-----	.5	89.5
	Sand, blue (water)-----	35.5	125

145-096-13DCB
(Log from K. J. Thompson)

Altitude:

	Topsoil and sand-----	10	10
	Gravel and rock-----	5	15
	Sand, red-----	8	23
	Sand, blue-----	13	36
	Clay, black, and coal-----	2	38
	Clay-----	3	41

145-096-13DCD
(Log from K. J. Thompson)

Altitude:

	Sand, red-----	26	26
	Rock-----	3	29
	Sand, red-----	21	50
	Sand, blue (water)-----	10	60
	Clay, sandy-----	10	70

145-096-17ADB
(Log from K. J. Thompson)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Topsoil, sandy (dry)-----	44	44
	Coal (dry)-----	2	46
	Clay and sand (dry)-----	36	82
	Rock-----	.5	82.5
	Clay-----	23.5	106
	Rock-----	1	107
	Sand (water)-----	11	118
	Rock-----	--	

145-096-18CCA1
(Log from K. J. Thompson)

Altitude:

	Topsoil, sandy-----	4	4
	Rock-----	2	6
	Sand-----	15	21
	Rock-----	1	22
	Sand-----	20	42
	Rock-----	3	45
	Sand and clay-----	19	64
	Sand and coal chunks (some water)-----	6	70
	Clay-----	15	85
	Coal (dry)-----	1	86
	Clay-----	5	91
	Rock-----	1	92
	Sand-----	4	96
	Rock-----	2	98
	Sand (some water)-----	14	112
	Clay-----	48	160
	Coal (dry)-----	3	163
	Clay-----	29	192
	Rock-----	1	193
	Clay-----	13	206
	Coal (dry)-----	1	207
	Clay-----	59	266
	Coal (dry)-----	2	268
	Clay-----	18	286
	Coal (dry)-----	1	287
	Clay-----	28	315

145-096-20DDD1
(Log from K. J. Thompson)

Altitude:

	Topsoil, sandy-----	27	27
	Rock-----	2	29
	Clay-----	9	38
	Coal (dry)-----	1	39
	Clay-----	11	50
	Coal (dry)-----	1	51
	Clay-----	47	98
	Sand (water)-----	22	120

145-096-20DDD2
(Log from K. J. Thompson)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Missing-----	60	60
	Clay, sandy-----	18	78
	Rock-----	1	79
	Sand (dry)-----	2	81
	Rock-----	1	82
	Sand (dry)-----	18	100
	Sand (water)-----	18	118
	Clay, sandy, black-----	2	120

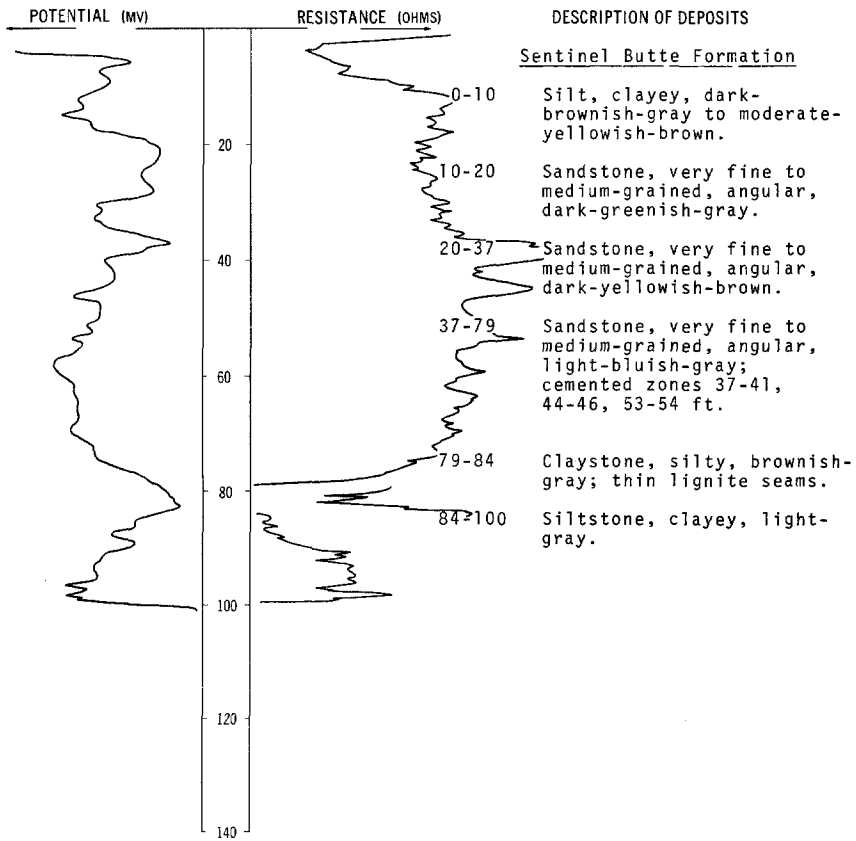
NDSWC 4736

LOCATION: 145-096-21DDD

DATE DRILLED: June 1974

ALTITUDE: 2396
(FT, MSL)

DEPTH: 100
(FT)



145-096-22CCD
(Log from K. J. Thompson)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay-----	7	7
	Clay, sandy-----	28	35
	Sand (water)-----	25	60

145-096-24DBC
NDSWC 4735

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
Alluvium:	Silt, clayey, brownish-black-----	7	7
	Sand, very fine to very coarse, gravelly, lignitic, subangular-----	5	12
Sentinel Butte Formation:	Siltstone, clayey, light-gray-----	9	21
	Siltstone, clayey, sandy, carbonaceous, greenish-gray to medium-gray-----	19	40

145-097-01AAB
(Log from K. J. Thompson)

Altitude:

	Clay and sand-----	60	60
--	--------------------	----	----

145-097-02DDB1
(Log from K. J. Thompson)

Altitude:

	Topsoil, sandy-----	12	12
	Rock-----	1.5	13.5
	Sand (dry)-----	21.5	35
	Rock-----	1.5	36.5
	Sand (dry)-----	17.5	54
	Rock-----	10	64
	Sand-----	27	91
	Coal slack (dry)-----	6	97
	Sand-----	13	110
	Sand (water)-----	12	122
	Coal-----	2	124
	Clay-----	1	125

145-097-08CBB
(Log from R. J. Thompson)

Altitude:

	Topsoil-----	2	2
	Sand-----	77	79
	Sandstone, soft-----	6	85
	Sand, red-----	5	90
	Sand, blue-----	12	102
	Clay-----	3	105

145-097-08CBC
(Log from R. J. Thompson)

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Topsoil and sand-----	28	28
	Coal-----	.5	28.5
	Sand-----	45.5	74
	Rock-----	7	81
	Sand, red-----	59	140
	Sand, gray-----	5	145
	Clay-----	28.5	173.5
	Coal-----	2	175.5
	Clay-----	27.5	203
	Rock-----	2	205
	Clay-----	17	222
	Coal-----	6	228
	Clay-----	43	271
	Coal-----	4	275
	Clay-----	10	285
	Coal-----	5	290
	Clay-----	10	300
	Dry hole		

145-097-08CCB
(Log from R. J. Thompson)

Altitude:

	Topsoil and clay-----	15	15
	Sand-----	26	41
	Coal-----	4	45
	Sand-----	34	79
	Rock-----	2	81
	Sand, red-----	65	146
	Sand, gray-----	4	150
	Clay-----	29	179
	Coal-----	3	182
	Clay, sandy-----	45	227
	Coal-----	10	237
	Clay-----	40	277
	Coal-----	5	282
	Clay-----	10	292
	Coal-----	5	297
	Clay-----	14	311
	Rock-----	2	313
	Clay-----	16	329
	Coal-----	2	331
	Clay with coal streaks-----	9	340
	Coal-----	5	345
	Clay-----	29	374
	Coal-----	2	376
	Clay-----	39	415
	Rock-----	--	--
	Dry hole		

145-097-11ACC
(Log from K. J. Thompson)

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Sand-----	32	32
	Rock-----	4	36
	Sand and clay-----	44	80
	Sand (water)-----	16	96
	Clay-----	6	102

145-097-12BCD1
(Log from K. J. Thompson)

Altitude:

	Topsoil, sandy, red-----	35	35
	Sand, gray (water)-----	7	42
	Sand, dry-----	8	50

145-097-14DDA
(Log from K. J. Thompson)

Altitude:

	Sand-----	31	31
	Rock-----	7	38
	Sand-----	42	80
	Sand-----	20	100
	Sand and coal chunks-----	10	110

145-097-15CAD
(Log from K. J. Thompson)

Altitude:

	Sand-----	50	50
	Blind-----	1	51
	Sand-----	9	60
	Blind-----	1	61
	Sand-----	19	80
	Sand (water)-----	50	130

145-097-22DCC
(Log from K. J. Thompson)

Altitude:

	Sand-----	34	34
	Coal (water)-----	5	39
	Clay-----	11	50

145-097-30AAB
(Log from R. J. Thompson)

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Topsoil and sand-----	18	18
	Clay-----	4	22
	Sand-----	6	28
	Rock-----	3	31
	Sand-----	4	35
	Rock-----	2	37
	Sand-----	23	60
	Sand, blue-----	15	75
	Rock-----	--	

145-097-34CCC1
(Log from K. J. Thompson)

Altitude:

	Topsoil and clay-----	38	38
	Rock-----	1	39
	Clay-----	8	47
	Coal (seep)-----	4	51
	Clay-----	19	70
	Coal (water)-----	3	73
	Clay-----	3	76
	Coal-----	1	77
	Clay-----	8	85

145-097-34CCC2
(Log from K. J. Thompson)

Altitude:

	Topsoil, sandy-----	18	18
	Coal (seep)-----	2	20
	Clay-----	17	37
	Rock-----	.5	37.5
	Clay-----	3.5	41
	Coal (water)-----	4	45
	Clay-----	22	67
	Coal-----	--	

145-097-34CCD
(Log from K. J. Thompson)

Altitude:

	Sand-----	15	15
	Gravel-----	5	20
	Coal-----	1.5	21.5
	Clay-----	21.5	43
	Coal (water)-----	4	47
	Clay-----	3	50

145-097-35DDD
(Log from K. J. Thompson)

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Sand-----	20	20
	Rock-----	2	22
	Sand-----	20	42
	Rock-----	2.5	44.5
	Sand (water)-----	11.5	56
	Coal-----	3	59
	Clay-----	1	60
	Coal (dry)-----	3	63
	Clay-----	1	64
	Rock-----	1	65
	Clay-----	19	84
	Rock-----	1	85
	Clay-----	17	102
	Coal (dry)-----	3	105
	Clay-----	5	110
	Coal (dry)-----	1	111
	Clay-----	23	134
	Coal (dry)-----	4	138
	Clay-----	2	140
	Coal (dry)-----	2	142
	Clay-----	8	150

146-091-01DDC
(Log from U.S. Bureau of Mines)

Altitude:

	Soil, black-----	5	5
	Clay, yellow-----	39	44
	Clay, blue-----	18	62
	Clay, blue, sandy-----	23	85
	Sandstone and water-----	35	120
	Clay, blue-----	3	123

146-091-05CBB
(Log from U.S. Public Health Service,
Division of Indian Health)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Topsoil-----	2	2
	Clay, yellow-----	26	28
	Clay, gray-----	7	35
	Coal and water-----	5	40
	Clay, gray-----	12	52
	Coal and water-----	3	55
	Clay, gray-----	14	69

146-091-08CAA
(Log from Dingman and Gordon, 1954)

Altitude:

	Clay, yellow-----	5	5
	Clay, yellow, and gravel-----	3	8
	Clay, yellow-----	6	14
	Clay, carbonaceous, and lignite-----	6	20
	Clay, gray-----	7	27
	Clay, light-gray, silty-----	8	35
	Clay, brown, and gravel-----	7	42
	Clay, gray-----	8	50
	Clay, dark-gray, silty-----	12	62
	Lignite-----	6	68
	Clay, gray-----	12	80
	Lignite-----	5	85
	Clay, gray, silty-----	20	105
	Clay, gray, sandy-----	5	110
	Clay, gray-----	8	118
	Lignite-----	6	124
	Clay, gray-----	28	152
	Sand-----	11	163
	Lignite-----	5	168
	Clay, sandy-----	22	190

146-091-13BCA2
(Log from R. J. Thompson)

Altitude:

	Topsoil, clayey-----	26.5	26.5
	Rock-----	2	28.5
	Clay-----	81.5	110
	Sand-----	9	119
	Coal-----	2	121
	Clay-----	41.5	162.5
	Coal-----	1	163.5
	Clay-----	11.5	175
	Sand-----	18	193
	Sandstone-----	3.5	196.5
	Sand-----	1	197.5
	Sandstone-----	2.5	200
	Sand-----	2	202
	Sandstone-----	4	206
	Sand, blue-----	22	228
	Sandstone-----	2	230

146-091-14DDB
(Log from K. J. Thompson)

Altitude:

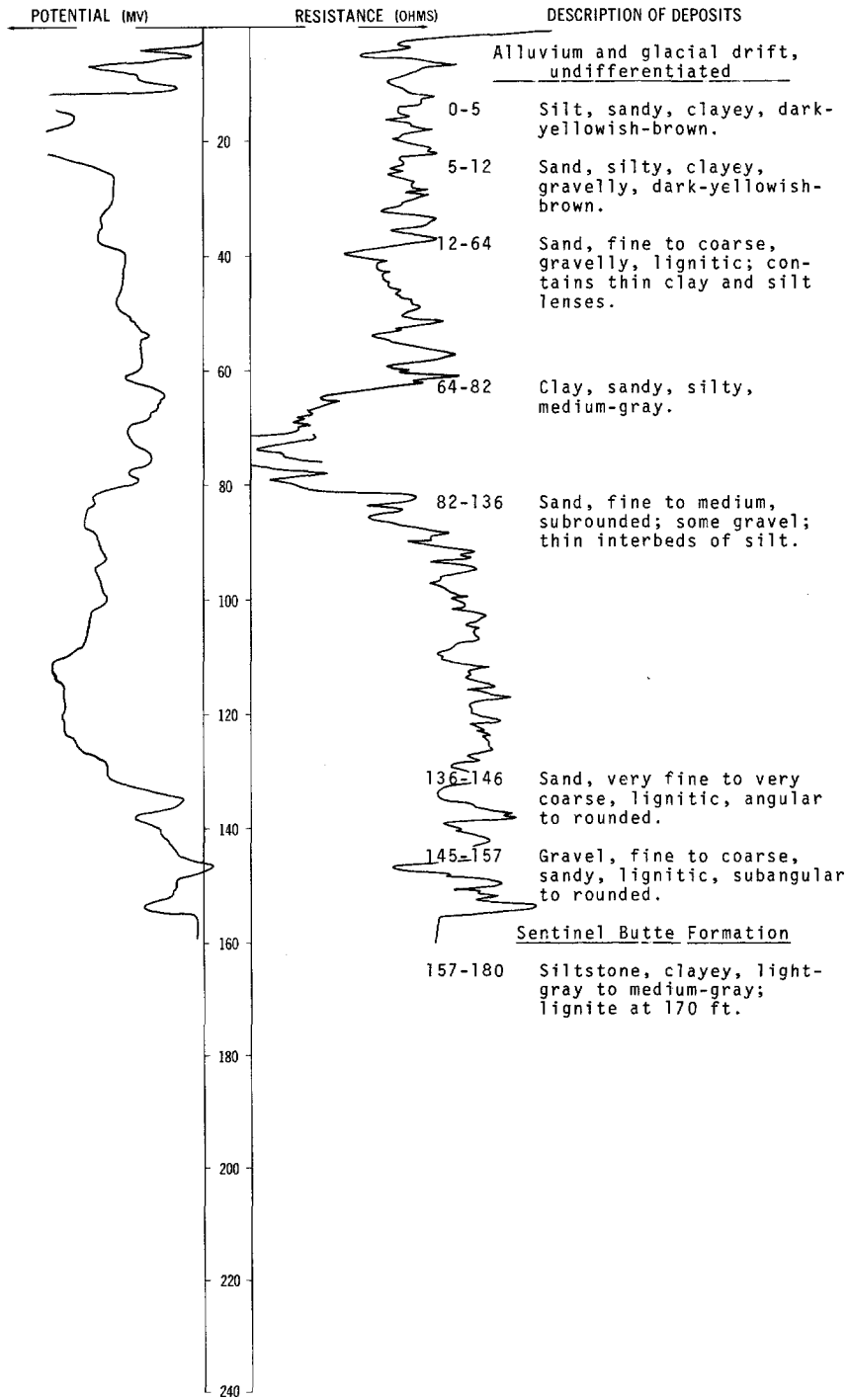
<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Topsoil, sandy-----	50	50
	Rock-----	2	52
	Clay-----	4	56
	Coal (dry)-----	1	57
	Clay-----	35	92
	Coal (dry)-----	2	94
	Clay-----	26	120
	Sand (dry)-----	21	141
	Rock-----	3	144
	Sand (dry)-----	3	147
	Rock-----	1	148
	Sand (dry)-----	5	153
	Rock-----	2	155
	Sand (dry)-----	4	159
	Rock-----	2	161
	Sand (water)-----	11	172
	Rock-----	1	173
	Sand (water)-----	37	210

LOCATION: 146-091-17CDC

DATE DRILLED: June 1974

ALTITUDE: 1930
(FT, MSL)

DEPTH: 180
(FT)

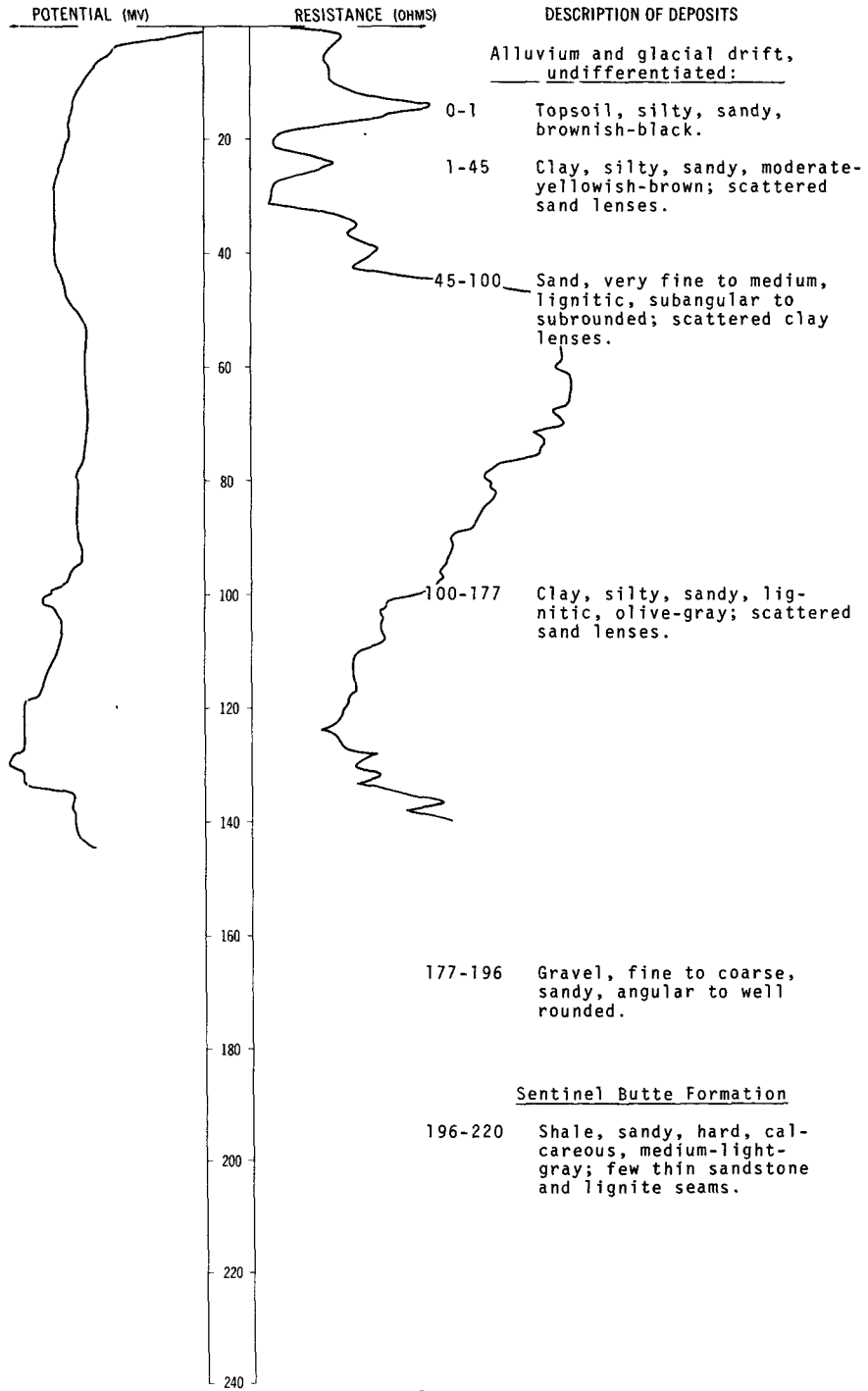


LOCATION: 146-091-21CDD1,2

DATE DRILLED: October 1971

ALTITUDE: 1978
(FT, MSL)

DEPTH: 220
(FT)



146-091-21DCD
(Log from K. J. Thompson)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Missing-----	60	60
	Clay, sandy-----	9	69
	Coal (water)-----	2	71
	Clay-----	9	80

146-091-22BBA 2
(Log from Ray Mohl)

Altitude:

	Clay and scoria-----	10	10
	Clay, white-----	12	22
	Quicksand-----	5	27
	Sandstone, soft-----	4	31
	Sand, blue-----	14	45
	Clay, gray-----	13	58
	Coal-----	1	59
	Clay, brown and black-----	14	73
	Coal-----	2	75
	Clay, gray-----	9	84
	Clay, sandy-----	21	105
	Clay, gray-----	6	111
	Coal-----	1.5	112.5
	Clay, hard-----	5.5	118
	Trace of coal-----	1	119
	Clay, white-----	4	123
	Coal-----	2	125
	Clay, white-----	14	139
	Coal-----	3	142
	Sand, gray, hard-----	45	187
	Coal-----	1	188
	Broken coal and hard sand-----	3	191
	Coal-----	6	197
	Clay, gray-----	18	215
	Rock, shale-----	2	217
	Clay, and blue sand-----	11	228
	Coal-----	7	235
	Clay, gray-----	5	240

146-091-28ABA
NDSWC 8217

Altitude: 1985 ft

Alluvium and glacial drift, undifferentiated:			
	Topsoil, silty, sandy, brownish-black-----	1	1
	Clay, silty, sandy, moderate-yellowish-brown-----	24	25
	Sand, very fine to medium, silty, clayey---	17	42
	Clay, silty, sandy, dark-yellowish-brown---	18	60
	Sand, very fine to medium, gravelly, subangular to subrounded-----	36	96
	Clay, silty, sandy, pebbly, olive-gray (till)-----	32	128
Sentinel Butte Formation:			
	Shale, sandy, hard, noncalcareous, medium-gray; few thin sandstone and lignite seams-----	12	140

146-091-28BBB
NDSWC 8218

Altitude: 1984 ft

<u>Geologic</u> <u>source</u>	<u>Material</u>	<u>Thickness</u> <u>(feet)</u>	<u>Depth</u> <u>(feet)</u>
Glacial drift:			
	Topsoil, silty, clayey, sandy, brownish- black-----	1	1
	Clay, silty, sandy, pebbly, moderate- yellowish-brown (till)-----	14	15
Sentinel Butte Formation:			
	Shale, silty, hard, calcareous, moderate- yellowish-brown; lignite streaks-----	13	28
	Shale, hard, noncalcareous, medium-gray; lignite streaks-----	12	40

NDSWC 4709

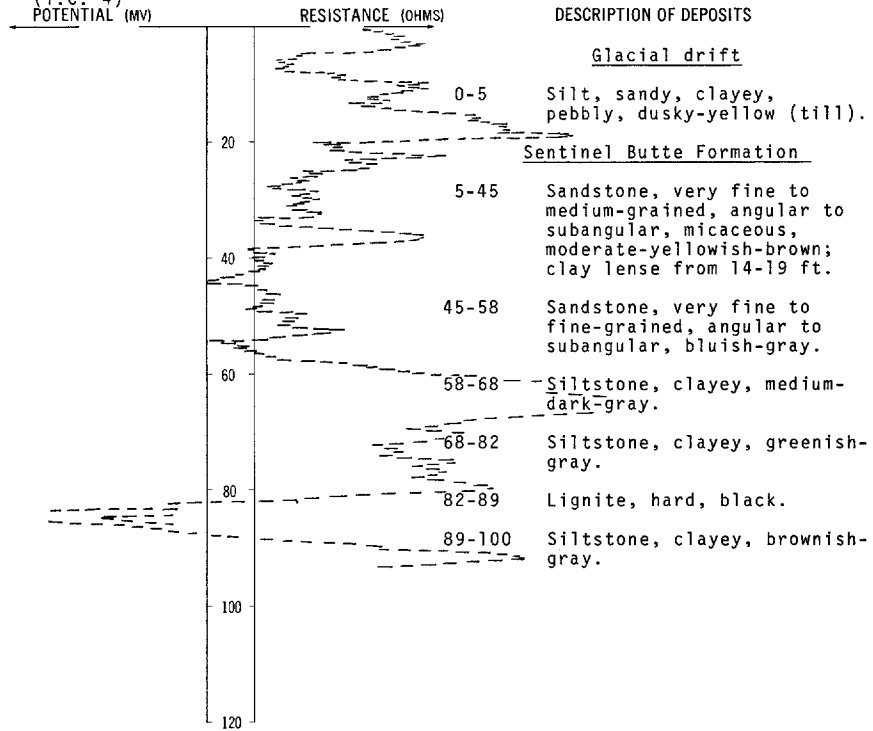
LOCATION: 146-092-27DDD

DATE DRILLED: June 1974

ALTITUDE: 2235
(FT, MSL)

DEPTH: 100
(FT)

Gamma log ---
(T.C. 4)
POTENTIAL (MV)



146-092-28CCC
NDSWC 4710

Altitude:

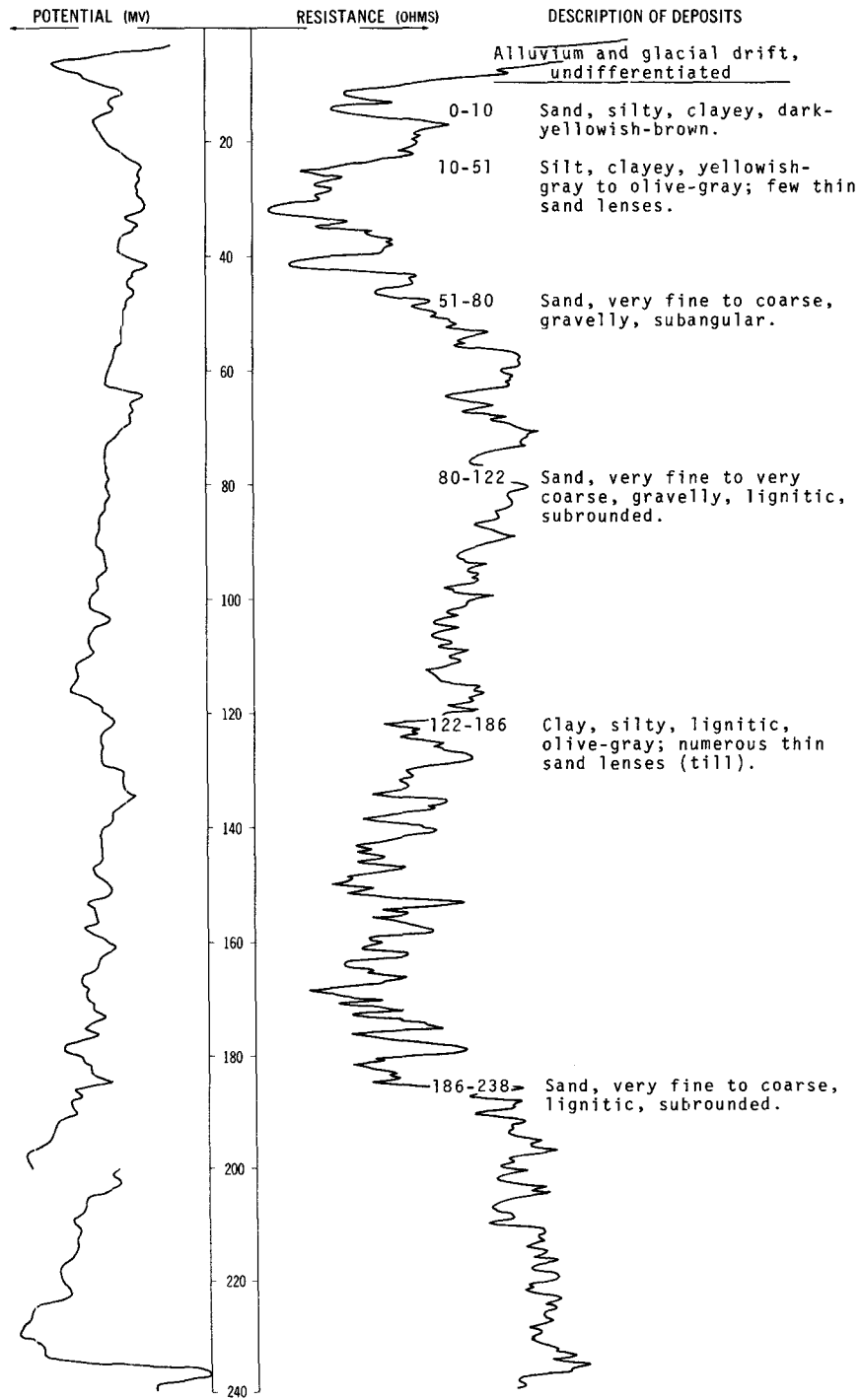
<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Sentinel Butte Formation:			
	Sandstone, fine- to medium-grained, silty, lignitic, micaceous, light-brown-----	32	32
	Siltstone, clayey, sandy, medium-gray-----	8	40

LOCATION: 146-091-35BBC

DATE DRILLED: June 1974

ALTITUDE: 2020
(FT, MSL)

DEPTH: 320
(FT)



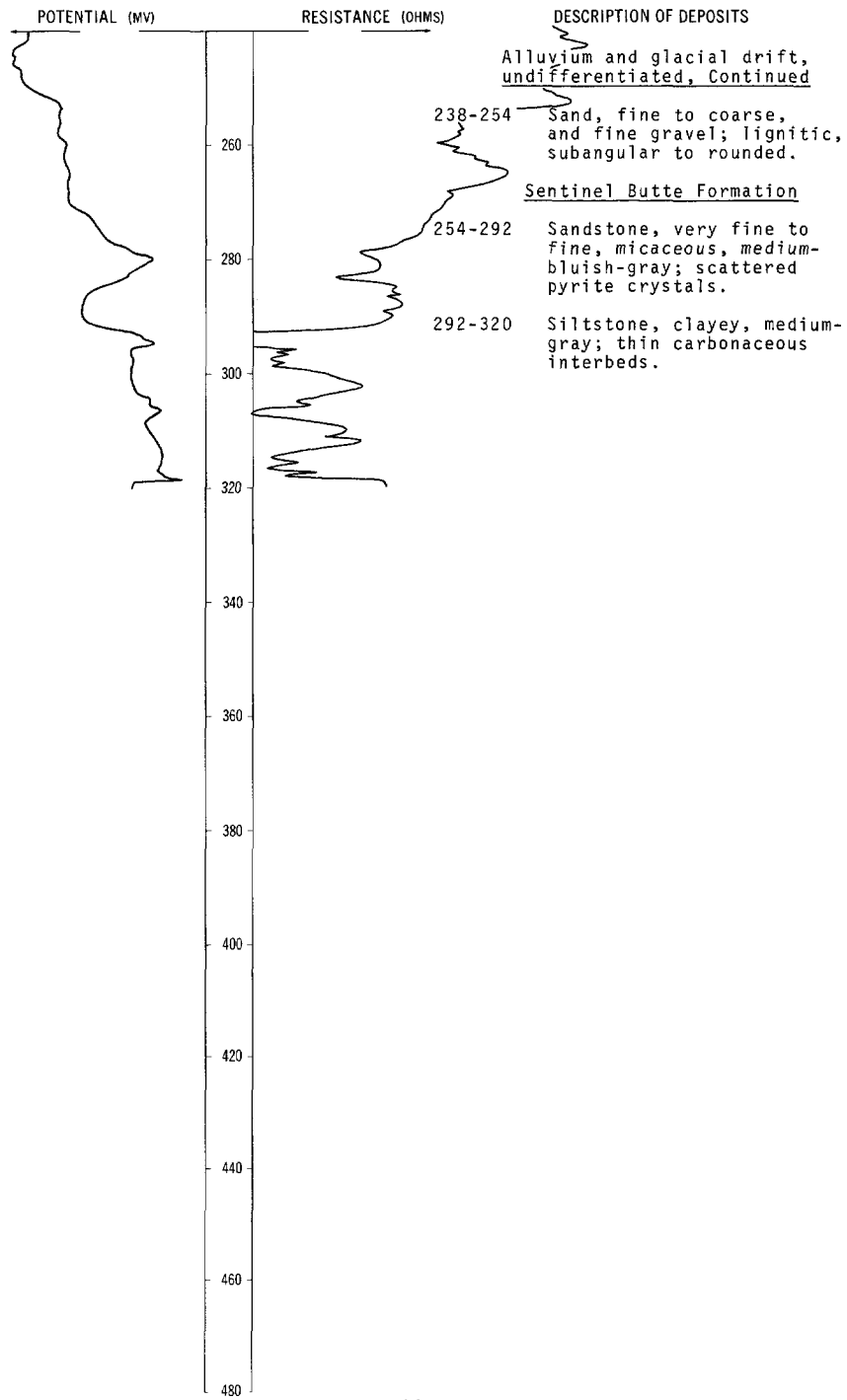
NDSWC 4707, Continued

LOCATION: 146-091-35BBC

DATE DRILLED: June 1974

ALTITUDE: 2020
(FT, MSL)

DEPTH: 320
(FT)



146-092-14BB
(Log from Dingman and Gordon, 1954)

Altitude: 2090 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Silt, brown-----	3	3
	Clay, silty, tan-----	3	6
	Silt, sandy, tan, with pebbles-----	2	8
	Clay, silty, brown-----	7	15
	Sand-----	2	17
	Clay, sandy, tan-----	7	24
	Sand-----	16	40
	Sand, with pebbles and fragments of concretions-----	5	45
	Sand and a small amount of clay-----	5	50
	Sand-----	5	55
	Sand, pebbles, and silty clay-----	4	59
	Clay, gray-----	35	94
	Lignite-----	6	100
	Clay, gray-----	16	116
	Clay and lignite-----	1	117
	Clay, sandy, gray-----	3	120
	Clay, gray-green, with small amount of lignite-----	5	125
	Clay, gray-----	11	136
	Lignite-----	4.5	140.5
	Clay, gray-----	4.5	145
	Sand-----	10	155
	Clay, gray-----	5	160
	Clay, silty, gray, with small amount of lignite-----	5	165
	Clay, gray-----	7	172
	Lignite-----	4	176
	Clay, silty, gray-----	31	207
	Sand-----	28	235
	Clay, sandy, gray-----	5	240
	Sand-----	14	254
	Lignite-----	6	260
	Lignite and carbonaceous clay-----	2	262
	Clay, silty, gray-----	3	265
	Lignite-----	3	268
	Clay, silty, gray, and lignite-----	6	274
	Sand-----	21	295
	Clay, gray-green-----	5	300
	Sand-----	5	305
	Lignite and small amount of sand-----	6	311
	Lignite-----	3.5	314.5
	Clay, gray-----	8	322.5
	Lignite-----	1.5	324
	Clay, gray-----	21	345
	Lignite-----	15	360
	Clay, gray, and lignite-----	5	365
	Sand and lignite-----	5	370
	Lignite and small amounts of clay and sand-----	5	375
	No sample-----	15	390

146-092-14CDD2
(Log from K. J. Thompson)

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Topsoil, clay, and sand-----	32	32
	Coal (dry)-----	3	35
	Clay-----	11	46
	Coal (dry)-----	2	48
	Clay-----	17	65
	Coal (water)-----	2	67
	Clay-----	8	75

146-092-15DDD
(Log from Julius Benz)

Altitude: 2260 ft

	Sand (lost circulation, abandoned hole)----	43	43
--	---	----	----

146-092-19DBC
(Log from K. J. Thompson)

Altitude:

	Topsoil and clay-----	129	129
	Coal (dry)-----	1	130
	Sand (water)-----	13	143
	Rock-----	3	146
	Sand (water)-----	4	150
	Clay-----	3	153

146-092-22ABB
(Log from Julius Benz)

Altitude: 2270 ft

	Sand (lost circulation, abandoned hole)----	40	40
--	---	----	----

146-092-29DDD1
(Log from K. V. Thompson)

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Sand-----	65	65

146-092-30DAA
(Log from K. J. Thompson)

Altitude:

	Topsoil, sandy-----	10	10
	Rock-----	.5	10.5
	Sand, red-----	39.5	50
	Sand, blue (water)-----	14	64
	Clay, sandy-----	6	70

146-092-32CDD
(Log from K. J. Thompson)

Altitude:

	Topsoil, sandy-----	60	60
	Sand, blue (water)-----	18	78
	Clay-----	2	80

146-092-35DAD2
(Log from K. J. Thompson)

Altitude:

	Topsoil, sandy-----	13	13
	Rock-----	2	15
	Sand, red-----	55	70
	Sand, blue (water)-----	35	105
	Clay-----	5	110

146-093-03CDD
(Log from Ralph Wood Well Drilling)

Altitude: 2060 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Clay-----	7	7
	Scoria and till-----	23	30
	Coal-----	10	40
	Clay-----	90	130
	Coal-----	5	135
	Clay-----	75	210
	Coal-----	5	215
	Clay-----	139	354
	Coal-----	14	368
	Clay-----	60	428
	Rock-----	3	431
	Clay-----	54	485
	Sand-----	75	560
	Clay-----	80	640
	Rock-----	10	650
	Clay-----	87	737
	Sand-----	3	740
	Clay-----	105	845
	Sand-----	10	855
	Clay and shale-----	257	1112
	Sand-----	34	1146
	Shale-----	42	1188
	Coal-----	6	1194
	Clay-----	21	1215
	Clay, sandy-----	65	1280
	Shale-----	30	1310
	Sand-----	20	1330
	Shale-----	45	1375
	Coal-----	5	1380
	Clay, sandy-----	10	1390
	Sand-----	70	1460
	Shale and water-----	26	1486
	Sand and water-----	39	1525

146-093-150DD
NDSWC 8231

Altitude: 2320 ft

Sentinel Butte Formation:			
	Sandstone, very fine to fine-grained, clayey, silty, subangular, micaceous, yellowish-gray-----	20	20
	Sandstone, very fine to fine-grained, clayey, silty, subangular, moderate- yellowish-brown-----	40	60
	Lignite, hard, black-----	5	65
	Hole abandoned due to loss of circulation--		--

146-093-17CBB
(Log from K. J. Thompson)

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Topsoil, gravel, and clay-----	32	32
	Rock-----	2	34
	Clay-----	17	51
	Rock-----	1	52
	Sand (dry)-----	59	111
	Coal (dry)-----	1	112
	Clay-----	33	145
	Coal (water)-----	5	150
	Clay-----	5	155

146-093-19BDD
(Log from K. J. Thompson)

Altitude:

	Clay, sandy-----	61	61
	Rock-----	1	62
	Sand-----	5	67
	Rock-----	1	68
	Sand-----	1	69
	Rock-----	8	77
	Sand-----	8	85
	Rock-----	3	88
	Sand-----	2	90
	Rock-----	2	92
	Sand (water)-----	36	128
	Coal-----	2	130
	Sand (water)-----	10	140
	Clay-----	--	--

146-093-20CCA
(Log from K. J. Thompson)

Altitude:

	Topsoil, sandy-----	40	40
	Rock-----	1.5	41.5
	Sand, red (dry)-----	14.5	56
	Rock-----	4	60
	Sand, red (dry)-----	15	75
	Rock-----	4.5	79.5
	Sand, red (dry)-----	1.5	81
	Rock-----	3	84
	Sand, red (dry)-----	36	120
	Sand, blue (water)-----	11	131
	Rock-----	3	134
	Coal(?)-----	1.5	135.5
	Clay-----	4.5	140

146-093-24DCC2
(Log from K. J. Thompson)

Altitude: 2305 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Topsoil and clay-----	25	25
	Sand (dry)-----	49	74
	Rock-----	3	77
	Sand-----	18	95
	Sand (water)-----	20	115

146-093-26CBA
(Log from K. V. Thompson)

Altitude:

	Clay and sand-----	55	55
--	--------------------	----	----

146-093-26CBB
(Log from K. J. Thompson)

Altitude: 2261 ft

	Sand-----	35	35
	Blind (water)-----	3	38
	Sand-----	22	60
	Clay-----	6	66

LOCATION: 146-093-27CCC

DATE DRILLED: July 1974

ALTITUDE: 2214

DEPTH: 120

(FT, MSL)

(FT)

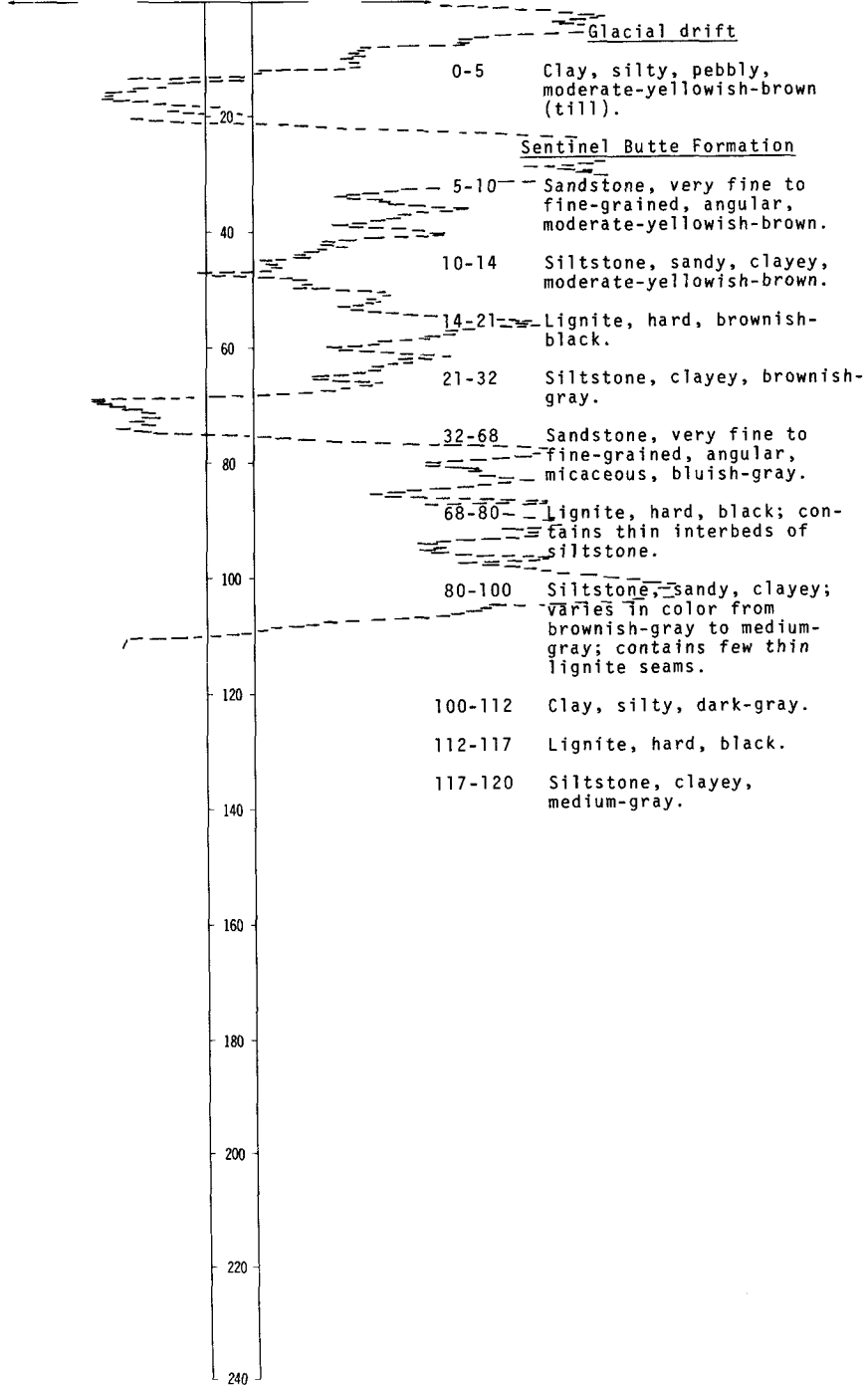
Gamma log -----

(T.C. 4)

POTENTIAL (MV)

RESISTANCE (OHMS)

DESCRIPTION OF DEPOSITS



LOCATION: 146-093-27CDD

DATE DRILLED: July 1974

ALTITUDE: 2212

DEPTH: 100

(FT, MSL)

(FT)

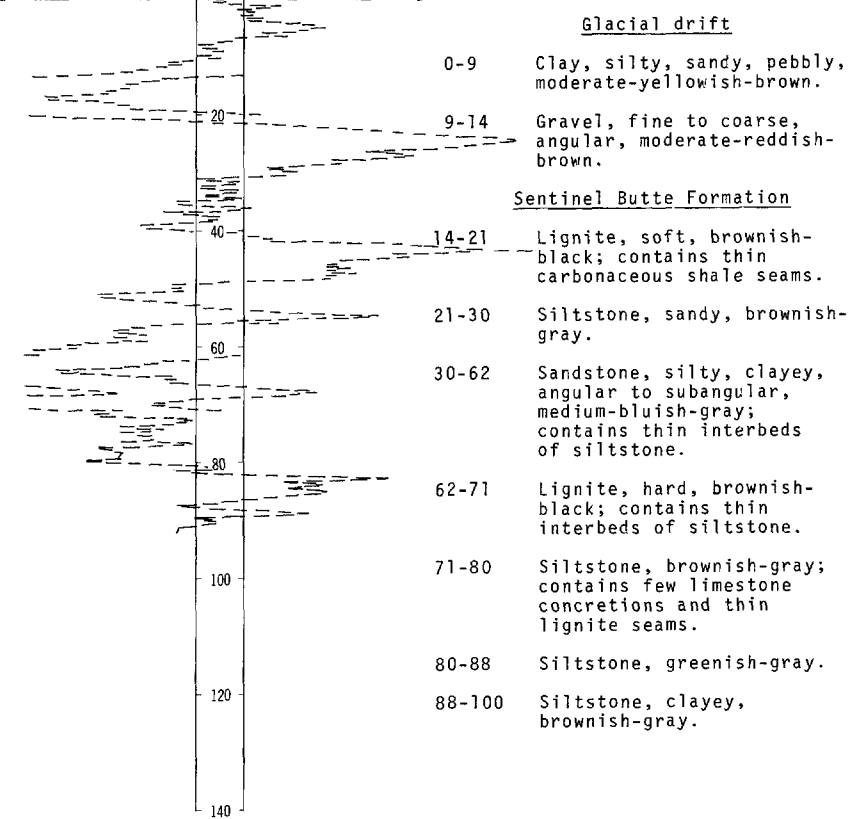
Gamma log ---

(T.C. 4)

POTENTIAL (MV)

RESISTANCE (OHMS)

DESCRIPTION OF DEPOSITS



146-093-27DAA
(Log from K. J. Thompson)

Altitude: 2230 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Topsoil and red sand-----	15	15
	Sand, blue-----	10	25
	Clay-----	2	27
	Rock-----	2	29
	Clay-----	46	75
	Rock-----	3	78
	Clay-----	17	95
	Coal (dry)-----	9	104
	Clay-----	7	111
	Coal (dry)-----	1	112
	Clay-----	8	120
	Sand-----	7	127
	Coal-----	5	132
	Clay-----	14	146

LOCATION: 146-093-28AAA1,2

DATE DRILLED: November 1974

ALTITUDE: 2234

DEPTH: 140

(FT, MSL)

(FT)

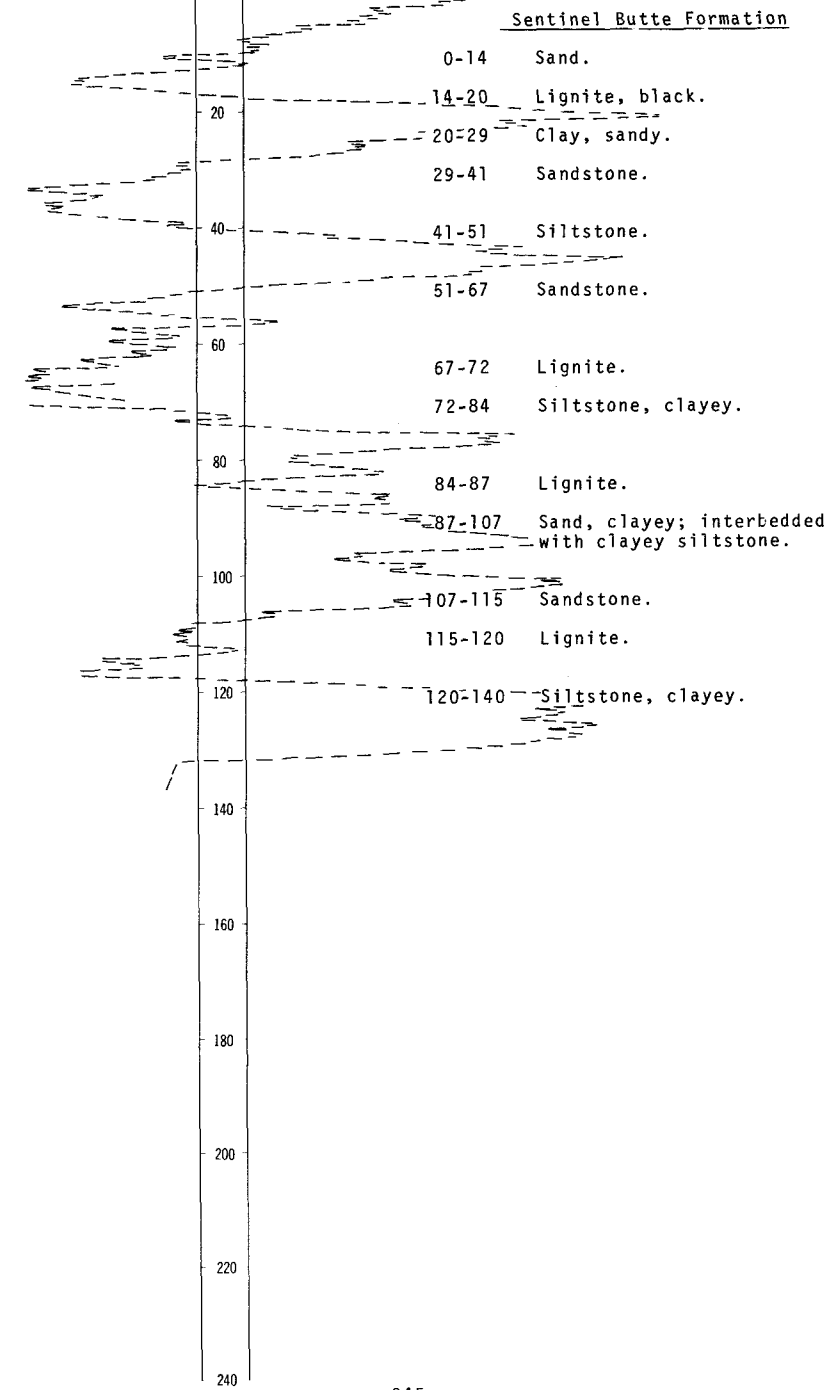
Gamma log -----

(T.C. 4)

POTENTIAL (mv)

RESISTANCE (OHMS)

DESCRIPTION OF DEPOSITS



146-093-28ADD
(Log from K. J. Thompson)

Altitude: 2246 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Topsoil and clay-----	35	35
	Coal (seep)-----	8	43
	Clay-----	11	54
	Rock-----	1.5	55.5
	Clay-----	9.5	65
	Clay, sandy-----	21	86
	Coal (water)-----	9	95
	Clay-----	5	100

146-093-28CCB
(Log from K. J. Thompson)

Altitude: 2290 ft

	Topsoil and clay-----	20	20
	Rock-----	1	21
	Sand-----	67	88
	Rock-----	3.5	91.5
	Sand-----	2.5	94
	Coal (water)-----	8	102
	Blind-----	2	104
	Coal and clay streaks-----	11	115
	Clay-----	--	--

146-093-28DDB1
(Log from K. J. Thompson)

Altitude: 2230 ft

	Topsoil-----	4	4
	Gravel (dry)-----	16	20
	Clay-----	10	30
	Coal (dry)-----	10	40
	Clay-----	13	53
	Rock-----	1	54
	Sand-----	20	74
	Clay-----	10	84
	Coal (water)-----	11	95
	Clay-----	7	102
	Coal-----	1	103
	Clay-----	5	108

146-093-29CCC1
(Log from R. J. Thompson)

Altitude:

	Topsoil and gravel-----	6	6
	Sand-----	36	42
	Coal slack-----	4	46
	Clay-----	9	55

LOCATION: 146-093-29CCC2

DATE DRILLED: July 1974

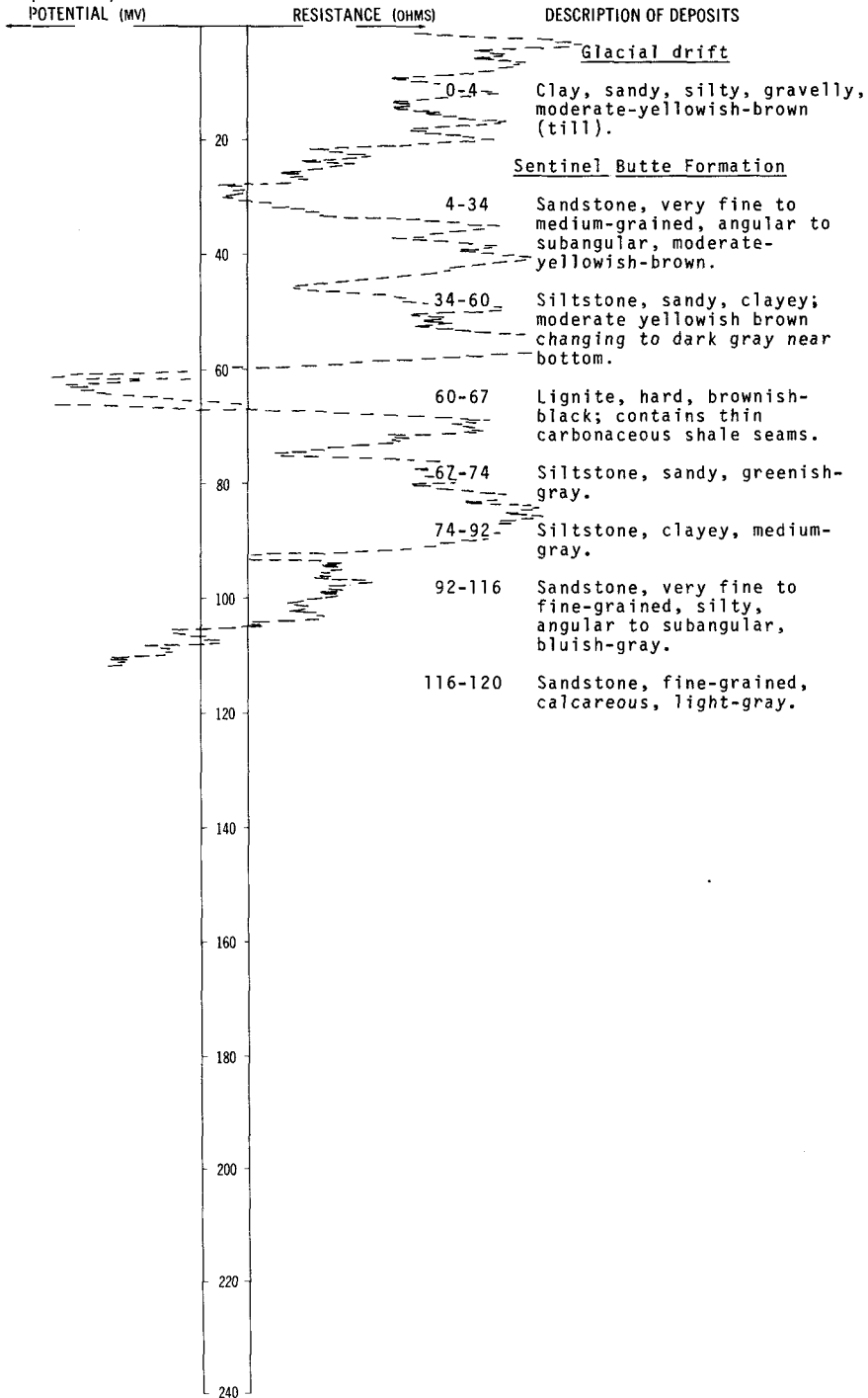
ALTITUDE: 2282

DEPTH: 120

(FT, MSL)

(FT)

Gamma Log -----
(T.C. 4)



146-093-32BBB2
(Log from K. J. Thompson)

Altitude: 2282 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Topsoil, sand and gravel-----	48	48
	Coal (seep)-----	7	55
	Clay-----	19	74
	Sand (dry)-----	13	87
	Rock-----	1.5	88.5
	Sand (water)-----	34.5	123
	Clay-----	2	125

146-093-33BAA1
(Log from K. J. Thompson)

Altitude: 2262 ft

	Sand (dry)-----	35	35
	Clay-----	5	40
	Coal (dry)-----	1	41
	Clay-----	28	69
	Coal (water)-----	8	77
	Clay-----	2	79

146-093-33BAA2
(Log from K. J. Thompson)

Altitude: 2262 ft

	Topsoil and sand-----	8	8
	Rock-----	2	10
	Sand and clay-----	24	34
	Coal (seep)-----	2	36
	Clay-----	25	61
	Coal (water)-----	7	68
	Clay-----	2	70

146-093-34CBA
(Log from K. J. Thompson)

Altitude: 2195 ft

	Topsoil and sand-----	15	15
	Clay-----	15	30
	Clay and gravel-----	3	33
	Gravel and sand (water)-----	7	40

146-093-34CBB
(Log from K. V. Thompson)

Altitude:

	Topsoil, sandy-----	28	28
	Clay, blue-----	6	34
	Coal-----	9	43
	Clay, blue-----	5	48
	Coal-----	1	49
	Clay, blue-----	2	51

LOCATION: 146-093-34CCC

DATE DRILLED: July 1974

ALTITUDE: 2188

DEPTH: 140

(FT, MSL)

(FT)

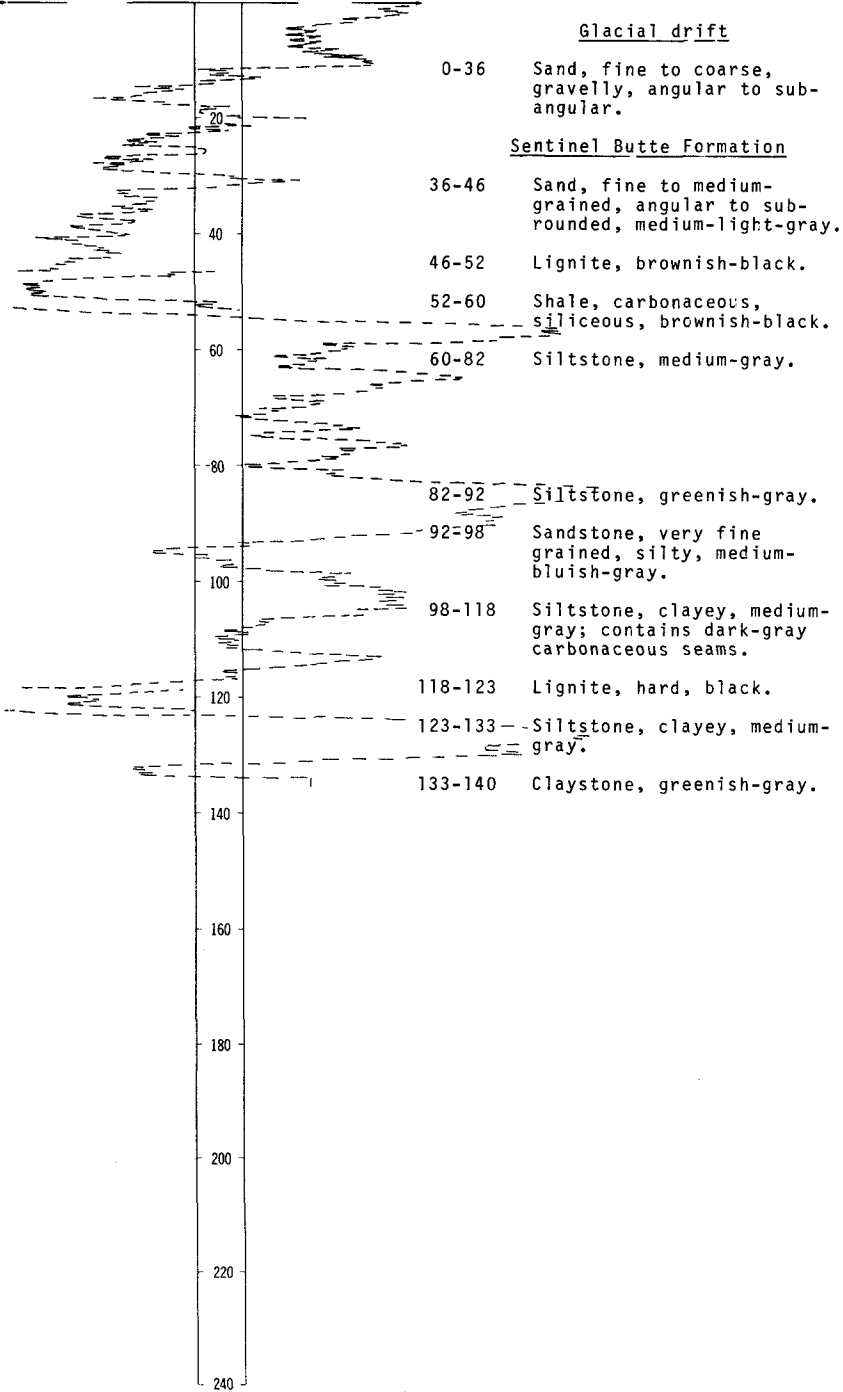
Gamma log -----

(T.C. 4)

POTENTIAL (MV)

RESISTANCE (OHMS)

DESCRIPTION OF DEPOSITS



146-094-04BBC
(Log from Ralph Wold)

Altitude: 1980 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Clay-----	22	22
	Coal-----	3	25
	Clay-----	39	64
	Coal-----	8	72
	Clay-----	93	165
	Rock-----	1	166
	Clay-----	16	182
	Coal-----	12	194
	Clay-----	51	245
	Sand-----	17	262
	Clay-----	53	315
	Coal-----	7	322
	Clay, sandy-----	108	430
	Sand-----	25	455
	Coal-----	11	466
	Clay-----	74	540
	Sand-----	8	548
	Shale-----	77	625
	Rock-----	4	629
	Shale-----	43	672
	Sand-----	23	695
	Clay-----	45	740
	Coal-----	8	748
	Clay-----	66	814
	Clay, sandy-----	83	897
	Sand-----	45	942
	Rock-----	3	945
	Shale-----	315	1260
	Clay, streaked-----	35	1295
	Rock-----	6	1301
	Sand-----	19	1320
	Clay-----	135	1455
	Sand-----	10	1465
	Shale-----	55	1520
	Sand and water-----	70	1590
	Clay-----	10	1600

146-094-05CBD
(Log from Ralph Wold)

Altitude: 1905 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Sand-----	18	18
	Gravel-----	4	22
	Clay-----	42	64
	Coal-----	5	69
	Clay, gray-----	61	130
	Coal-----	8	138
	Clay, blue-----	76	214
	Coal-----	3	217
	Clay-----	67	284
	Sand-----	12	296
	Clay-----	49	345
	Coal-----	13	358
	Clay-----	38	396
	Rock-----	3	399
	Clay, sandy-----	42	441
	Clay-----	69	510
	Rock-----	4	514
	Clay-----	111	625
	Shale-----	33	658
	Rock-----	1	659
	Shale-----	86	745
	Sand-----	15	760
	Shale-----	5	765
	Clay-----	40	805
	Shale-----	30	835
	Clay-----	95	930
	Clay, streaky-----	55	985
	Rock-----	1	986
	Clay-----	49	1035
	Clay, streaky-----	48	1083
	Sand-----	32	1115
	Shale-----	150	1265
	Clay-----	25	1290
	Rock-----	4	1294
	Clay-----	46	1340
	Sand and water-----	70	1410
	Clay-----	5	1415

146-094-05DCC
(Log from Ralph Wold)

Altitude: 1960 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Clay-----	80	80
	Coal-----	6	86
	Clay-----	39	125
	Coal-----	18	143
	Clay-----	45	188
	Coal-----	6	194
	Clay, sandy-----	11	205
	Rock-----	1	206
	Clay-----	54	260
	Coal-----	5	265
	Clay-----	20	285
	Sand-----	20	305
	Rock-----	3	308
	Sand-----	80	388
	Rock-----	7	395
	Clay-----	85	480
	Sand-----	30	510
	Clay-----	145	655
	Sand-----	10	665
	Clay-----	45	710
	Rock-----	4	714
	Sand-----	16	730
	Rock-----	4	734
	Clay-----	151	885
	Rock-----	5	890
	Shale-----	60	950
	Sand-----	18	968
	Shale-----	85	1053
	Clay, sandy-----	10	1063
	Shale-----	59	1122
	Rock-----	3	1125
	Shale-----	35	1160
	Sand-----	31	1191
	Clay, sandy-----	14	1205
	Shale and rock-----	165	1370
	Sand-----	18	1388
	Shale-----	27	1415
	Sand and water-----	85	1500

146-094-08DAD
(Log from Ralph Wold)

Altitude: 1940 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Clay, sandy-----	24	24
	Coal-----	3	27
	Clay-----	33	60
	Rock-----	4	64
	Clay-----	16	80
	Rock-----	2	82
	Clay-----	22	104
	Coal-----	5	109
	Clay-----	71	180
	Rock-----	2	182
	Clay-----	76	258
	Rock-----	1	259
	Clay-----	81	340
	Rock-----	3	343
	Clay-----	132	475
	Sand-----	20	495
	Shale-----	115	610
	Rock-----	3	613
	Sand-----	52	665
	Shale-----	37	702
	Coal streaks-----	13	715
	Sand-----	45	760
	Clay-----	58	818
	Rock-----	2	820
	Clay-----	38	858
	Sand-----	17	875
	Coal-----	10	885
	Clay-----	105	990
	Rock-----	2	992
	Clay-----	98	1090
	Sand-----	15	1105
	Sand-----	100	1205
	Coal-----	13	1218
	Shale-----	76	1294
	Rock-----	2	1296
	Clay-----	62	1358
	Sand and water-----	46	1404
	Clay-----	6	1410

146-094-13CBB
(Log from K. J. Thompson)

Altitude: 2260 ft

	Topsoil, sand and gravel (water)-----	67	67
	Coal (seep)-----	7	74
	Clay-----	13	87

146-094-15ACC1
(Log from K. J. Thompson)

Altitude: 2298 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand and clay-----	40	40
	Coal slack-----	1	41
	Sand-----	9	50
	Clay-----	70	120
	Rock-----	2	122
	Sand-----	11	133
	Coal-----	3	136
	Sand-----	9	145
	Rock-----	1	146

146-094-15ACC2
(Log from K. J. Thompson)

Altitude: 2290 ft

	Sand-----	54	54
	Coal-----	1	55
	Clay and sand-----	42	97
	Rock-----	1	98
	Sand-----	39	137
	Rock-----	1	138
	Sand-----	2	140
	Coal-----	.5	140.5
	Sand and water (water 142 ft from top)-----	5.5	146
	Coal-----	2	148
	Clay-----	2	150
	Rock bottom-----	--	

146-094-20DAC
(Log from K. J. Thompson)

Altitude:

	Topsoil and clay-----	79	79
	Coal (dry)-----	1	80
	Clay-----	1	81
	Coal (water)-----	2	83
	Clay-----	2	85

146-094-22BDD
(Log from K. J. Thompson)

Altitude: 2282 ft

	Topsoil and sand-----	40	40
	Coal-----	2	42
	Clay and sand-----	86	128
	Coal-----	1	129
	Sand (water)-----	1	130
	Coal (some water)-----	6	136
	Clay-----	4	140

146-094-22DBB
(Log from K. J. Thompson)

Altitude: 2282 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Gravel and rocks-----	7	7
	Rock-----	3	10
	Rock (softer)-----	4	14
	Sand and clay-----	16	30
	Coal (dry)-----	2	32
	Clay-----	19	51
	Coal (water)-----	4	55
	Clay-----	7	62
	Coal (dry)-----	1	63
	Clay-----	5	68
	Coal (dry)-----	1	69
	Clay-----	7	76
	Sand (dry)-----	18	94
	Clay and coal streaks (dry)-----	42	136
	Coal (water)-----	4	140
	Clay-----	2	142

LOCATION: 146-094-23CCC

DATE DRILLED: November 1974

ALTITUDE: 2335

DEPTH: 300

(FT, MSL)

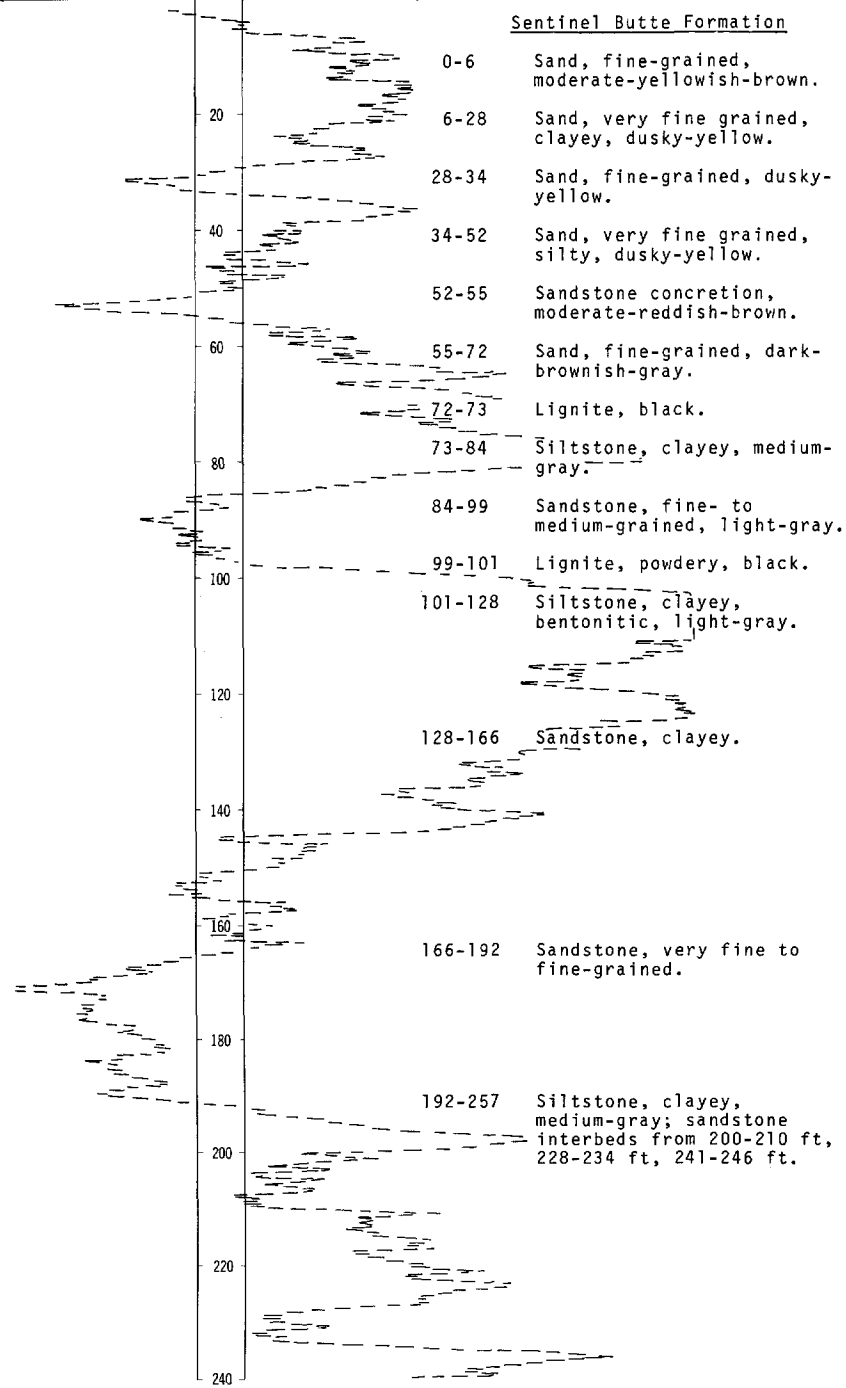
(FT)

Gamma log
(T.C. 4)

POTENTIAL (MV)

RESISTANCE (OHMS)

DESCRIPTION OF DEPOSITS



NDSWC 4779, Continued

LOCATION: 146-094-23CCC

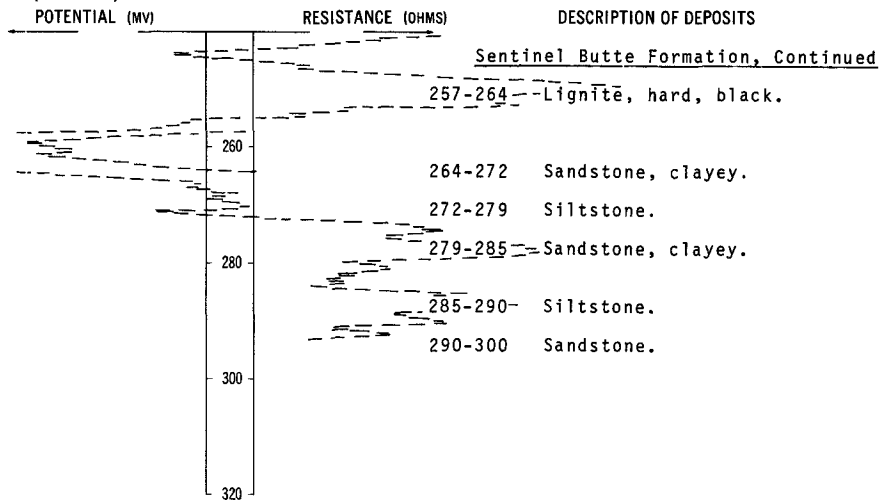
DATE DRILLED: November 1974

ALTITUDE: 2335

DEPTH: 300

(FT. MSL)
Gamma Log -----
(T.C. 4)

(FT)



146-094-24CAA
(Log from K. J. Thompson)

Altitude: 2260 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand-----	24	24
	Coal slack, wet-----	3	27
	Clay-----	2	29
	Coal, wet-----	1.5	30.5
	Clay-----	22.5	53
	Coal (water)-----	7	60
	Clay-----	5	65

146-094-24CAB1
(Log from K. J. Thompson)

Altitude: 2255 ft

	Topsoil, sandy-----	26	26
	Rock-----	1.5	27.5
	Clay-----	13.5	41
	Coal (water)-----	10	51
	Clay-----	5	56

146-094-24DDD1
(Log from K. J. Thompson)

Altitude: 2262 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Sand-----	38	38
	Coal (dry)-----	2	40
	Clay-----	17	57
	Coal (seep)-----	6	63
	Clay-----	32	95
	Sand (dry)-----	8	103
	Rock-----	1	104
	Sand (dry)-----	30	134
	Coal (water)-----	6	140

146-094-24DDD2
(Log from K. J. Thompson)

Altitude: 2262 ft

	Topsoil and clay-----	38	38
	Coal (dry)-----	2	40
	Clay-----	20	60
	Coal (water)-----	7	67
	Clay-----	10	77

LOCATION: 146-094-25AAA

DATE DRILLED: July 1974

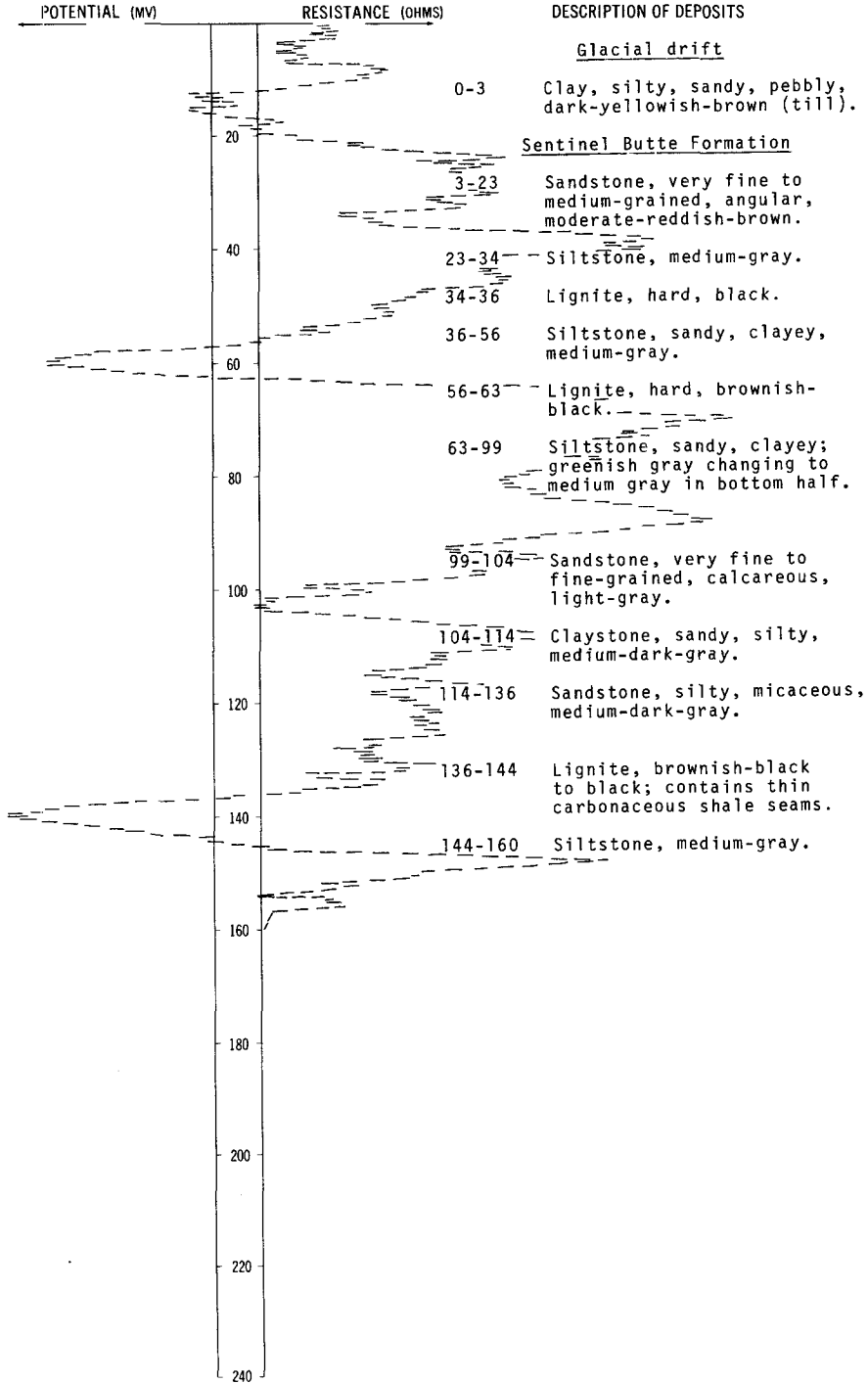
ALTITUDE: 2260

DEPTH: 160

(FT. MSL)

(FT)

Gamma log -----
(T.C. 4)



LOCATION: 146-094-25ABA

DATE DRILLED: July 1974

ALTITUDE: 2235

DEPTH: 120

(FT, MSL)

(FT)

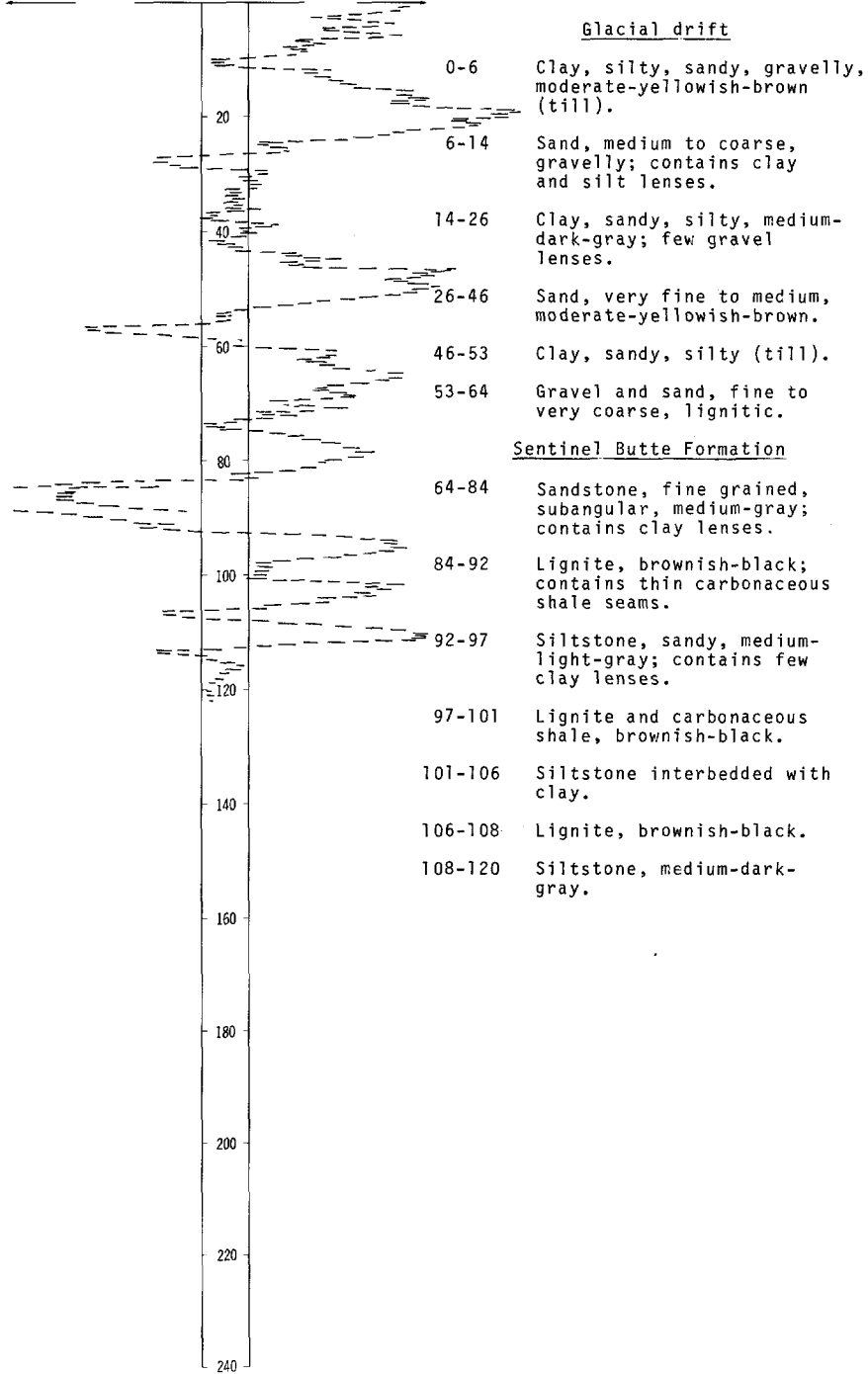
Gamma log -----

(T.C. 4)

POTENTIAL (MV)

RESISTANCE (OHMS)

DESCRIPTION OF DEPOSITS



LOCATION: 146-094-25BAA

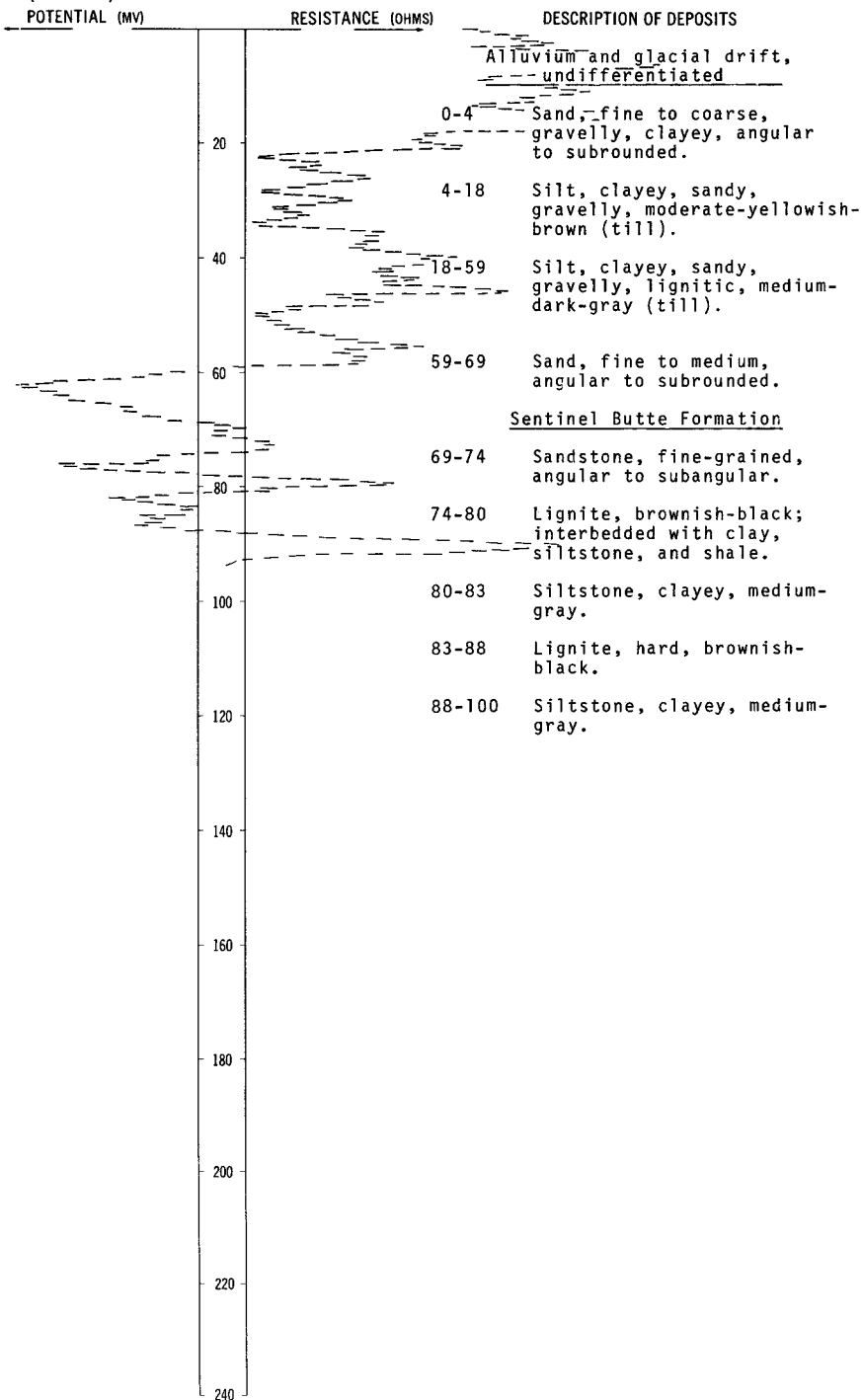
DATE DRILLED: July 1974

ALTITUDE: 2225

DEPTH: 100

(FT, MSL)
Gamma log -----
(T.C. 4)

(FT)



146-094-27DDA
(Log from K. J. Thompson)

Altitude: 2280 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Topsoil and sand-----	36	36
	Rock-----	1.5	37.5
	Sand-----	14.5	52
	Coal (dry)-----	3	55
	Clay-----	5	60
	Coal (dry)-----	2	62
	Clay-----	58	120
	Sand-----	30	150
	Sand, soft (water)-----	5	155
	Coal-----	7	162
	Clay-----	8	170

146-094-29CCC
NDSWC 8184

Altitude: 2290 ft

Glacial drift:			
	Topsoil, silty, clayey, boulders, grayish-black-----	1	1
	Clay, silty, sandy, medium-gray (till)-----	9	10
Sentinel Butte Formation:			
	Shale, sandy, silty, calcareous, dark-yellowish-brown-----	18	28
	Sandstone, fine-grained, clayey, silty, subangular-----	22	50
	Shale, sandy, silty, hard, noncalcareous, dark-yellowish-brown-----	20	70
	Shale, silty, hard, noncalcareous, medium-gray; few thin lignite seams-----	30	100

146-094-31DAD
(Log from K. J. Thompson)

Altitude:

	Topsoil, sandy-----	30	30
	Gravel (dry)-----	2	32
	Clay, sandy-----	3	35
	Sand (wet)-----	4	39
	Clay-----	16	55
	Clay, sandy-----	8	63
	Gravel (water)-----	--	--

146-094-33CCC
NDSWC 8185

Altitude: 2290 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
Sentinel	Butte Formation:		
	Topsoil, silty, clayey, brownish-black-----	2	2
	Sand, fine- to medium-grained, clayey, subangular-----	7	9
	Shale, sandy, hard, calcareous, moderate-yellowish-brown-----	13	22
	Shale, silty, hard, noncalcareous, medium-light-gray; few thin lignite seams-----	38	60

146-094-33DDD
NDSWC 8186

Altitude: 2327 ft

Sentinel	Butte Formation:		
	Topsoil, silty, sandy, clayey, brownish-black-----	1	1
	Sandstone, fine-grained, clayey, silty, lignitic, subangular, micaceous, light-olive-brown-----	44	45
	Lignite, fractured-----	--	
	Hole abandoned due to loss of circulation		

146-094-34CAC
(Log from K. J. Thompson)

Altitude: 2310 ft

	Topsoil and sand-----	31	31
	Coal slack (water)-----	9	40
	Clay, sandy-----	8	48
	Coal-----	1	49
	Clay-----	1	50

146-094-34CCA2
(Log from R. J. Thompson)

Altitude:

	Topsoil and clay-----	10	10
	Sand-----	38	48
	Coal slack and sand (water)-----	12	60
	Clay-----	3.5	63.5
	Coal-----	1	64.5
	Clay-----	13.5	78
	Coal-----	2.5	80.5
	Clay-----	11.5	92
	Dry hole		

146-094-34CCA3
(Log from R. J. Thompson)

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Sandstone-----	9	9
	Sand-----	16	25
	Clay-----	5	30
	Sand-----	35	65
	Clay-----	13	78
	Coal-----	1	79
	Clay-----	13	92
	Coal-----	3	95
	Clay-----	5	100

146-094-34DDB
(Log from R. J. Thompson)

Altitude:

	Topsoil and sand-----	67	67
	Clay-----	2	69
	Coal-----	1	70
	Clay-----	1	71
	Coal-----	1	72
	Sand-----	71	143
	Rock-----	3	146
	Sand-----	19	165
	Clay-----	1	166

146-094-35ABA
(Log from K. J. Thompson)

Altitude:

	Clay-----	21	21
	Coal (water)-----	5	26
	Clay-----	14	40

LOCATION: 146-094-36BBB

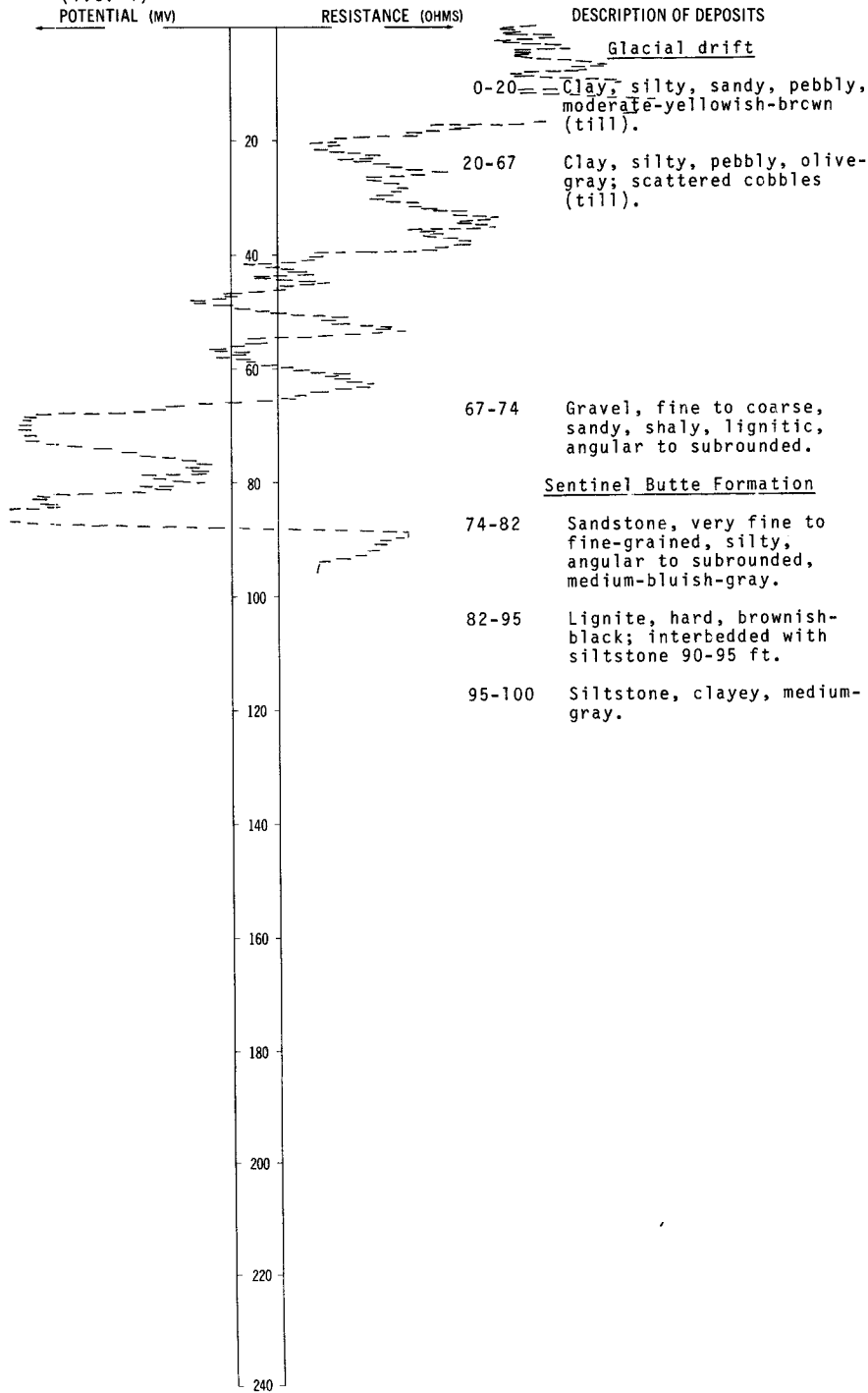
DATE DRILLED: July 1974

ALTITUDE:

DEPTH: 100

(FT, MSL)
Gamma log -----
(T.C. 4)

(FT)



146-095-03DCB
(Log from Ralph Wold)

Altitude: 2092 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Sand-----	12	12
	Scoria-----	6	18
	Coal-----	3	21
	Clay-----	27	48
	Coal-----	10	58
	Clay-----	19	77
	Coal-----	7	84
	Clay-----	56	140
	Rock-----	5	145
	Clay, sandy-----	69	214
	Coal-----	17	231
	Clay-----	154	385
	Rock-----	3	388
	Clay-----	182	570
	Sand-----	45	615
	Clay-----	27	642
	Coal-----	22	664
	Clay-----	172	836
	Rock-----	4	840
	Clay-----	310	1150
	Sand and rock-----	17	1167
	Clay-----	71	1238
	Coal-----	4	1242
	Clay-----	10	1252
	Coal and sand streaks-----	11	1263
	Shale-----	21	1284
	Coal-----	14	1298
	Clay, sandy-----	37	1335
	Clay and shale-----	170	1505
	Clay, hard-----	15	1520
	Sand and water-----	82	1602
	Clay-----	3	1605

146-095-070DB2
(Log from K. J. Thompson)

Altitude:

	Topsoil, sandy-----	26	26
	Rock-----	1	27
	Sand (water)-----	6	33
	Clay, sandy-----	2	35
	Clay-----	10	45
	Coal-----	5	50

146-095-19DDD
NDSWC 4482

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
Alluvium and glacial drift, undifferentiated:			
	Topsoil, sandy, dark-brown-----	1	1
	Sand, medium to coarse, reddish-brown-----	11	12
	Silt, dusky-yellow; laminated and interbedded with silty clay-----	12	24
	Sand, very fine to medium, olive-brown; interbedded with silt and clay-----	25	49
Sentinel Butte Formation:			
	Sandstone, fine- to medium-grained, subangular, yellowish-green; indurated from 58 to 63 ft-----	27	76
	Shale, silty, hard, light-yellowish-green to dusky-yellow-----	10	86
	Shale, silty, variegated gray and green; numerous carbonaceous stains-----	14	100

146-095-20CCA1
(Log from K. J. Thompson)

Altitude:

Topsoil and clay-----	12	12
Gravel-----	2	14
Clay-----	8	22
Sand, red (dry)-----	18	40
Sand, red (wet)-----	6	46
Rock-----	4	50
Sand (water)-----	18	68

146-095-20CCA2
(Log from K. J. Thompson)

Altitude:

Topsoil and gravel-----	10	10
Clay, sandy, red (dry)-----	40	50
Sand (water)-----	20	70
Clay-----	--	--

146-095-20CCB
NDSWC 8180

Altitude: 2339 ft

Glacial drift:

Topsoil, sandy, silty, clayey, brownish-black-----	1	1
Clay, silty, sandy, pebbly, dark-yellowish-brown (till)-----	8	9
Gravel, fine to coarse, sandy, angular to subrounded-----	8	17
Sand, fine to medium, subangular-----	43	60

Sentinel Butte Formation:

Sandstone, fine-grained, hard, subangular, calcareous, micaceous-----	5	65
Sandstone, fine-grained, loose to semi-consolidated, noncalcareous, micaceous---	7	72
Shale, silty, noncalcareous, grayish-brown; carbonaceous laminae and lignite streaks-----	8	80

146-095-28CAD
(Log from K. J. Thompson)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand (water)-----	80	80

146-095-28CCC
NDSWC 8182

Altitude:

Alluvium and glacial drift, undifferentiated:			
	Topsoil, silty, clayey, grayish-black-----	1	1
	Clay, silty, sandy, moderate-yellowish-brown-----	27	28
	Clay, silty, sandy, medium-gray-----	34	62
Sentinel Butte Formation:			
	Shale, silty, noncalcareous, medium-light-gray; lignite streaks-----	18	80

146-095-30DAD
(Log from R. J. Thompson)

Altitude:

	Sand and gravel-----	30	30
	Clay-----	3	33
	Rock-----	2	35
	Sand, red-----	20	55
	Sand (water)-----	15	70
	Sand and gravel-----	2	72
	Sand (water)-----	4	76

146-095-30DDD
NDSWC 8181

Altitude: 2300 ft

Glacial drift:

	Gravel, fine to coarse, clayey, sandy, angular to subrounded; scattered cobbles-----	3	3
	Clay, silty, sandy, dark-yellowish-brown---	19	22
	Sand, fine to medium, subangular-----	35	57

Sentinel Butte Formation:

	Sandstone, fine-grained, hard, calcareous, micaceous-----	3	60
	Sandstone, fine-grained, silty, clayey, micaceous, medium-bluish-gray-----	10	70
	Shale, silty, hard, noncalcareous, medium-gray-----	10	80

146-095-33ABB
NDSWC 8183

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Alluvium and glacial drift, undifferentiated:			
	Topsoil, silty, clayey, grayish-black-----	1	1
	Clay, sandy, silty, moderate-yellowish-brown (till)-----	21	22
Sentinel Butte Formation:			
	Sandstone, fine-grained, hard, calcareous, micaceous-----	5	27
	Sandstone, fine-grained, lignitic, subangular, micaceous, medium-bluish-gray-----	31	58
	Shale, sandy, silty, noncalcareous, medium-bluish-gray-----	20	78
	Shale, silty, hard, noncalcareous, light-brownish-gray; few thin lignite seams----	14	92
	Shale, silty, hard, noncalcareous, medium-gray-----	8	100

146-095-34ABC
(Log from K. J. Thompson)

Altitude:

Topsoil, sandy-----	5	5
Rock-----	2	7
Clay-----	12	19
Coal (dry)-----	3	22
Clay-----	22	44
Coal (seep)-----	2	46
Clay-----	16	62
Rock-----	7	69
Sand (dry)-----	2	71
Rock-----	1	72
Sand (dry)-----	7	79
Rock-----	8	87
Sand (dry)-----	8	95
Sand (water)-----	29	124
Clay-----	1	125

146-095-34DCC2
(Log from K. J. Thompson)

Altitude:

Clay-----	18	18
Rock-----	.5	18.5
Clay-----	6.5	25
Rock-----	1.5	26.5
Clay-----	28.5	55
Coal-----	5	60
Clay-----	7	67

146-095-35CCA
(Log from K. J. Thompson)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay and sand-----	38	38
	Coal (yellow water)-----	2	40
	Clay-----	2	42
	Coal (yellow water)-----	3	45
	Clay-----	33	78
	Coal (dry)-----	1	79
	Clay-----	1	80
	Coal (dry)-----	2	82
	Clay-----	22	104
	Coal (dry)-----	3	107
	Clay-----	3	110
	Coal (dry)-----	2	112
	Clay-----	50	162
	Coal (dry)-----	4	166
	Clay-----	18	184
	Coal (dry)-----	3	187
	Clay-----	36	223
	Coal (dry)-----	3	226
	Clay-----	6	232
	Sand, muddy water-----	8	240
	Coal (water)-----	5	245
	Clay-----	9	254
	Sand (water)-----	3	257
	Rock-----	1	258

146-096-01BBB
NDSWC 8177

Altitude: 2600 ft

Glacial drift:

	Topsoil, sandy, silty, clayey, grayish-black-----	1	1
	Clay, silty, pebbly, pale-yellowish-brown (till)-----	4	5

Sentinel Butte Formation:

	Shale, silty, hard, calcareous, pale-yellowish-brown-----	24	29
	Sandstone, fine-grained, hard, calcareous--	3	32
	Shale, sandy, noncalcareous, medium-bluish-gray-----	13	45
	Shale, silty, hard, noncalcareous, medium-gray; carbonaceous laminae-----	15	60

146-096-06CCC
NDSWC 8176

Altitude: 2417 ft

Sentinel Butte Formation:

	Shale, silty, hard, calcareous, dark-yellowish-brown-----	30	30
	Shale, silty, hard, noncalcareous, medium-bluish-gray; carbonaceous laminae-----	10	40

146-096-13ADA
NDSWC 4483

Altitude: 2417 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Colluvium:			
	Sand, clayey, calcareous, white; contains abundant limestone pebbles-----	2	2
Sentinel Butte Formation:			
	Sandstone, fine-grained, calcareous, yellowish-gray-----	3	5
	Sandstone, fine- to medium-grained, sub-angular, dusky-yellow-----	7	12
	Sandstone, clayey, carbonaceous, yellowish-brown to black-----	3	15
	Shale, silty, lignitic, green-----	18	33
	Sandstone, very fine to fine-grained, silty, greenish-gray; thin shale interbeds-----	27	60
	Sandstone, greenish-gray-----	29	89
	Siltstone, clayey, lignitic, medium-gray---	11	100

146-096-13BCC
NDSWC 8179

Altitude:

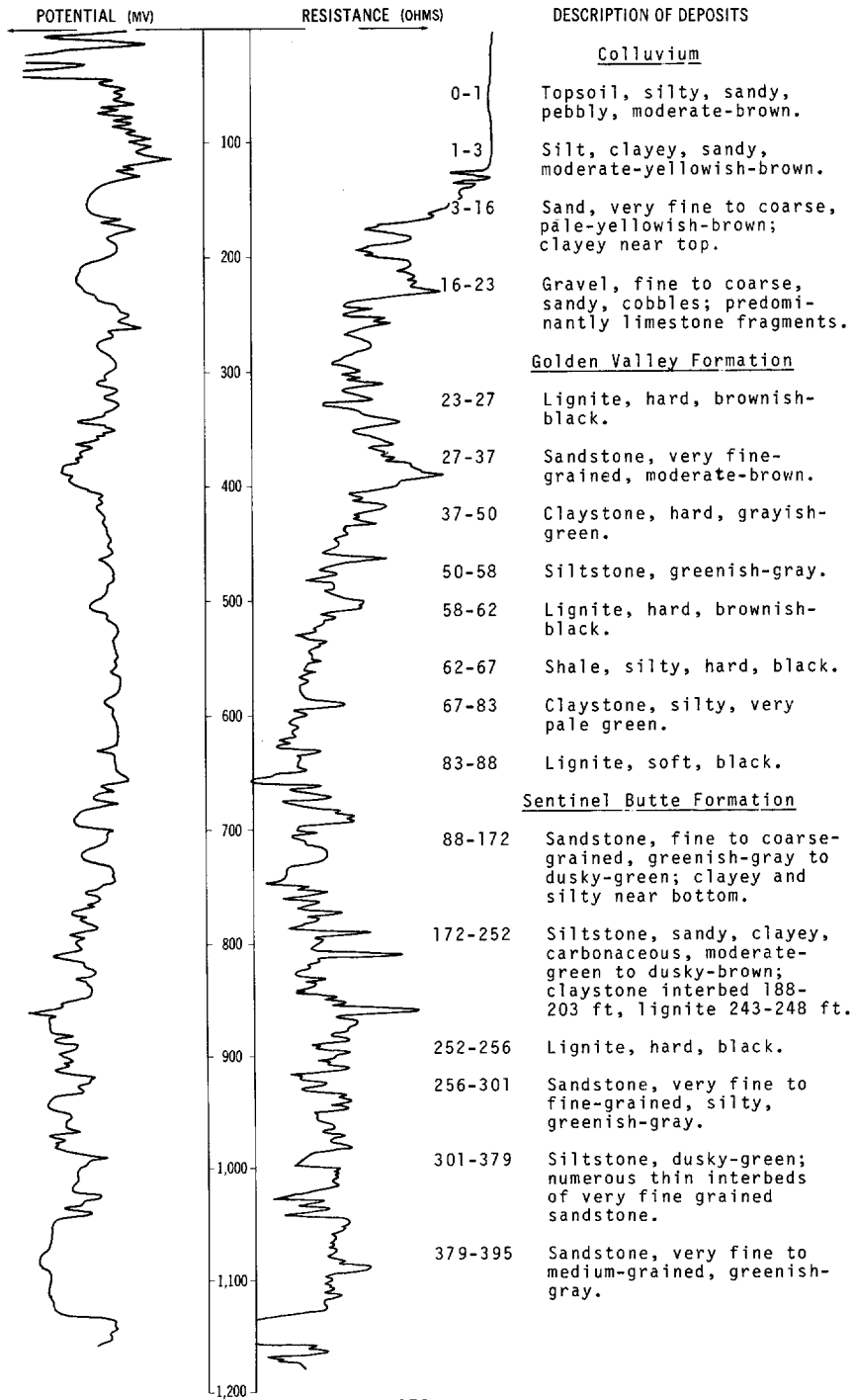
Colluvium:			
	Clay, silty, sandy, pebbly, dark-yellowish-brown (till)-----	9	9
Sentinel Butte Formation:			
	Shale, silty, noncalcareous, carbonaceous, pale-yellowish-brown-----	31	40
	Sandstone, fine-grained, subangular, noncalcareous, micaceous, medium-bluish-gray-----	20	60

LOCATION: 146-096-14CDD1,2

DATE DRILLED: October 1973

ALTITUDE: 2531
(FT. MSL)

DEPTH: 1180
(FT)



NDSWC 4597 and 4597A, Continued

LOCATION: 146-096-14CDD1,2

DATE DRILLED: October 1973

ALTITUDE: 2531
(FT, MSL)

DEPTH: 1180
(FT)

POTENTIAL (MV)	RESISTANCE (OHMS)	DESCRIPTION OF DEPOSITS
		<u>Sentinel Butte Formation, Continued</u>
	395-499	Siltstone, sandy to clayey, light-green to pale-brown; interbedded with claystone and thin limestone; lignite from 415-425 ft and 431-436 ft.
1,300		
	499-510	Sandstone, fine-grained, carbonaceous, dark-green.
1,400		
	510-587	Siltstone, sandy, carbonaceous, light-green to brownish-black; interbedded with claystone.
1,500		
	587-595	Lignite, hard, black.
	595-652	Siltstone, clayey, sandy, carbonaceous, variegated gray, green, and brown.
1,600		
	652-661	Shale, carbonaceous, dusky-green.
	661-677	Siltstone, sandy, carbonaceous.
1,700		
	677-684	Shale, hard, dusky-green.
	684-751	Sandstone, very fine to fine-grained, carbonaceous, greenish-gray to light-olive-gray; interbedded with clayey, sandy siltstone.
1,800		
		<u>Tongue River Formation</u>
	751-847	Claystone, siltstone, and sandstone; thinly interbedded gray, green, and black.
1,900		
	847-852	Lignite, hard, black.
2,000		
	852-916	Sandstone, very fine to fine-grained, greenish-gray to dusky-green.
	916-998	Siltstone, clayey, sandy, carbonaceous, light-olive-gray to greenish-gray; interbedded with green to black silty claystone.
2,100		
	998-1006	Lignite, hard, black.
2,200		
	1006-1022	Sandstone, fine- to medium-grained, greenish-gray to dusky-green.
	1022-1044	Siltstone, sandy, lignitic; interbedded with claystone.
2,300		
	1044-1132	Sandstone, fine- to medium-grained, light-green to dusky-green.
2,400		

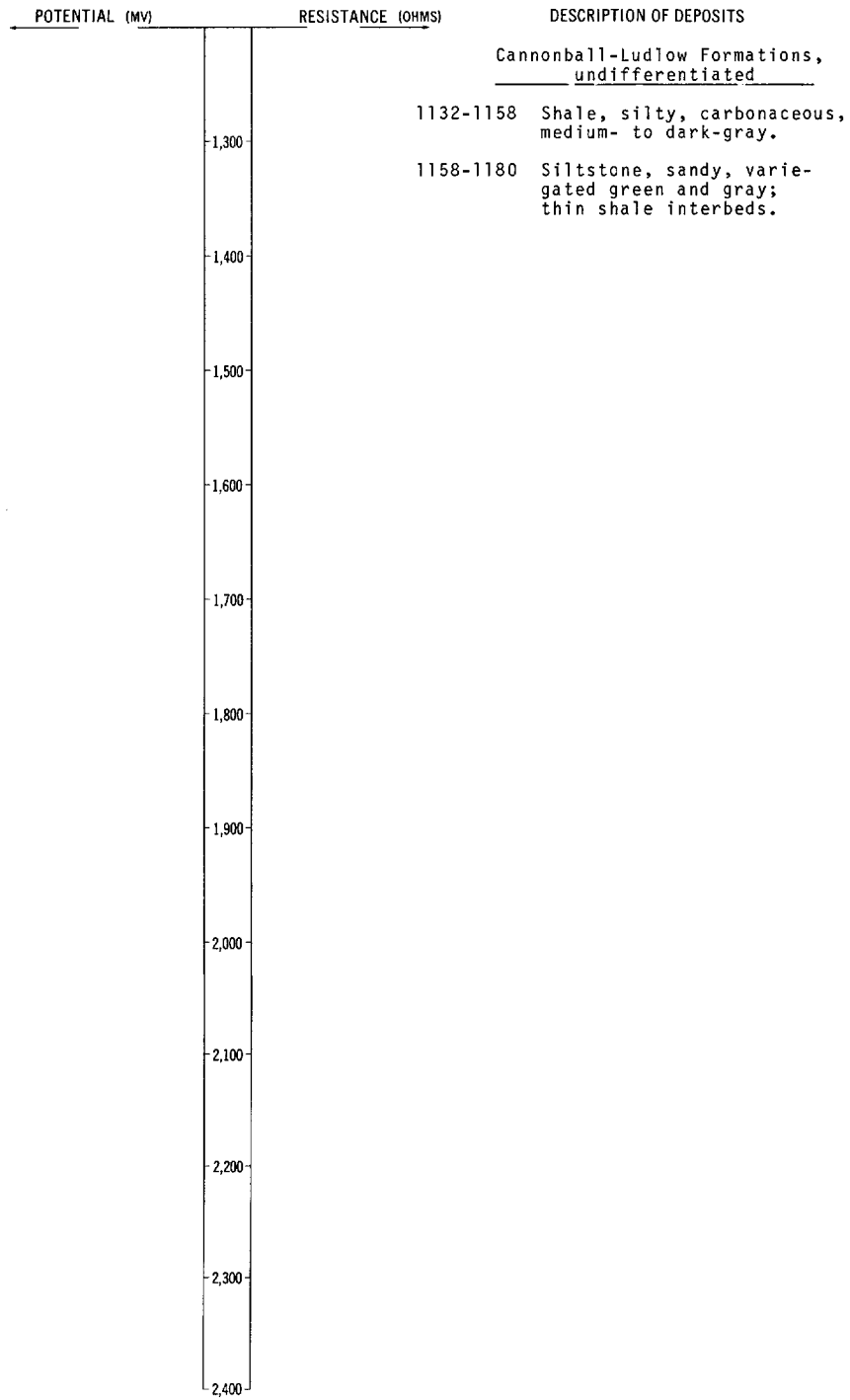
NDSWC 4597 and 4597A, Continued

LOCATION: 146-096-14CDD1,2

DATE DRILLED: October 1973

ALTITUDE: 2531
(FT, MSL)

DEPTH: 1180
(FT)



146-096-26ACC
(Log from R. J. Thompson)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Topsoil and sand-----	19	19
	Sand rock (boulder)-----	6	25
	Sand-----	17	42
	Sand, gravel, and coal-----	13	55
	Coal-----	2	57
	Clay-----	3	60

146-096-26DBB
(Log from R. J. Thompson)

Altitude:

	Topsoil and sand-----	4	4
	Rock-----	1	5
	Sand-----	50	55
	Clay-----	3	58
	Coal-----	4	62
	Clay-----	6	68
	Sand-----	12	80
	Clay-----	10	90
	Sand, blue-----	11	101
	Rock-----	2	103
	Sand-----	4	107
	Rock-----	.5	107.5
	Sand-----	4.5	112
	Rock-----	1	113
	Sand, blue-----	7	120

146-096-36AAA
NDSWC 4480

Altitude: 2340 ft

Colluvium:

	Sand, fine to medium, dark-brown; subrounded-----	2	2
--	---	---	---

Glacial drift:

	Clay, light-yellow; lensed with angular limestone and sandstone detritus-----	6	8
	Sand, medium to coarse, yellowish-green; subangular to subrounded-----	6	14
	Sand, medium to coarse, gray; subangular to subrounded-----	4	18

Sentinel Butte Formation:

	Sandstone, medium-grained, subangular, dark-green-----	11	28
	Shale, hard, carbonaceous, variegated gray, brown, and black-----	5	33
	Siltstone, light-green-----	6	39
	Siltstone, sandy, light-greenish-gray-----	21	60

146-096-36BBB
NDSWC 4481

Altitude: 2380 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Glacial drift:			
	Sand, fine to medium, clayey, silty, yellowish-brown-----	14	14
	Sand, fine to coarse, dark-brown-----	12	26
	Sand, fine to medium, clayey, silty-----	8	34
	Sand, medium to coarse, subangular, dark-greenish-gray-----	13	47
Sentinel Butte Formation:			
	Shale, silty, variegated green and gray; interbedded with carbonaceous shale and siltstone-----	13	60

146-097-12AAB2
(Log from K. J. Thompson)

Altitude:

Topsoil and clay (wet)-----	52	52
Coal (dry)-----	4	56
Clay-----	9	65
Rock-----	1	66
Sand (dry)-----	32	98
Sand, blue (water)-----	22	120
Clay-----	5	125

146-097-25AAC1
(Log from K. J. Thompson)

Altitude:

Topsoil and clay-----	50	50
Rock-----	2.5	52.5
Clay-----	29.5	82
Coal and clay streaks-----	13	95
Clay-----	75	170
Sand (some water)-----	22	192
Coal (dry)-----	2	194
Clay-----	93	287
Rock-----	1	288
Sand-----	20	308
Blind (water)-----	1	309
Sand-----	11	320
Coal streaks and clay-----	10	330
Clay-----	--	--

146-097-25ACA
(Log from K. D. Thompson)

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Clay, yellow-----	30	30
	Sandstone-----	10	40
	Sand (saturated)-----	15	55
	Shale, blue-----	165	220
	Sand and clay (saturated)-----	5	225
	Shale-----	95	320
	Sand, brown (saturated)-----	4	324
	Shale-----	66	390
	Sand, fine-----	18	408

146-097-34CDA2
(Log from K. J. Thompson)

Altitude:

	Topsoil and sand-----	41	41
	Coal (seep)-----	1	42
	Clay-----	28	70
	Sand (water)-----	16	86
	Coal-----	1	87
	Clay-----	4	91

147-091-15DCC
(Log from U.S. Bureau of Mines)

Altitude: 2178 ft

	Clay, brown-----	24	24
	Soil, black-----	20	44
	Sand and water-----	2	46
	Clay, brown-----	17	63

147-091-17AAD
(Log from Dingman and Gordon, 1954)

Altitude: 2169 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Silt, sandy, brown; pebbles-----	5	5
	Soil, silty and sandy, brown-----	5	10
	Clay, silty and sandy, brown-----	10	20
	Clay, silty, tan-----	5	25
	Clay, silty, gray-----	19	44
	Clay, silty, gray, and limestone-----	3	47
	Clay, silty, gray-----	3	50
	Lignite-----	3	53
	Clay, silty, gray and tan-----	27	80
	Clay, carbonaceous, gray and brown-----	5	85
	Clay, carbonaceous, gray and brown, and lignite-----	5	90
	Clay, sandy, gray-----	5	95
	Sand and lignite-----	5	100
	Clay, silty, dense, gray-----	45	145
	Clay, sandy, gray, and lignite-----	5	150
	Clay, silty, dense, gray-----	20	170
	Lignite and small amount of clay-----	5	175
	Clay, gray-----	20	195
	Clay, gray, and lignite-----	5	200
	Clay, gray-----	11	211
	Clay, gray, and lignite-----	8	219
	Clay, gray, and small amount of lignite---	12	231
	Clay, silty, gray-----	9	240
	Clay, gray, and small amount of lignite---	5	245
	Clay, gray-----	22	267
	Clay, gray and brown, and small amount of lignite-----	2	269
	Clay, gray-----	11	280
	Lignite and small amount of clay-----	7	287
	Clay, gray-----	15	302
	Lignite-----	8	310
	Clay, gray, and small amount of lignite---	5	315
	Lignite and small amount of clay-----	15	330
	Sand, clay, and lignite-----	5	335
	Clay, silty and sandy, dense, gray-----	13	348
	Lignite and clay-----	12	360
	Clay, gray-----	5	365
	Clay, carbonaceous, gray-----	5	370
	Clay, silty and sandy, gray-----	10	380
	Sand and sandy clay-----	10	390
	Clay, carbonaceous, gray, and lignite-----	10	400

147-091-21DCA
(Log from U.S. Public Health Service,
Division of Indian Health)

Altitude: 2268 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Topsoil-----	4	4
	Clay, yellow-----	3	7
	Sand and yellow clay-----	3	10
	Clay, yellow-----	5	15
	Clay, gray and blue-----	10	25
	Clay, blue-----	20	45
	Rock-----	1	46
	Clay, gray-----	19	65
	Coal and water-----	3	68
	Clay, gray-----	5	73

147-091-22AAD
(Log from Dingman and Gordon, 1954)

Altitude: 2256 ft

	Sand-----	85	85
	Clay, silty, gray-----	25	110
	Clay, gray-----	40	150
	Clay, silty, gray-----	30	180
	Clay, gray-----	15	195
	Clay, silty, gray-----	5	200
	Clay, sandy, gray-----	44	244
	Clay, gray, and small amount of lignite---	6	250
	Clay, gray-----	24	274
	Clay, sandy, gray-----	6	280
	Clay, silty, gray-----	10	290
	Clay, gray-----	10	300
	Clay, silty, gray-----	15	315
	Clay, gray-----	15	330
	Lignite-----	3	333
	Lignite and small amount of clay-----	7	340
	Clay, gray-----	23.5	363.5
	Clay and small amount of lignite-----	1.5	365
	Clay, gray-----	3	368
	Lignite-----	8	376
	Clay, gray, and small amount of lignite---	4	380
	Clay, gray-----	15	395
	Clay, gray, and small amount of lignite---	5	400

147-091-25DAA
(Log from Dingman and Gordon, 1954)

Altitude: 2087 ft

	Topsoil-----	3	3
	Clay, yellow-----	9	12
	Clay, gray, with thin lignite beds-----	31	43
	Clay, gray, and sand-----	7	50
	Sand-----	1	51
	Clay, gray-----	9	60
	Sand and clay, gray-----	5	65
	Lignite-----	5	70
	Sand and clay, gray-----	6	76
	Clay, gray-----	6	82
	Sand and clay, gray-----	51	133
	Clay, gray and green-----	42	175
	Sand and clay, gray-----	9	184
	Sand-----	2	186

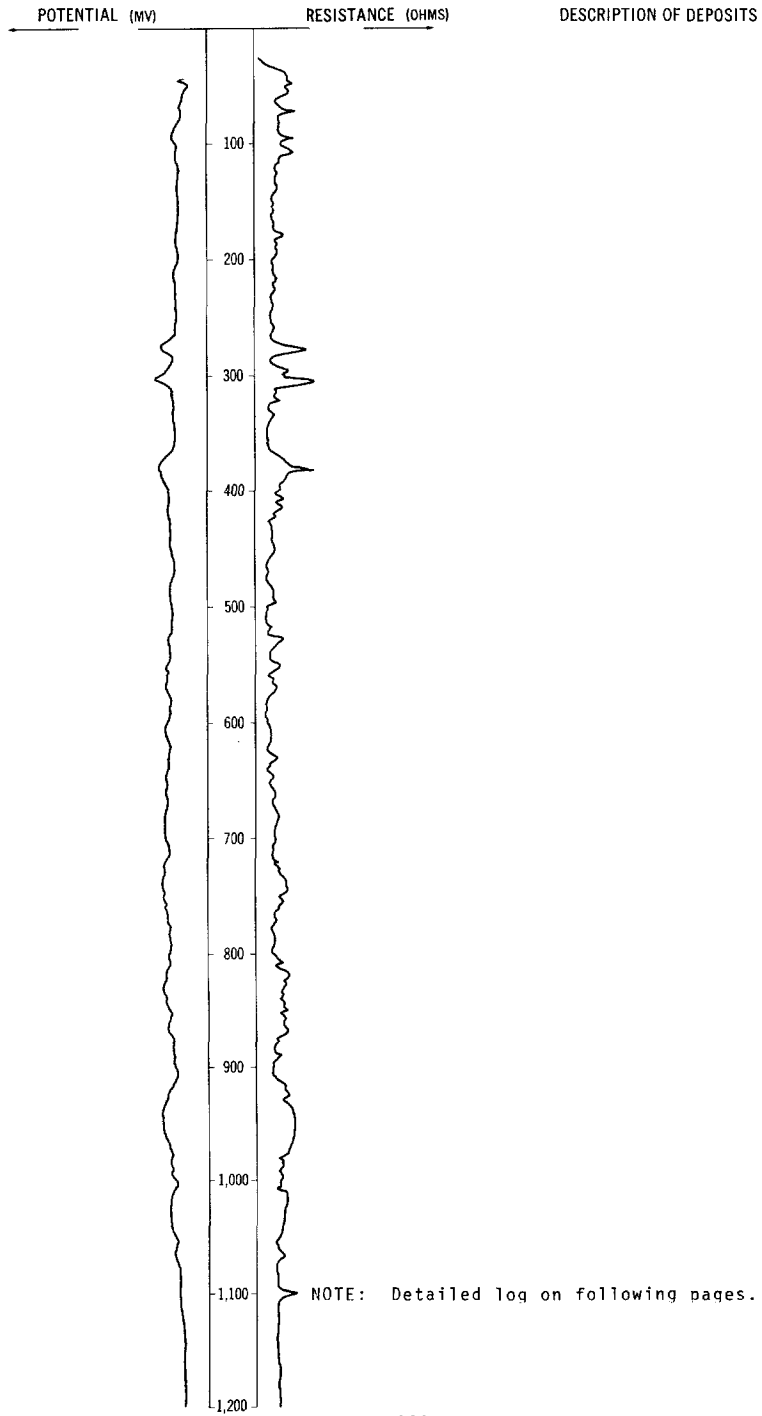
LOG FROM NORTH DAKOTA STATE WATER COMMISSION

LOCATION: 147-091-26CCD

DATE DRILLED: July 1966

ALTITUDE: 2218
(FT, MSL)

DEPTH: 1720
(FT)



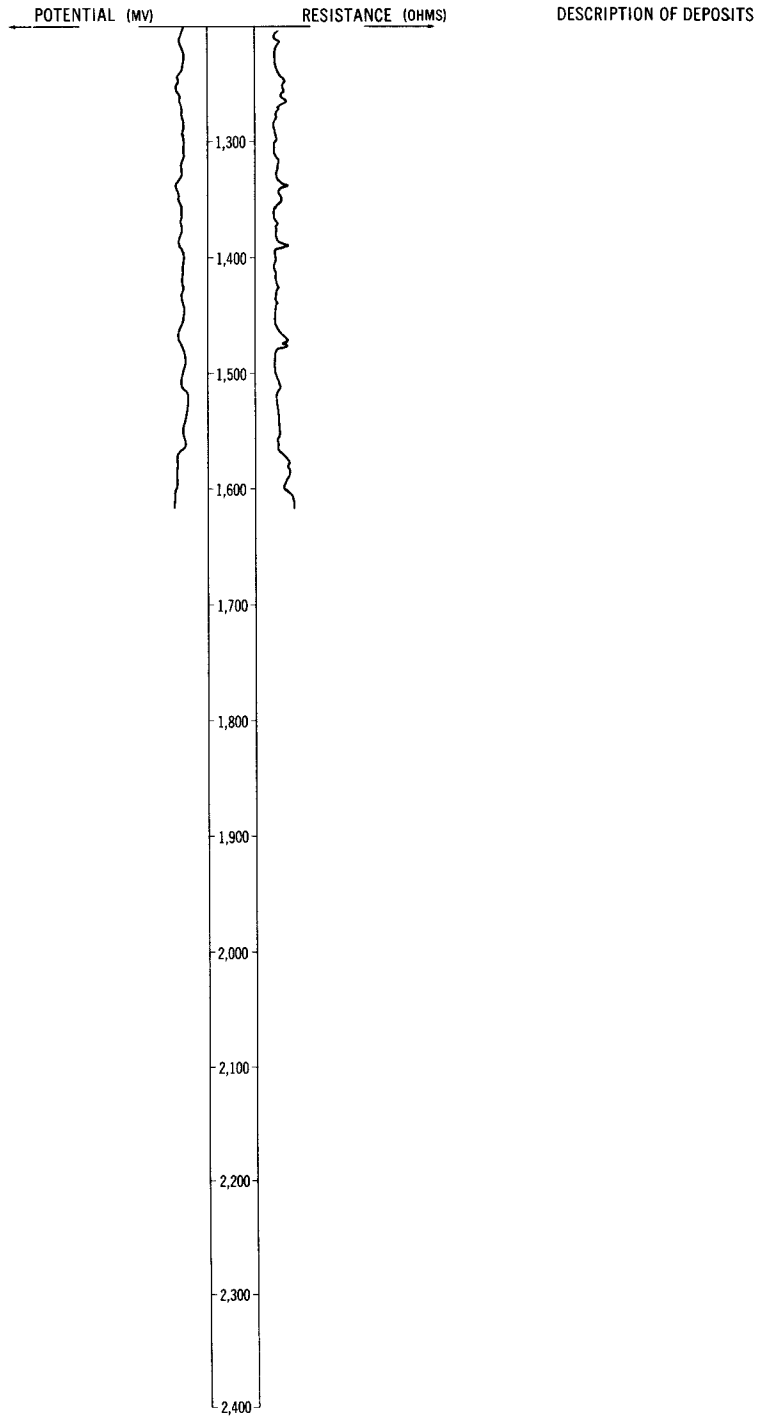
LOG FROM NORTH DAKOTA STATE WATER COMMISSION, Continued

LOCATION: 147-091-26CCD

DATE DRILLED: July 1966

ALTITUDE: 2218
(FT, MSL)

DEPTH: 1720
(FT)



147-091-26CCD
(Log from Independent Drilling Co.)

Altitude: 2218 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Topsoil-----	2	2
	Clay, yellow-----	8	10
	Gravel, coarse-----	1	11
	Clay, brown, and coal streaks-----	1	12
	Clay, yellow, and coal streaks-----	8	20
	Coal-----	2	22
	Clay, yellow-----	8	30
	Clay, blue; few green clay streaks-----	16	46
	Coal-----	1	47
	Clay, blue; few green clay streaks-----	3	50
	Clay, brown and blue; few thin coal streaks	10	60
	Clay, blue, brown, and green; thin coal		
	streaks-----	10	70
	Clay, blue and green; thin coal streaks----	4	74
	Limestone, soft-----	7	81
	Clay, blue, and coal streaks-----	30	111
	Rock-----	1	112
	Clay, gray-----	10	122
	Clay, gray, and coal streaks-----	32	154
	Clay, gray-----	10	164
	Clay, gray, with coal streaks-----	11	175
	Clay, gray-----	31	206
	Clay, gray, soft, sticky-----	21	227
	Clay, gray, and coal streaks-----	10	237
	Coal with thin clay streaks-----	10	247
	Clay, gray-----	42	289
	Clay, gray and green-----	10	299
	Clay, soft, brown and green-----	11	310
	Clay, gray, very soft-----	11	321
	Clay, gray, with coal and lime streaks-----	31	352
	Clay, gray, with hard lime streaks-----	20	372
	Clay, gray-----	10	382
	Lime rock, hard-----	3	385
	Clay, gray-----	18	403
	Clay, gray, with thin coal streaks-----	10	413
	Clay, gray-----	11	424
	Coal-----	10	434
	Clay, gray with some green clay streaks----	31	465
	Clay, very soft, gray; some green and brown		
	clay streaks and a few intermittent coal		
	streaks-----	52	517
	Clay, soft, gray, with thin lime streaks---	10	527
	Clay, gray and green with thin coal streaks	10	537
	Coal-----	5	542
	Clay, gray and green-----	17	559
	Coal-----	4	563
	Clay, gray and green with thin coal streaks	16	579
	Clay, gray and green-----	10	589
	Clay, gray and green with thin coal		
	streaks, very soft-----	61	650
	Clay, gray with coal streaks-----	20	670
	Predominantly gray clay; some brown and		
	green clay streaks with thin coal streaks	52	722
	Clay, gray, and coal streaks-----	50	772
	Clay, gray, green and white with thin coal		
	streaks-----	33	805
	Clay, light gray-----	10	815
	Clay, gray and green with thin coal streaks	20	835
	Clay, gray with thin coal streaks-----	21	856
	Clay, soft, gray and green with thin clay		
	streaks and thin layers of white clay		
	last 7 ft-----	42	898

147-091-26CCD, Continued

Altitude: 2218 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Clay, gray and green with lime streak at 909 ft-----	11	909
	Clay, gray and green with coal streaks-----	20	929
	Coal and gray clay mixed-----	8	937
	Sand, fine to medium, white, some thin dirty streaks-----	23	960
	Sand, fine to medium, white, clean, drilled very fast-----	32	992
	Hard lime streak-----	1	993
	Clay, gray and green, with few thin coal streaks-----	51	1044
	Clay, dark gray and green-----	21	1065
	Clay, gray and green-----	20	1085
	Clay, gray, few green clay streaks-----	25	1110
	Hard lime streak-----	2	1112
	Clay, gray and green; thin lime streaks at 1158 ft, 1180 ft, and 1191 ft-----	79	1191
	Clay, gray and green; firmer with thin coal streaks-----	37	1228
	Clay, gray, sandy, very dirty, mostly clay-----	7	1235
	Hard lime rock-----	2	1237
	Clay, firm, gray and green; thin coal streaks and lime streaks at 1255 ft, 1265 ft, and 1308 ft-----	78	1315
	Clay, gray and green; few thin dirty sand streaks at 1325 ft-----	10	1325
	Clay, gray and green-----	22	1347
	Clay, gray and green; with thin coal streak	20	1367
	Clay, firm, gray and green-----	52	1419
	Clay, gray and green with thin lime streaks	27	1446
	Clay, sandy, gray-----	4	1450
	Clay, gray and green with thin lime streaks	41	1491
	Shale, gray and green with thin lime streaks-----	20	1511
	Clay, gray and green, firmer-----	20	1531
	Clay, gray and green, with thin hard lime streaks-----	8	1539
	Clay, sandy, gray-----	2	1541
	Clay, gray and lime streaks-----	9	1550
	Clay, sandy, gray-----	10	1560
	Clay, green-----	12	1572
	Sand, dirty, tight-----	26	1598
	Clay, sandy-----	8	1606
	Clay, gray and green, with thin sand streaks-----	51	1657
	Sand, dirty-----	14	1671
	Clay, gray, hard-----	1	1672
	Sand, very hard, dirty, mixed with clay, drilled like a very poor, tight sand-----	48	1720

147-091-26CDB
(Log from Independent Drilling Co.)

Altitude: 2218 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Topsoil-----	5	5
	Sand, yellow-----	5	10
	Clay, sandy, yellow-----	5	15
	Clay, yellow-----	5	20
	Clay, sandy, yellow-----	5	25
	Sand, coarse-----	10	35
	Sand, fine-----	5	40
	Sand, gravel, clay-----	10	50
	Sand, gravel-----	10	60
	Sand, fine, gray-----	5	65
	Clay, gray, sand-----	5	70
	Coal and gray clay-----	5	75
	Clay, gray-----	12	87
	Limestone-----	1	88
	Clay, gray-----	12	100

147-091-27BBD
(Log from Dingman and Gordon, 1954)

Altitude: 2208 ft

	Clay, silty and sandy, brown-----	5	5
	Clay, silty and sandy, brown; pebbly-----	5	10
	Clay, sandy, gray-----	25	35
	Clay, gray-----	5	40
	Sand-----	10	50
	Lignite-----	4	54
	Clay, gray-----	6	60
	Clay, gray, and lignite-----	6	66
	Clay, gray-----	11	77
	Lignite-----	2	79
	Clay, silty, gray-----	5	84
	Sand-----	16	100
	Lignite, sand, and clay-----	10	110
	Clay, silty, gray-----	30	140
	Sand-----	5.5	145.5
	Sand and small amount of lignite-----	2.5	148
	Clay, silty and sandy, dense, gray-----	22	170
	Sand-----	5	175
	Sand and small amount of lignite-----	5	180
	Clay, silty and sandy, dense, gray-----	5	185
	Clay, gray-----	50	235
	Clay, gray, and lignite-----	8	243
	Clay, gray-----	13	256
	Clay, silty, gray, and lignite-----	4	260
	Clay, silty, gray-----	10	270
	Lignite-----	15	285
	Lignite and gray silty clay-----	10	295
	Clay, sand, and lignite-----	5	300
	Sand-----	5	305
	Clay and sand-----	15	320
	Clay, sandy, gray-----	5	325
	Clay, silty, gray-----	25	350
	Lignite-----	8	358
	Lignite and gray clay-----	12	370
	Lignite-----	10	380
	Lignite and gray clay-----	10	390
	Clay, silty, gray-----	6	396
	Clay, gray, and small amount of lignite---	1.5	397.5
	Clay, gray-----	2.5	400

147-091-28DDD1
(Log from U.S. Public Health Service,
Division of Indian Health)

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Topsoil-----	2	2
	Clay, yellow-----	23	25
	Clay, gray-----	9	34
	Coal and water-----	3	37
	Clay, green-----	5	42
	Clay, gray-----	13	55
	Rock-----	2	57
	Clay, gray-----	8	65
	Coal-----	4	69
	Clay, gray-----	3	72
	Coal-----	1	73
	Clay, gray-----	5	78
	Coal-----	1	79
	Clay, gray-----	8	87
	Rock-----	2	89
	Clay, gray-----	.5	89.5

147-091-28DDD2
(Log from U.S. Public Health Service,
Division of Indian Health)

Altitude:

	Topsoil-----	3	3
	Clay, yellow-----	21	24
	Clay, yellow, mixed-----	8	32
	Clay, gray-----	13	45
	Rock-----	10	55
	Clay, gray-----	2	57
	Rock-----	8	65

147-091-28DDD3
(Log from U.S. Public Health Service,
Division of Indian Health)

Altitude:

	Topsoil-----	4	4
	Clay, yellow-----	16	20
	Yellow clay mixture-----	15	35
	Clay, gray-----	11	46
	Rock-----	11	57
	Clay, gray-----	6	63
	Coal-----	7	70
	Clay, gray, and sand, dry-----	15	85
	Clay, gray-----	6	91
	Rock-----	7	98

147-091-29BCA
(Log from Frederickson's Inc.)

Altitude: 2270 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Topsoil, brown-----	2	2
	Clay, brown-----	2	24
	Clay, sandy, brown and yellow-----	33	57
	Clay, brown, and coal-----	5	62
	Shale, green-----	15	77
	Shale, blue-----	25	102
	Shale, sticky, blue and green-----	39	141
	Shale, sticky, softer, blue-----	56	197
	Limestone, white-----	3	200
	Shale, sticky, soft, gray-----	100	300
	Shale, hard, and limestone-----	27	327
	Shale, hard, gray-----	15	342
	Softer shale with layers of coal, gray-----	19	361
	Shale, soft, gray-----	28	389
	Limestone, white-----	15	404
	Shale, soft, whitish-green-----	15	419
	Shale, hard, green-----	9	428
	Shale, soft, green with coal-----	11	439
	Shale, hard, white and green-----	23	462
	Shale, soft with few lenses of sand, gray--	25	487
	Shale, hard, brown-----	21	508
	Shale, softer, gray-----	55	563
	Shale, harder, gray-----	26	589
	Limestone boulder, whitish-----	2	591
	Shale, hard, gray-----	17	608
	Limestone boulder, white-----	2	610
	Shale, softer, gray-----	32	642
	Shale, hard-----	42	684
	Shale, soft, sticky, gray and green-----	18	702
	Shale, softer, gray-----	15	717
	Shale, hard, gray-----	22	739
	Shale, softer, white, with layers of coal--	20	759
	Shale, softer, whitish-----	22	781
	Shale, hard, green-----	5	786
	Limestone, white-----	2	788
	Shale, hard, white and green-----	45	833
	Shale, soft, white-----	20	853
	Shale, soft with lenses of sandstone, gray--	29	882
	Sandstone, gray-----	35	917
	Shale, hard, black-----	1	918

147-091-30AAA
(Log from Dingman and Gordon, 1954)

Altitude: 2261 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Clay, silty and sandy, brown, gray, and tan	50	50
	Sand-----	34	84
	Lignite-----	6	90
	Clay, silty, dense, gray-----	36	126
	Lignite-----	3	129
	Clay, silty and sandy, gray-----	11	140
	Clay, gray-green, and small amount of lignite-----	5	145
	Clay, gray-green-----	5	150
	Clay, gray-----	10	160
	Clay, gray, and small amount of lignite---	4	164
	Clay, silty and sandy, dense, gray-----	16	180
	Sand-----	15	195
	Clay, sandy, gray-----	5	200
	Clay, gray-----	4	204
	Lignite and sandy clay-----	6	210
	Lignite and sand-----	5	215
	Clay, silty and sandy, dense, gray-----	45	260
	Sand-----	37	297
	Lignite-----	3	300
	Clay, gray-green-----	5	305
	Sand-----	4	309
	Clay, silty, gray-green-----	11	320
	Clay, gray-----	5	325
	Clay, gray, and small amount of lignite---	6	331
	Lignite-----	4	335
	Clay, gray-----	5.5	340.5
	Lignite-----	3.5	344
	Clay, gray-----	16	360
	Clay, gray, and small amount of lignite---	5	365
	Clay, silty, gray-green-----	13	378
	Clay, gray-green-----	2	380
	Lignite-----	7	387
	Lignite and clay-----	3	390
	Clay, gray, and small amount of lignite---	10	400

147-091-33ADD
(Log from Dingman and Gordon, 1954)

Altitude: 2308 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Clay, silty, yellow and tan-----	13	13
	Clay, gray and brown-----	8	21
	Sand-----	4	25
	Clay, gray, and small amount of lignite---	5	30
	Clay, gray-----	6	36
	Lignite-----	4	40
	Clay, gray, and lignite-----	5	45
	Clay, gray-----	7.5	52.5
	Sand-----	5.5	58
	Clay, gray, and sand-----	9	67
	Lignite-----	8	75
	Clay, gray-----	15	90
	Lignite and small amount of sand-----	2.5	92.5
	Sand-----	3.5	96
	Clay, gray-----	5	101
	Clay, gray, silty, carbonaceous, gray and brown-----	4	105
	Clay, gray-----	13	118
	Lignite-----	3	121
	Clay, gray-----	17.5	138.5
	Sand and lignite-----	1.5	140
	Clay, silty, gray, and lignite-----	1	141
	Lignite-----	2	143
	Clay, silty and sandy, dense gray-----	57	200
	Clay, gray, and sand-----	4	204
	Clay, gray, silty-----	1.5	205.5
	Sand-----	9.5	215
	Clay, silty, carbonaceous, brown-----	5	220
	Clay, silty and sandy, dense, gray-----	35	255
	Sand-----	5	260
	Sand and clay-----	5	265
	Sand-----	20	285
	Lignite-----	1	286
	Clay, gray-----	4	290
	Clay, silty, green-----	25	315
	Clay, silty, gray-----	45	360
	Sand-----	5	365
	Clay, silty, brown, and sand-----	6	371
	Sand-----	4	375
	Sand and sandy clay, gray-----	5	380
	Sand-----	4	384
	Clay, silty, gray-green and gray-brown-----	21	405

147-091-35BDA
(Log from Frederickson's Inc.)

Altitude: 2185 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Topsoil, brown-----	2	2
	Clay, brown-----	2	4
	Shale, sticky, soft, gray-----	106	110
	Shale, hard, sticky, gray-----	40	150
	Shale, softer, gray-----	35	185
	Shale, hard, gray-----	22	207
	Shale, softer, green, lensed with coal-----	113	320
	Shale, softer, white-----	37	357
	Coal-----	14	371
	Shale, harder, whitish-----	19	390
	Shale, softer, lensed with coal-----	45	435
	Shale, hard, gray with lenses of coal-----	35	470
	Shale, hard, gray-----	21	491
	Shale, softer, gray, and coal-----	10	501
	Shale, hard, gray, and coal-----	114	615
	Shale, hard, gray-----	45	660
	Shale, softer, lensed with coal-----	52	712
	Shale, hard, gray, and rock-----	8	720
	Shale, hard, gray with lenses of coal-----	65	785
	Shale, softer with lenses of sandstone-----	45	830
	Shale, hard-----	76	906
	Shale, soft, and sandstone-----	9	915
	Sandstone, dirty-white-----	16	931
	Shale, soft, with lenses of sandstone-----	11	942
	Sandstone, white-----	8	950
	Shale, hard, whitish-----	52	1002
	Shale, softer, with sandstone-----	8	1010
	Limestone-----	6	1016
	Shale, hard-----	14	1030
	Limestone-----	6	1036
	Shale, hard, greenish-white-----	50	1086
	Limestone-----	2	1088
	Shale, softer, gray-----	14	1102
	Shale, hard, gray-----	8	1110
	Limestone, gray-----	3	1113
	Shale, softer, gray-----	15	1128
	Shale, hard, whitish-green-----	13	1141
	Shale, softer, gray and black-----	6	1147
	Shale, hard, black-----	7	1154
	Sandstone, white-----	5	1159
	Lignite-----	3	1162
	Shale, hard, colored-----	25	1187
	Shale, hard, with layers of lignite-----	11	1198
	Shale, hard, gray-----	12	1210
	Shale, softer, layers of lignite-----	10	1220
	Lignite-----	8	1228
	Shale and lignite-----	13	1241
	Limestone boulder-----	2	1243
	Shale, hard, colored-----	18	1261
	Shale, softer, colored-----	16	1277
	Lignite-----	10	1287
	Shale, softer, colored-----	79	1366
	Shale, soft, and a little coal, colored-----	24	1390
	Shale, hard, colored-----	37	1427
	Shale, softer, sandstone, colored-----	53	1480
	Shale, hard, colored-----	27	1507
	Limestone-----	13	1520
	Shale, softer, and sandstone, colored-----	17	1537
	Shale, hard, colored-----	5	1542
	Sandstone-----	4	1546
	Shale, colored-----	1	1547

147-092-03CDC
(Log from U.S. Public Health Service,
Division of Indian Health)

Altitude: 1905 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Topsoil-----	3	3
	Clay, yellow-----	22	25
	Coal-----	2	27
	Sand, yellow-----	100	127
	Coal-----	5	132
	Clay, brown-----	5	137
	Mixture-----	13	150
	Sand and water-----	9	159

147-092-21DA
(Log from Dingman and Gordon, 1954)

Altitude: 2288 ft

	Sand and sandy clay-----	10	10
	Clay, sandy, brown-----	5	15
	Sand-----	68	83
	Clay, sandy, gray-----	7	90
	Clay, gray-----	6	96
	Limestone-----	1	97
	Clay, gray-----	8	105
	Lignite-----	10	115
	Clay, gray-----	40	155
	Clay, silty, gray, and small amount of lignite-----	5	160
	Clay, gray-----	7.5	167.5
	Sand-----	8.5	176
	Clay, gray-----	15	191
	Lignite-----	6	197
	Clay, silty, dense, gray-----	16	213
	Clay, sandy, gray-----	4.5	217.5
	Lignite-----	1.5	219
	Clay, sandy, gray-----	6	225
	Clay, gray-----	7	232
	Lignite-----	1.5	233.5
	Clay, gray-----	29.5	263
	Lignite and small amount of brown clay-----	4	267
	Clay, silty, dense, gray-----	40	307
	Lignite-----	3	310
	Clay, gray-----	5	315
	Lignite and clay-----	5	320
	Clay, silty, gray-----	10	330
	Lignite and clay-----	3	333
	Clay, silty, gray-----	14.5	347.5
	Sand-----	7.5	355
	Clay, sandy, gray-----	5	360
	Sand-----	45	405

147-092-36BC
(Log from Dingman and Gordon, 1954)

Altitude: 2312 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Soil, silty and sandy, brown-----	5	5
	Clay, silty, tan-----	26	31
	Sand, silty, brown-----	5.5	36.5
	Gravel-----	2	38.5
	Gravel and silty and sandy clay-----	2.5	41
	Clay, pebbles, and lignite fragments-----	1.5	42.5
	Clay, gray-----	27.5	70
	Clay, silty, gray-----	15	85
	Clay, gray-----	5	90
	Clay, carbonaceous, gray-----	2	92
	Clay, gray-----	11	103
	Lignite-----	3	106
	Clay, gray, and small amount of lignite---	1.5	107.5
	Sand-----	2.5	110
	Clay, sandy, gray-----	4	114
	Clay, gray-----	46	160
	Clay, silty and sandy, gray-----	10	170
	Clay, gray, and lignite-----	4	174
	Clay, sandy, gray-----	6	180
	Clay, silty, dense, gray-----	20	200
	Clay, gray-green-----	10	210
	Clay, gray-----	5	215
	Clay, gray, and small amount of lignite---	5	220
	Clay, silty and sandy, dense, gray-----	28	248
	Lignite-----	2	250
	Clay, gray-----	20	270
	Clay, silty, gray-----	10	280
	Clay, sandy, gray-----	5	285
	Sand and sandy clay-----	20	305
	Clay, sandy, gray-----	5	310
	Sand-----	5	315
	Clay, silty and sandy, gray-----	10	325
	Lignite and gray clay-----	5	330
	Clay, gray, and small amount of lignite---	5	335
	Clay, silty and sandy, dense, gray-----	25	360
	Sand-----	5	365
	Clay, sandy, gray-----	5	370
	Sand-----	18	388
	Clay, silty, gray-----	7	395
	Clay, gray, and sand-----	5	400
	Sand and small amount of brown carbonaceous clay-----	5	405

147-093-03DBB
(Log from Dingman and Gordon, 1954)

Altitude: 2001 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Clay, silty, gray-----	5	5
	Clay, silty, brown-----	20	25
	Clay, gray-----	5	30
	Lignite and gray clay-----	5	35
	Clay, gray-----	5	40
	Lignite and clay-----	5	45
	Clay, silty, dense, gray-----	15	60
	Sand-----	5	65
	Clay, sandy-----	5	70
	Clay, gray-----	6	76
	Lignite and clay-----	9	85
	Clay, silty, dense, gray-----	15	100
	Lignite-----	4	104
	Clay, silty, gray-----	36	140
	Clay, sandy, gray-----	10	150
	Clay, silty, gray-----	25	175
	Sand-----	5	180
	Clay, silty, gray-----	5	185
	Sand-----	15	200
	Clay, sandy, gray-----	7.5	207.5
	Sand-----	22.5	230
	Clay, sandy, gray-----	4	234
	Clay, silty, gray-----	6	240
	Clay, sandy, gray-----	5	245
	Sand-----	5	250

147-093-15BCD
(Log from Dingman and Gordon, 1954)

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Clay, silty and sandy, brown-----	5	5
	Clay, silty, brown, with a few pebbles----	8.5	13.5
	Clay, silty, gray to brown-----	6.5	20
	Lignite and tan clay-----	6.5	26.5
	Lignite and red shale-----	3.5	30
	Clay, silty and sandy, gray and tan-----	7	37
	Clay, silty and sandy, carbonaceous, gray--	13	50
	Sand-----	5	55
	Clay, silty and sandy, dense, gray-----	20	75
	(No sample)-----	15	90
	Clay and lignite-----	5	95
	Lignite-----	10	105
	Clay, gray-----	5	110
	Lignite and gray clay-----	5	115
	Clay, silty, gray-----	46	161
	Lignite-----	5	166
	Clay, silty, gray-----	44	210
	Lignite-----	5	215
	Clay, gray-----	5	220
	Lignite-----	5	225
	Clay, silty, gray-----	5	230
	Lignite and gray clay-----	5	235
	Clay, gray-----	16	251
	Clay and lignite-----	4	255
	Clay, silty, gray-----	10	265
	Lignite and silty clay-----	5	270
	Clay, gray-----	35	305
	Lignite and gray clay-----	5	310
	Clay, gray-----	5	315
	Lignite and clay-----	10	325
	Clay, gray-----	35	360
	Lignite-----	15	375
	Clay, gray-----	30	405

147-094-02AD
(Log from Dingman and Gordon, 1954)

Altitude: 2244 ft

	Sand-----	30	30
	(No sample)-----	15	45
	Lignite-----	12	57
	Lignite and sand-----	6	63
	Lignite-----	7	70
	Sand-----	20	90
	Clay, sandy, gray-----	24	114
	Lignite-----	4	118
	Sand-----	22	140
	Lignite and gray clay-----	9	149
	Clay, silty, gray-----	31	180
	Lignite-----	4	184
	Clay, silty and sandy, gray-----	26	210
	Sand-----	13	223
	Clay and sand-----	3	226
	(No sample)-----	89	315

147-094-26BCB
(Log from Ralph Wold)

Altitude: 1940 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Clay, sandy-----	15	15
	Coal-----	3	18
	Clay-----	24	42
	Sand-----	28	70
	Coal-----	10	80
	Clay-----	82	162
	Coal-----	15	177
	Sand-----	31	208
	Clay-----	97	305
	Coal-----	7	312
	Clay-----	30	342
	Coal and rocks-----	24	366
	Clay-----	34	400
	Coal-----	4	404
	Clay-----	56	460
	Sand-----	20	480
	Clay-----	130	610
	Sand and rocks-----	35	645
	Clay-----	140	785
	Sand-----	45	830
	Clay and shale-----	155	985
	Rock-----	2	987
	Clay-----	158	1145
	Sand, streaked, and clay-----	40	1185
	Clay-----	53	1238
	Sand-----	22	1260
	Clay and shale-----	135	1395
	Sand-----	20	1415
	Clay-----	55	1470
	Sand and water-----	32	1502
	Shale-----	8	1510

147-094-33DB
(Log from Ralph Wold)

Altitude: 2210 ft

	Clay-----	35	35
	Coal-----	5	40
	Sand-----	145	185
	Clay-----	223	308
	Sand-----	27	335
	Clay-----	21	356
	Coal-----	7	363
	Coal-----	12	375
	Sand-----	5	380
	Clay-----	110	490
	Coal-----	5	495
	Clay-----	90	585
	Sand-----	45	630
	Clay-----	45	675
	Sand-----	30	705
	Rock-----	3	708
	Clay-----	50	758
	Coal-----	5	763
	Clay-----	144	907
	Sand-----	50	957
	Clay and shale-----	78	1035
	Sand-----	10	1045

147-094-33DB, Continued
(Log from Ralph Wold)

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Shale-----	141	1186
	Rock-----	2	1188
	Clay-----	152	1340
	Shale-----	168	1408
	Rock-----	4	1412
	Clay and shale-----	128	1540
	Sand-----	15	1555
	Rock-----	3	1558
	Shale-----	32	1590
	Sand and water-----	75	1665

147-094-34BAD
(Log from Ralph Wold)

Altitude: 1980 ft

	Clay, sandy-----	90	90
	Rock-----	2	92
	Clay-----	72	164
	Rock-----	2	166
	Clay, brown-----	29	195
	Coal-----	2	197
	Clay-----	171	368
	Sand-----	22	390
	Clay-----	305	695
	Sand-----	15	710
	Clay-----	124	834
	Sand-----	16	850
	Rock-----	5	855
	Sand-----	30	885
	Clay, streaked-----	160	1045
	Rock-----	2	1047
	Shale-----	178	1225
	Sand-----	15	1240
	Clay-----	20	1260
	Coal-----	8	1268
	Clay-----	22	1290
	Rock-----	2	1292
	Shale-----	28	1320
	Sand-----	5	1325
	Clay and shale-----	140	1465
	Sand and water-----	45	1510
	Shale-----	5	1515

147-095-04BBA
(Log from Ralph Wold)

Altitude: 1970 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Clay, sandy-----	15	15
	Scoria-----	3	18
	Sand-----	60	78
	Clay-----	117	195
	Rock-----	4	199
	Clay-----	67	266
	Coal-----	7	273
	Clay-----	7	280
	Sand-----	7	287
	Clay-----	55	342
	Coal-----	10	352
	Clay-----	10	362
	Sand-----	10	372
	Clay, sandy-----	48	420
	Coal-----	6	426
	Clay-----	84	510
	Coal-----	6	516
	Clay-----	14	530
	Coal-----	4	534
	Clay-----	41	575
	Coal-----	13	588
	Clay-----	114	702
	Rock-----	2	704
	Clay and shale-----	169	873
	Rock-----	2	875
	Clay streaked-----	25	900
	Shale-----	72	972
	Sandy coal streaks-----	18	990
	Clay-----	28	1018
	Coal-----	6	1024
	Clay-----	86	1110
	Coal-----	6	1116
	Clay and shale-----	124	1240
	Sand-----	8	1248
	Rock-----	2	1250
	Shale-----	70	1320
	Sand and water-----	28	1348
	Clay-----	2	1350

147-095-08BDC
(Log from Ralph Wold)

Altitude: 1990 ft

	Topsoil-----	6	6
	Clay-----	32	38
	Coal-----	3	41
	Clay-----	71	112
	Coal-----	7	119
	Clay-----	126	245
	Sand-----	15	260
	Clay-----	50	310
	Coal-----	6	316
	Clay and shale-----	224	540
	Sand-----	24	564
	Rock-----	3	567
	Clay and shale-----	358	925
	Sand-----	20	945
	Rock-----	3	948
	Shale-----	197	1145
	Sand-----	25	1170
	Shale-----	215	1385
	Sand-----	105	1490
	Shale-----	40	1530

147-095-12CAD
(Log from Ralph Wold)

Altitude:

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Sand-----	14	14
	Clay-----	24	38
	Coal-----	6	44
	Clay-----	18	62
	Coal-----	5	67
	Clay-----	28	95
	Sand-----	13	108
	Rock-----	1	109
	Clay, sandy-----	63	172
	Coal-----	7	179
	Clay-----	37	216
	Sand-----	22	238
	Clay-----	57	295
	Coal-----	7	302
	Clay-----	62	364
	Sand-----	14	378
	Rock-----	6	384
	Clay-----	94	478
	Coal-----	8	486
	Clay, sandy-----	76	562
	Sand-----	28	590
	Shale-----	85	675
	Sand-----	17	692
	Clay-----	40	732
	Sand-----	14	746
	Shale-----	58	804
	Sand-----	16	820
	Clay, streaked-----	126	946
	Coal-----	7	953
	Clay-----	188	1141
	Sand-----	12	1153
	Clay-----	127	1280
	Sand-----	15	1295
	Rock-----	7	1302
	Clay-----	84	1386
	Sand and water-----	24	1410
	Clay-----	15	1425

147-095-13CCC1
(Log from K. J. Thompson)

Altitude: 2420 ft

	Topsoil and clay-----	48	48
	Coal, dry-----	4	52
	Clay-----	11	63
	Rock-----	2	65
	Rock-----	5	70
	Clay-----	12	82
	Coal, dry-----	2	84
	Clay-----	76	160

147-095-13CCC2
(Log from Ralph Wold)

Altitude: 2420 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Clay-----	48	48
	Coal-----	6	54
	Clay-----	122	176
	Rock-----	7	183
	Sand-----	37	220
	Coal-----	5	225
	Sand-----	15	240
	Coal-----	13	253
	Clay-----	27	280
	Rock-----	1	281
	Clay-----	74	355
	Clay, sandy-----	15	370
	Clay-----	67	437
	Sand-----	8	445
	Clay-----	5	450
	Sand-----	10	460
	Rock-----	5	465
	Sand-----	7	472
	Clay-----	23	495
	No sample-----	9	504
	Coal-----	6	510
	No sample-----	85	595
	Sand-----	10	605
	Rock-----	3	608
	Clay-----	47	655
	Rock-----	3	658
	Clay-----	74	732
	Rock-----	1	733
	No sample-----	74	807
	Sand-----	8	815
	Clay-----	160	975
	Sand-----	11	986
	No sample-----	19	1005
	Rock-----	2	1007
	No sample-----	53	1060
	Sand-----	12	1072
	No sample-----	28	1100
	Coal-----	10	1110
	No sample-----	60	1170
	Sand-----	20	1190
	Rock-----	3	1193
	No sample-----	67	1260
	Rock-----	1	1261
	No sample-----	9	1270
	Rock-----	1	1271
	No sample-----	9	1280
	Clay-----	15	1295
	No sample-----	13	1308
	Rock-----	1	1309
	No sample-----	57	1366
	Clay w/hard rock streaks-----	13	1373
	No sample-----	512	1885
	Sand-----	5	1890
	Clay-----	5	1895
	Sand-----	10	1905
	Clay, soft-----	7	1912
	Sand and rock-----	23	1935
	Clay and shale-----	15	1950

147-095-14AAA
(Log from Ralph Wold)

Altitude: 1980 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Clay, sandy-----	18	18
	Coal slack-----	6	24
	Clay-----	48	72
	Coal-----	6	78
	Clay-----	42	120
	Coal-----	4	124
	Clay-----	44	168
	Coal-----	6	174
	Clay-----	46	220
	Sand-----	26	246
	Clay-----	99	345
	Coal-----	13	358
	Sand-----	14	372
	Clay-----	98	470
	Coal-----	12	482
	Clay-----	92	574
	Sand-----	7	581
	Clay-----	144	725
	Sand-----	13	738
	Shale-----	55	793
	Sand-----	17	810
	Shale-----	145	955
	Coal-----	9	964
	Clay-----	181	1145
	Sand-----	10	1155
	Clay, streaked-----	75	1230
	Sand-----	15	1245
	Sand-----	42	1287
	Rock-----	2	1289
	Clay and shale-----	121	1410
	Sand and water-----	20	1430
	Clay-----	5	1435

147-095-17ACA
(Log from Ralph Wold)

Altitude:

	Clay-----	30	30
	Coal-----	4	34
	Clay-----	24	58
	Coal-----	2	60
	Clay-----	185	245
	Sand-----	25	270
	Coal-----	6	276
	Clay, black-----	169	445
	Rock-----	2	447
	Clay, sandy-----	63	510
	Clay-----	30	540
	Clay, streaked-----	125	665
	Sand-----	40	705
	Clay, black-----	260	965
	Rock-----	3	968
	Shale-----	57	1025
	Sand-----	45	1070
	Clay-----	150	1220
	Coal-----	10	1230
	Clay-----	35	1265
	Sand-----	20	1285
	Rock-----	3	1288
	Sand-----	7	1295
	Shale-----	170	1465
	Sand-----	7	1472

147-095-17ACA, Continued
(Log from Ralph Wold)

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay-----	38	1510
	Sand and water-----	15	1525
	Clay-----	25	1550
	Sand and water-----	20	1570
	Clay-----	10	1580

147-095-21ABA
(Log from Ralph Wold)

Altitude:

	Clay-----	8	8
	Coal-----	2	10
	Clay-----	20	30
	Rock-----	4	34
	Sand-----	16	50
	Clay-----	6	56
	Coal-----	6	62
	Clay-----	80	142
	Coal-----	7	149
	Clay-----	63	212
	Rock-----	2	214
	Clay, sandy-----	31	245
	Sand and water-----	37	282
	Clay-----	4	286

147-096-28BBA
NDSWC 8178

Altitude: 2600 ft

Colluvium:

	Topsoil, sandy, silty, clayey, brownish-black-----	1	1
	Clay, sandy, silty, dark-brown-----	4	5
	Sand, fine to medium, silty, clayey, subangular-----	39	44

Sentinel Butte Formation:

	Shale, sandy, silty, dark-yellowish-brown--	26	70
	Shale, silty, hard, noncalcareous, carbonaceous, brownish-black-----	10	80

147-096-34BBA
(Log from K. J. Thompson)

Altitude:

	Clay-----	15	15
	Sand and clay streaks-----	178	193
	Coal (water)-----	2	195
	Sand (water)-----	3	198
	Coal (water)-----	4	202
	Clay-----	3	205

147-096-36CAC
(Log from K. J. Thompson)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Topsoil, sandy-----	20	20
	Rock-----	1	21
	Sand-----	17	38
	Rock-----	7	45
	Sand-----	11	56
	Rock-----	2.5	58.5
	Sand-----	27.5	86
	Coal (seep)-----	6	92
	Sand and coal chunks (water)-----	2	94
	Coal (dry)-----	1	95
	Clay-----	3	98
	Coal(?)-----	3	101

147-096-36DCB
(Log from R. J. Thompson)

Altitude:

	Topsoil and sand-----	26	26
	Rock-----	.5	26.5
	Sand-----	29.5	56
	Coal-----	3	59
	Clay-----	4	63
	Coal-----	6	69
	Clay-----	46	115
	Coal-----	3	118
	Clay-----	17	135
	Rock-----	1	136
	Sand, blue-----	12	148
	Clay-----	1	149

147-097-10DDA
(Log from K. J. Thompson)

Altitude:

	Topsoil, sandy-----	10	10
	Blind-----	1	11
	Sand-----	46	57
	Rock-----	2	59
	Sand-----	13	72
	Rock-----	1	73
	Sand-----	79	152
	Rock-----	2	154
	Clay-----	37	191
	Rock-----	1.5	192.5
	Sand(?)-----	47.5	240
	Clay-----	6	246
	Coal (water)-----	12	258
	Clay-----	7	265

147-097-11DAA1
(Log from K. J. Thompson)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand-----	45	45
	Clay-----	25	70
	Coal (dry)-----	3	73
	Clay-----	5	78
	Coal (dry)-----	4	82
	Clay-----	11	93
	Sand-----	19	112
	Coal (dry)-----	2.5	114.5
	Clay-----	10.5	125

147-097-11DBB
(Log from K. J. Thompson)

Altitude:

	Topsoil, sandy-----	5	5
	Sand (dry)-----	28	33
	Rock-----	2	35
	Sand-----	15	50
	Sand, reddish (water)-----	5	55
	Clay-----	9	64

147-097-12BDB1
(Log from K. J. Thompson)

Altitude:

	Topsoil and clay-----	39	39
	Coal (seep)-----	2	41
	Clay-----	56	97
	Rock-----	2	99
	Sand-----	25	124
	Rock-----	1	125
	Clay-----	7	132
	Rock-----	1	133
	Clay-----	9	142
	Rock-----	3	145
	Sand-----	11	156
	Rock-----	2	158
	Sand-----	30	188
	Rock-----	2	190
	Sand-----	21	211
	Rock-----	1	212
	Clay-----	34	246
	Rock (water)-----	4	250
	Sand (water)-----	9	259
	Coal (water)-----	3	262
	Sand (water)-----	5	267
	Coal (water)-----	5	272
	Clay-----	13	285

147-097-12BDB2
(Log from K. J. Thompson)

Altitude:

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay-----	40	40
	Coal (dry)-----	2	42
	Clay-----	36	78
	Rock-----	1	79
	Clay-----	18	97
	Rock-----	1	98
	Clay-----	15	113
	Rock-----	2	115
	Clay-----	44	159
	Rock-----	.5	159.5
	Clay-----	13.5	173
	Rock-----	4	177
	Sand-----	18	195
	Rock-----	1	196
	Sand-----	19	215
	Rock-----	1	216
	Sand-----	12	228
	Rock-----	2	230
	Sand-----	23	253
	Rock (water)-----	1	254
	Sand (water)-----	4	258
	Coal (water)-----	3	261
	Sand (water)-----	4	265
	Coal (water)-----	6	271
	Clay-----	9	280

148-092-03DBA
(Log from Dingman and Gordon, 1954)

Altitude: 2217 ft

	Clay, silty, brown-----	4	4
	Clay, gray and tan-----	18	22
	Sand-----	18	40
	Clay, gray-----	13	53
	Lignite-----	3	56
	Clay, gray-----	14	70
	Lignite, limestone, sandstone, and clay---	2	72
	Clay, silty and sandy, dense, gray-----	21.5	93.5
	Lignite-----	3.5	97
	Clay, gray-----	12.5	109.5
	Limestone-----	.5	110
	Clay, gray-----	10	120
	Sand-----	5	125
	Clay, silty, gray-----	12	137
	Lignite-----	1	138
	Clay, silty, gray-----	4	142
	Lignite-----	5	147
	Clay, silty, gray-----	34	181
	Clay, gray; sand and lignite-----	4	185
	Clay, silty, carbonaceous, brown-----	10	195
	Sand and clay-----	8	203
	Clay, gray-----	10	213
	Sand-----	77	290
	Sand and lignite-----	5	295
	Lignite-----	5	300
	Sand-----	25	325
	Clay, silty, gray-----	10	335
	Sand, lignite, and clay-----	7	342
	Lignite-----	2.5	344.5
	Clay, sandy, gray-----	8	352.5

148-092-03DBA, Continued
(Log from Dingman and Gordon, 1954)

Geologic source	Material	Thickness (feet)	Depth (feet)
	Lignite and clay-----	2.5	355
	Sand-----	5	360
	Clay, gray-----	30	390
	Lignite-----	2	392
	Sand-----	6.5	398.5
	Lignite-----	3.5	402
	Clay, sandy, dense, gray-----	20	422
	Lignite-----	10	432
	Clay, silty, gray-----	13	445
	Sand-----	23.5	468.5
	Lignite-----	1	469.5
	Sand-----	20.5	490
	Sand and lignite-----	5	495
	Sand-----	15	510

148-092-5
(Log from Dingman and Gordon, 1954)

Altitude: 2327 ft

	Sand-----	5	5
	Sand and gravel-----	20	25
	Clay, brown-----	10	35
	Sand-----	25	60
	Clay, brown, and sand-----	10	70
	Sand-----	30	100
	Clay and sand-----	35	135
	Sand-----	50	185
	Lignite-----	10	195
	Clay, gray-----	10	205
	Clay, gray, and sand-----	20	225
	Clay, gray-----	5	230
	Lignite-----	5	235
	Clay, gray-----	5	240
	Lignite-----	5	245
	Clay, gray-----	45	290
	Lignite-----	8	298
	Sand and clay, gray-----	17	315
	Lignite-----	5	320
	Sand and clay, gray-----	5	325
	Clay, gray-----	55	380
	Lignite-----	5	385
	Clay, gray-green-----	15	400

148-092-11CCB
(Log from Bice Drilling Co.)

Altitude:

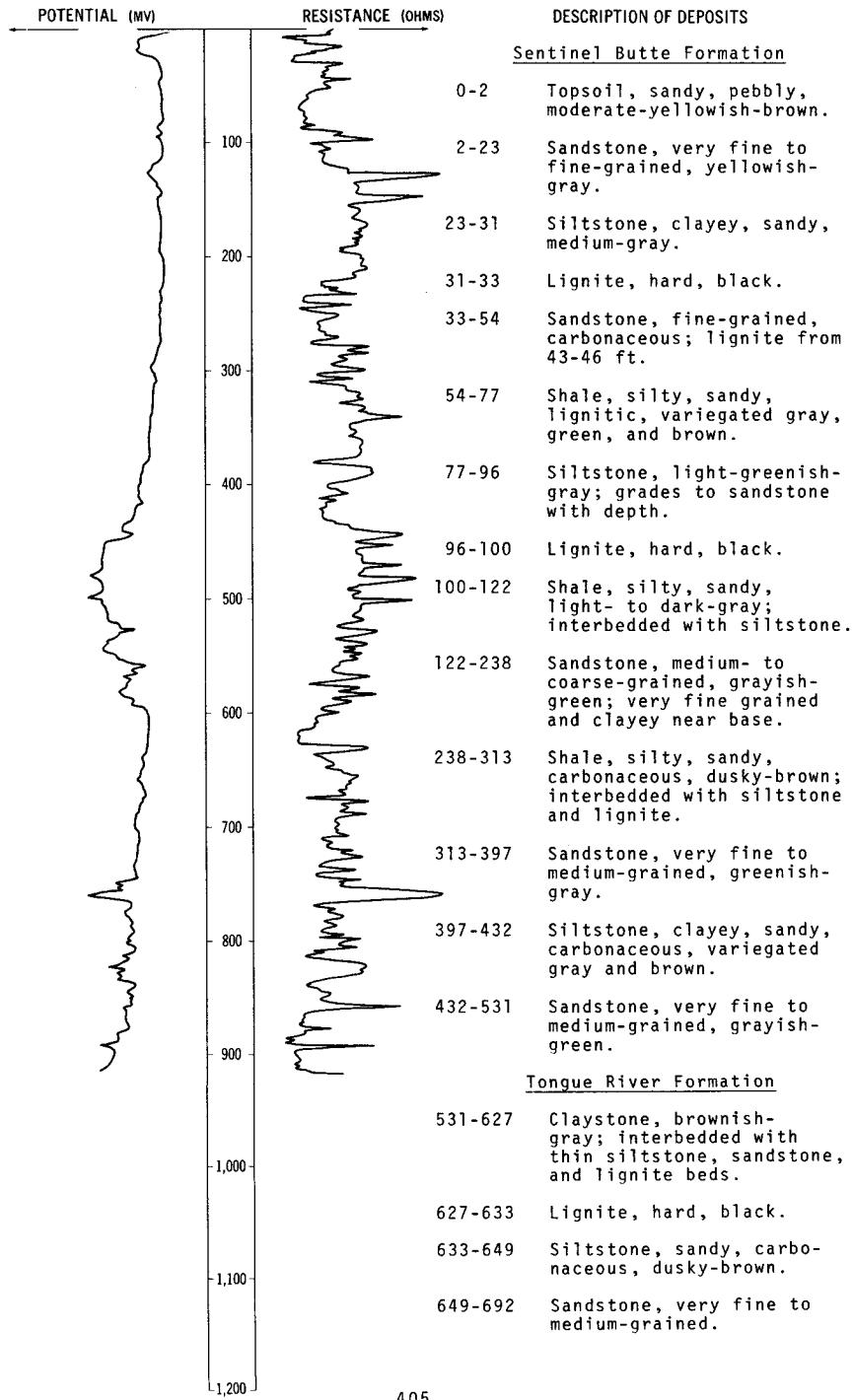
	Topsoil, dark-----	2	2
	Clay, yellow-----	7	9
	Shale with 3 layers of coal-----	37	46
	Coal-----	2	48
	Shale, gray-----	5	53
	Coal mixed with shale-----	1	54
	Shale, gray-----	23	77
	Shale, sandy-----	23	100

LOCATION: 148-093-04CBD, CAB1, CAB2

DATE DRILLED: October 1973

ALTITUDE: 1985
(FT, MSL)

DEPTH: 920
(FT)



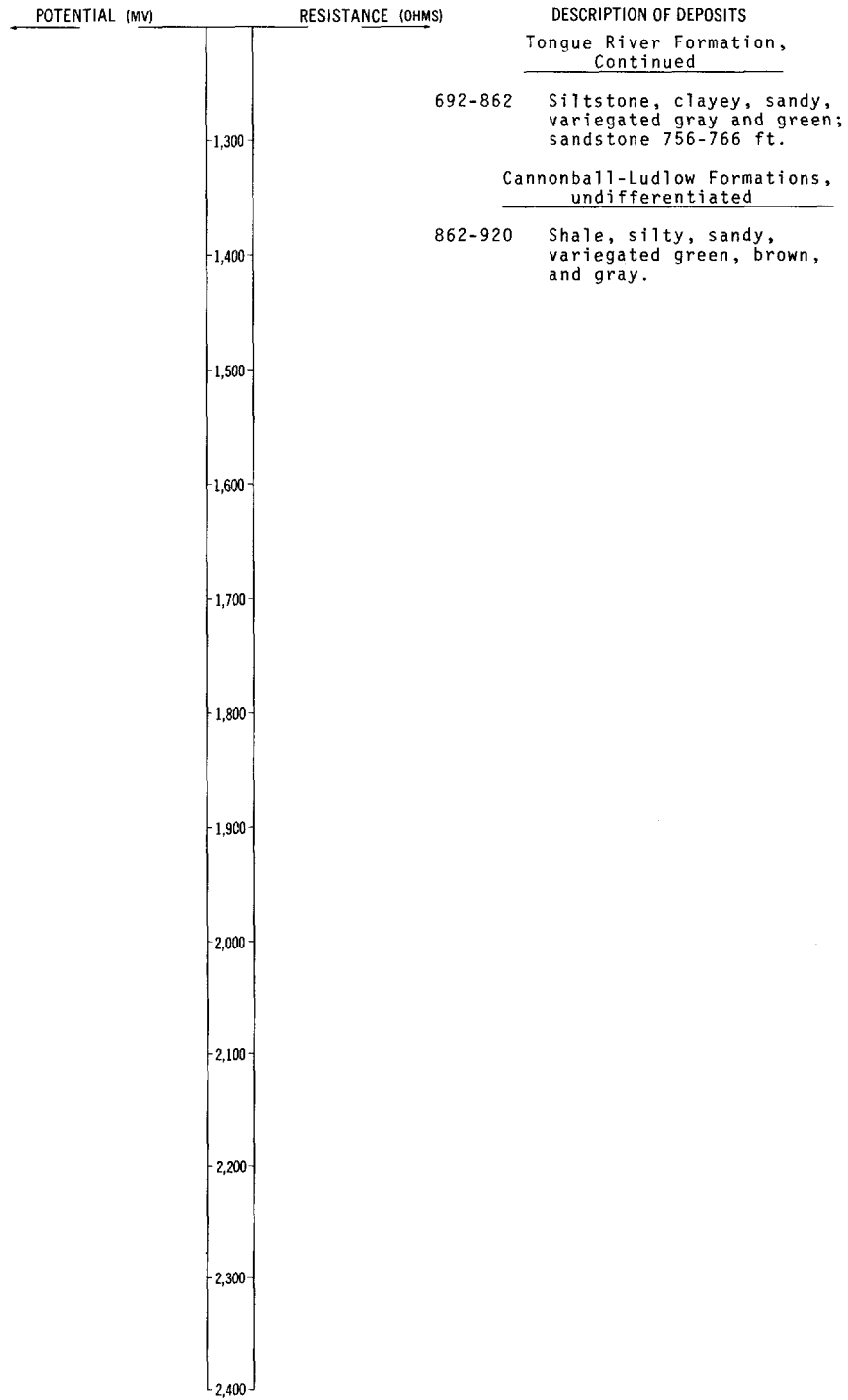
NDSWC 4596, 4596A, and 4596B, Continued

LOCATION: 148-093-04CBD, CAB1, CAB2

DATE DRILLED: October 1973

ALTITUDE: 1985
(FT, MSL)

DEPTH: 920
(FT)



148-093-09BBC
(Log from Dingman and Gordon, 1954)

Altitude: 1955 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Clay, gray to brown-----	20	20
	Clay, gray to brown, with pebbles-----	5	25
	Gravel-----	25	50
	Sand-----	5	55
	Clay, gray-----	7	62
	Lignite-----	4	66
	Clay, gray-----	9	75
	Lignite-----	5	80
	Clay, silty, gray-----	10	90
	Sand-----	111	201
	Lignite-----	3	204
	Clay, silty, carbonaceous, gray-----	19	223
	Lignite-----	1.5	224.5
	Clay, silty, gray-----	27.5	252
	Lignite-----	5	257
	Clay, silty, gray-----	13	270
	Sand-----	5	275
	Clay, silty, gray to tan-----	35	310
	Sand-----	50	360
	Lignite and tan clay-----	5	365
	Clay, gray-----	20	385
	Clay, gray, and lignite-----	5	390
	Clay, silty, dense, gray-----	40	430
	Sand-----	20	450
	Clay, sandy, gray-----	5	455
	Sand-----	50	505
	Lignite and sand-----	5	510

LOCATION: 148-093-10CCC

DATE DRILLED: July 1974

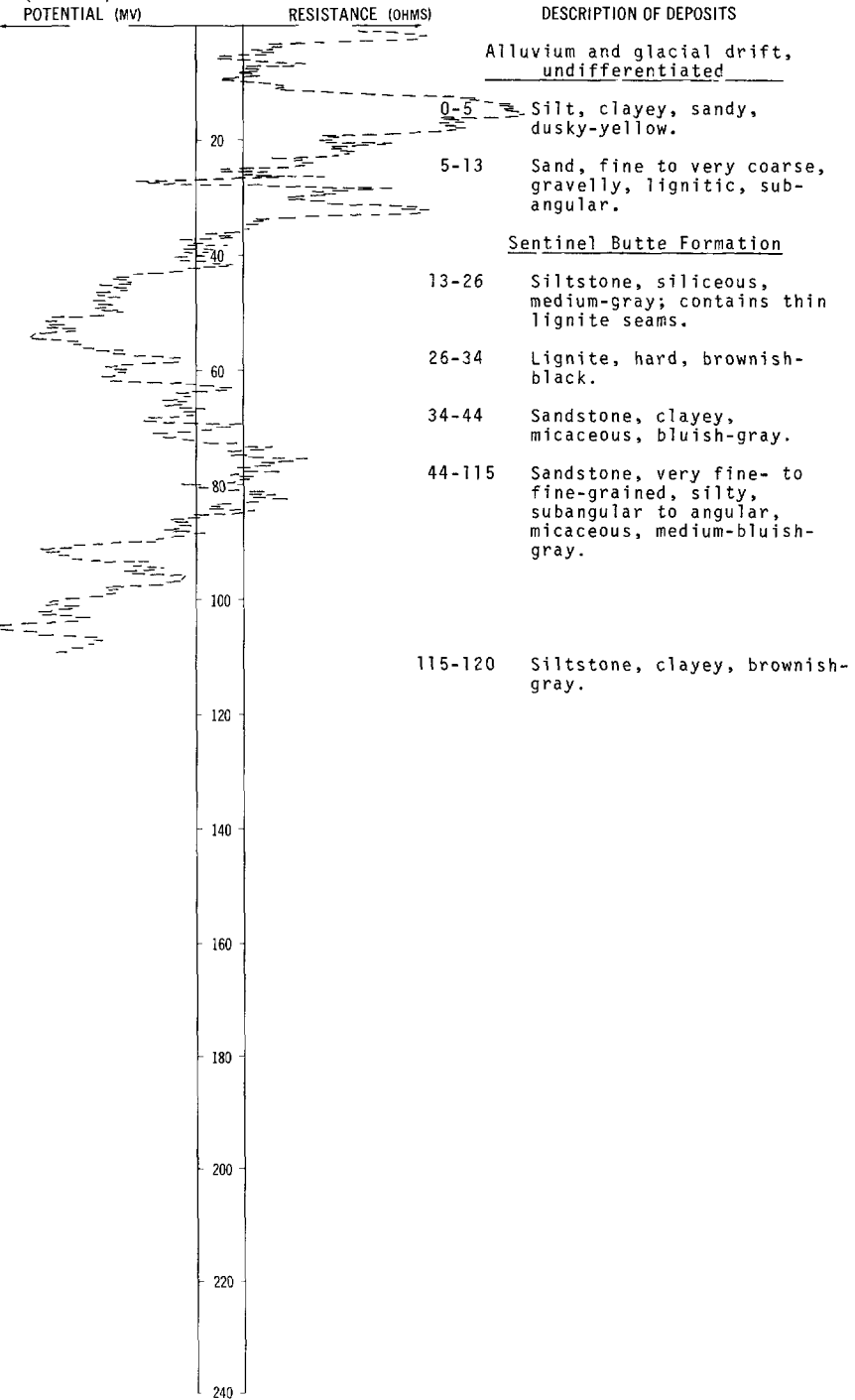
ALTITUDE: 1920

DEPTH: 120

(FT, MSL)

(FT)

Gamma log
(T.C. 4)



LOCATION: 148-093-14CDC

DATE DRILLED: July 1974

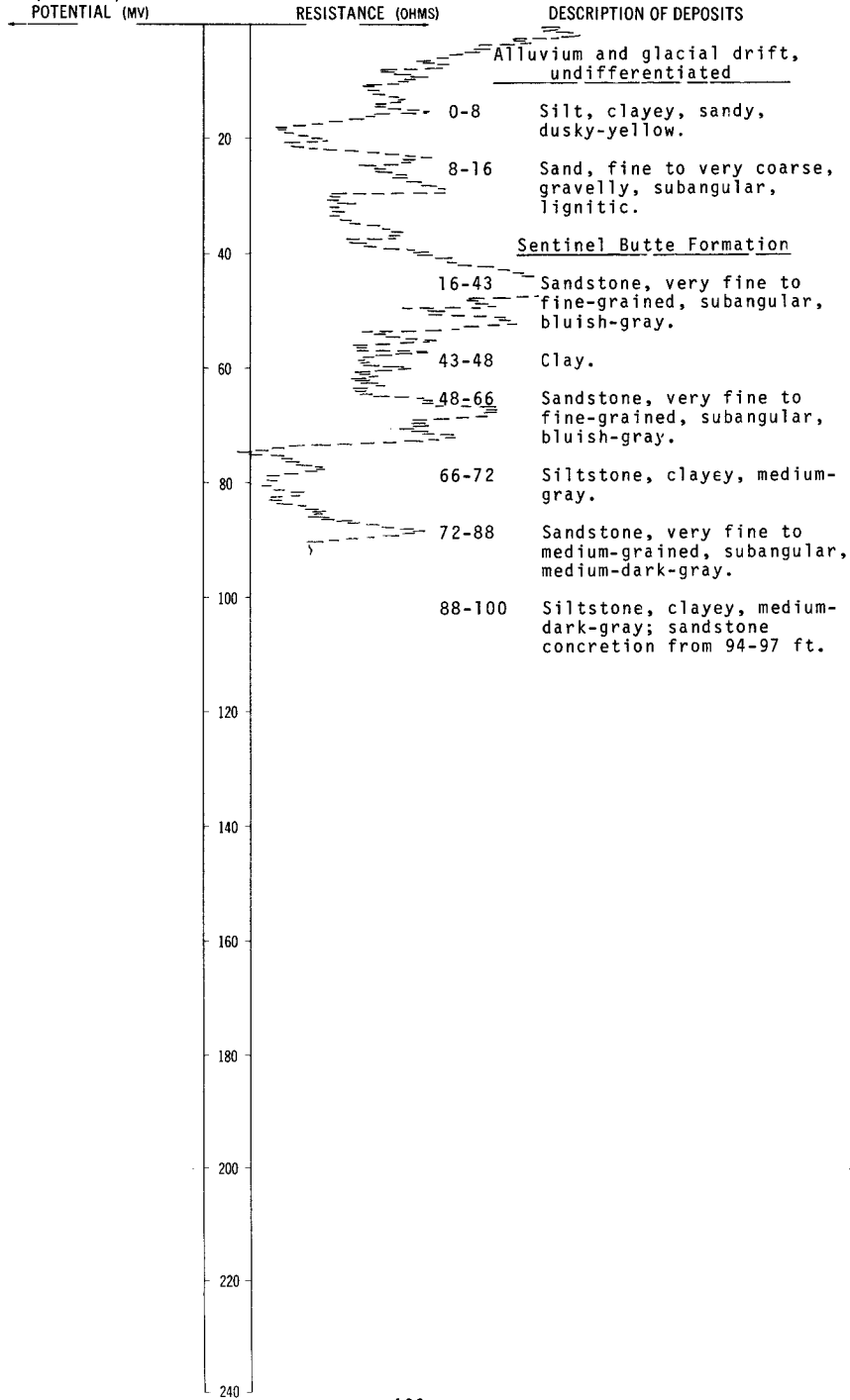
ALTITUDE: 1840

DEPTH: 100

(FT, MSL)

(FT)

Gamma log ----
(T.C. 4)



148-093-15ACB
NDSWC 8175

Altitude: 1895 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Alluvium	and glacial drift, undifferentiated: Clay, silty, sandy, yellowish-gray-----	7	7
	Gravel, clayey; numerous cobbles and boulders-----	4	11
Sentinel Butte Formation:	Shale, silty, hard, calcareous, medium- gray; few thin lignite seams-----	29	40

148-093-20BCA
(Log from Dingman and Gordon, 1954)

Altitude: 2211 ft

Clay, silty, brown-----	30	30
Clay, silty and sandy, brown and gray with pebbles-----	15	45
Clay, silty and sandy, gray, with pebbles--	15	60
Clay, sandy, gray, and lignite-----	5	65
Clay, sand, lignite, and pebbles-----	8	73
Sand-----	12	85
Lignite-----	5	90
Clay and lignite-----	5	95
Sand, clay, and lignite-----	10	105
Sand-----	50	155
Clay, silty and sandy, gray-----	60	215
Sand, clay, and lignite-----	8	223
Lignite and clay-----	12	235
Clay, gray-----	5	240
Lignite and silty clay-----	10	250
Clay, lignite, and sand-----	10	260
Clay, silty, gray-----	20	280
Clay, gray, and lignite-----	5	285
Clay, sandy, dense, gray-----	15	300
Lignite-----	5	305
Clay, silty and sandy, gray-----	20	325
Sand, clay, and lignite-----	20	345
Sand-----	23	368
Clay, lignite, and limestone-----	5	373
Sand-----	52	425
Lignite-----	5	430
Lignite and gray clay-----	20	450

148-093-32CDB
(Log from Dingman and Gordon, 1953)

Altitude: 2131 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Silt, tan-----	10	10
	Clay, silty, tan, with pebbles-----	22	32
	Sand, clay, and pebbles-----	14	46
	Lignite, sand, and brown clay-----	4	50
	Clay, silty, gray, and sand-----	10	60
	Lignite and gray clay-----	5	65
	Clay, gray-----	40	105
	Lignite and gray clay-----	7	112
	Clay, gray-----	50	162
	Lignite and gray clay-----	3	165
	Clay, gray-----	65	230
	Clay and lignite-----	4	234
	Lignite-----	6	240
	Clay, gray-----	32.5	272.5
	Sand-----	7.5	280
	Clay, silty, dense, gray-----	12.5	292.5
	Lignite-----	7.5	300
	Lignite and clay-----	10	310
	Clay, silty, dense, carbonaceous, gray-----	40	350
	Lignite and clay-----	10	360
	Lignite-----	5	365
	Clay, silty, gray-----	10	375
	Clay and lignite-----	5	380
	Clay, silty, gray-----	5	385
	Lignite-----	5	390
	Clay, gray-----	10	400

148-094-01DDD
NDSWC 8174

Altitude: 2055 ft

Alluvium and glacial drift, undifferentiated:			
	Topsoil, silty, black-----	1	1
	Clay, sandy, silty, dark-yellowish-brown---	33	34
	Sand, fine to coarse-----	1	35
	Clay, sandy, silty, dark-yellowish-brown---	13	48
Sentinel Butte Formation:			
	Shale, silty, hard, calcareous, medium-gray; few thin lignite beds-----	32	80

148-094-03ABB
(Log from Dingman and Gordon, 1954)

Altitude: 2366 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay, silty, tan and brown-----	46	46
	Chert, silty clay, and rock fragments-----	9	55
	Chert, sandstone, and clay-----	5	60
	Clay, silty, gray-----	14	74
	Lignite-----	6	80
	Clay, gray-----	20	100
	Sandstone(?), clay(?), and pebbles(?)-----	15	115
	Clay, silty, gray-----	10	125
	Lignite-----	5	130
	Clay, lignite, and chert fragments(?)-----	16	146
	Clay, gray(?)-----	64	210
	Lignite (?)-----	4	214
	Lignite and clay(?)-----	6	220
	Lignite with small amount of clay(?)-----	60	280
	Clay and lignite(?)-----	10	290
	Clay, gray(?)-----	3	293
	Clay and lignite(?)-----	2	295
	Clay, gray(?)-----	25	320
	Lignite(?)-----	40	360
	Lignite and clay(?)-----	65	425
	Sand(?)-----	5	430
	Lignite(?)-----	20	450

148-094-13AAD
(Log from Dingman and Gordon, 1954)

Altitude: 2237 ft

	Clay, silty, brown-----	10	10
	Sand and brown clay-----	5	15
	Clay, silty, dense, brown and gray-----	13	28
	Lignite-----	5	33
	Clay, silty, gray-----	4	37
	Lignite-----	7	44
	Clay, gray to brown-----	4	48
	Clay, gray, and lignite-----	2	50
	Clay, silty, dense, gray-----	80	130
	Clay, silty, brown, and small amount of lignite-----	5	135
	Clay, silty and sandy, gray-----	20	155
	Sand-----	70	225
	Clay, silty and sandy, dense, gray-----	21	246
	Lignite and gray clay-----	8	254
	Clay, silty, dense, gray-----	53	307
	Lignite-----	3	310
	Clay, silty, dense, gray-----	20	330
	Clay, carbonaceous, gray-----	9	339
	Clay, silty, gray-----	6	345
	Clay, gray-----	7	352
	Lignite-----	4	356
	Clay, silty, gray-----	79	435
	Clay, gray, and small amount of lignite-----	5	440
	Sand-----	10	450

148-094-20DDD
(Log from Dingman and Gordon, 1954)

Altitude: 2308 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Clay, silty, brown-----	11	11
	Clay, silty, gray-----	6	17
	Gravel-----	6	23
	Sand and clay, silty, brown-----	6	29
	Clay, silty, tan, and red chert-----	3	32
	Clay, silty and sandy, brown, with pebbles-----	6	38
	Silt, sand, clay, and pebbles-----	5	43
	Clay, silty, gray, with pebbles-----	2	45
	Clay, silty and sandy, gray-----	74	119
	Clay, silty, gray, with pebbles-----	3	122
	Clay, silty, gray-----	13	135

148-094-26DCA
(Log from Dingman and Gordon, 1954)

Altitude: 2263 ft

	Clay, silty and sandy, brown-----	15	15
	Sand-----	5	20
	Clay, silty, gray-----	28	48
	Lignite-----	8	56
	Clay, silty and sandy, dense, gray-----	87	143
	Lignite-----	7	150
	Clay, silty, gray-----	26	176
	Lignite and clay-----	9	185
	Clay, silty, brown-----	3	188
	Sand-----	79.5	267.5
	Clay, silty and sandy, gray-----	12.5	280
	Sand-----	10	290

148-094-33ACD
(Log from Dingman and Gordon, 1954)

Altitude: 2279 ft

	Clay, silty, brown-----	5	5
	Clay, silty, gray-----	10	15
	Clay, sandy, gray and brown-----	5	20
	Sand-----	10	30
	Clay, silty, gray, brown and tan-----	22	52
	Sand-----	23	75
	Clay, silty and sandy, gray-----	42.5	117.5
	Sand-----	12.5	130
	Clay, sandy, gray-----	5	135
	Sand-----	13	148
	Lignite-----	2	150
	Clay, gray-----	5	155
	Clay, carbonaceous-----	5	160
	Clay, silty, gray-----	4	164
	Lignite-----	4	168
	Clay, gray-----	32	200

148-095-01DBB
(Log from Dingman and Gordon, 1954)

Altitude: 2507 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Clay, silty and sandy, brown-----	6	6
	Sand and several sandstone lenses-----	224	230
	Lignite, clay, and sand-----	5	235
	Lignite and sandy clay-----	5	240

148-095-13ADC
(Log from Dingman and Gordon, 1954)

Altitude: 2444 ft

	Clay, brown-----	5	5
	Clay, silty, tan-----	20	25
	Clay, silty and sandy, dense, gray-----	20	45
	Sand-----	5	50
	Clay, silty, dense, gray-----	32	82
	Lignite and gray clay-----	8	90
	Clay, silty and sandy, dense, gray-----	40	130
	Lignite and gray clay-----	5	135
	Clay, silty and sandy, gray-----	15	150
	Sand-----	12	162
	Lignite-----	8	170
	Clay, silty, gray-----	25	195
	Lignite and clay-----	5	200
	Clay, gray-----	37	237
	Lignite-----	3	240
	Lignite and clay-----	6	246
	Clay, gray-----	39	285
	Lignite and gray clay-----	4	289
	Clay, silty, gray-----	21	310
	Sand-----	5	315
	Clay, silty, gray-----	5	320
	Clay, sandy, gray-----	10	330
	Clay, gray-----	9	339
	Lignite and clay-----	16	355
	Clay, gray-----	10	365
	Lignite and gray clay-----	5	370
	Clay, carbonaceous, gray-----	10	380
	Clay, gray-----	20	400

148-095-22CCA
(Log from Ralph Wold)

Altitude: 1925 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand-----	12	12
	Coal-----	4	16
	Clay-----	22	38
	Coal-----	5	43
	Clay, blue-----	53	96
	Coal-----	16	112
	Clay, sandy-----	28	140
	Sand-----	15	155
	Clay-----	75	230
	Sand-----	12	242
	Coal-----	6	248
	Shale-----	127	375
	Sand-----	145	510
	Clay-----	28	538
	Coal-----	8	546
	Clay-----	69	615
	Sand-----	15	630
	Rock-----	2	632
	Shale-----	13	645
	Sand-----	50	695
	Clay-----	29	724
	Coal-----	14	738
	Clay-----	77	815
	Coal-----	7	822
	Clay-----	23	845
	Rock-----	3	848
	Shale-----	57	905
	Shale with sand streaks-----	28	933
	Rock-----	3	936
	Clay-----	126	1062
	Rock-----	4	1066
	Shale-----	38	1104
	Sand-----	22	1126
	Clay and shale-----	246	1372
	Sand and water-----	58	1430
	Shale-----	25	1455

148-095-31CCA
(Log from Ralph Wold)

Altitude: 1940 ft

	Clay-----	110	110
	Coal-----	4	114
	Clay-----	46	160
	Rock-----	3	163
	Clay-----	57	220
	Sand-----	5	225
	Clay-----	93	318
	Rock-----	5	323
	Clay-----	87	410
	Rock-----	4	414
	Clay-----	166	580
	Sand-----	40	620
	Sand and rock streaks-----	40	660
	Clay and shale-----	102	762
	Rock-----	5	767
	Clay-----	82	849
	Rock-----	2	851
	Clay-----	133	984
	Rock-----	2	986

148-095-31CCA, Continued
(Log from Ralph Wold)

Altitude: 1940 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Clay-----	26	1012
	Rock-----	1	1013
	Clay and shale-----	60	1073
	Sand-----	7	1080
	Clay-----	68	1148
	Rock-----	1	1149
	Clay and shale-----	66	1215
	Rock-----	3	1218
	Clay and shale-----	27	1245
	Sand-----	5	1250
	Clay-----	45	1295
	Sand-----	19	1314
	Rock-----	3	1317
	Sand and water-----	33	1350
	Clay-----	5	1355

148-095-32DBD
(Log from Ralph Wold)

Altitude: 1930 ft

	Topsoil-----	8	8
	Sand-----	32	40
	Coal-----	2	42
	Clay-----	32	74
	Coal-----	8	82
	Clay-----	36	118
	Rock-----	5	123
	Clay-----	52	175
	Sand-----	5	180
	Clay-----	35	215
	Rock-----	3	218
	Clay-----	47	265
	Sand-----	8	273
	Clay-----	112	385
	Sand-----	7	392
	Clay-----	28	420
	Sand-----	63	483
	Coal-----	2	485
	Clay-----	63	548
	Coal-----	6	554
	Clay and rock streaks-----	208	762
	Coal-----	8	770
	Sand-----	25	795
	Clay-----	228	1023
	Rock-----	2	1025
	Clay-----	23	1048
	Coal-----	7	1055
	Clay-----	40	1095
	Coal-----	13	1108
	Sand-----	7	1115
	Clay-----	75	1190
	Coal-----	6	1196
	Clay-----	41	1237
	Sand-----	11	1248
	Clay and shale-----	87	1335
	Sand and water-----	30	1365
	Clay-----	5	1370

148-096-09ABD
(Log from Ralph Wold)

Altitude: 1950 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Clay, sandy-----	12	12
	Clay-----	38	50
	Sand-----	5	55
	Coal-----	6	61
	Clay, sandy-----	59	120
	Sand-----	5	125
	Clay-----	150	275
	Sand-----	8	283
	Rock-----	3	286
	Clay-----	76	362
	Rock-----	2	364
	Clay-----	91	455
	Sand-----	20	475
	Clay-----	8	483
	Rock-----	1	484
	Clay and shale-----	85	569
	Rock-----	2	571
	Clay-----	74	645
	Sand-----	70	715
	Clay and shale-----	50	765
	Rock-----	3	768
	Coal-----	6	774
	Clay-----	146	920
	Rock-----	2	922
	Clay and shale-----	89	1011
	Rock-----	1	1012
	Clay-----	58	1070
	Coal-----	15	1085
	Clay-----	35	1120
	Sand-----	10	1130
	Shale-----	135	1265
	Sand-----	15	1280
	Clay-----	38	1318
	Sand-----	10	1328
	Shale-----	7	1335
	Sand-----	7	1342
	Clay-----	93	1435
	Sand and water-----	25	1460
	Clay-----	5	1465

148-096-11BB
(Log from Ralph Wold)

Altitude: 2000 ft

	Clay-----	24	24
	Coal-----	2	26
	Clay, sandy-----	46	72
	Coal-----	6	78
	Clay-----	82	160
	Coal-----	5	165
	Clay-----	15	180
	Coal-----	6	186
	Clay-----	24	210
	Coal-----	4	214
	Clay-----	86	300
	Rock-----	4	304
	Clay-----	56	360
	Coal-----	6	366
	Clay-----	124	490
	Coal-----	10	500

148-096-11BB, Continued
(Log from Ralph Wold)

Altitude: 2000 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Clay-----	61	561
	Sand-----	29	590
	Clay, sandy-----	180	770
	Clay and shale-----	125	895
	Sand and clay streaks-----	50	945
	Shale and clay-----	80	1025
	Coal-----	10	1035
	Clay-----	35	1070
	Sand-----	10	1080
	Shale-----	20	1100
	Sand-----	43	1143
	Coal-----	5	1148
	Shale-----	92	1240
	Sand-----	16	1256
	Shale-----	54	1310
	Coal-----	8	1318
	Shale-----	56	1374
	Sand, rock, and water-----	81	1455

148-096-15AAA
(Log from Ralph Wold)

Altitude: 2400 ft

	Clay-----	18	18
	Sand-----	17	35
	Clay-----	81	116
	Coal-----	3	119
	Clay-----	227	346
	Coal-----	12	358
	Clay-----	82	440
	Sand-----	32	472
	Clay-----	38	510
	Coal-----	8	518
	Clay, sandy-----	67	585
	Sand-----	7	592
	Clay-----	72	664
	Rock-----	1	665
	Clay-----	125	790
	Rock-----	3	793
	Clay-----	52	845
	Coal-----	15	860
	Sand-----	24	884
	Clay-----	51	935
	Rock-----	2	937
	Clay-----	75	1012
	Sand-----	13	1025
	Shale-----	265	1290
	Sand-----	6	1296
	Clay and shale-----	132	1428
	Sand-----	7	1435
	Shale-----	17	1452
	Rock-----	3	1455
	Sand-----	10	1465
	Clay-----	7	1472
	Sand and water-----	68	1540
	Clay and shale-----	60	1600
	Sand-----	5	1605
	Clay and shale-----	60	1665
	Sand and water-----	10	1675
	Shale-----	5	1680

148-096-22BCB
(Log from Emil Guimont)

Altitude: 1895 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Sand-----	19	19
	Gravel-----	4	23
	Clay and sand-----	9	32
	Coal-----	3	35
	Sand-----	8	43
	Clay-----	100	143
	Coal-----	5	148
	Clay and coal-----	107	255

148-097-20CAD
(Log from K. D. Thompson)

Altitude: 2140 ft

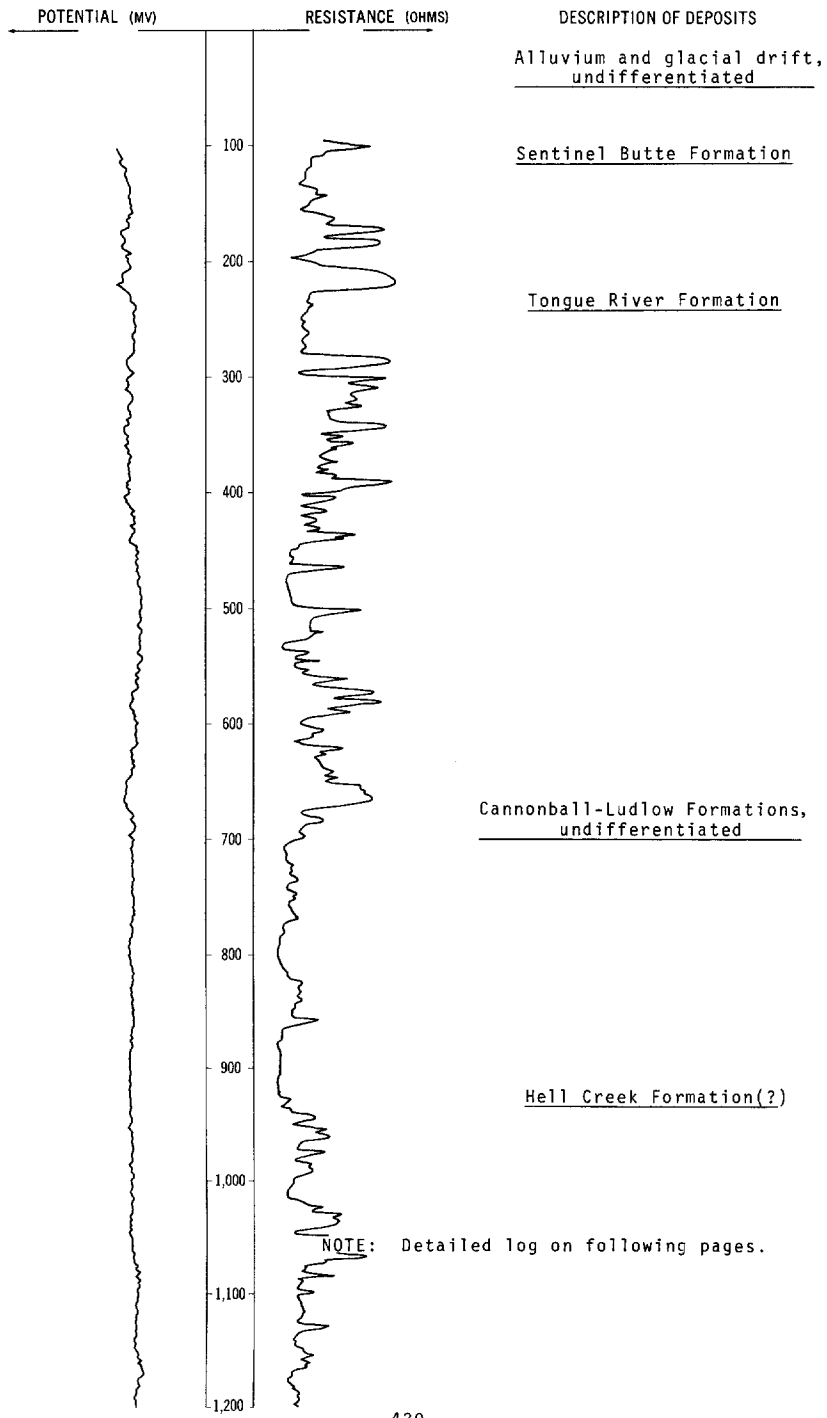
	Clay and silt-----	70	70
	Shale, blue-----	250	320
	Sand, fine-----	20	340
	Shale and thin coal veins-----	385	725
	Sand, fine-----	10	735
	Shale and thin rock ledges-----	415	1150
	Sand-----	25	1175
	Shale-----	318	1493
	Sand-----	5	1498
	Shale-----	12	1510
	Sand-----	4	1514
	Shale, hard, black-----	116	1630
	Sand, coarse-----	63	1693
	Shale-----	8	1701

LOCATION: 148-097-33ABB

DATE DRILLED: September 1972

ALTITUDE: 1920
(FT, MSL)

DEPTH: 1970
(FT)

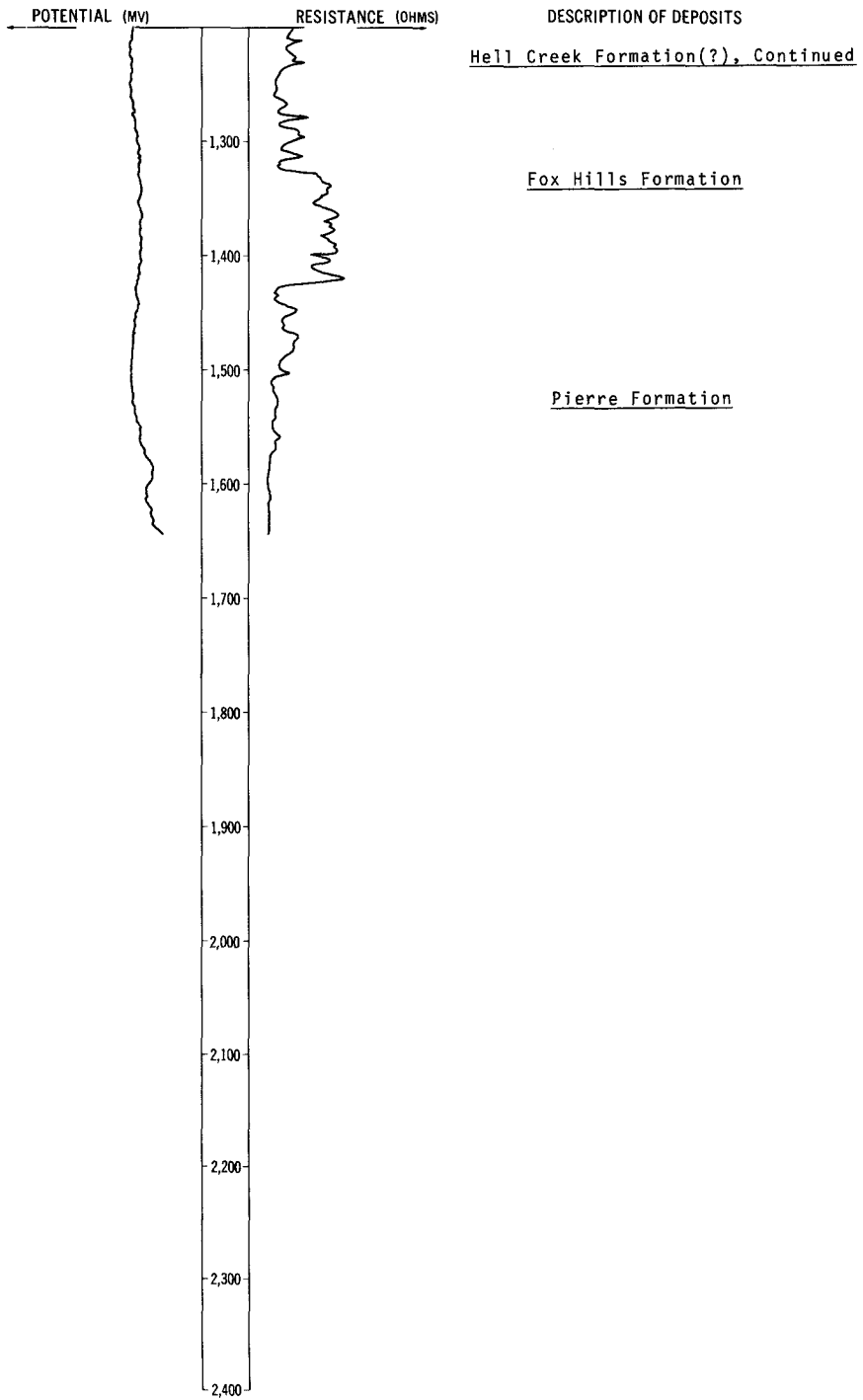


LOCATION: 148-097-33ABB

DATE DRILLED: September 1972

ALTITUDE: 1920
(FT, MSL)

DEPTH: 1970
(FT)



148-097-33ABB, Continued
NDSWC 4478

Altitude: 1920 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Alluvium	and glacial drift, undifferentiated:		
	Topsoil, silty, sandy, dark-brown-----	1	1
	Silt, clayey, yellowish-gray-----	11	12
	Silt, sandy, dusky-yellow-----	11	23
	Sand, medium to very coarse, gravelly, subrounded-----	18	41
	Silt, clayey, sandy, yellowish-gray-----	19	60
	Clay, medium-gray-----	10	70
	Silt, clayey, sandy-----	20	90
	Clay, silty, grayish-yellow-green-----	4	94
	Clay, black-----	4	98
	Gravel; composed predominantly of local bedrock-----	6	104
Sentinel Butte Formation:			
	Siltstone, clayey, sandy, light-gray to medium-gray-----	54	158
	Lignite, hard, black-----	6	164
	Siltstone, clayey, sandy, carbonaceous, light-gray to light-olive-gray-----	6	170
	Sandstone, very fine grained, silty, carbonaceous, light-greenish-gray-----	19	189
	Shale, lignitic, hard, black-----	14	203
	Sandstone, very fine to fine-grained, carbonaceous, light-greenish-gray-----	20	223
Tongue River Formation:			
	Claystone, light-gray; contains thin seams of lignite and siltstone-----	31	254
	Siltstone, sandy, carbonaceous, medium-dark-gray; interbedded with siltstone-----	24	278
	Sandstone, fine-grained, fossiliferous, light-olive-gray-----	13	291
	Shale, greenish-gray-----	6	297
	Siltstone, sandy, carbonaceous, light-olive-gray-----	18	315
	Lignite, hard, black-----	9	324
	Siltstone, sandy, carbonaceous, light-olive-gray; interbedded with shale and clayey sandstone-----	16	340
	Sandstone, very fine grained, silty, micaceous, light-olive-gray-----	9	349
	Siltstone, sandy, carbonaceous, light-olive-gray to greenish-gray; interbedded with lignite and shale-----	39	388
	Limestone, calcareous, dark-gray-----	8	396
	Claystone, silty, lignitic, carbonaceous; pinkish-gray but mottled with green and black-----	32	428
	Siltstone, sandy, carbonaceous, light-gray to brownish-gray; interbedded with shale-----	15	443
	Siltstone, carbonaceous-----	19	462
	Lignite, hard, black-----	5	467
	Siltstone, sandy, clayey, carbonaceous, light-gray to greenish-gray-----	33	500
	Sandstone, fine-grained, light-greenish-gray-----	5	505
	Sandstone, fine- to medium-grained, fossiliferous, greenish-gray-----	22	527
	Shale, carbonaceous, brownish-black-----	10	537
	Lignite, hard, black-----	3	540
	Siltstone, clayey, light-greenish-gray-----	5	545

148-097-33ABB, Continued
NDSWC 4478

Altitude: 1920 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Tongue River Formation, continued:			
	Limestone, calcareous, dark-gray-----	2	547
	Siltstone, clayey, light-greenish-gray-----	11	558
	Lignite, hard, black-----	6	564
	Shale, silty, lignitic, carbonaceous, brownish-black-----	6	570
	Siltstone, clayey, sandy, light-greenish-gray-----	9	579
	Shale, dark-green-----	1	580
	Siltstone, sandy, micaceous, greenish-gray-----	6	586
	Shale, carbonaceous, black-----	2	588
	Lignite, shaly, black-----	6	594
	Siltstone, lignitic, carbonaceous, olive-green-----	8	602
	Siltstone; thinly interbedded with sandstone, shale, lignite, and limestone-	50	652
	Sandstone, very fine grained, silty, carbonaceous, micaceous, grayish-green---	22	674
Cannonball-Ludlow Formations, undifferentiated:			
	Lignite, shaly, black-----	8	682
	Limestone, hard, dark-gray-----	4	686
	Siltstone, carbonaceous, brownish-black: thin interbeds of shale and lignite-----	34	720
	Sandstone, very fine to coarse-grained, silty, clayey, gravelly, olive-gray; contains shell fragments-----	29	749
	Lignite, black-----	3	752
	Siltstone, clayey, grayish-olive; interbedded with sandstone, lignite, and carbonaceous shale-----	32	784
	Claystone, silty, sandy, carbonaceous, brownish-gray to greenish-gray-----	29	813
	Sandstone, very fine to fine-grained, clayey, silty, fossiliferous, greenish-gray; thin interbeds of green and black shale-----	45	858
	Limestone, hard, gray-----	4	862
	Shale, light-gray-----	6	868
	Siltstone, clayey, sandy, carbonaceous, variegated gray, green, and brown-----	15	883
	Claystone, silty, sandy, brownish-gray-----	45	928
Hell Creek Formation(?):			
	Sandstone, very fine to fine-grained, clayey, silty, greenish-gray to dark-greenish-gray; interbedded with siltstone and shale-----	67	995
	Siltstone, clayey, sandy, variegated green and gray-----	23	1018
	Siltstone, sandy; thin interbeds of carbonaceous shale and lignite-----	57	1075
	Sandstone, very fine to fine-grained, silty; interbedded with shale and claystone-----	39	1114
	Siltstone, shaly, sandy, variegated gray and green; carbonaceous inclusions-----	56	1170
	Siltstone, clayey, sandy, micaceous, brownish-gray; scattered pyrite crystals-	63	1233
	Shale, carbonaceous, dusky-brown to greenish-black; interbedded with fine-to medium-grained, silty, fossiliferous sandstone-----	97	1330

148-097-33ABB, Continued
NDSWC 4478

Altitude: 1920 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
Fox Hills	Formation: Sandstone, medium- to coarse-grained, subangular to subrounded, dark- greenish-gray to greenish-black-----	88	1418
	Sandstone, very fine grained, dark- greenish-gray-----	4	1422
	Shale, silty, sandy, carbonaceous, brownish-black to greenish-black-----	20	1442
	Sandstone, very fine to fine-grained, clayey, greenish-gray to dark-greenish- gray-----	66	1508
Pierre	Formation: Siltstone, sandy, dark-greenish-gray to dark-gray; thin shale interbeds-----	76	1584
	Shale, siliceous, medium-gray to dark- gray; few sand lenses-----	386	1970

Note: Dual induction laterolog, bulk density, and gamma-gamma logs available.

149-091-17BAB
(Log from Dingman and Gordon, 1954)

Altitude: 2177 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Topsoil-----	3	3
	Clay, silty, brown-----	22	25
	Clay, sandy, dense, gray-----	40	65
	Sand-----	15	80
	Clay, gray-----	33	113
	Sand-----	76	189
	Lignite-----	1	190
	Clay, gray-----	34	224
	Lignite-----	2	226
	Clay, silty, dense, gray to brown-----	27	253
	Lignite-----	4	257
	Clay, silty, gray-brown-----	11	268
	Lignite-----	2	270
	Clay, gray-----	35	305
	Clay, gray-brown, with thin layers of lignite-----	28	333
	Sand-----	2	335
	Clay, gray-brown-----	30	365
	Lignite-----	10	375
	Clay, gray-----	2	377
	Sand-----	8	385
	Clay, gray, sandy-----	15	400

149-091-30CCD
(Log from Dingman and Gordon, 1954)

Altitude: 2195 ft

	Clay-----	5	5
	Sand and clay with pebbles-----	5	10
	Sand-----	37	47
	Clay, gray, and lignite-----	2	49
	Clay, carbonaceous, brown-----	11	60
	(No sample)-----	20	80
	Lignite-----	10	90
	Clay, gray-----	35	125
	Lignite-----	5	130
	Clay, gray-----	65	195
	Lignite-----	7	202
	Clay, gray-----	13	215
	Lignite-----	5	220
	Clay, gray-----	65	285
	Clay, brown-----	15	300
	Clay, gray-----	17	317
	Sand and clay, gray-----	3	320
	Clay, gray-----	15	335
	Clay, sandy-----	10	345
	Lignite-----	5	350
	Clay, sandy, gray-----	10	360
	Lignite-----	10	370
	Lignite and gray sandy clay-----	5	375

149-091-33BCC
(Log from Dingman and Gordon, 1954)

Altitude: 2010 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Clay, brown and gray-----	16	16
	Lignite-----	10	26
	Clay, dense, sandy, gray-----	39	65
	Lignite-----	5	70
	Sand-----	50	120
	Clay, silty, gray-----	5	125
	Sand-----	10	135
	Clay, gray-----	8	143
	Lignite-----	1	144
	Clay, gray-----	11	155
	Sand-----	5	160
	Clay, silty, gray-----	5	165
	Lignite-----	3	168
	Clay, silty, gray-----	27	195
	Sand-----	48	243
	Lignite-----	10	253
	Clay, gray-----	12	265
	Sand-----	2	267
	Clay, silty, gray-----	3	270
	Sand-----	5	275
	Lignite-----	12	287
	Clay, gray-----	13	300
	Lignite-----	3	303
	Clay, gray-----	5	308
	Limestone-----	4	312
	Sand-----	3	315
	Clay, gray, and sand-----	15	330
	Sand-----	24	354
	Lignite-----	3	357
	Sand and gray clay-----	3	360
	Clay, gray-----	15	375
	Clay, sandy, gray-----	10	385
	Clay with thin layers of lignite-----	15	400

149-092-29DCC
(Log from Dingman and Gordon, 1954)

Altitude: 2184 ft

	Clay, sandy, silty, brown, with pebbles---	10	10
	Clay, tan-----	5	15
	Clay, gray, and a small amount of lignite--	5	20
	Clay, silty, gray-----	30	50
	Clay, gray, and a small amount of lignite--	1	51
	Lignite-----	9	60
	Clay, silty, gray-----	10	70
	Lignite-----	10	80
	Clay, silty, gray-----	15	95
	Clay, gray-----	10	105
	Clay, silty, gray-----	5	110
	Clay, gray-----	5	115
	Clay, silty, gray-----	19	134
	Lignite and gray silty clay-----	6	140
	Clay, gray-----	10	150
	Clay, silty, gray-----	10	160
	Lignite-----	9	169
	Clay, gray-----	16	185
	Clay, silty, gray-----	35	220
	Lignite and gray clay-----	10	230
	Clay, silty, gray-----	5	235
	Clay, gray-----	15	250

149-092-29DCC, Continued
(Log from Dingman and Gordon, 1954)

Altitude: 2184 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Lignite and gray clay-----	5	255
	Clay, gray-----	35	290
	Lignite and gray clay-----	10	300
	Clay, gray-----	7	307
	Clay, silty, gray-----	23	330
	Clay, gray, and a small amount of lignite--	10	340
	Clay, silty, gray-----	15	355
	Clay, sandy, gray-----	5	360
	Lignite and sandy clay-----	10	370
	Lignite-----	3	373
	Clay, silty, brown, and lignite-----	2	375
	Lignite-----	5	380
	Clay, gray-----	6	386
	Lignite-----	4	390
	Clay, gray-----	14	404

149-093-10AAA
(Log from Dingman and Gordon, 1954)

Altitude: 2297 ft

	Clay, silty and sandy, tan-----	4	4
	Sand, clay, and lignite fragments-----	4	8
	Clay, silty and sandy, tan-----	2	10
	Clay, silty, gray and brown-----	25	35
	Silt-----	4.5	39.5
	Clay, silty, brown-----	11.5	51
	Sand-----	4	55
	Sand and clay-----	10	65
	Sand-----	21	86
	Lignite and clay-----	1	87
	Lignite-----	9	96
	Clay, silty, gray-----	4	100
	Clay, gray, and lignite-----	9	109
	Lignite-----	2	111
	Lignite and gray clay-----	4	115
	Lignite-----	9.5	124.5
	Clay, gray-----	6.5	131
	Lignite-----	3	134
	Clay, silty, gray-----	25	159
	Lignite-----	2	161
	Clay, silty and sandy, dense, gray-----	38	199
	Lignite-----	1	200
	Clay, gray-----	20	220
	Lignite and gray clay-----	5	225
	Clay, gray-----	20	245
	Lignite-----	5	250
	Clay, silty, dense, gray-----	25	275
	Lignite-----	3	278
	Lignite and gray clay-----	7	285
	Clay, gray-----	1.5	286.5
	Lignite-----	2.5	289
	Clay, gray-----	11	300
	Clay, carbonaceous, gray, and lignite-----	5	305
	Clay, silty, dense, carbonaceous, gray-----	10	315
	Lignite and gray clay-----	7	322
	Lignite-----	3	325
	Clay, silty, dense, gray-----	77	402
	Lignite and clay-----	3	405
	Clay, gray-----	7	412
	Lignite-----	2	414
	Clay, silty, gray-----	26	440
	Clay, gray, and lignite-----	4	444
	Lignite and small amount of gray clay-----	6	450

149-093-14CCC
(Log from Dingman and Gordon, 1954)

Altitude: 2249 ft

Geologic source	Material	Thickness (feet)	Depth (feet)
	Sand and gravel-----	30	30
	Silt, sand, and clay-----	10	40
	Clay, carbonaceous-----	5	45
	Lignite and gray clay-----	5	50
	Lignite-----	5.5	55.5
	Lignite, clay, and chert fragments-----	.5	56
	Clay, carbonaceous, brown-----	4	60
	Sand-----	8	68
	Lignite, sand, and clay-----	2	70
	Lignite-----	9	79
	Clay, silty, dense, gray-----	85	164
	Lignite and gray clay-----	2	166
	Clay, gray-----	28	194
	Lignite-----	7	201
	Clay, silty, gray to tan-----	27.5	228.5
	Clay, silty, brown, and small amount of lignite-----	2	230.5
	Clay, silty, dense, gray-----	63.5	294
	Lignite and clay-----	3	297
	Clay, silty, gray-----	17	314
	Clay, gray, and small amount of lignite-----	6	320
	Clay, gray-----	9	329
	Clay, silty, gray, and small amount of lignite-----	8	337
	Clay, silty, gray-----	23	360
	Lignite-----	6.5	366.5
	Lignite and clay-----	1.5	368
	Clay, silty, gray-----	15	383
	Lignite-----	7	390
	Clay, gray-----	25	415
	Sand-----	35	450

149-093-18DDB
(Log from Dingman and Gordon, 1954)

Altitude: 2335 ft

	Sand-----	45	45
	Lignite and gray clay-----	1	46
	Clay, silty, carbonaceous, gray-----	14	60
	Lignite-----	1	61
	Clay, silty, gray-----	29	90
	Clay, gray-----	24	114
	Limestone-----	1	115
	Clay, silty, gray-----	10	125
	Clay, gray-----	21	146
	Lignite-----	4	150
	Clay, gray-----	21	171
	Lignite-----	1	172
	Clay, silty, gray-----	8	180
	Lignite and carbonaceous clay-----	4	184
	Clay, silty, gray-----	37	221
	Clay, silty, carbonaceous, gray and brown-----	16	237
	Sand-----	3	240
	Clay, silty, dense, gray-----	60	300
	Clay, gray, and lignite-----	5	305
	Clay, gray-----	4	309
	Sand-----	3	312
	Lignite-----	1.5	313.5
	Clay, silty, gray-----	16.5	330
	Sand-----	5	335
	Clay, gray-----	40	375

149-093-18DDB, Continued
(Log from Dingman and Gordon, 1954)

Altitude: 2335 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Lignite-----	4	379
	Clay, gray-----	26	405
	Lignite-----	3	408
	Clay, gray-----	7	415
	Lignite and clay-----	5	420
	Clay, gray-----	6	426
	Clay, silty and sandy, dense, gray-----	24	450
	Sand-----	15	465

149-093-25DDD
(Log from Dingman and Gordon, 1954)

Altitude: 2065 ft

	Clay, silty, brown-----	55	55
	Sand-----	10	65
	Clay, sandy, gray-----	15	80
	Clay, silty, dense, gray-----	10.5	90.5
	Lignite-----	3.5	94
	Lignite and brown clay-----	6	100
	Clay, silty, dense, gray-----	25	125
	Sand-----	5	130
	Clay, silty, dense, gray-----	15	145
	Lignite-----	5	150
	Clay, gray-----	5	155
	Lignite and clay-----	3	158
	Clay, gray-----	5.5	163.5
	Lignite-----	2.5	166
	Clay, silty and sandy, gray-----	4	170
	Sand-----	10	180
	Clay, sandy, dense, gray-----	11	191
	Lignite-----	2	193
	Clay, silty and sandy, gray-----	17	210
	Lignite-----	4.5	214.5
	Clay, silty, dense, gray-----	18.5	233
	Lignite and sand-----	12	245
	Sand-----	26	271
	Lignite and sandy clay-----	4	275
	Sand-----	10	285
	Lignite and sand-----	4	289
	Sand-----	49	338
	Lignite-----	7	345
	Clay, silty, gray-----	10	355
	Lignite and sand-----	5	360
	Lignite-----	6	366
	Clay, sandy, dense, gray-----	14	380
	Sand-----	10	390
	Lignite-----	12	402
	Clay, silty, dense, gray-----	36	438
	Lignite-----	7	445
	Clay, silty and sandy, dense, gray-----	20	465
	Lignite-----	5	470
	Clay, silty, gray-----	14.5	484.5
	Lignite-----	3.5	488
	Clay, silty, gray-----	7	495
	Lignite and gray to tan clay-----	15	510

149-093-34ACA
(Log from Dingman and Gordon, 1954)

Altitude: 2121 ft

<u>Geologic source</u>	<u>Material</u>	<u>Thickness (feet)</u>	<u>Depth (feet)</u>
	Clay, silty, brown-----	17	17
	Clay, gray-----	5	22
	Lignite-----	4	26
	Clay, silty, gray-----	8	34
	Clay, carbonaceous-----	6	40
	Clay, silty-----	65	105
	Silt-----	5	110
	Clay, silty, brown-----	10	120
	Limestone-----	1	121
	Clay, silty, brown-----	10	131
	Clay, gray, and limestone-----	4	135
	Clay, silty, gray-----	27	162
	Clay and lignite-----	1	163
	Clay, silty, dense, gray-----	25	188
	Lignite-----	2	190
	Clay, silty and sandy, gray-----	5	195
	Clay and lignite-----	6	201
	Sand-----	4	205
	Clay, silty, gray-----	22	227
	Sand-----	28	255
	Lignite and clay-----	10	265
	Clay, silty and sandy, dense, gray-----	43	308
	Lignite-----	7	315
	Clay, silty, dense, gray-----	10	325
	Sand-----	10	335
	Sand and lignite-----	5	340
	Sand-----	5	345
	Sand and clay-----	5	350
	Clay, gray-----	5	355
	Sand-----	5	360
	Clay, silty, carbonaceous, brown and gray--	5	365
	Sand-----	5	370
	Clay, silty and sandy, gray-----	2	372

TABLE 7.--Chemical analyses of water from streams during low flow

DISCHARGE (ft ³ /s)	DATE OF SAMPLE	DIS- SOLVED SILICA (SiO ₂) (mg/l)	DIS- SOLVED IRON (Fe) (µg/l)	DIS- SOLVED MAN- GANESE (Mn) (µg/l)	DIS- SOLVED CAL- CIUM (Ca) (mg/l)	DIS- SOLVED MAG- NE- SIUM (Mg) (mg/l)	DIS- SOLVED SODIUM (Na) (mg/l)	DIS- SOLVED PO- TAS- SIUM (K) (mg/l)	BICAR- BONATE (HCO ₃) (mg/l)	CAR- BONATE (CO ₃) (mg/l)	DIS- SOLVED SULFATE (SO ₄) (mg/l)	DIS- SOLVED CHLO- RIDE (Cl) (mg/l)	DIS- SOLVED FLUO- RIDE (F) (mg/l)	DIS- SOLVED NITRATE (NO ₃) (mg/l)	DIS- SOLVED BORON (B) (µg/l)	DIS- SOLVED SOLIDS (RESI- DUE AT 180°C) (mg/l)	HARD- NESS (Ca,Mg) (mg/l)	NON- CAR- BONATE HARD- NESS (mg/l)	PERCENT SODIUM	SODIUM AD- SORP- TION RATIO	SPECIFIC CONDUCT- ANCE (µmhos/cm @ 25°C)	pH (units)	TEMPER- ATURE (°C)			
0.10	10-22-73	4.6	98	6	47	37	580	9.0	KNIFE RIVER ABOUT 8 MILES NORTHWEST OF MANNING (144-097-26CD)										270	0	82	15	2870	8.1	9.0	
.79	10-22-73	5.8	120	8	42	33	550	8.7	KNIFE RIVER ABOUT 5.5 MILES NORTHWEST OF MANNING (144-096-32BCB)										1820	240	0	83	15	2640	8.1	9.0
.48	10-22-73	8.2	110	10	51	37	590	8.6	KNIFE RIVER AT MANNING (143-095-06BD)										1980	280	0	82	15	2800	8.1	9.0
.86	10-22-73	8.9	110	6	40	27	470	7.6	KNIFE RIVER ABOUT 7 MILES SOUTHEAST OF MANNING (143-094-19DAA)										1550	210	0	82	14	2270	8.2	9.0
.59	10-22-73	5.6	120	2	49	48	620	9.8	CROOKED CREEK ABOUT 8.5 MILES SOUTHEAST OF MANNING (143-094-21CC)										2100	320	0	80	15	2940	8.2	10.0
3.39	10-22-73	9.9	120	2	55	54	580	6.9	KNIFE RIVER ABOUT 6 MILES WEST OF MARSHALL (142-093-04DDD)										2060	360	0	77	13	2910	8.2	10.0
3.55	10-22-73	9.4	110	2	48	39	490	7.2	KNIFE RIVER AT MARSHALL (142-092-10BBB)										1670	280	0	79	13	2420	8.3	10.0
3.61	10-22-73	7.4	120	2	37	36	480	8.0	KNIFE RIVER ABOUT 5 MILES EAST OF MARSHALL (142-091-08DDD)										1590	240	0	81	13	2320	8.3	10.0
.08	10-23-73	18	35	1	37	21	440	6.6	SPRING CREEK ABOUT 6 MILES WEST OF KILLDEER (145-096-14CC)										1350	180	0	84	14	2020	8.2	11.5
.24	10-23-73	10	48	1	27	18	500	7.6	UNNAMED TRIBUTARY ABOUT 0.5 MILE NORTH OF KILLDEER (145-095-14DAA)										1530	140	0	88	18	2230	8.4	13.0
.46	10-23-73	6.0	15	6	31	22	280	4.9	SPRING CREEK ABOUT 0.25 MILE EAST OF KILLDEER (145-095-14DD)										912	170	0	78	9.3	1420	8.2	12.5
.71	10-23-73	9.4	8	5	100	68	360	6.8	SPRING CREEK ABOUT 0.5 MILE SOUTH OF DUNN CENTER (145-094-36AB)										1680	530	110	59	6.8	2300	8.1	12.5
2.80	10-23-73	9.7	6	7	89	63	300	7.1	SPRING CREEK AT WERNER (145-093-24DC)										1460	480	31	57	5.9	2030	8.0	11.5
3.10	10-23-73	8.5	21	1	78	60	280	7.3	SPRING CREEK AT HALLIDAY (145-091-19CC)										1310	440	10	58	5.8	1870	8.2	11.5
4.18	10-23-73	8.1	6	4	83	71	300	7.7	SPRING CREEK ABOUT 1.5 MILE NORTHWEST OF DODGE (144-091-04BB)										1440	500	48	56	5.8	2030	8.2	10.5

TABLE 8.--Chemical analyses of ground water for minor elements¹
(Dissolved mineral constituents in micrograms per litre (µg/l), except as indicated)

Local well number	144-091-23DBB	145-094-26AAA3	145-094-26AAA4	145-094-27ACC	146-093-03CDD	148-097-33ABB
Aquifer	Hell Creek	Sentinel Butte	Sentinel Butte	Sentinel Butte	Fox Hills	Fox Hills
Depth of well (ft)	1300	72	26	102	1525	1325
Date of sample	6-20-73	12-15-74	1- 7-75	5-23-73	5-24-73	5-18-73
Aluminum (Al)	0	0	230	0	0	0
Arsenic (As)	2	2	14	2	0	7
Barium (Ba)	200	100	0	0	200	300
Beryllium (Be)	0	10	10	0	0	0
Cadmium (Cd)	0	1	1	0	0	1
Carbon, organic (C) (mg/l)	0	24	97	0	0	0
Chromium (Cr)	0	10	0	0	0	0
Cobalt (Co)	1	1	0	1	1	0
Color	30	70	800	500	30	70
Copper (Cu)	8	4	1	21	5	3
Cyanide (CN) (mg/l)	.00	.03	0	.00	.00	.00
Lead (Pb)	2	3	0	7	0	1
Lithium (Li)	80	70	110	30	70	70
Mercury (Hg)	.1	2.3	2.4	.2	.0	.1
Molybdenum (Mo)	0	1	1	2	4	5
Nickel (Ni)	8	1	10	25	7	2
Selenium (Se)	4	0	1	0	0	2
Silver (Ag)	0	1	0	0	0	0
Strontium (Sr)	160	1200	2000	130	600	90
Vanadium (V)	1.2	3.2	0	1.4	1.2	.8
Zinc (Zn)	90	30	30	10	10	10

¹Analyses by the U.S. Geological Survey Laboratory, Salt Lake City, Utah.

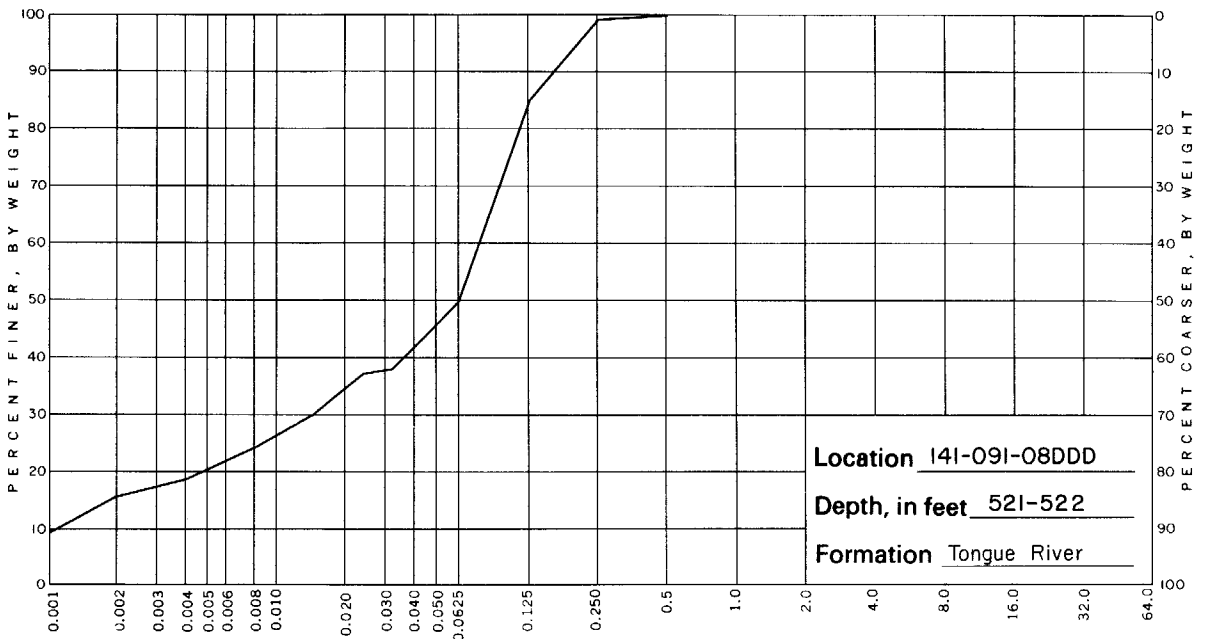
TABLE 9.--Hydraulic parameters from core samples

Location	Formation	Depth (ft)	Horizontal hydraulic conductivity (ft/d @ 60°F) ¹	Vertical hydraulic conductivity (ft/d @ 60°F) ²	Porosity (percent)	Median grain size (mm)	Type of core
141-091-08DDD	Tongue River	521-522	--	0.00023	31.0	0.062	Vertical
141-096-29CCC	Sentinel Butte	223	0.178	--	35.5	.047	Sidewall
	Tongue River	675	.095	--	38.4	--	Sidewall
	Tongue River	892	.088	--	32.9	.10	Sidewall
	Cannonball-Ludlow	980	.059	--	31.8	.13	Sidewall
	Cannonball-Ludlow	1210	.232	--	30.5	.088	Sidewall
	Hell Creek	1284	.112	--	38.6	.055	Sidewall
	Hell Creek	1584	1.22	--	35.6	.138	Sidewall
	Fox Hills	1690	3.39	--	38.3	--	Sidewall
Fox Hills	1700	2.89	--	39.2	.145	Sidewall	
142-092-09DAB	Tongue River	421	.173	--	36.9	--	Sidewall
	Tongue River	605	.010	--	26.5	--	Sidewall
	Hell Creek	1160	.016	--	27.2	--	Sidewall
	Fox Hills	1381.4-1383.4	--	.000023	--	.22	Vertical
	Fox Hills	1385	1.10	--	32.4	.17	Sidewall
	Fox Hills	1503	1.57	--	33.4	.18	Sidewall
	Fox Hills	1530	.141	--	29.9	.062	Sidewall
	Fox Hills	1533	.185	--	30.2	.082	Sidewall
	Fox Hills	1575	.061	--	31.0	.096	Sidewall
	Pierre	1641.7-1643.7	--	.0000023	--	.019	Vertical
143-091-19AAA1	Tongue River	552.4-553.4	--	.00001	44.8	.05	Vertical
144-097-26CBD2	Sentinel Butte	403-404	--	.0057	33.0	.16	Vertical
	Sentinel Butte	410-411	--	.000012	31.6	.14	Vertical
145-092-25ABB	Hell Creek	1210	.451	--	38.8	--	Sidewall
	Hell Creek	1310	.346	--	32.6	.10	Sidewall
	Hell Creek	1335	.093	--	30.6	.045	Sidewall
	Hell Creek	1375	.066	--	30.0	.07	Sidewall
	Fox Hills	1415	.276	--	32.9	.073	Sidewall
	Fox Hills	1427	.824	--	35.4	.081	Sidewall
	Fox Hills	1490	1.30	--	35.3	.069	Sidewall
	Fox Hills	1520	1.05	--	36.6	.109	Sidewall
Fox Hills	1538	.576	--	32.7	.102	Sidewall	
145-095-22DAD1	Cannonball-Ludlow	920	.261	--	29.7	.15	Sidewall
	Fox Hills	1580	.512	--	35.9	.095	Sidewall
	Fox Hills	1640	.228	--	30.7	.20	Sidewall
	Fox Hills	1675	1.04	--	32.8	.18	Sidewall
	Fox Hills	1730	.034	--	27.8	--	Sidewall
Fox Hills	1780	1.48	--	34.9	.18	Sidewall	
146-096-14CDD	Sentinel Butte	147-148	--	.0034	29.4	.25	Vertical
148-093-04CAB1	Sentinel Butte	331-332	--	.000006	31.6	.14	Vertical
	Sentinel Butte	336-337	--	.000003	30.4	.14	Vertical
148-093-04CAB2	Sentinel Butte	181-182	--	.15	33.6	.16	Vertical
	Sentinel Butte	187-188	--	.0053	31.3	.082	Vertical
148-097-33ABB	Sentinel Butte	215	.573	--	38.1	.08	Sidewall
	Tongue River	345	.176	--	35.4	.009	Sidewall
	Cannonball-Ludlow	725	.344	--	20.1	.08	Sidewall
	Hell Creek	1035	.017	--	30.1	.01	Sidewall
	Hell Creek	1055	.007	--	28.2	.008	Sidewall

¹ Horizontal hydraulic conductivities were determined by Core Laboratories, Inc., Williston, N.Dak.

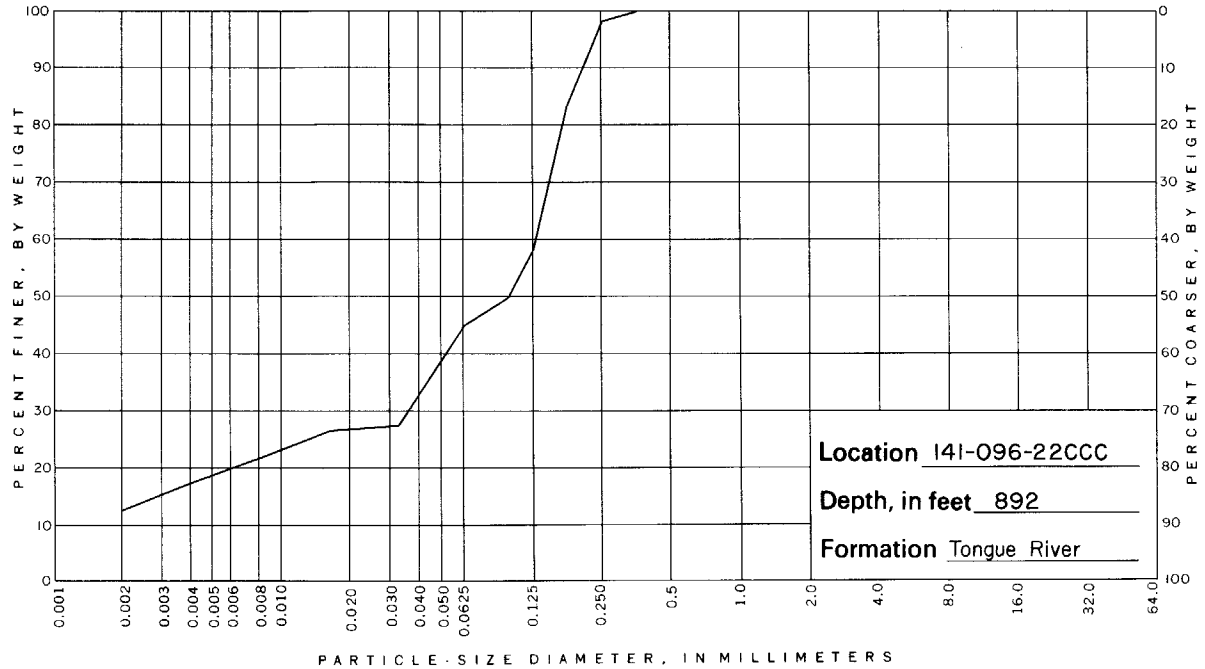
² Vertical hydraulic conductivities were determined by the U.S. Geological Survey Hydrologic Laboratory, Denver, Colo.

FIGURE 3.— Particle-size distribution graphs for core samples from wells and test holes

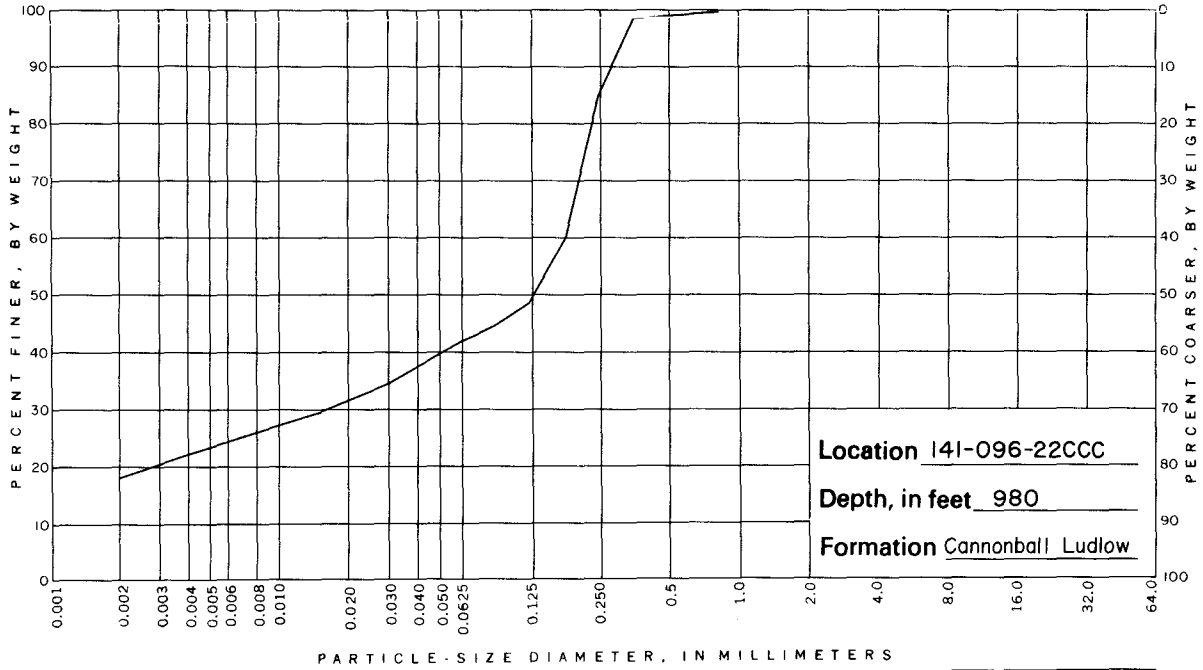


PERCENT OF SIZE	PARTICLE-SIZE DIAMETER, IN MILLIMETERS										
	CLAY SIZES < 0.004 mm	SILT SIZES 0.004-0.0625 mm	SAND SIZES				GRAVEL SIZES				
			V. FINE .0625-.125	FINE .125-.25	MEDIUM .25-.5	COARSE .5-1	V. COARSE 1-2	V. FINE 2-4	FINE 4-8	MEDIUM 8-16	COARSE 16-32
	18	32	35	13	2.0						

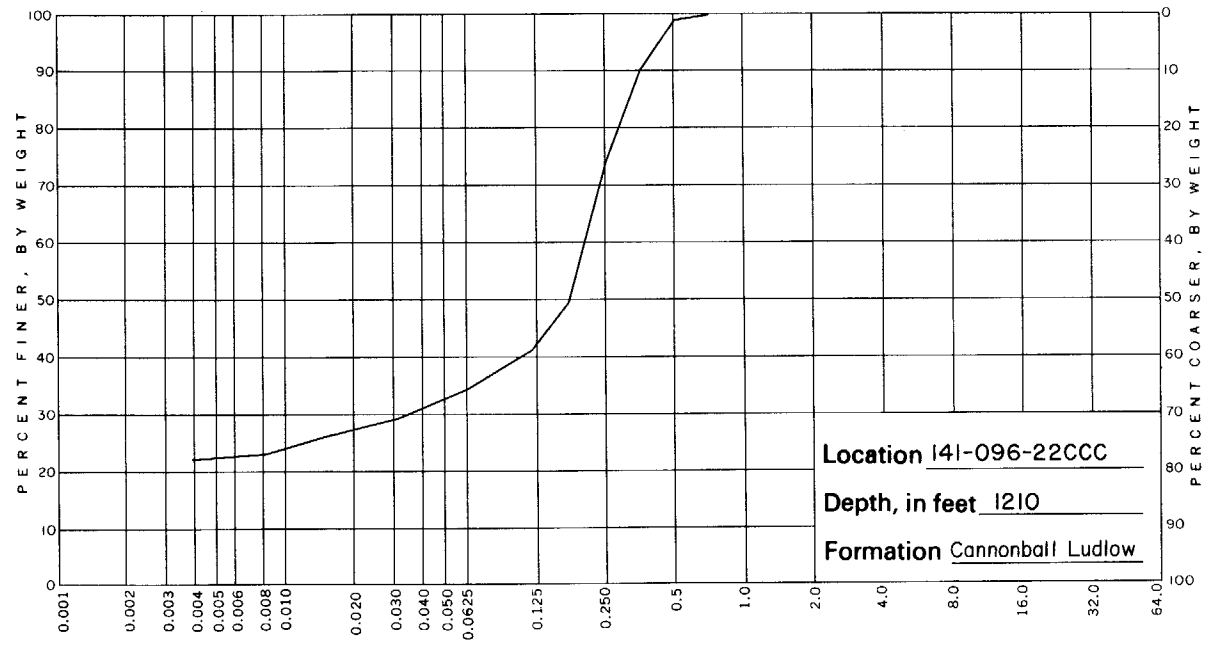
PREPARED BY U. S. GEOLOGICAL SURVEY
HYDROLOGIC LABORATORY, DENVER, COLO.



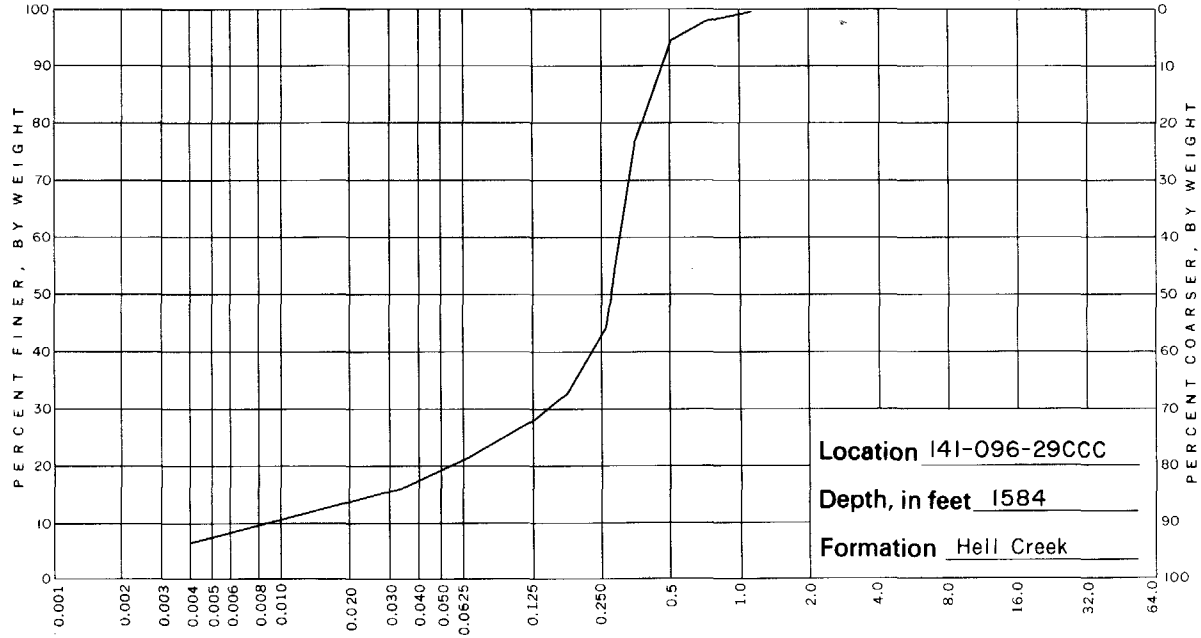
PERCENT OF SIZE	PARTICLE SIZE DIAMETER, IN MILLIMETERS										
	CLAY SIZES <0.004 mm	SILT SIZES 0.004-0.0625 mm	SAND SIZES					GRAVEL SIZES			
			V. FINE .0625-.125	FINE .125-.25	MEDIUM .25-.5	COARSE .5-1	V. COARSE 1-2	V. FINE 2-4	FINE 4-8	MEDIUM 8-16	COARSE 16-32
16	28	14	40	1.0	1.0						



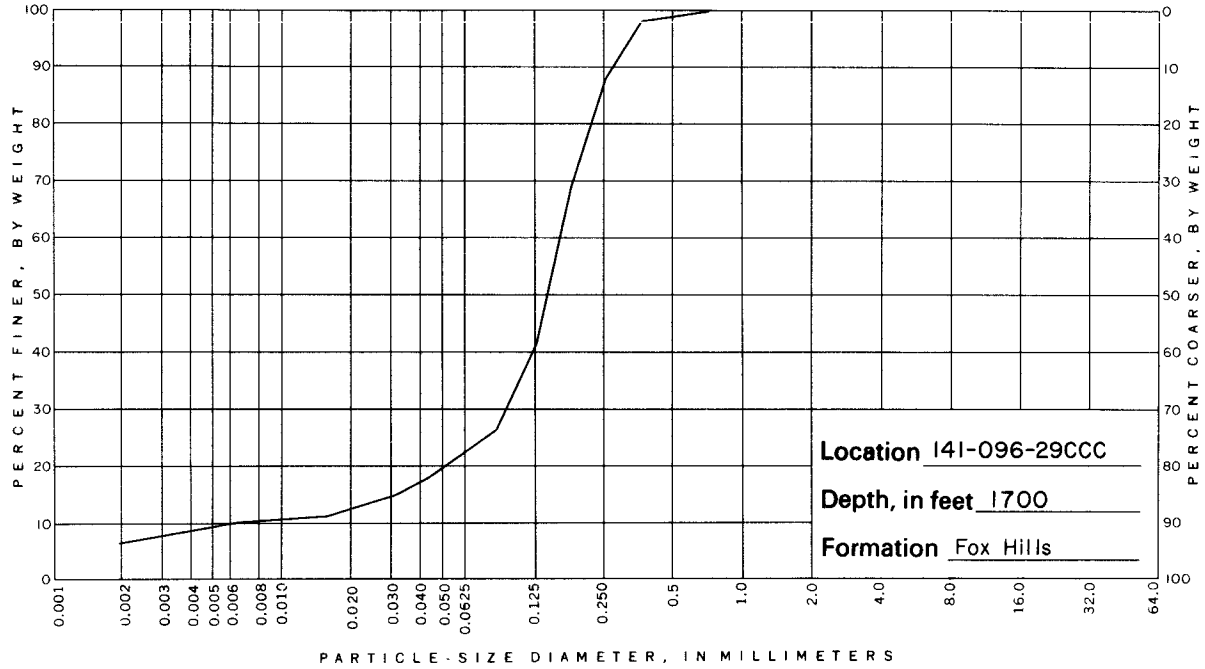
PERCENT OF SIZE	PARTICLE-SIZE DIAMETER, IN MILLIMETERS										
	CLAY SIZES < 0.004 mm	SILT SIZES 0.004-0.0625 mm	SAND SIZES				GRAVEL SIZES				
			V. FINE 0.025-.125	FINE .125-.25	MEDIUM .25-.5	COARSE .5-1	V. COARSE 1-2	V. FINE 2-4	FINE 4-8	MEDIUM 8-16	COARSE 16-32
	22	20	7.0	37	13	1.0					



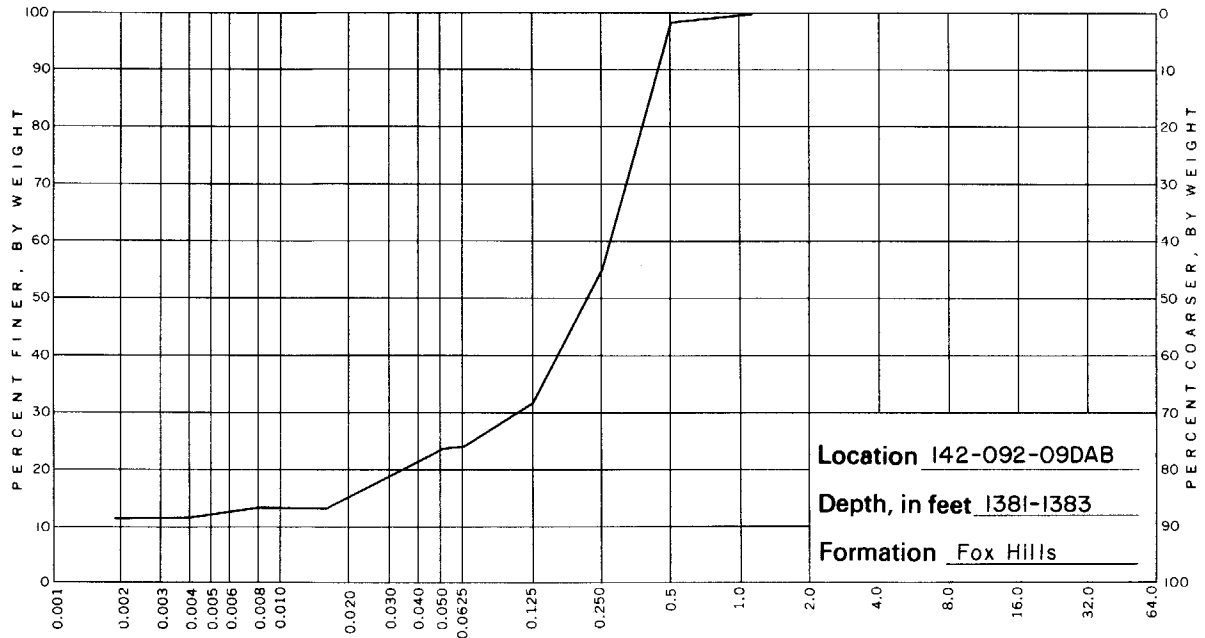
PERCENT OF SIZE	CLAY SIZES < 0.004 mm	SILT SIZES 0.004-0.0625 mm	SAND SIZES				GRAVEL SIZES					
			V. FINE .0625-.125	FINE .125-.25	MEDIUM .25-.5	COARSE .5-1	V. COARSE 1-2	V. FINE 2-4	FINE 4-8	MEDIUM 8-16	COARSE 16-32	V. COARSE 32-64
	23	18	33	25	10							



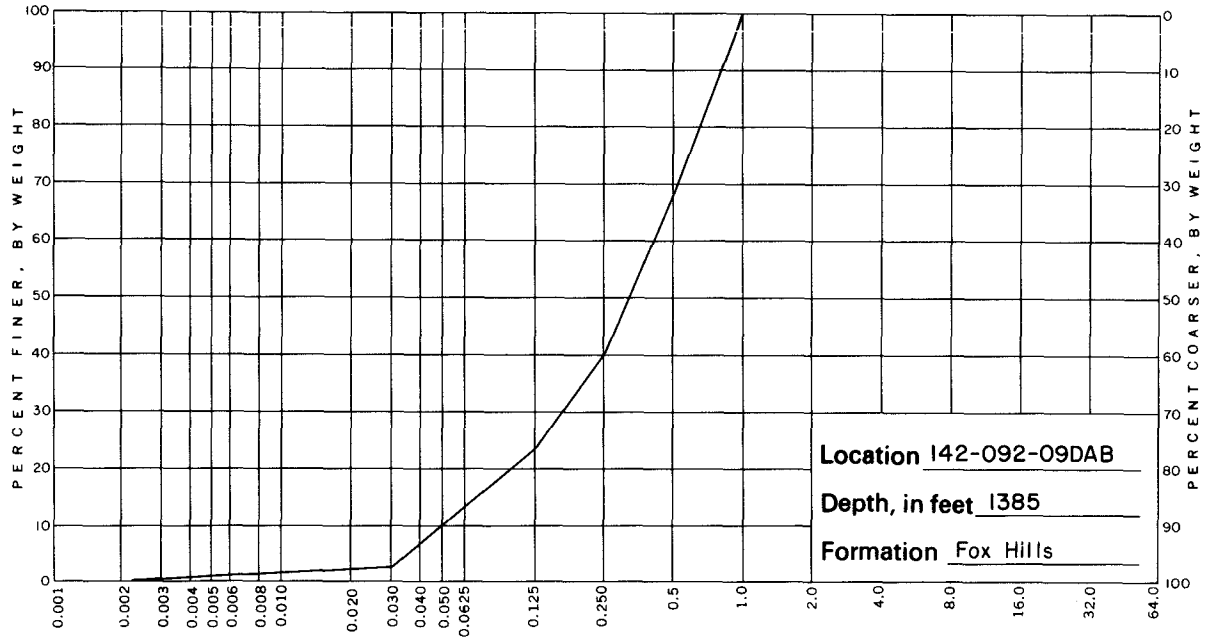
PERCENT OF SIZE	CLAY SIZES <0.004 mm	SILT SIZES 0.004-0.0625 mm	SAND SIZES				GRAVEL SIZES					
			V. FINE .0625-.125	FINE .125-.25	MEDIUM .25-.5	COARSE .5-1	V. COARSE 1-2	V. FINE 2-4	FINE 4-8	MEDIUM 8-16	COARSE 16-32	V. COARSE 32-64
	10	18	16	51	10	10						



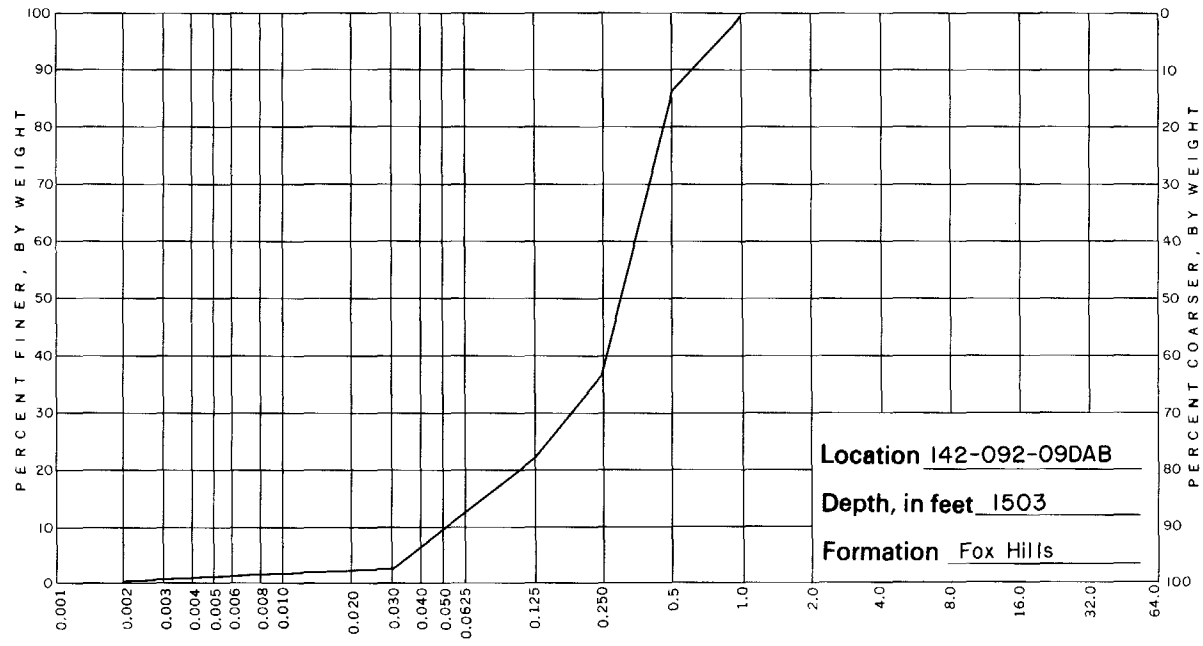
PERCENT OF SIZE	PARTICLE-SIZE DIAMETER, IN MILLIMETERS												
	CLAY SIZES < 0.004 mm	SILT SIZES 0.004-0.0625 mm	SAND SIZES					GRAVEL SIZES					
			V. FINE .0625-.125	FINE .125-.25	MEDIUM .25-.5	COARSE .5-1	V. COARSE 1-2	V. FINE 2-4	FINE 4-8	MEDIUM 8-16	COARSE 16-32	V. COARSE 32-64	
	7.0	14	20	47	11	1.0							



PERCENT OF SIZE	PARTICLE-SIZE DIAMETER, IN MILLIMETERS										
	CLAY SIZES < 0.004 mm	SILT SIZES 0.004-0.0625 mm	SAND SIZES				GRAVEL SIZES				
			V. FINE .0625-.125	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
	12	12	7.5	23	45	1.0					

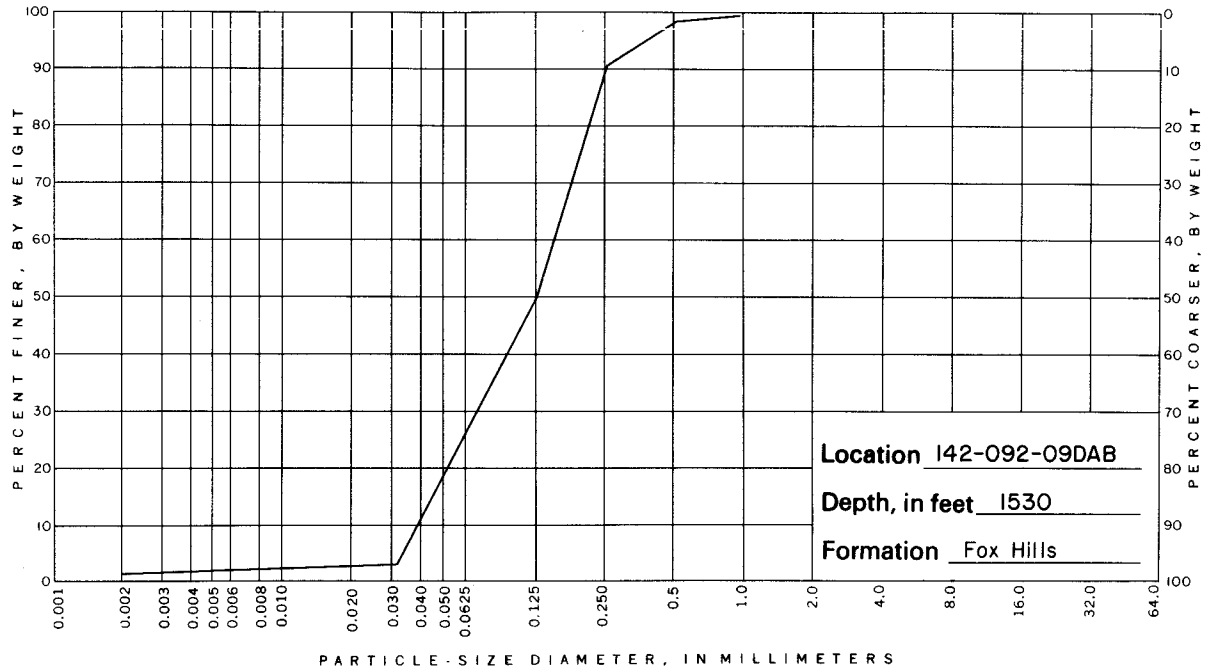


PERCENT OF SIZE	PARTICLE SIZE DIAMETER, IN MILLIMETERS											
	CLAY SIZES <0.004 mm	SILT SIZES 0.004-0.0625 mm	SAND SIZES					GRAVEL SIZES				
			V. FINE .0625-.125	FINE .125-.25	MEDIUM .25-.5	COARSE .5-1	V. COARSE 1-2	V. FINE 2-4	FINE 4-8	MEDIUM 8-16	COARSE 16-32	V. COARSE 32-64
	6	17	16	29	31	0.4						

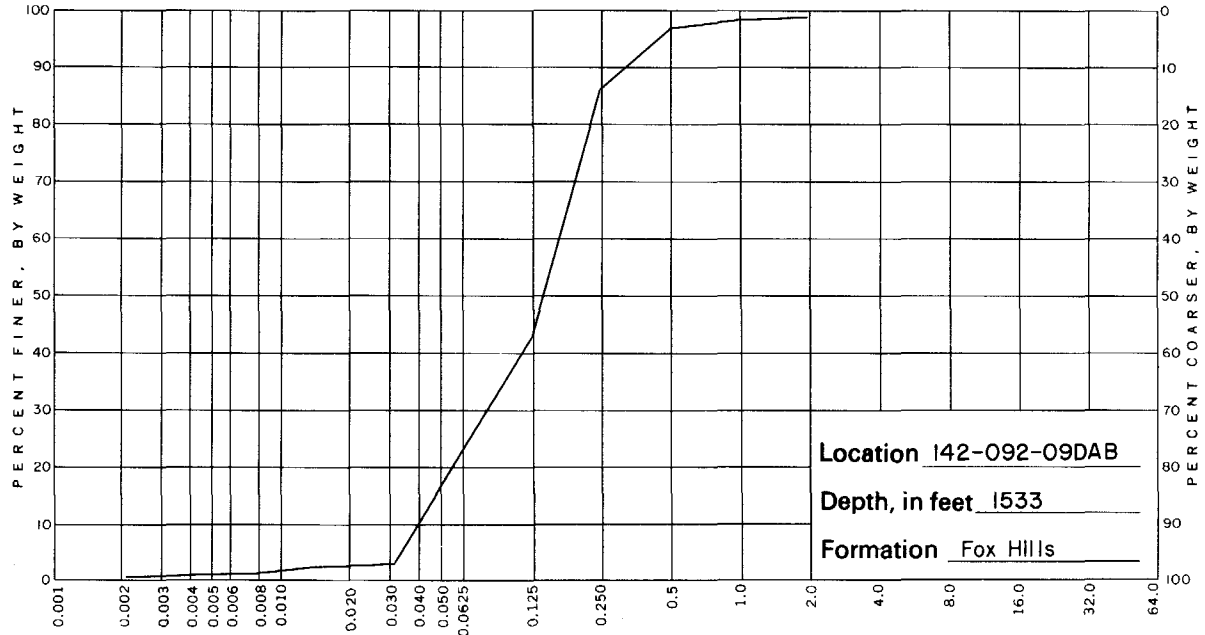


PERCENT OF SIZE	CLAY SIZES < 0.004 mm	SILT SIZES 0.004-0.0625 mm	SAND SIZES					GRAVEL SIZES				
			V. FINE .0625-.125	FINE .125-.25	MEDIUM .25-.5	COARSE .5-1	V. COARSE 1-2	V. FINE 2-4	FINE 4-8	MEDIUM 8-16	COARSE 16-32	V. COARSE 32-64
	4	19	15	49	14	0.1						

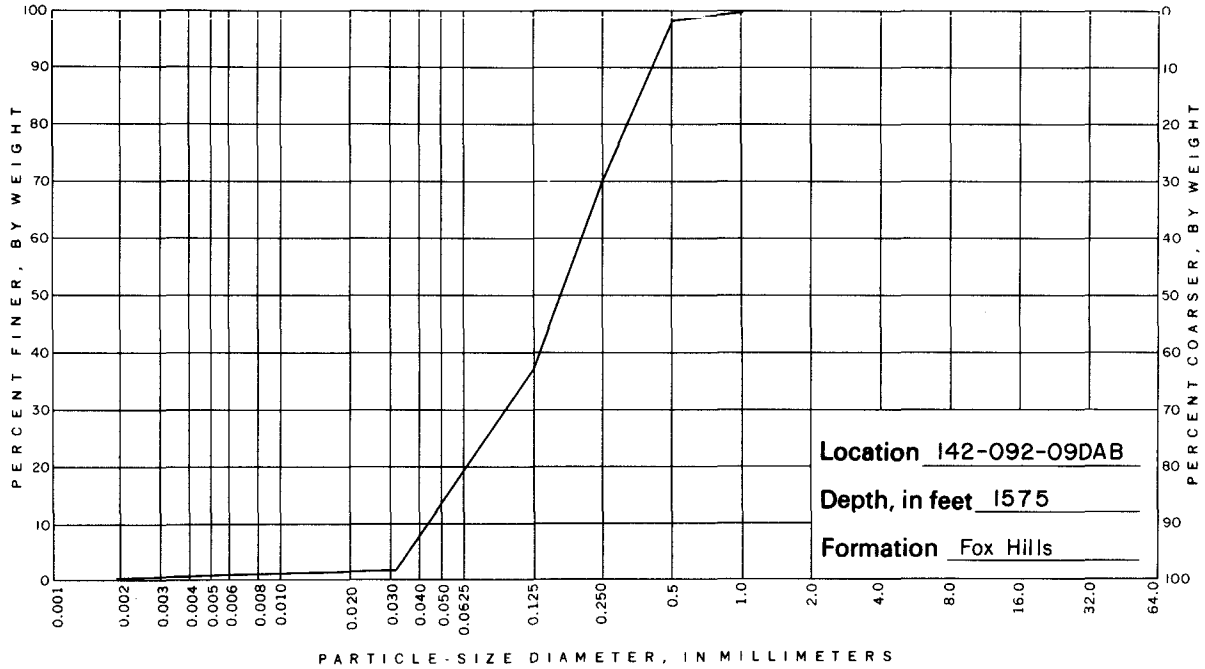
453



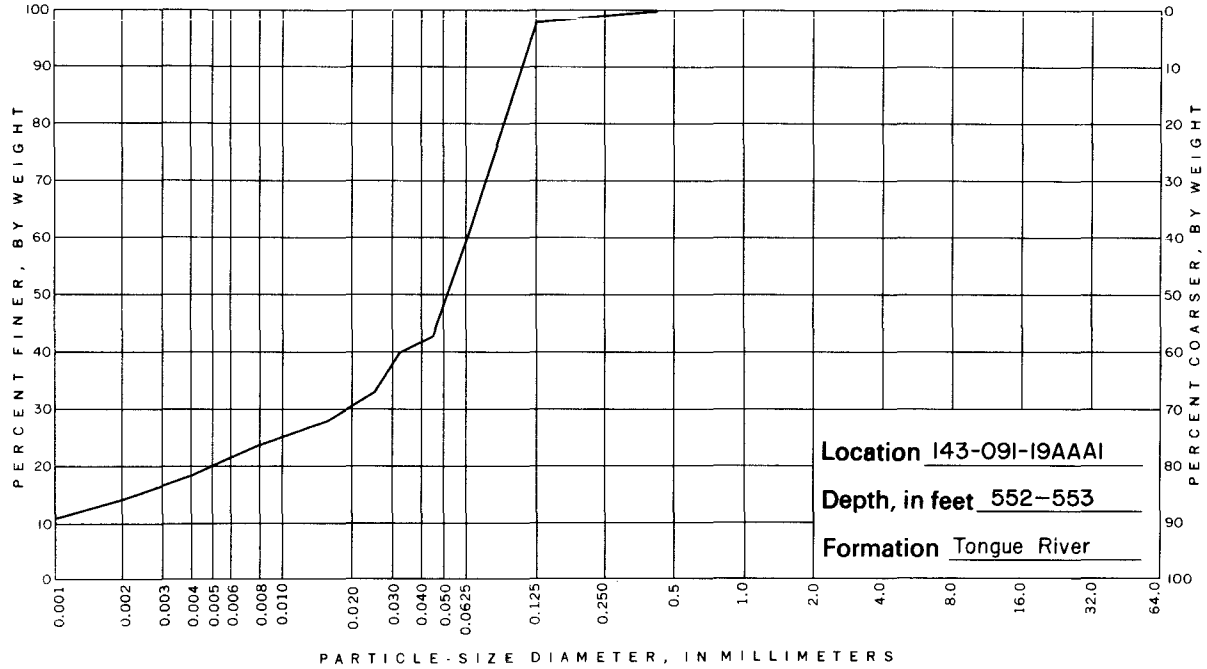
PERCENT OF SIZE	PARTICLE SIZE DIAMETER, IN MILLIMETERS										
	CLAY SIZES < 0.004 mm	SILT SIZES 0.004-0.0625 mm	SAND SIZES					GRAVEL SIZES			
			V. FINE .0625-.125	FINE .125-.25	MEDIUM .25-.5	COARSE .5-1	V. COARSE 1-2	V. FINE 2-4	FINE 4-8	MEDIUM 8-16	COARSE 16-32
	17	33	40	8.0	15	0.2					



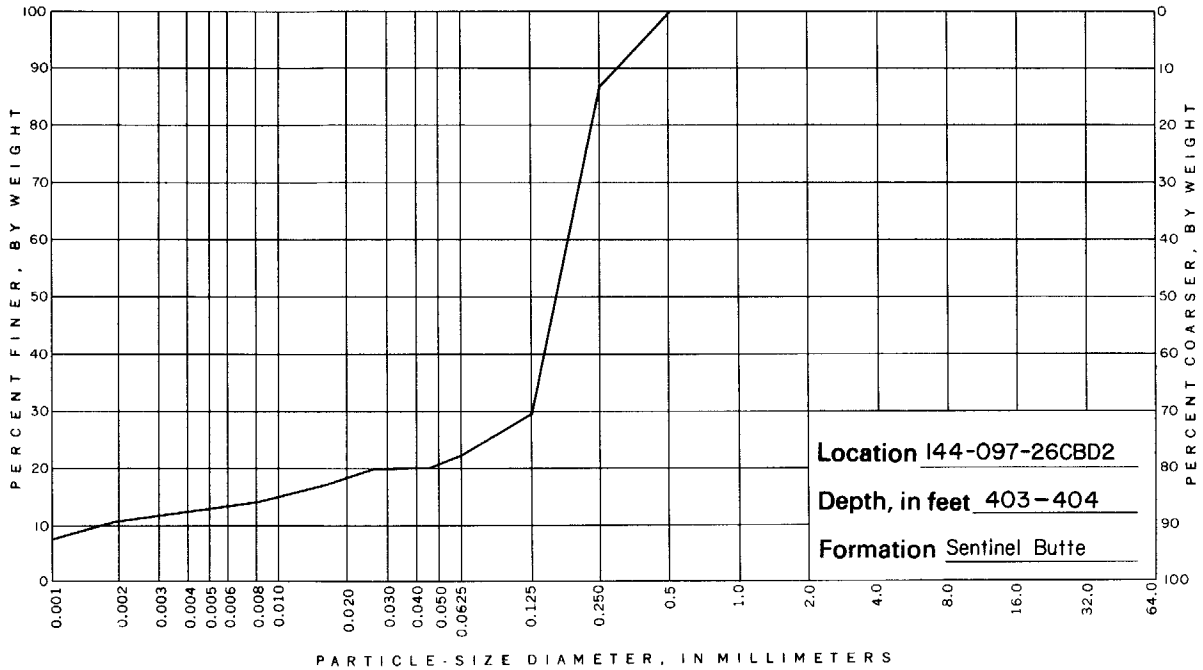
PERCENT OF SIZE	PARTICLE SIZE DIAMETER, IN MILLIMETERS										
	CLAY SIZES < 0.004 mm	SILT SIZES 0.004-0.0625 mm	SAND SIZES					GRAVEL SIZES			
			V. FINE .0625-.125	FINE .125-.25	MEDIUM .25-.5	COARSE .5-1	V. COARSE 1-2	V. FINE 2-4	FINE 4-8	MEDIUM 8-16	COARSE 16-32
	15	28	44	11	2.9	0.2	0.1				



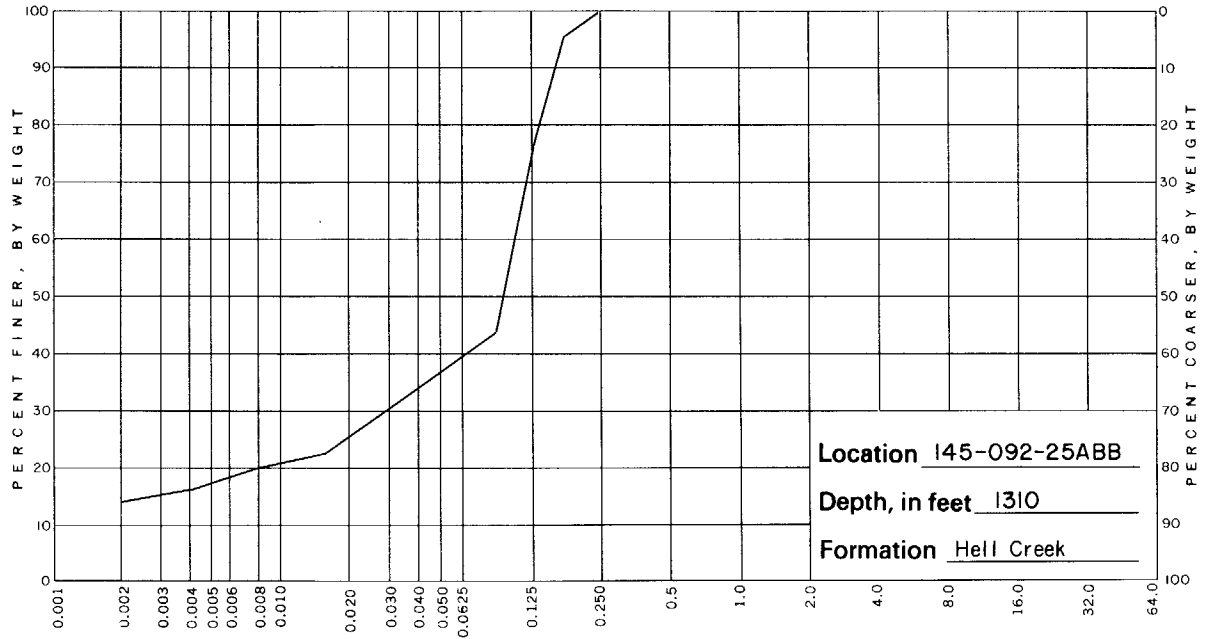
PERCENT OF SIZE	CLAY SIZES < 0.004 mm	SILT SIZES 0.004-0.0625 mm	SAND SIZES					GRAVEL SIZES				
			V. FINE .0625-.125	FINE .125-.25	MEDIUM .25-.5	COARSE .5-1	V. COARSE 1-2	V. FINE 2-4	FINE 4-8	MEDIUM 8-16	COARSE 16-32	V. COARSE 32-64
11		26	33	27	25							



PERCENT OF SIZE	PARTICLE-SIZE DIAMETER, IN MILLIMETERS										
	CLAY SIZES <0.004 mm	SILT SIZES 0.004-0.0625 mm	SAND SIZES					GRAVEL SIZES			
			V. FINE .0625-.125	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
	18	42	38	1.2	0.3						

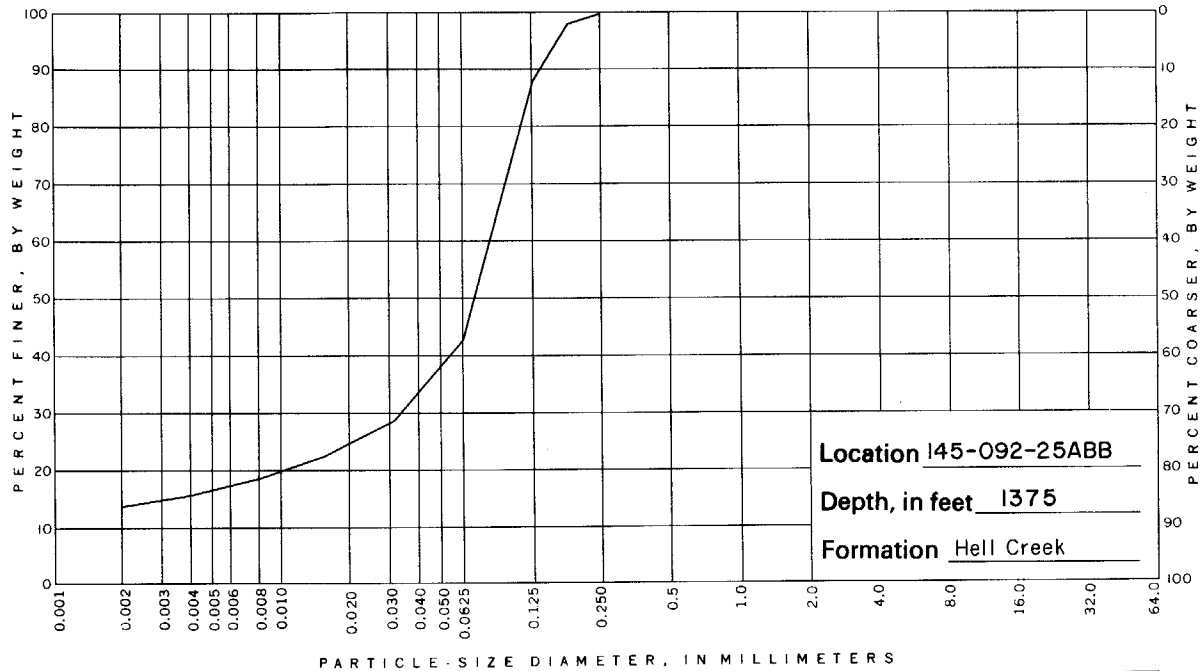


PERCENT OF SIZE	PARTICLE SIZE DIAMETER, IN MILLIMETERS											
	CLAY SIZES < 0.004 mm	SILT SIZES 0.004-0.0625 mm	SAND SIZES				GRAVEL SIZES					
			V. FINE .0625-.125	FINE .125-.25	MEDIUM .25-.5	COARSE .5-1	V. COARSE 1-2	V. FINE 2-4	FINE 4-8	MEDIUM 8-16	COARSE 16-32	V. COARSE 32-64
	12	10	7.3	57	13							



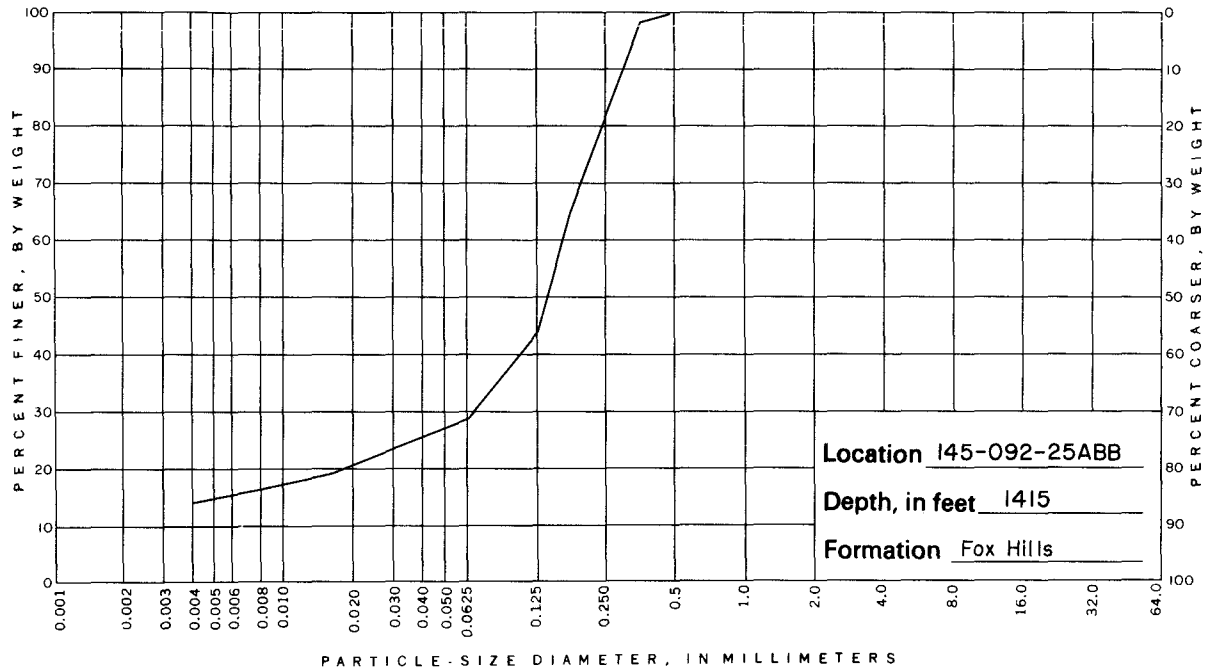
PERCENT OF SIZE	PARTICLE SIZE DIAMETER, IN MILLIMETERS										
	CLAY SIZES < 0.004 mm	SILT SIZES 0.004-0.0625 mm	SAND SIZES				GRAVEL SIZES				
			V. FINE .0625-.125	FINE .125-.25	MEDIUM .25-.5	COARSE .5-1	V. COARSE 1-2	V. FINE 2-4	FINE 4-8	MEDIUM 8-16	COARSE 16-32
	14	20	39	25							

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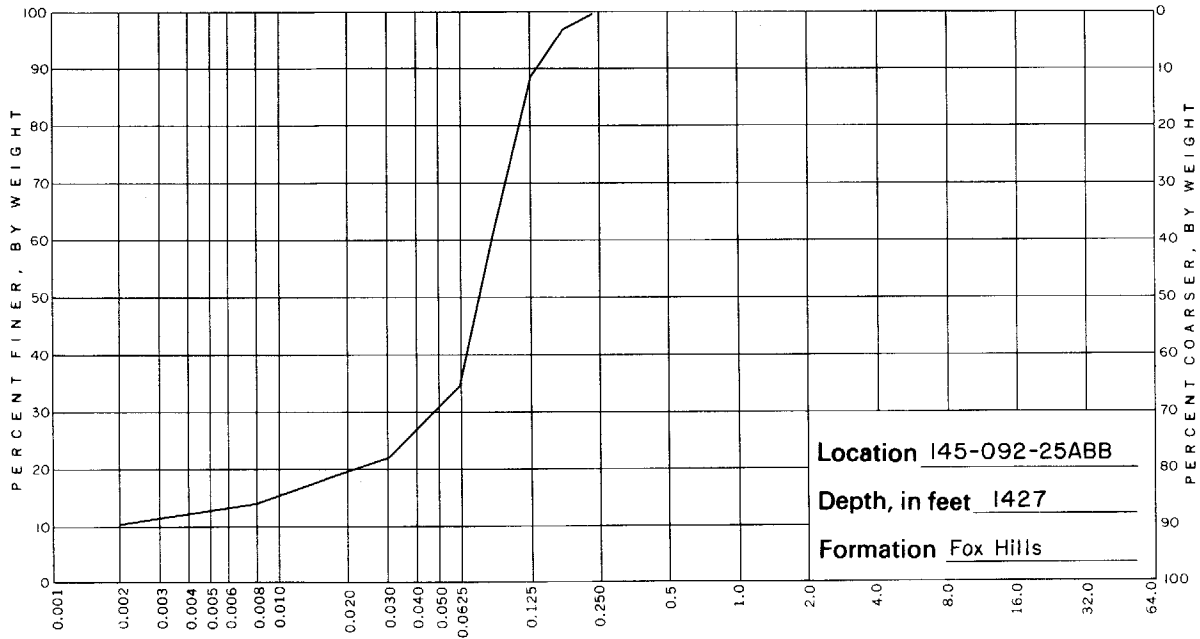


PERCENT OF SIZE	PARTICLE SIZE DIAMETER, IN MILLIMETERS										
	CLAY SIZES <0.004 mm	SILT SIZES 0.004-0.0625 mm	SAND SIZES				GRAVEL SIZES				
			V. FINE .0625-.125	FINE .125-.25	MEDIUM .25-.5	COARSE .5-1	V. COARSE 1-2	V. FINE 2-4	FINE 4-8	MEDIUM 8-16	COARSE 16-32
	17	28	31	19	10						

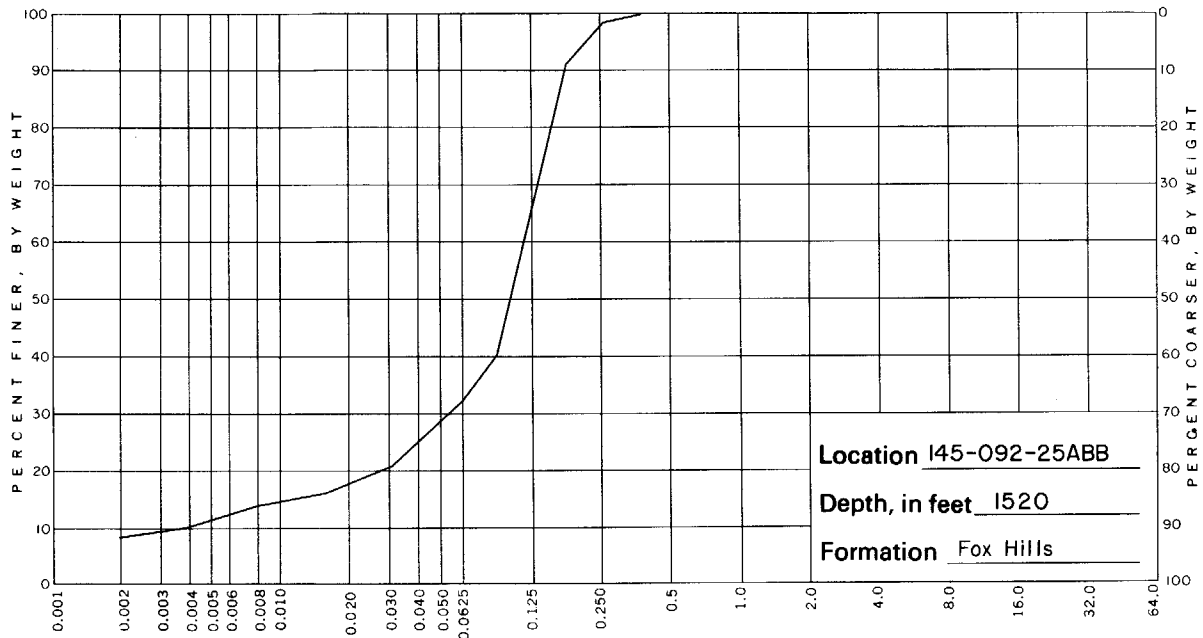
463



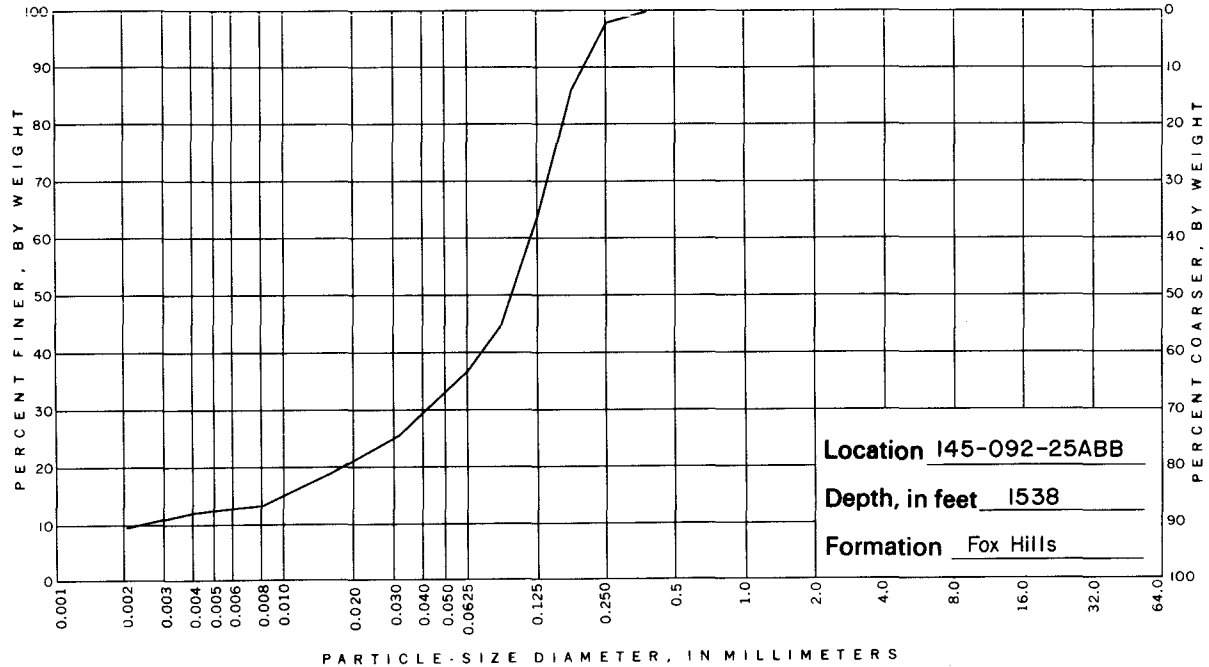
PERCENT OF SIZE	PARTICLE-SIZE DIAMETER, IN MILLIMETERS										
	CLAY SIZES < 0.004 mm	SILT SIZES 0.004-0.0625 mm	SAND SIZES				GRAVEL SIZES				
			V. FINE .0625-.125	FINE .125-.25	MEDIUM .25-.5	COARSE .5-1	V. COARSE 1-2	V. FINE 2-4	FINE 4-8	MEDIUM 8-16	COARSE 16-32
	14	27	45	12							



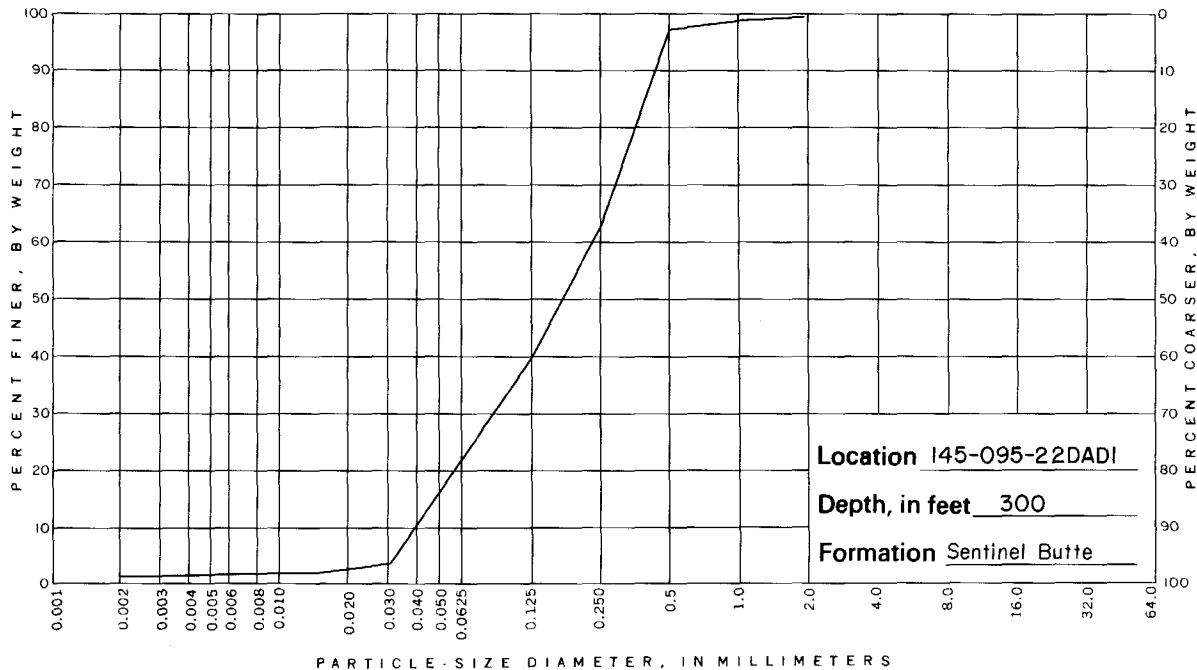
PERCENT OF SIZE	PARTICLE SIZE DIAMETER, IN MILLIMETERS										
	CLAY SIZES < 0.004 mm	SILT SIZES 0.004-0.0625 mm	SAND SIZES				GRAVEL SIZES				
			V. FINE .0625-.125	FINE .125-.25	MEDIUM .25-.5	COARSE .5-1	V. COARSE 1-2	V. FINE 2-4	FINE 4-8	MEDIUM 8-16	COARSE 16-32
	10	24	54	13							



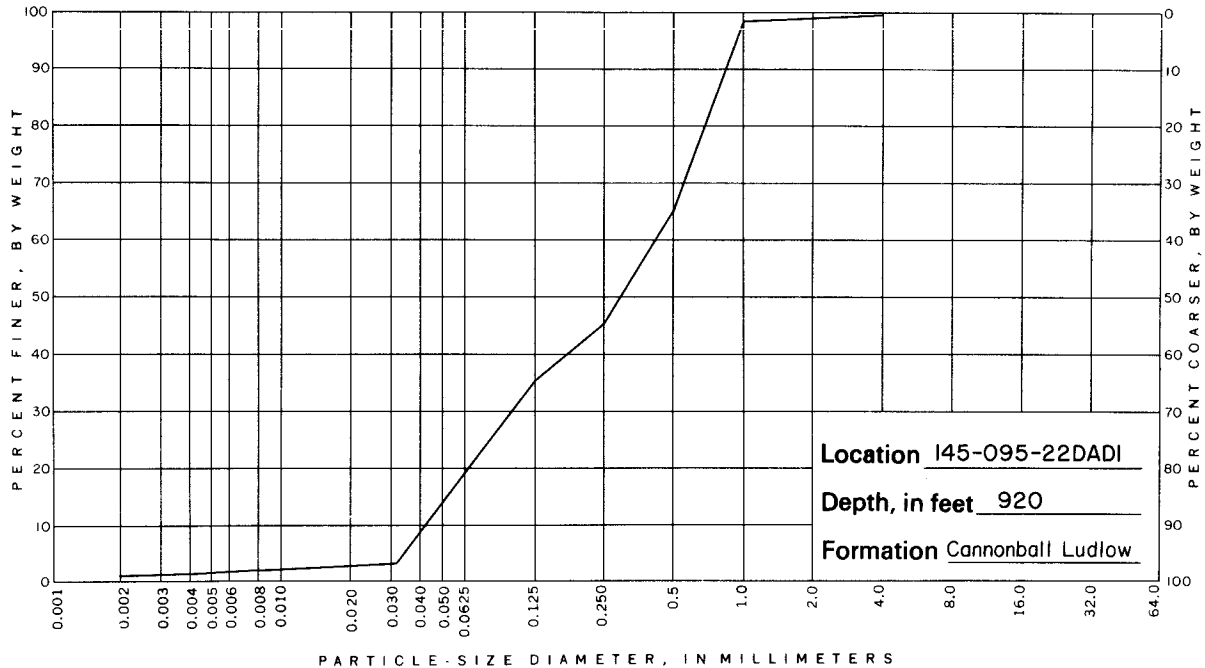
PERCENT OF SIZE	CLAY SIZES < 0.004 mm	SILT SIZES 0.004-0.0625 mm	SAND SIZES					GRAVEL SIZES				
			V. FINE .0625-.125	FINE .125-.25	MEDIUM .25-.5	COARSE .5-1	V. COARSE 1-2	V. FINE 2-4	FINE 4-8	MEDIUM 8-16	COARSE 16-32	V. COARSE 32-64
	8	24	37	29	1.0							



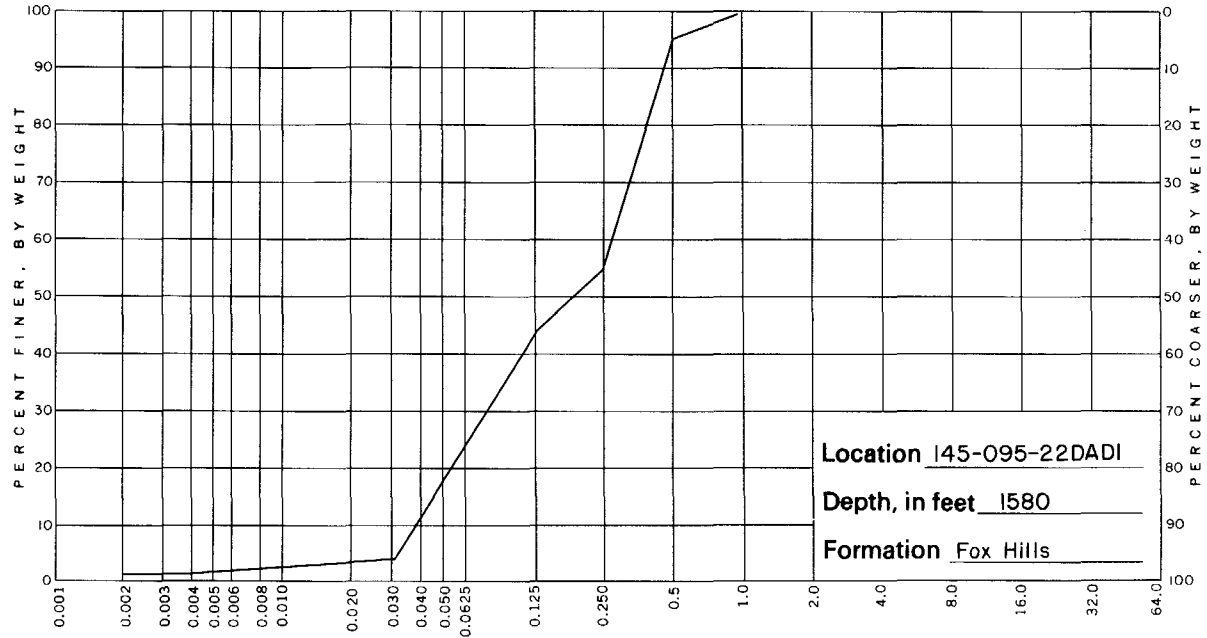
PERCENT OF SIZE	CLAY SIZES < 0.004 mm	SILT SIZES 0.004-0.0625 mm	SAND SIZES					GRAVEL SIZES				
			V. FINE .0625-.125	FINE .125-.25	MEDIUM .25-.5	COARSE .5-1	V. COARSE 1-2	V. FINE 2-4	FINE 4-8	MEDIUM 8-16	COARSE 16-32	V. COARSE 32-64
	9.0	24	28	34	2.0							



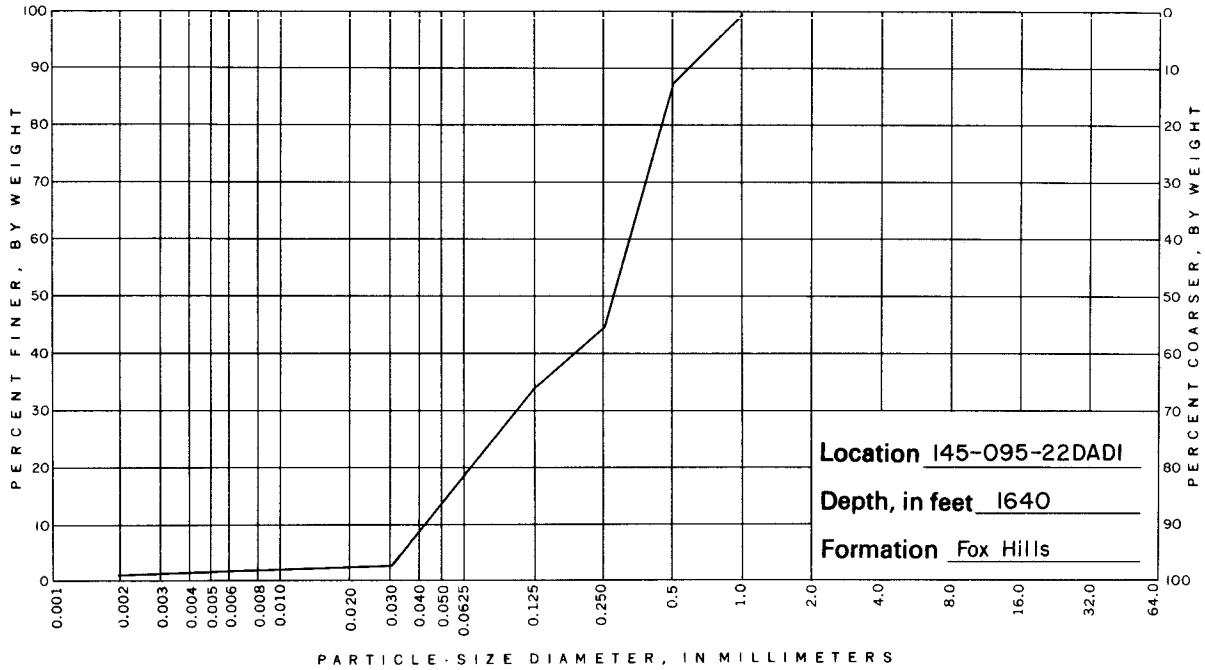
PERCENT OF SIZE	PARTICLE-SIZE DIAMETER, IN MILLIMETERS											
	CLAY SIZES ≤ 0.004 mm	SILT SIZES 0.004-0.0625 mm	SAND SIZES					GRAVEL SIZES				
			V. FINE .0625-.125	FINE .125-.25	MEDIUM .25-.5	COARSE .5-1	V. COARSE 1-2	V. FINE 2-4	FINE 4-8	MEDIUM 8-16	COARSE 16-32	V. COARSE 32-64
	15	24	23	36	1.8	0.2	0.1					



PERCENT OF SIZE	PARTICLE SIZE DIAMETER, IN MILLIMETERS											
	CLAY SIZES < 0.004 mm	SILT SIZES 0.004-0.0625 mm	SAND SIZES				GRAVEL SIZES					
			V. FINE .0625-.125	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
	12	23	10	21	33	1.2	0.3	0.3				

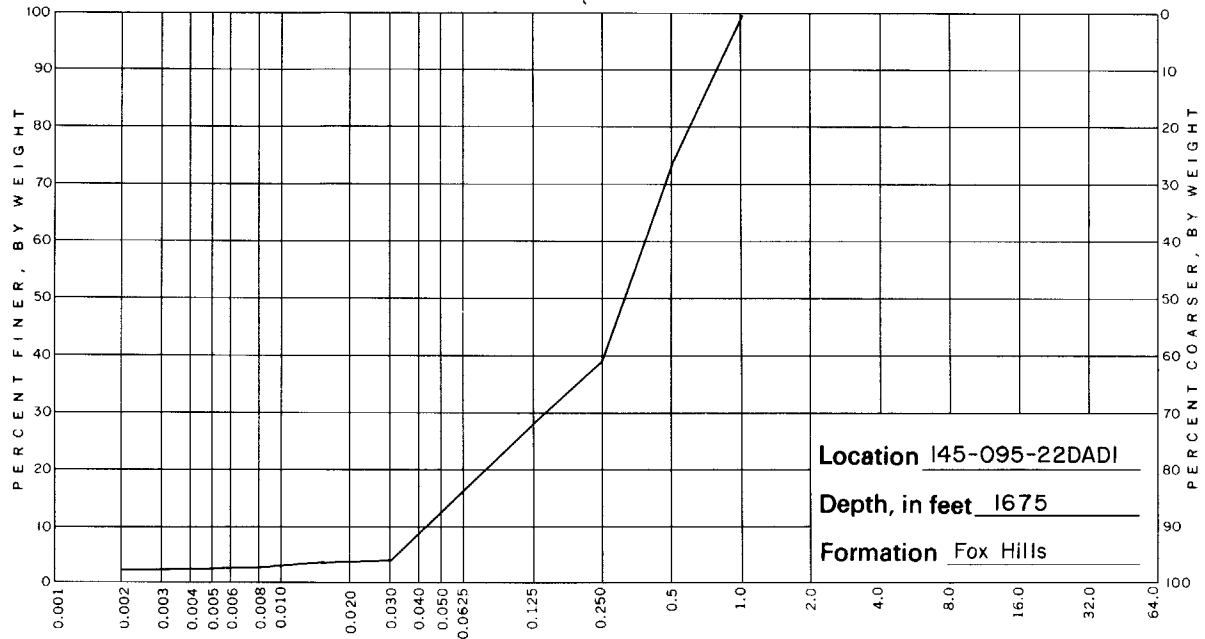


PERCENT OF SIZE	PARTICLE-SIZE DIAMETER, IN MILLIMETERS											
	CLAY SIZES <0.004 mm	SILT SIZES 0.004-0.0625 mm	SAND SIZES					GRAVEL SIZES				
			V. FINE .0625-.125	FINE .125-.25	MEDIUM .25-.5	COARSE .5-1	V. COARSE 1-2	V. FINE 2-4	FINE 4-8	MEDIUM 8-16	COARSE 16-32	V. COARSE 32-64
	21	22	12	40	3.7	0.7	0.1					

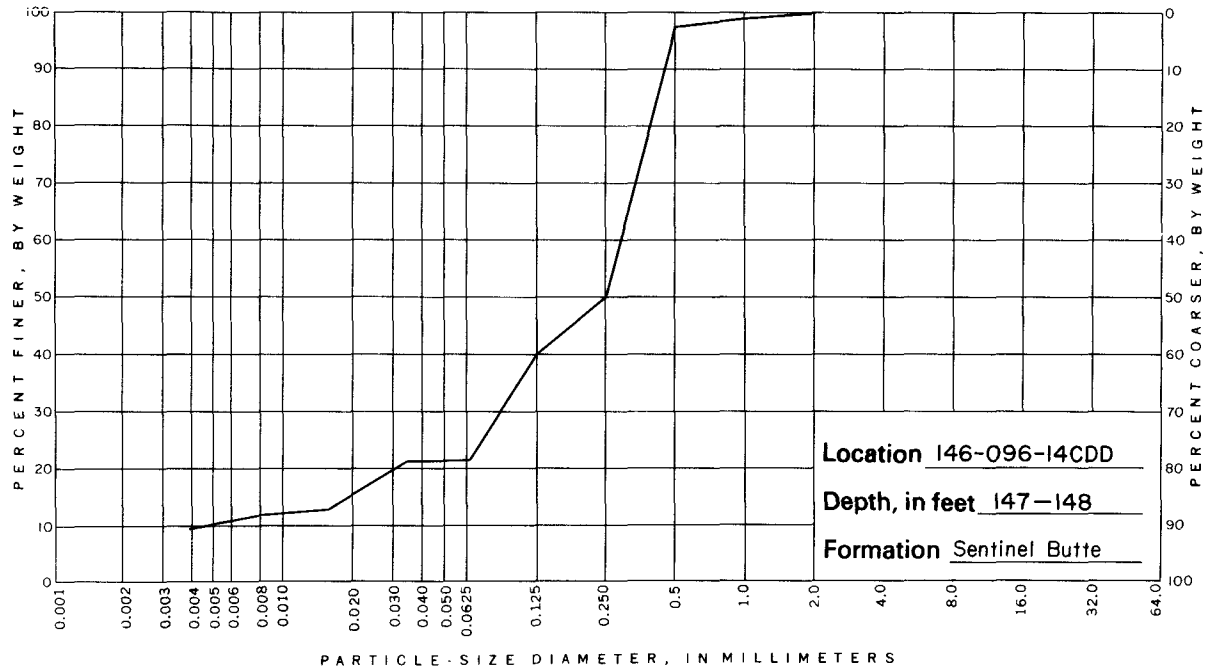


PERCENT OF SIZE	CLAY SIZES < 0.004 mm	SILT SIZES 0.004-0.0625 mm	SAND SIZES				GRAVEL SIZES					
			V. FINE .0625-.125	FINE .125-.25	MEDIUM .25-.8	COARSE .8-1	V. COARSE 1-2	V. FINE 2-4	FINE 4-8	MEDIUM 8-16	COARSE 16-32	V. COARSE 32-64
	15	19	12	43	11	0.5						

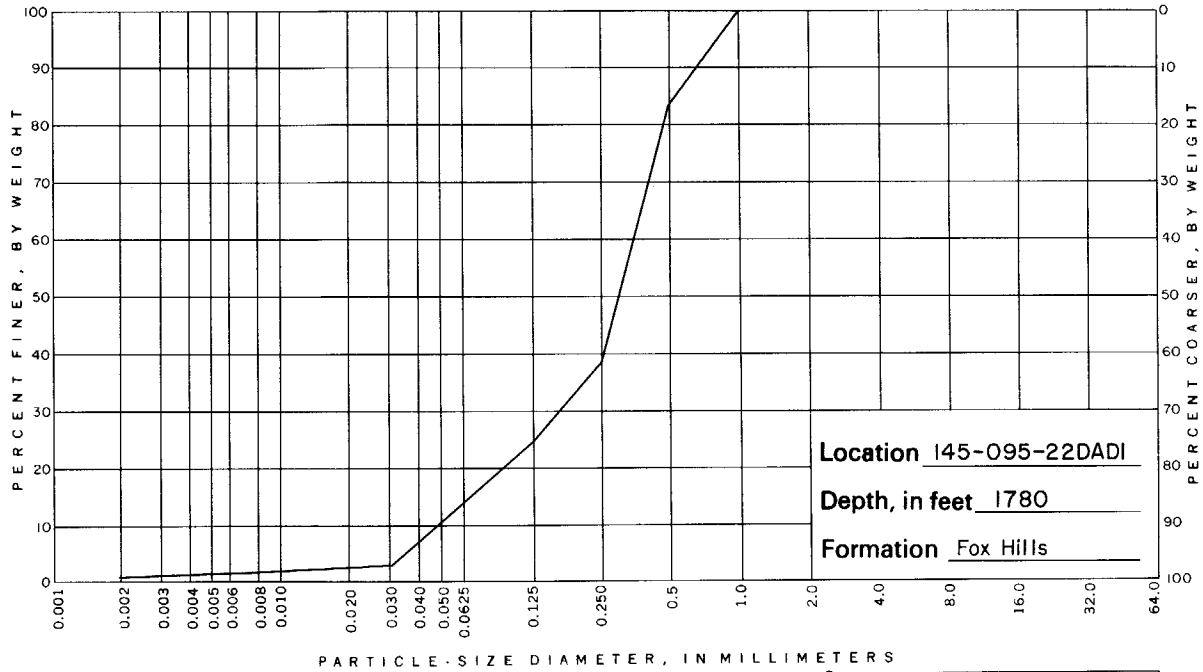
472



PERCENT OF SIZE	CLAY SIZES < 0.004 mm	SILT SIZES 0.004-0.0625 mm	SAND SIZES				GRAVEL SIZES					
			V. FINE .0625-.125	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
	9	19	11	34	26	0.7	0.1					

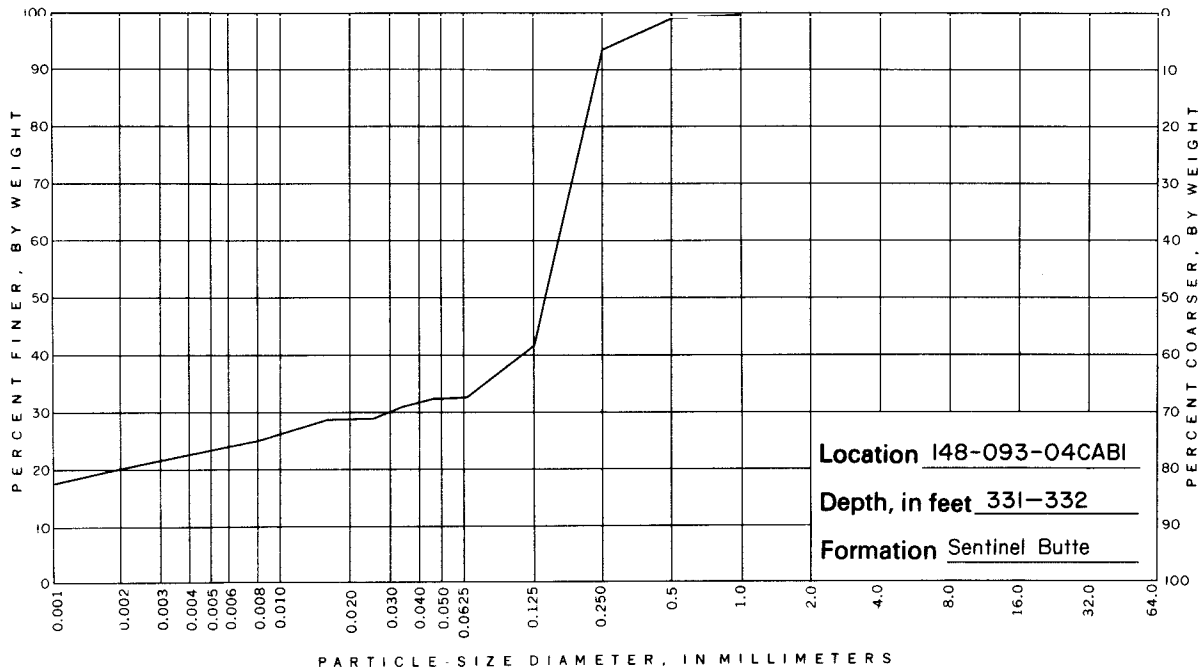


PERCENT OF SIZE	CLAY SIZES < 0.004 mm	SILT SIZES 0.004-0.0625 mm	SAND SIZES					GRAVEL SIZES				
			V. FINE .0625-.125	FINE .125-.25	MEDIUM .25-.5	COARSE .5-1	V. COARSE 1-2	V. FINE 2-4	FINE 4-8	MEDIUM 8-16	COARSE 16-32	V. COARSE 32-64
	9.4	12	19	9.2	48	1.5	1.0					

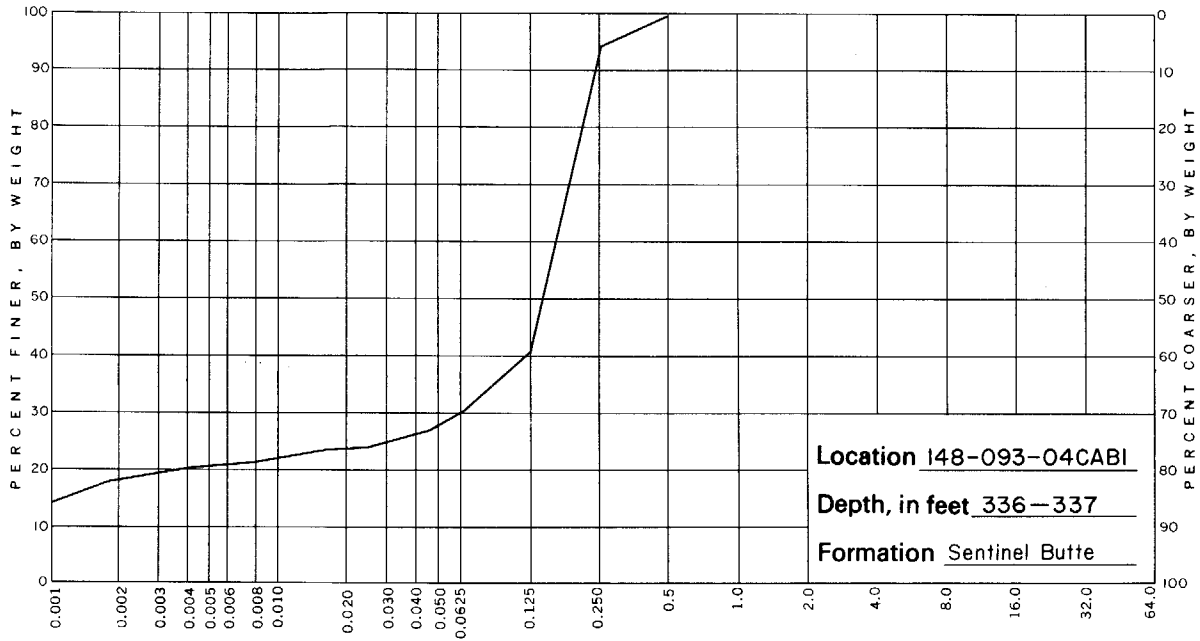


PERCENT OF SIZE	PARTICLE SIZE DIAMETER, IN MILLIMETERS											
	CLAY SIZES < 0.004 mm	SILT SIZES 0.004-0.0625 mm	SAND SIZES					GRAVEL SIZES				
			V. FINE .0625-.125	FINE .125-.25	MEDIUM .25-.5	COARSE .5-1	V. COARSE 1-2	V. FINE 2-4	FINE 4-8	MEDIUM 8-16	COARSE 16-32	V. COARSE 32-64
	9	16	13	45	17	0.2						

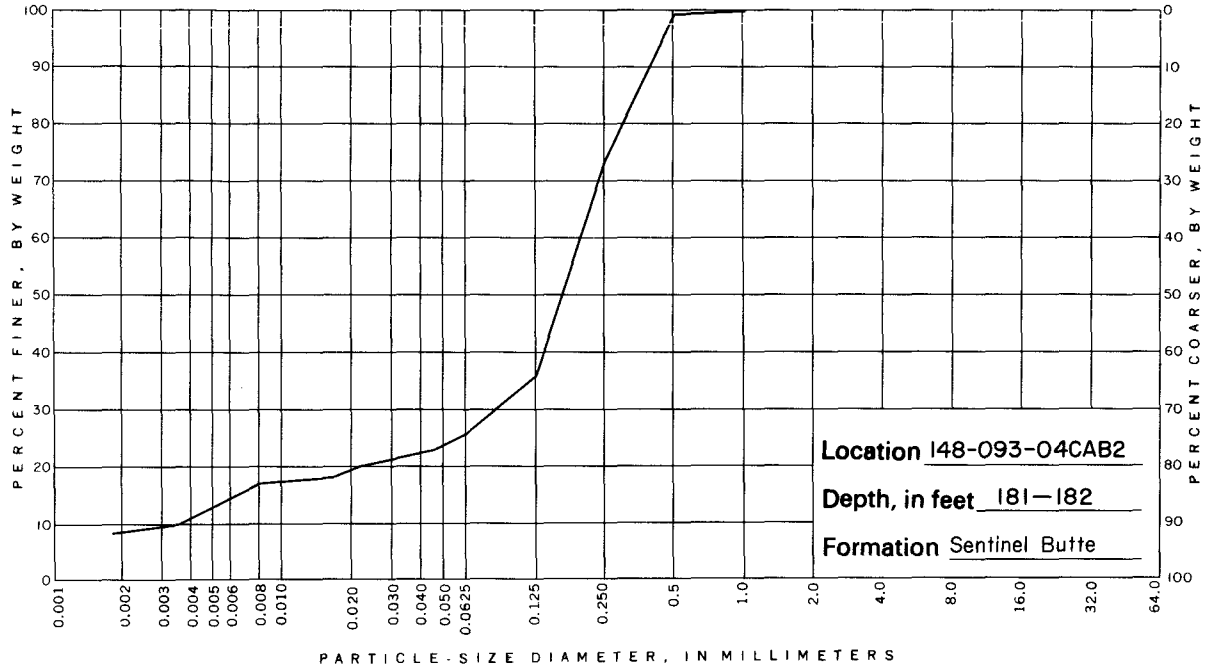
475



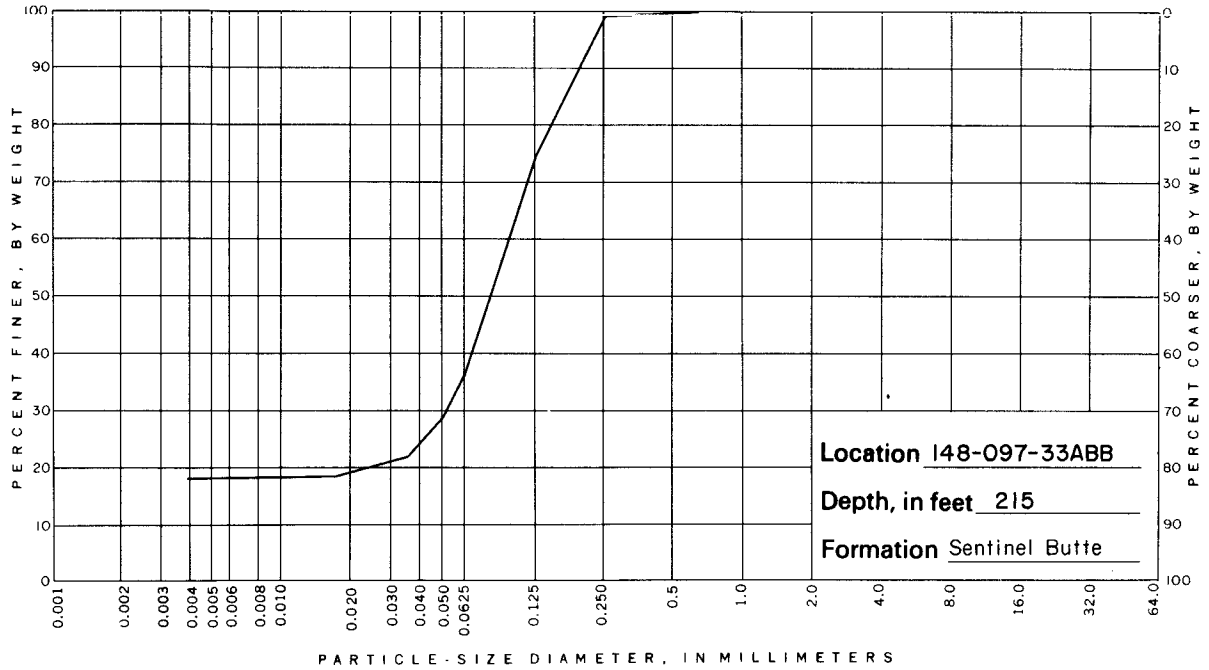
PERCENT OF SIZE	CLAY SIZES <0.004 mm	SILT SIZES 0.004-0.0625 mm	SAND SIZES					GRAVEL SIZES				
			V. FINE .0625-.125	FINE .125-.25	MEDIUM .25-.5	COARSE .5-1	V. COARSE 1-2	V. FINE 2-4	FINE 4-8	MEDIUM 8-16	COARSE 16-32	V. COARSE 32-64
	22	10	9.0	53	5.7	0.2						



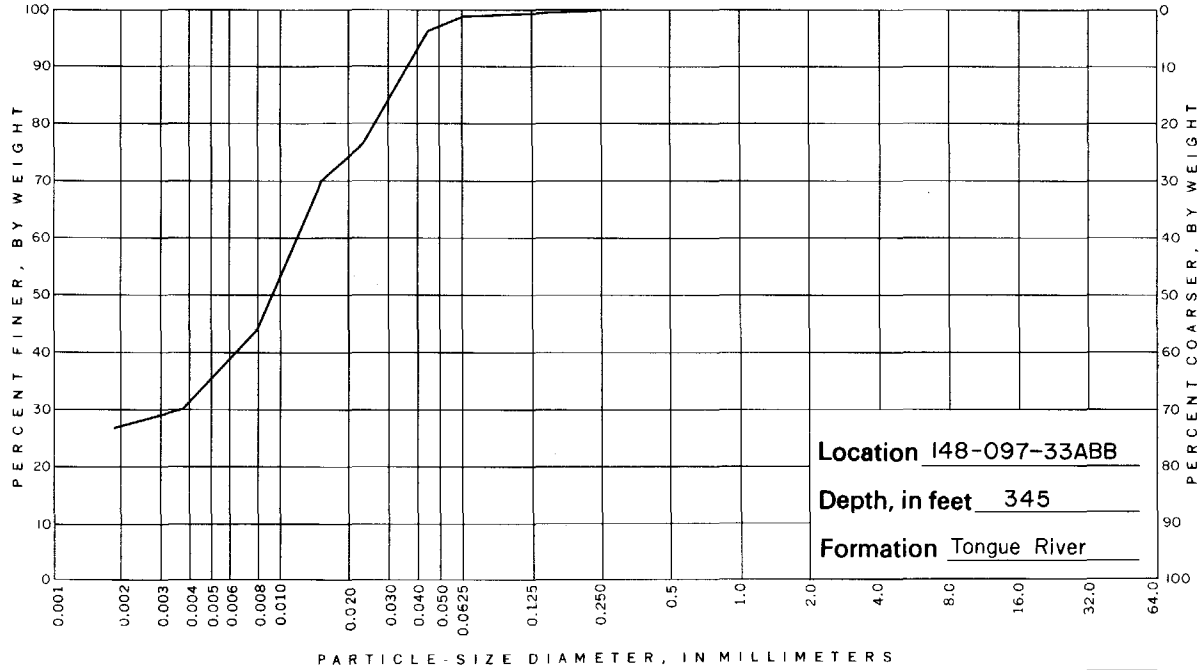
PERCENT OF SIZE	PARTICLE SIZE DIAMETER, IN MILLIMETERS											
	CLAY SIZES < 0.004 mm	SILT SIZES 0.004-0.0625 mm	SAND SIZES					GRAVEL SIZES				
			V. FINE .0625-.125	FINE .125-.25	MEDIUM .25-.5	COARSE .5-1	V. COARSE 1-2	V. FINE 2-4	FINE 4-8	MEDIUM 8-16	COARSE 16-32	V. COARSE 32-64
20	9.7	10	54	5.7								



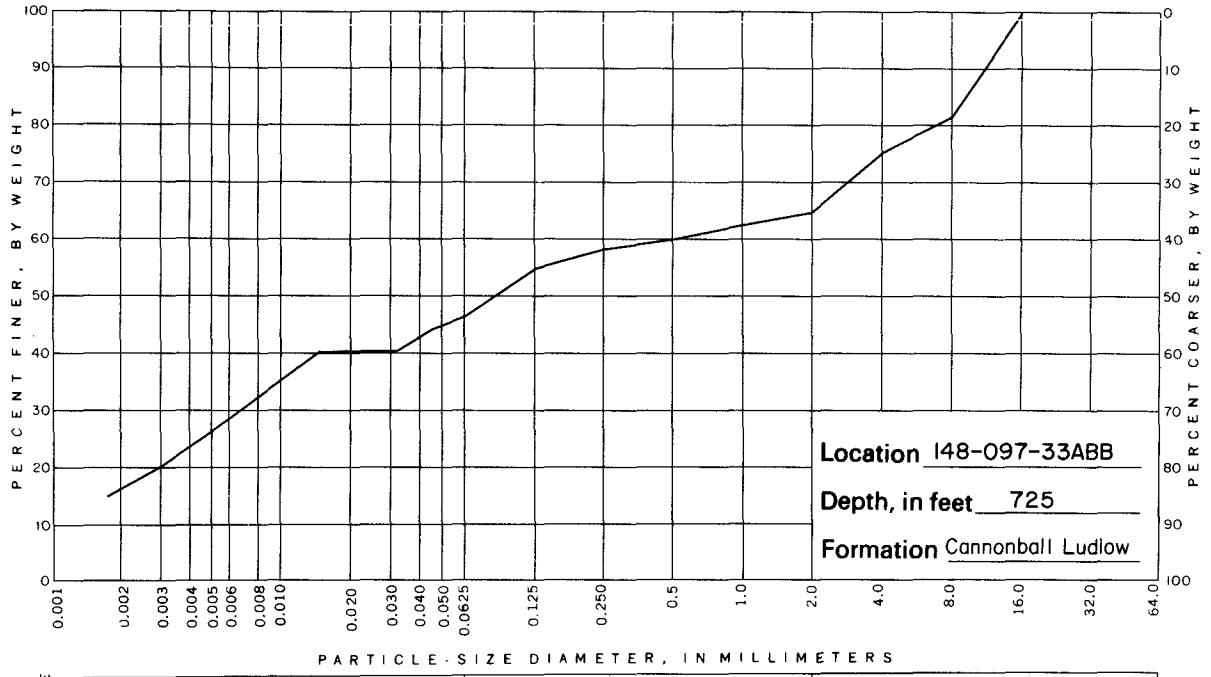
PERCENT OF SIZE	PARTICLE-SIZE DIAMETER, IN MILLIMETERS										
	CLAY SIZES <0.004 mm	SILT SIZES 0.004-0.0625 mm	SAND SIZES				GRAVEL SIZES				
			V. FINE .0625-.125	FINE .125-.25	MEDIUM .25-.5	COARSE .5-1	V. COARSE 1-2	V. FINE 2-4	FINE 4-8	MEDIUM 8-16	COARSE 16-32
	11	15	10	38	26						



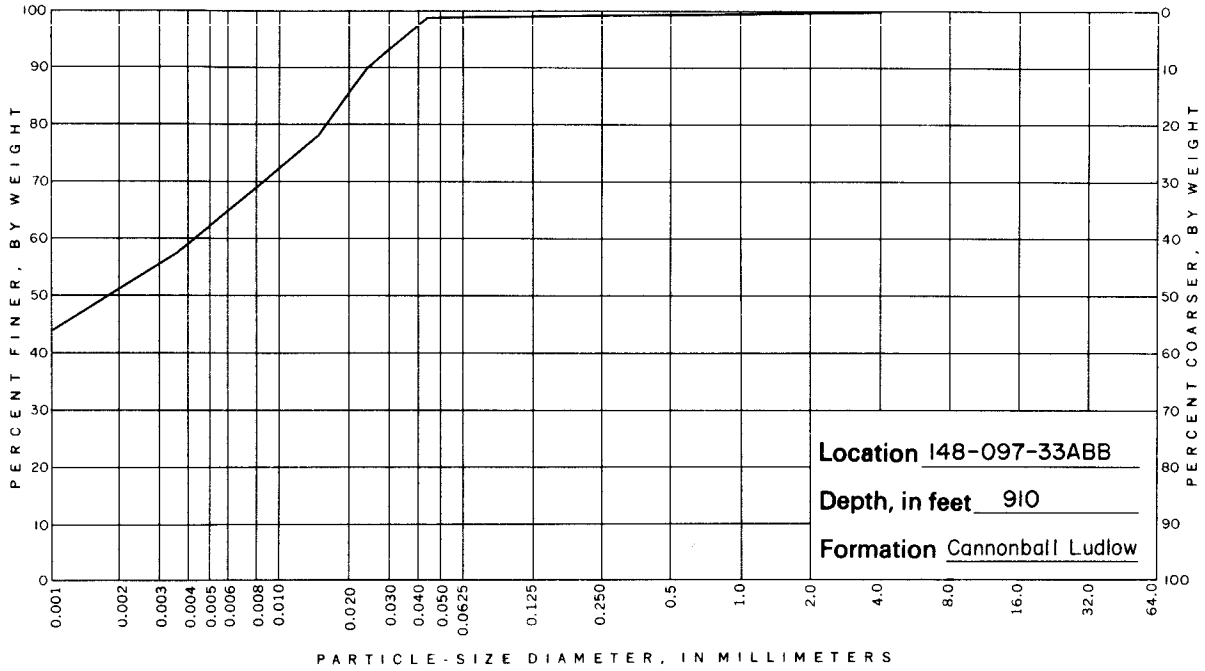
PERCENT OF SIZE	PARTICLE-SIZE DIAMETER, IN MILLIMETERS											
	CLAY SIZES <0.004 mm	SILT SIZES 0.004-0.0625 mm	SAND SIZES				GRAVEL SIZES					
			V. FINE 0.0625-.125	FINE .125-.25	MEDIUM .25-.5	COARSE .5-1	V. COARSE 1-2	V. FINE 2-4	FINE 4-8	MEDIUM 8-16	COARSE 16-32	V. COARSE 32-64
	18	18	38	25	0.2	0.4						



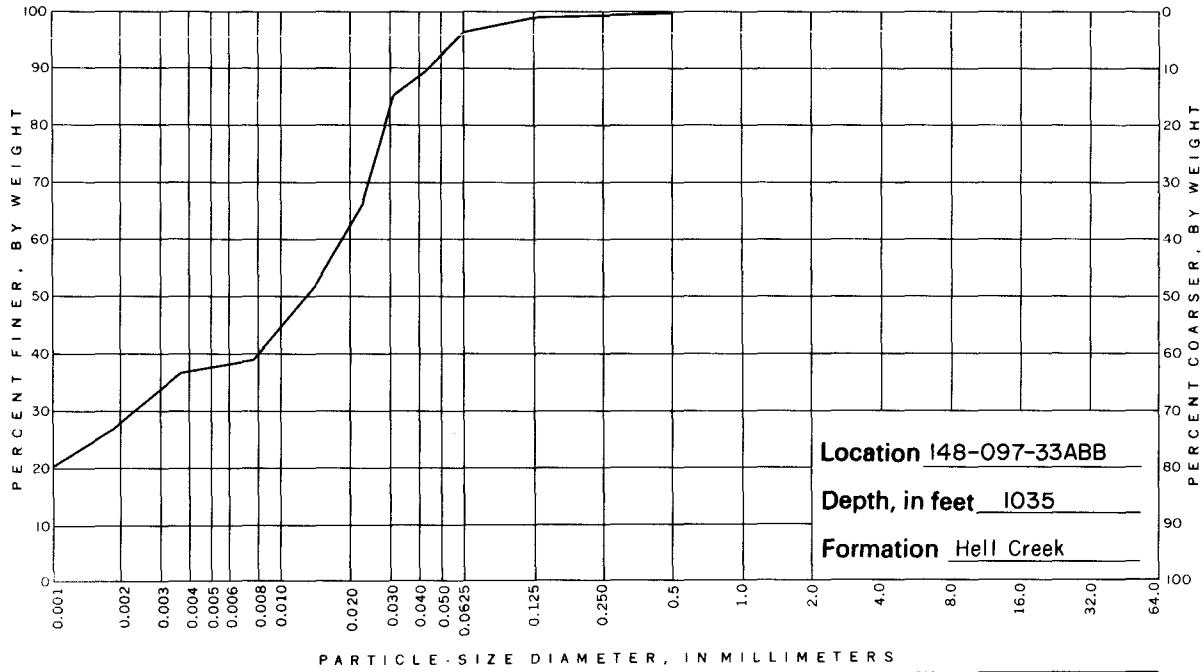
PERCENT OF SIZE	PARTICLE-SIZE DIAMETER, IN MILLIMETERS												
	CLAY SIZES < 0.004 mm	SILT SIZES 0.004-0.0625 mm	SAND SIZES					GRAVEL SIZES					
			V. FINE .0625-.125	FINE .125-.25	MEDIUM .25-.5	COARSE .5-1	V. COARSE 1-2	V. FINE 2-4	FINE 4-8	MEDIUM 8-16	COARSE 16-32	V. COARSE 32-64	
	30	69	0.4	0.3	0.1	0.1							



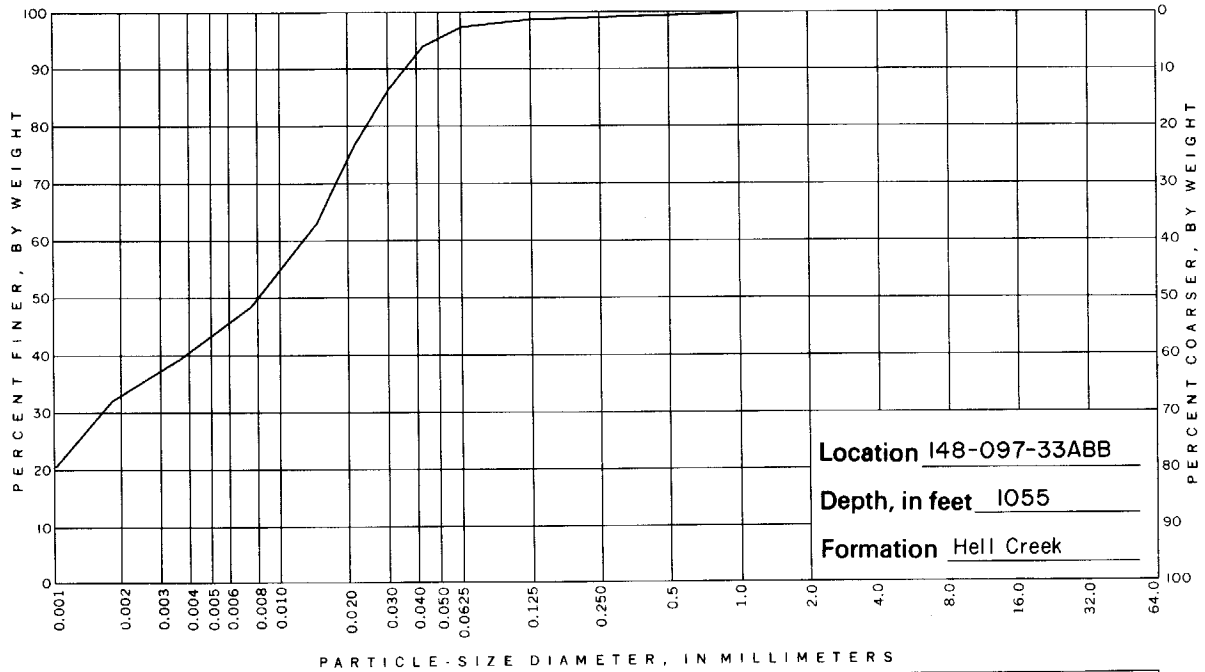
PERCENT OF SIZE	PARTICLE SIZE DIAMETER, IN MILLIMETERS											
	CLAY SIZES <0.004 mm	SILT SIZES 0.004-0.0625 mm	SAND SIZES				GRAVEL SIZES					
			V. FINE .0625-.125	FINE .125-.25	MEDIUM .25-.5	COARSE .5-1	V. COARSE 1-2	V. FINE 2-4	FINE 4-8	MEDIUM 8-16	COARSE 16-32	V. COARSE 32-64
	22	24	8.7	3.6	1.7	2.6	2.3	11	5.9	18		



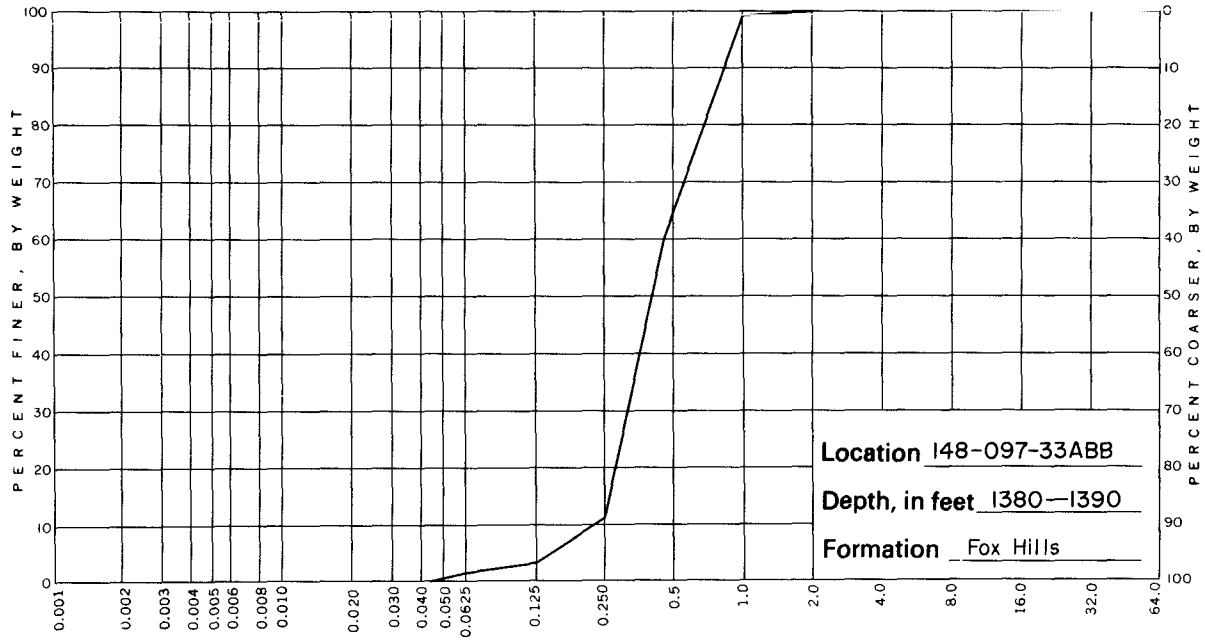
PERCENT OF SIZE	PARTICLE-SIZE DIAMETER, IN MILLIMETERS										
	CLAY SIZES < 0.004 mm	SILT SIZES 0.004-0.0625 mm	SAND SIZES				GRAVEL SIZES				
			V. FINE .0625-.125	FINE .125-.25	MEDIUM .25-.5	COARSE .5-1	V. COARSE 1-2	V. FINE 2-4	FINE 4-8	MEDIUM 8-16	COARSE 16-32
58	42	0.1		0.2							



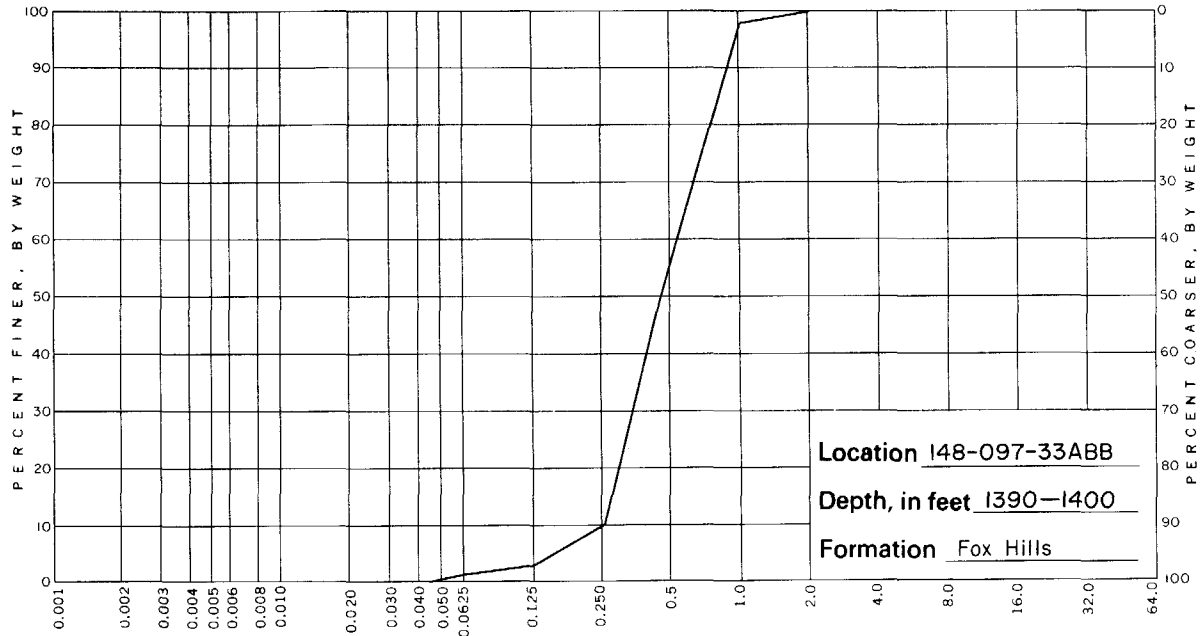
PERCENT OF SIZE	CLAY SIZES < 0.004 mm	SILT SIZES 0.004-0.0625 mm	SAND SIZES					GRAVEL SIZES				
			V. FINE .0625-.125	FINE .125-.25	MEDIUM .25-.5	COARSE .5-1	V. COARSE 1-2	V. FINE 2-4	FINE 4-8	MEDIUM 8-16	COARSE 16-32	V. COARSE 32-64
	37	60	2.6	0.4	0.2							



PERCENT OF SIZE	PARTICLE SIZE DIAMETER, IN MILLIMETERS											
	CLAY SIZES < 0.004 mm	SILT SIZES 0.004-0.0625 mm	SAND SIZES					GRAVEL SIZES				
			V. FINE .0625-.125	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
	39	59	1.3	0.5	0.1							



PERCENT OF SIZE	PARTICLE SIZE DIAMETER, IN MILLIMETERS										
	CLAY SIZES < 0.004 mm	SILT SIZES 0.004-0.0625 mm	SAND SIZES				GRAVEL SIZES				
			V. FINE .0625-.125	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
	1.2	1.6	8.2	54	34	1.0					



PARTICLE-SIZE DIAMETER, IN MILLIMETERS

PERCENT OF SIZE	CLAY SIZES < 0.004 mm	SILT SIZES 0.004-0.0625 mm	SAND SIZES				GRAVEL SIZES					
			V. FINE .0625-.125	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
		1.2	1.6	6.9	47	41	1.8					

APPENDIX A

Local well numbers and corresponding U.S. Geological Survey station numbers

LOCAL WELL NUMBER	LAT-LONG	LOCAL WELL NUMBER	LAT-LONG	LOCAL WELL NUMBER	LAT-LONG
		141-093-02CCC	470317N1022619.1	141-094-35DCC	465856N1023316.1
		141-093-03AAA	470402N1022628.1	141-095-01B8C	470355N1024013.1
141-091-03CCC	470317N1021223.1	141-093-04AAD	470356N1022744.1	141-095-0288B	470401N1024129.1
141-091-03DCC	470317N1021145.1	141-093-04CBB1	470336N1022851.1	141-095-02C0C	470316N1024110.1
141-091-048AA	470403N1021311.1	141-093-04CBB2	470336N1022851.2	141-095-02DCB	470323N1024051.1
		141-093-05BAB	470402N1022947.1	141-095-06CCD	470315N1024624.1
141-091-04CCB	470324N1021339.1	141-093-06ABA	470402N1023035.1	141-095-08BCD	470249N1024508.1
141-091-04DAD	470330N1021233.1	141-093-06ACB	470349N1023044.1	141-095-10ABB	470309N1024207.1
141-091-04DCD	470317N1021255.1	141-093-09BD	470250N1022832.1	141-095-12ADC	470250N1023916.1
141-091-06C0C	470317N1021552.1	141-093-10BDD	470251N1022706.1	141-095-17ACC	470158N1024439.1
141-091-08ABB	470823N1021420.1				
		141-093-11BCC	470251N1022619.1	141-095-20CCD	470039N1024508.1
141-091-08DD	470228N1021354.1	141-093-14ABA	470218N1022532.1	141-095-248BA	470126N1024004.1
141-091-08DDD	470225N1021349.1	141-093-16AAA1	470218N1022744.1	141-095-24CAC	470053N1023954.1
141-091-09DDD	470225N1021233.1	141-093-16AAA2	470218N1022744.2	141-095-24CAD	470053N1023945.1
141-091-10DBC	470238N1021145.1	141-093-17ACA	470205N1022919.1	141-095-29BAC	470026N1024458.1
141-091-12DCC	470225N1020913.1				
		141-093-1788B	470218N1023006.1	141-095-32AAC	465935N1024420.1
141-091-140CD	470133N1021020.1	141-093-19DDD	470040N1023016.1	141-095-3388B	465941N1024401.1
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144-094-01BCA	471927N1023227.1	144-095-06BAA2	471942N1024555.2	144-096-35CCC	471424N1024856.1
144-094-01BCB	471847N1023324.1	144-095-07CAC	471815N1024605.1	144-097-02CDC	471853N1025616.1
144-094-01BCC	471920N1023237.1	144-095-10AAD	471841N1024133.1	144-097-04AAA1	471940N1025801.1
144-094-01CBC	471907N1023237.1	144-095-10BAA	471848N1024211.1	144-097-04AAA2	471940N1025801.2
144-094-01DDD	471854N1023131.1	144-095-10BBB	471848N1024239.1	144-097-07AAC	471839N1030044.1
144-094-04ABB	470402N1023548.1	144-095-10CBC	471814N1024239.1	144-097-080BD	471812N1025937.1
144-094-06DAA	471914N1023748.1	144-095-14CCC1	471708N1024124.1	144-097-12CC1	471759N1025519.1
144-094-07DAA1	471822N1023748.1	144-095-14CCC2	471708N1024124.2	144-097-12CCC2	471759N1025519.2
144-094-07DAA2	471822N1023748.2	144-095-18DCA1	471715N1024537.1	144-097-12CCC3	471759N1025519.3
144-094-10DAA	471821N1023402.1	144-095-18DCA2	471715N1024537.2	144-097-13BBC	471745N1025519.1
144-094-10DDD	471802N1023402.1	144-095-26AAA	471608N1024019.1	144-097-14AAB	471752N1025538.1
144-094-11BAA	471847N1023324.1	144-095-26ABB1	471608N1024047.1	144-097-14ABD1	471745N1025547.1
144-094-12DRB	471821N1023159.1	144-095-26ABB2	471608N1024047.2	144-097-14ABD2	471745N1025547.2
144-094-13BCB	471742N1023237.1	144-095-26ABB3	471608N1024047.3	144-097-14ABD3	471745N1025547.3
144-094-13CCC	471709N1023237.1	144-095-26ABB4	471608N1024047.4	144-097-20CDD	471610N1025956.1
144-094-16DDD	471709N1023517.1	144-095-27DBC	471534N1024201.1	144-097-24DAB	471631N1025421.1
144-094-17DDA1	471716N1023633.1	144-095-30DCD	471522N1024537.1	144-097-26CBD1	471530N1025626.1
144-094-17DDA2	471716N1023633.2	144-095-32DCC	471428N1024431.1	144-097-26CBD2	471530N1025626.2
144-094-20ADD1	471643N1023633.1	144-095-34BAA	471514N1024211.1	144-097-26CCA	471523N1025626.1
144-094-20ADD2	471643N1023633.2	144-095-35ACB1	471501N1024047.1	144-097-27DAA1	471537N1025645.1
144-094-21BBB	471703N1023623.1	144-095-35ACB2	471501N1024047.2	144-097-27DAA2	471537N1025645.2
144-094-22CDC	471617N1023449.1	144-095-36AAA	471514N1023904.1	144-097-31BBB1	471509N1030141.1
144-094-24BDB	471649N1023218.1	144-096-01DDC	471854N1024642.1	144-097-31BBB2	471509N1030141.2
144-094-24BDD	471643N1023208.1	144-096-02CAD1	471908N1024828.1	144-097-31BBB3	471509N1030141.3
144-094-28DA	471535N1023530.1	144-096-02CAD2	471908N1024828.2	144-097-32CBA	471442N1030015.1
144-094-29AAA	471610N1023633.1	144-096-06ACD	471920N1025314.1	145-091-01BBB	472452N1021932.1
144-094-29BDC	471551N1023720.1	144-096-07AAA	471847N1025255.1	145-091-01BCC	472432N1021332.1
144-094-30CAC1	471538N1023835.1	144-096-10ACC	471827N1024934.1	145-091-01CBB	472426N1021332.1
144-094-30CAC2	471538N1023835.2	144-096-10CAA	471820N1024944.1	145-091-05DDD1	472407N1021730.1
144-094-30CDB	471531N1023835.1	144-096-10DBB	471820N1024934.1	145-091-05DDD2	472407N1021730.2
144-094-31DDD	471432N1023748.1	144-096-12ACC	471827N1024701.1	145-091-05DDD3	472407N1021730.3
144-094-32CCC	471432N1023739.1	144-096-14CAA1	471726N1024828.1	145-091-10CDD1	472314N1021536.1
144-094-34BAB1	471518N1023449.1	144-096-14CAA2	471726N1024828.2	145-091-10CDD2	472314N1021536.2
144-094-34BAB2	471518N1023449.2	144-096-15BBB	471753N1025013.1	145-091-11CDD1	472314N1021420.1
144-095-01BBB	471934N1024000.1	144-096-22CCC	471612N1025013.1	145-091-11CDD2	472314N1021420.2
144-095-03AAD	471934N1024133.1	144-096-22CDD	471612N1025003.1	145-091-12AAA1	472400N1021226.1
144-095-03ADD	471921N1024133.1	144-096-30ABC	471558N1025324.1	145-091-12AAA2	472400N1021226.2
144-095-03DAA	471914N1024133.1	144-096-30DCA1	471524N1025314.1	145-091-16CCC	472222N1021720.1
144-095-05DCD	471855N1024422.1	144-096-30DCA2	471524N1025314.2	145-091-17BD	472252N1021813.1

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145-091-17DCC	472223N1021758.1	145-092-19CAC	472143N1022713.1	145-092-31DDD	471945N1022625.1
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145-091-18DBB	472242N1021914.1	145-092-20ADC1	472156N1022518.1	145-092-36CDD	471945N1022040.1
145-091-19C8D	472144N1021943.1	145-092-20ADC2	472156N1022518.2	145-093-02C8B1	472427N1023006.1
145-091-19CCD	472131N1021943.1	145-092-20B8B	472216N1022616.1	145-093-02C8B2	472427N1023006.2
145-091-20AAA1	472216N1021730.1	145-092-22ACC	472156N1022304.1	145-093-04DCC	472407N1023201.1
145-091-20AAA2	472216N1021730.2	145-092-22ADD	472156N1022235.1	145-093-04DDD	472407N1023132.1
145-091-22ACD	472156N1021517.1	145-092-22DAA1	472150N1022235.1	145-093-07CCB	472321N1023512.1
145-091-22CBD	472143N1021555.1	145-092-22DAA2	472150N1022235.2	145-093-07CCC	472315N1023512.1
145-091-26ACD1	472104N1021401.1	145-092-22DAA3	472150N1022235.3	145-093-09CCC	472315N1023239.1
145-091-26ACD2	472104N1021401.2	145-092-23BCC	472156N1022226.1	145-093-10AAC1	472354N1023025.1
145-091-278BD	472117N1021555.1	145-092-23DAA	472150N1022118.1	145-093-10AAC2	472354N1023025.2
145-091-278CC	472104N1021604.1	145-092-23DAD	472143N1022118.1	145-093-10CBD1	472328N1023113.1
145-091-3088D	472118N1021943.1	145-092-2488C	472209N1022109.1	145-093-10CBD2	472328N1023113.2
145-091-308DD	472104N1021924.1	145-092-248CA	472203N1022059.1	145-093-10CCC	472315N1023122.1
145-091-30CAA	472058N1021924.1	145-092-24CCB	472136N1022109.1	145-093-14ADA1	472255N1022858.1
145-091-30CAO	472051N1021924.1	145-092-24CCD	472130N1022109.1	145-093-14ADA2	472255N1022858.2
145-091-30DCC	472038N1021914.1	145-092-24CCD	472130N1022059.1	145-093-15DDD	472223N1023015.1
145-091-32ABC1	472025N1021758.1	145-092-24CDD1	472130N1022040.1	145-093-17C8B	472242N1023356.1
145-091-32ABC2	472025N1021758.2	145-092-24CDD2	472130N1022040.2	145-093-17CCB	472229N1023356.1
145-091-33ADD	472012N1021614.1	145-092-25AAC	472117N1022011.1	145-093-17DBC	472236N1023317.1
145-091-34C8C	471959N1021604.1	145-092-25AAD	472117N1022002.1	145-093-18CCC	472735N1023512.1
145-091-34CDA1	471952N1021536.1	145-092-25ABA1	472123N1022021.1	145-093-20CCC	472131N1023356.1
145-091-34CDA2	471952N1021536.2	145-092-25ABB	472123N1022031.2	145-093-21CDD	472131N1023210.1
145-091-3588B	472031N1021448.1	145-092-25ABC	472117N1022031.1	145-093-22DCA	472137N1023034.1
145-092-01DBA	472427N1022021.1	145-092-25ADA	472110N1022002.1	145-093-24ADD	472157N1022742.1
145-092-02CAD1	472420N1022157.1	145-092-25AOC1	472104N1022011.1	145-093-25DCD	472042N1022807.1
145-092-02CAD2	472420N1022157.2	145-092-25ADC2	472104N1022011.2	145-093-26BAD	472118N1022937.1
145-092-04CBC	472420N1022459.1	145-092-25BAA1	472123N1022040.1	145-093-26CCB	472045N1023006.1
145-092-04DCD	472407N1022411.1	145-092-25BAA2	472123N1022040.2	145-093-27DBC	472051N1023044.1
145-092-06CCD	472407N1022723.1	145-092-25DAA	472057N1022002.1	145-093-2888C	472118N1023239.1
145-092-06DDD	472407N1022625.1	145-092-25DAB	472057N1022011.1	145-093-298CA	472111N1023346.1
145-092-08ABA	472400N1022528.1	145-092-26CC1	472038N1022226.1	145-093-29CDB1	472045N1023336.1
145-092-12DCC1	472315N1022031.1	145-092-26CC2	472038N1022226.2	145-093-29CDB2	472045N1023336.2
145-092-12DCC2	472315N1022031.2	145-092-28AB	472117N1022411.1	145-093-30CDD1	472038N1023443.1
145-092-14BAD	472302N1022157.1	145-092-28DD8	472044N1022401.1	145-093-30CDD2	472038N1023443.2
145-092-15AAA	472308N1022235.1	145-092-29CAA	472057N1022547.1	145-093-32ADD	472012N1023248.1
145-092-17CDB	472229N1022556.1	145-092-30ABB	472123N1022654.1	145-093-3288B1	472032N1023356.1
145-092-18CBA1	472242N1022723.1	145-092-3088B1	472123N1022732.1	145-093-3288B2	472032N1023356.2
145-092-18CBA2	472242N1022723.2	145-092-3088B2	472123N1022732.2	145-093-3288B3	472032N1023356.3

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145-096-3588C	472027N1025305.1	146-091-228BA	472728N1021555.1	146-093-24DCC2	472643N1022811.2
145-097-01AAB	472453N1025828.1	146-091-22CBA	472702N1021555.1	146-093-25ABB	472637N1022811.1
145-097-02DDB1	472414N1025945.1	146-091-248DB	472714N1021312.1	146-093-26CBA	472611N1022956.1
145-097-02DDB2	472414N1025945.2	146-091-25DC	472556N1021244.1	146-093-26CBB	472611N1023006.1
145-097-07AAC	472354N1030453.1	146-091-26AAB1	472635N1021351.1	146-093-27CCC	472551N1023122.1
145-097-08CBA	472334N1030424.1	146-091-26AAB2	472635N1021351.2	146-093-27CDD	472551N1023053.1
145-097-08CBB	472334N1030433.1	146-091-26AAB3	472635N1021351.3	146-093-27DAA	472611N1023015.1
145-097-08CBC	472328N1030433.1	146-091-28ABA	472636N1021633.1	146-093-28AAA1	472637N1023132.1
145-097-08CBD	472328N1030424.1	146-091-28BBB	472636N1021721.1	146-093-28AAA2	472637N1023132.2
145-097-08CCB	472321N1030433.1	146-091-30BCD	472616N1021944.1	146-093-28ADD	472617N1023132.1
145-097-11ACC	472341N1030004.1	146-091-318AD	472537N1021925.1	146-093-28CCA	472558N1023229.1
145-097-12BCD1	472341N1025916.1	146-091-32CAA	472518N1021808.1	146-093-28CCB	472558N1023239.1
145-097-12BCD2	472341N1025916.2	146-091-34CBA	472517N1021555.1	146-093-28DDB1	472558N1023141.1
145-097-12DAD	472329N1025819.1	146-091-35BBC	472537N1021448.1	146-093-28DDB2	472558N1023141.2
145-097-14DDA	472230N1025936.1	146-091-36BCB	472530N1021332.1	146-093-28DDB3	472558N1023141.3
145-097-15CAD	472236N1030131.1	146-092-148B	472822N1022214.1	146-093-29CCC	472551N1023356.1
145-097-22DCC	472132N1030121.1	146-092-14CDD	472735N1022158.1	146-093-29CCC	472551N1023356.1
145-097-30AAB	472125N1030453.1	146-092-15DDD	472735N1022236.1	146-093-32BBB1	472545N1023356.1
145-097-30ADD1	472105N1030443.1	146-092-19DBC	472656N1022654.1	146-093-32BBB2	472545N1023356.2
145-097-30ADD2	472105N1030443.2	146-092-22ABB	472729N1022304.1	146-093-33BAA1	472545N1023210.1
145-097-32CAC1	472000N1030414.1	146-092-27CBB	472611N1022343.1	146-093-33BAA2	472545N1023210.2
145-097-32CAC2	472000N1030414.2	146-092-27DDD	472551N1022236.1	146-093-34CBA	472519N1023113.1
145-097-34CCC1	471948N1030200.1	146-092-28CCC	472551N1022459.1	146-093-34CBB	472519N1023122.1
145-097-34CCC2	471948N1030200.2	146-092-29DDC1	472551N1022518.1	146-093-34CCC	472545N1023122.1
145-097-34CCD	471948N1030150.1	146-092-29DDC2	472551N1022518.2	146-093-34DCC	472459N1023034.1
145-097-35DDD	471948N1025936.1	146-092-30DAA	472611N1022625.1	146-094-04BBC	472958N1024018.1
146-091-01DDC	472918N1021234.1	146-092-32CDD	472459N1022547.1	146-094-05CBB	472932N1024124.1
146-091-05CBB	472938N1021837.1	146-092-34ABB	472545N1022304.1	146-094-05DCC	472917N1023900.1
146-091-08CAA	472846N1021808.1	146-092-35DAD1	472512N1022119.1	146-094-08DAC1	472840N1024037.1
146-091-11CB	472843N1021443.1	146-092-35DAD2	472512N1022119.2	146-094-08DAC2	472840N1024037.2
146-091-13CA1	472807N1021322.1	146-093-03CDD	472919N1023053.1	146-094-08DAD	472840N1024027.1
146-091-13CA2	472807N1021322.2	146-093-15DDD	472735N1023015.1	146-094-13CBB	472755N1023629.1
146-091-14ADC	472800N1021351.1	146-093-17CBB	472755N1023356.1	146-094-15ACC1	472801N1023823.1
146-091-14DDB	472740N1021351.1	146-093-19DDB	472709N1023443.1	146-094-15ACC2	472801N1023823.2
146-091-17CDC	472735N1021818.1	146-093-20ADD	472709N1023248.1	146-094-20DAC	472656N1024037.1
146-091-20ACA	472715N1021749.1	146-093-20CBC	472656N1023356.1	146-094-22BDD	472709N1023833.1
146-091-20DDD	472642N1021730.1	146-093-20CCA	472650N1023346.1	146-094-22CCA	472650N1023852.1
146-091-21CDD1	472642N1021652.1	146-093-22ADD	472709N1023015.1	146-094-22DDB	472703N1023823.1
146-091-21CDD2	472642N1021652.2	146-093-22CCC	472643N1023122.1	146-094-23AAD	472722N1023638.1

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147-093-29DCA	473111N1023304.1	147-097-05BDB	473503N1030416.1	148-094-13BBD	473834N1023616.1
147-093-35CBC	473025N1023002.1	147-097-06ABB	473516N1030513.1	148-094-14DAC	473808N1023645.1
147-094-02AD	473501N1023640.1	147-097-10DDA	473346N1030055.1	148-094-20DDD	473705N1024025.1
147-094-26BCB	473139N1023742.1	147-097-11DAA1	473359N1025938.2	148-094-25CCC	473613N1023626.1
147-094-33DB	473031N1023932.1	147-097-11DAA2	473359N1025938.2	148-094-26DCA	473619N1023655.1
147-094-34BAD	473054N1023830.1	147-097-11DBB	473359N1030007.1	148-094-33ACD	473547N1023928.1
147-095-03AAB	473517N1024543.1	147-097-12BDB1	473412N1025910.1	148-095-01DBB	473958N1024328.1
147-095-04BBA	473517N1024748.1	147-097-12BDB2	473412N1025910.2	148-095-13ADC	473821N1024308.1
147-095-08BDC	473406N1024856.1	147-097-12BDB3	473412N1025910.3	148-095-22CCA	473711N1024631.1
147-095-12BCD	473406N1024356.1	147-097-18DBC	473300N1030513.1	148-095-29CBC	473626N1024916.1
147-095-12CAD	473354N1024337.1	147-097-20BAB	473240N1030416.1	148-095-31BAC	473601N1025014.1
147-095-13CC1	473250N1024406.1	147-097-24ADB1	473228N1025831.1	148-095-31CCA	473529N1025023.1
147-095-13CC2	473250N1024406.2	147-097-24ADB2	473228N1025831.2	148-095-32DBD	473535N1024827.1
147-095-14AAA	473334N1024415.1	148-092-03ABA	474023N1022253.1	148-095-33BDB	473554N1024739.1
147-095-14CAC	473302N1024506.1	148-092-03DBA	473957N1022253.1	148-095-35BDD	473547N1024455.1
147-095-14CBB1	473309N1024523.1	148-092-05	474002N1022538.1	148-096-06DCA	473947N1025726.1
147-095-14CBB2	473309N1024523.2	148-092-06BAD	474016N1022702.1	148-096-09ABD	473928N1025453.1
498 147-095-14CBB3	473309N1024523.3	148-092-06BCA	474010N1022721.1	148-096-11BB	473931N1025302.1
147-095-17ACA	473322N1024827.1	148-092-06BDB	474010N1022711.1	148-096-15AAA	473842N1025316.1
147-095-18DAC	473302N1024935.1	148-092-11CCB	473854N1022224.1	148-096-17CCD	473758N1025648.1
147-095-19ABA	473243N1024945.1	148-092-23CCA	473712N1022215.1	148-096-18ABC	473837N1025736.1
147-095-21ABA	473243N1024710.1	148-092-26CCD	473614N1022215.1	148-096-22CDB	473738N1025424.1
147-095-22BBA	473243N1024631.1	148-092-35BDA	473555N1022156.1	148-096-23BBB	473751N1025307.1
147-095-23CCA	473205N1024513.1	148-093-04CAB1	473957N1023217.1	148-096-25CDA	473621N1025121.1
147-095-24AAC	473237N1024308.1	148-093-04CAB2	473957N1023217.2	148-096-35BCC	473549N1025307.1
147-095-26BBB1	473152N1024523.1	148-093-04CBD	473951N1023227.1	148-097-04DBA	474000N1030233.1
147-095-26BBB2	473152N1024523.2	148-093-05CCA1	473944N1023343.1	148-097-09BDB	473902N1030233.1
147-096-21AAB1	473241N1025442.1	148-093-05CCA2	473944N1023343.2	148-097-10CAA	473909N1030135.1
147-096-21AAB2	473241N1025442.2	148-093-07ADA	473919N1023402.1	148-097-12ABA	473934N1025843.1
147-096-21ACD1	473221N1025451.1	148-093-09BBC	473925N1023236.1	148-097-17DAA	473817N1030330.1
147-096-21ACD2	473221N1025451.2	148-093-10CCC	473847N1023120.1	148-097-20CAD	473719N1030409.1
147-096-22DCD1	473155N1025335.1	148-093-14CDC	473755N1022944.1	148-097-22CDB	473706N1030145.1
147-096-22DCD2	473155N1025335.2	148-093-15ACB	473827N1023041.1	148-097-27CDB	473647N1030204.1
147-096-28BBA	473149N1025530.1	148-093-17BBD	473834N1023343.1	148-097-28ACB	473647N1030243.1
147-096-28BBC	473129N1025539.1	148-093-20BCA	473736N1023343.1	148-097-30ADA	473647N1030447.1
147-096-34BBA	473057N1025413.1	148-093-32CDB	473528N1023334.1	148-097-33ABB	473608N1030243.1
147-096-36CAC	473024N1025131.1	148-094-01DDD	473938N1023519.1	148-097-33BCC	473549N1030321.1
147-096-36DCB	473018N1025111.1	148-094-03ABB	474023N1023821.1	149-091-17BAB	474351N1022129.1
147-097-05AAA	473516N1030328.1	148-094-06DBD	473952N1024201.1	149-091-22BD	470110N1021200.1
147-097-05ADD	473457N1030328.1	148-094-13AAD	473834N1023519.1	149-091-30CCD	474121N1022256.1

LOCAL WELL NUMBER	LAT-LONG	LOCAL SPRING NUMBER	LAT-LONG	LOCAL SPRING NUMBER	LAT-LONG
149-091-33BCC	474055N1022031.1	144-097-11BBD	471839N1025626.1	146-094-35AAB	472545N1023648.1
149-092-22CDC	474214N1022636.1	144-097-23ADD	471638N1025528.1	146-095-19CBA	472703N1025023.1
149-092-29DCC	474121N1022851.1	144-097-23BCB	471644N1025635.1	146-095-30CDB	472558N1025013.1
149-093-02ACB	474523N1023241.1	145-091-22CBC	472123N1021604.1	146-095-30DCA	472558N1024944.1
149-093-05CDC	474450N1023650.1	145-091-27BCC	472104N1021604.1	146-095-32CB9	472519N1024915.1
149-093-08DCC	474358N1023631.1	145-092-08DAD	472328N1022508.1	146-095-35DDC	472459N1024426.1
149-093-09CCD	474358N1023543.1	145-092-13DDD	472222N1022002.1	146-096-06BA9	472958N1025743.1
149-093-10AAA	474444N1023329.1	145-092-14BAD2	472302N1022157.1	146-096-11BAC	472906N1025246.1
149-093-14CCC	474306N1023320.1	145-092-20ADC	472156N1022518.1	146-096-11DAC	472840N1025208.1
149-093-18ddb	474313N1023729.1	145-092-20CBC	472143N1022616.1	146-096-15CDC	472735N1025403.1
149-093-21DCA	474221N1023505.1	145-092-24BCA1	472203N1022059.1	146-096-23ADD	472709N1025158.1
149-093-23ACD	474240N1023232.1	145-092-28ddb1	472044N1022401.1	146-096-23CBB	472703N1025305.1
149-093-24AC	474243N1023120.1	145-092-28ddb2	472044N1022401.1	146-096-23CCC	472643N1025305.1
149-093-25DDD	474122N1023056.1	145-093-23CCC	472131N1023006.1	146-096-27ADC	472617N1025324.1
149-093-27ABA	474208N1023348.1	156-093-27DCD	472038N1023006.1	146-096-27BCB	472624N1025422.1
149-093-34ACA	474103N1023348.1	145-093-29BCD	472105N1023346.1	146-096-32CBA	472519N1025645.1
150-091-35CCA	474551N1021747.1	145-093-32AAC	472025N1023258.1	146-096-33ACC	472525N1025500.1
150-093-31ADD	474609N1023721.1	145-095-07BCB	472348N1025032.1	146-097-34CAD	472513N1020133.1
150-093-33CAA	474603N1023525.1	145-095-14BCB	472258N1024522.1	147-091-14BBD	473314N1021417.1
		145-095-18DCA	472258N1024522.1	147-091-15ABC	473327N1021524.1
		145-095-29CDB	472045N1024856.1	147-091-22ABB	473241N1021524.1
		145-095-32BDA	472019N1024846.1	147-091-25DAD	473117N1021223.1
		145-095-33CBB	472006N1024758.1	147-091-26BDB	473136N1021427.1
		145-096-01CBD	472420N1025139.1	147-091-26CAC	473117N1021427.1
		145-097-03AAB	472452N1030102.1	147-091-31CDB2	473019N1021931.1
		145-097-04ADC	472433N1030219.1	147-094-04DAA	473438N1023908.1
		145-097-06CAB	472426N1030531.1	147-094-04DDA	473438N1023918.1
		146-091-05CBA1	472938N1021827.1	147-095-15CBA	473309N1024631.1
		146-091-05CBA2	472938N1021827.2	147-095-18CBA	473309N1025023.1
		146-091-05CBA2	472938N1021827.2	147-095-18DAD	473302N1024925.1
		146-091-18DBA	472754N1021906.1	147-095-22BBA	473231N1024444.1
		146-091-21DDC	472642N1021623.1	147-095-23ACB	473042N1024856.1
		146-091-22BBA	472728N1021555.1	147-095-32BDC	473243N1024641.1
		146-092-02DCA	472927N1020137.1	147-095-32BDD	473042N1024837.1
		146-092-14CDD	472735N1022158.1	147-096-27DDA	473110N1025316.1
		146-092-15CBB	472755N1022343.1	147-097-01ADD	473457N1025822.1
		146-092-15CDB	472742N1022324.1	147-097-02CBD	473444N1030036.1
		146-092-25BCB	472624N1022110.1	147-097-17AAA	473332N1030328.1
		146-093-10BAC	472906N1023103.1	147-097-23BAD	473228N1030036.1
		146-094-26ADB	472624N1023648.1	147-097-24ADB	473228N1025831.1
LOCAL SPRING NUMBER	LAT-LONG				
141-092-24AAD	470120N1021621.1				
141-097-15ABB	470216N1025720.1				
142-091-06CAD	470842N1021546.1				
142-091-08ABB1	470823N1021420.1				
142-096-04CDB2	470833N1025122.1				
142-097-16CAA	470701N1025850.1				
143-094-14CDC	471158N1023346.1				
143-095-04AAC	471421N1024616.1				
143-095-06BB	471424N1024641.1				
143-095-24CDA	471113N1023957.1				
143-097-03ADA	471412N1025705.1				
143-097-20AAB	471128N1025948.1				
144-092-08CDB	471809N1022211.1				
144-093-27ACC	471551N1022656.1				
144-095-30DCB	471522N1024537.1				
144-096-10CDC	471800N1024954.1				
144-096-15BAB	471753N1024954.1				
144-096-27CBA	471538N1025003.1				
144-097-04CBB	471913N1025908.1				
144-097-04CCA	471859N1025859.1				

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LOCAL SPRING NUMBER	LAT-LONG
147-097-26CCC	473104N1030045.1
147-097-34CAA	473031N1030133.1
148-091-07BAA	473931N1021923.1
148-092-03ABA	474023N1022253.1
148-092-04CBD	473951N1022448.1
148-092-11AAC	473925N1022127.1
148-092-11ACA	473919N1022136.1
148-092-26ACA	473646N1022136.1
148-093-01DDC	473938N1022749.1
149-093-17BDD	473821N1023334.1
148-093-31BBD	473534N1023421.1
148-093-31DCC	473521N1023421.1
148-094-15CAD	473808N1023830.1
148-094-23CBD	473717N1023733.1
148-095-06ACA	474012N1024945.1
148-095-24BDA	473736N1024337.1
148-095-27DDB	473620N1024543.1
148-096-10DBC	473902N1025345.1
148-097-18ACB	473830N1030516.1
149-091-08AAA	474444N1022040.1
149-091-16BBB	474351N1022031.1
149-091-16BCB	474338N1022031.1
149-094-16BCC	474332N1022031.1
149-092-07ABA	474444N1022958.1
149-092-25CDC	474121N1022403.1
149-092-27BBB	474207N1022656.1
149-092-30CAB	474141N1023027.1
149-092-32CCD	474029N1022920.1
149-092-35BDA	474102N1022510.1
149-092-35BDA	474102N1022510.1
149-093-03CAC	474503N1023417.1
149-093-12ACC	474424N1023125.1
149-093-20BDD	474240N1023641.1
149-093-21DCC	474214N1023515.1

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APPENDIX B

Temperature Conversion Table

Degrees Celsius (°C)	Degrees Fahrenheit (°F)	Degrees Celsius (°C)	Degrees Fahrenheit (°F)	Degrees Celsius (°C)	Degrees Fahrenheit (°F)
3.5	38	12.5	54	21.5	71
4.0	39	13.0	55	22.0	72
4.5	40	13.5	56	22.5	72
5.0	41	14.0	57	23.0	73
5.5	42	14.5	58	23.5	74
6.0	43	15.0	59	24.0	75
6.5	44	15.5	60	24.5	76
7.0	45	16.0	61	25.0	77
7.5	45	16.5	62	25.5	78
8.0	46	17.0	63	26.0	79
8.5	47	17.5	63	26.5	80
9.0	48	18.0	64	27.0	81
9.5	49	18.5	65	27.5	81
10.0	50	19.0	66	28.0	82
10.5	51	19.5	67	28.5	83
11.0	52	20.0	68	29.0	84
11.5	53	20.5	69	29.5	85
12.0	54	21.0	70		